User Guide
Core Impact 19.1

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CORE SECURITY
A HelpSystems Company

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Introduction

Welcome

Welcome to the "Core Impact 19.1 User Guide"!

Core Impact elevates the practice of penetration testing to the new standards of quality required by today's organizations. The application provides you with not only a comprehensive and scalable framework in which to perform penetration tests, but also a controlled environment in which to perform them. Core Impact allows you to do the following:

- Automate the penetration testing process, targeting hosts, users, web applications, WiFi networks and network devices.
- Safely and efficiently determine how a malicious attacker might gain access to or disrupt your information assets.
- Define and execute a repeatable and scalable testing methodology.
- Increase team productivity.
- Leverage security knowledge and expertise across penetration tests.

The chapters that follow teach you how to use Core Impact as efficiently as possible so you can rapidly achieve each one of these goals. If you have already installed Core Impact and created a Workspace, you can also get a jump-start and view the available Quick Guides - these will guide you through some basic penetration tests with Core Impact.

Installing and Activating Core Impact

Before you install Core Impact , please read the Release Notes (included with the distribution). If you do not read the Release Notes, you may overlook important information regarding the installation, configuration and use of the product.

> **WARNING:**
> Antivirus software will interfere with the installation of Core Impact and may interfere with Core Impact's operation. Disable antivirus scanners during installation and then exclude the following Core Impact installation directories from your antivirus tool's scanning locations:
>
> - `%ProgramData%\IMPACT`
> - `c:\Program Files\Core Security` (on 32-bit operating systems)
> - `c:\Program Files (x86)\Core Security` (on 64-bit operating systems)

Minimum System Requirements for Core Impact 19.1

The following operating systems are *certified* platforms for Core Impact. These platforms have been tested thoroughly by Core Security staff.

- Windows 10 Enterprise 64 bit
- Windows 10 Pro 64 bit

The following operating systems are *supported* platforms for Core Impact. These platforms have also been tested and, although they are not certified, they are fully expected to provide a stable platform for Core Impact.

- Windows Server 2016 Standard

In addition to an accepted operating system, the below minimum requirements should be met:

- Intel Core i5 (4th Generation)
- 8 GB RAM
- 4 GB Free Hard Disk Space (hard disk capacity requirements increase with the quantity of high-volume test workspaces)
- Internet Explorer 11.0 or later
- A Windows-compatible Ethernet networking card. Core Impact works with wireless network interface cards.
- Screen resolution: 1024 x 768 minimum (1280 x 1024 recommended)

Please note the following important details about Core Impact:

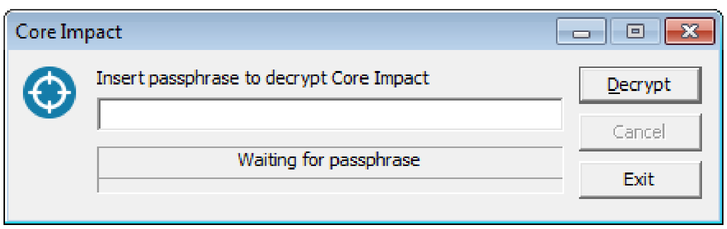
- In order to create a Fake Access Point using Core Impact, you must use a Pineapple Nano (https://www.wifipineapple.com/) wireless network auditing tool.
- In order for you to install and use Core Impact, you must have Administrator privileges on the system.
- Unless otherwise stated by a module or exploit, Core Impact is compatible to run on and target US English versions of the specified operating systems only.
- Connecting directly with a DSL/Cable modem using PPTP will limit some of the product's functionality (packet capture and custom packet crafting).
- Some modules (such as Remediation Validation, Resume, Agent Redploy) may not run on Workspaces generated from a previous version of Core Impact. These modules will automatically detect this condition and abort on startup so as to prevent executing an invalid command.

Installing Core Impact

Core Impact is distributed as a self-installing Windows executable (`.exe`). If you are currently running an older version of Core Impact, you do not need to uninstall it before installing the latest version.

1. If you have a download link for the software, save the distribution to a temporary directory and double click the `CORE_IMPACT-19.1.exe` file. If you are using an alternative distribution media such as a CD, double click on the `.exe` file. When distributed as a download, the installer is encrypted with a pass phrase which you should have received via email. You will be presented with a dialog for entering this pass phrase.

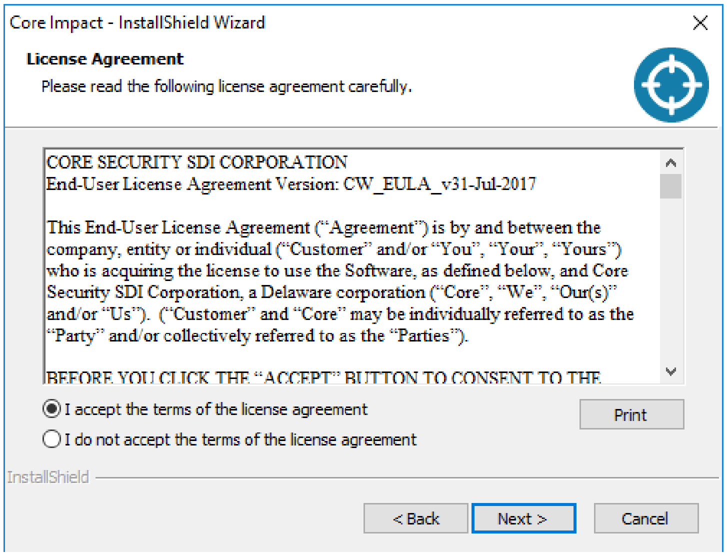
   Decrypting the installer

   If the passphrase is correct, the installer will self-decrypt and start. The Welcome Dialog Box of the InstallShield Wizard appears.

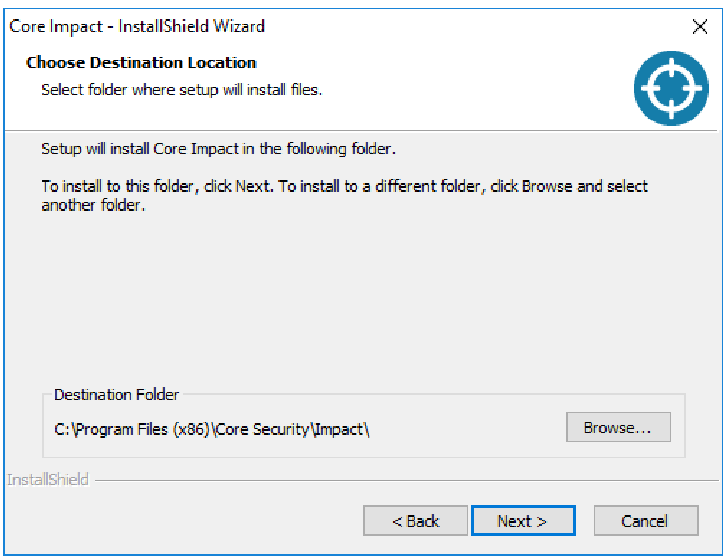
   The installer reads every character entered into the decrypter, including white spaces. Ensure you have removed trailing spaces if you copy and paste the passphrase into the field.
2. If you do not have certain required software already installed on your computer, the installer will install them for you. Click the Install button if/when prompted.
3. In the License Agreement Window, read the product license for Core Impact . To accept the license, click the I accept the terms ... radio button and then click Next. If the license is not accepted, Core Impact will not install.

   License Agreement Window



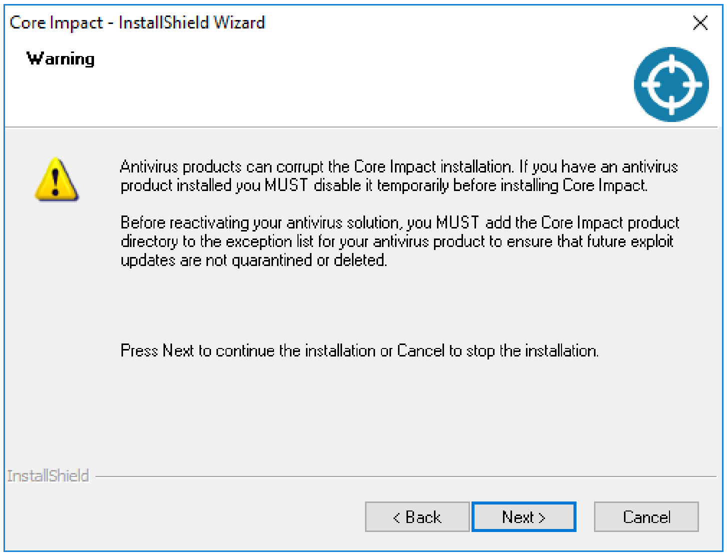
4. You will be prompted for the destination location. You can change the destination folder by pressing the Browse button. Press Next to continue.

   Destination Location Window



5. Antivirus software will interfere with the installation of Core Impact and may interfere with Core Impact's operation. This page of the wizard is a reminder to disable antivirus scanners during installation.

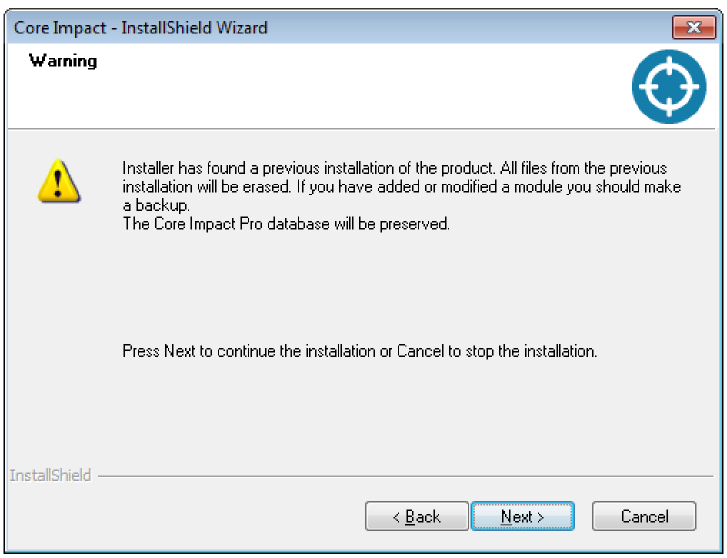
   Antivirus Product Warning



Temporarily disable any Antivirus tools running on your machine, then click the Next button.

6. If you have had Core Impact installed on your system previously, you may see a warning that all previous files except the Core Impact database will be erased.

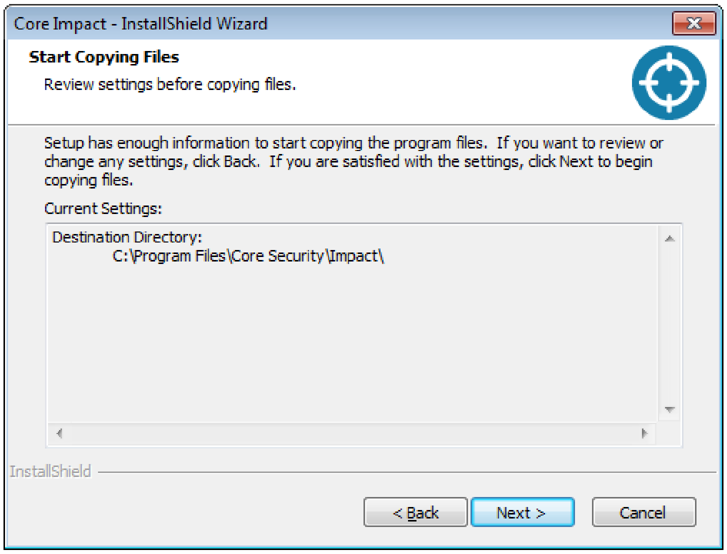
   Previous Installation Warning



   If needed, back up your previous installation's files, then click the Next button.

7. The installation Wizard will display a summary of the installation. Review the information and click Next.

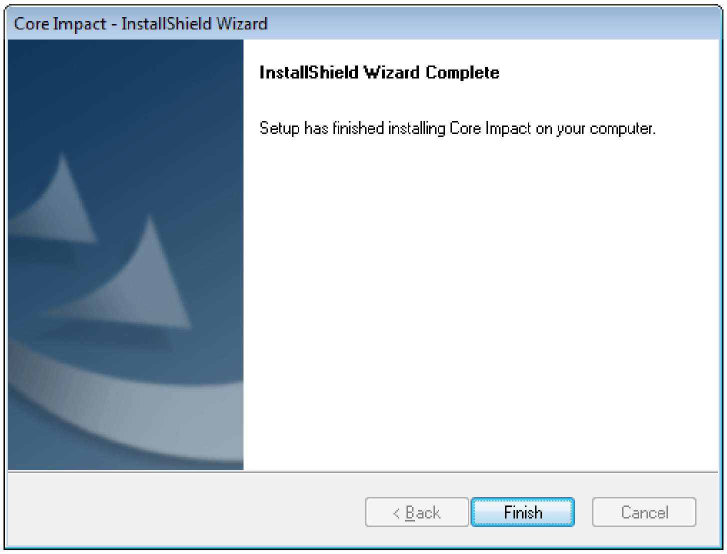
   Start Copying Files Window



The installation of Core Impact will begin. Core Impact may also install any dependencies it needs - this is normal and these installers should be allowed to continue.

8. The wizard will notify you when the installation is complete.

   Installer Finished



9. Click the Finish button.

Core Impact's installation process also installs the following required software:

- Microsoft Visual C++ 2010 Redistributable (x86)
- Microsoft Windows Installer 4.5
- Microsoft .NET Framework
- Microsoft SQL Server 2012 SP1 Express
- Crystal Reports 2008 Runtime SP3

- Microsoft Internet Information Server 7.5 Express
- Microsoft Windows Installer 4.5

If you had a previous version of Core Impact installed or if this is a brand new installation, the Migration Wizard may appear when you first launch Core Impact. For more details on this, see Database Migration Wizard.

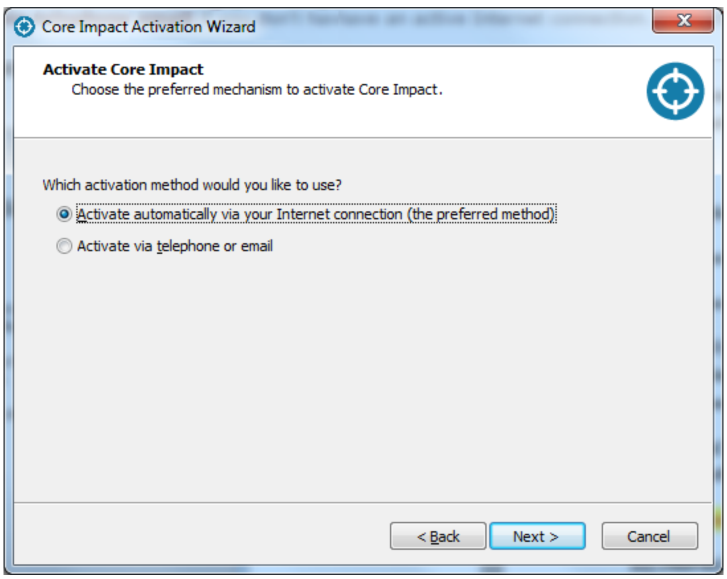
After installing Core Impact, you should install the 3rd party software program provided by Core Security. Simply follow the prompts and allow the required third party application to install.

Activating the product

The first time you run Core Impact on a new computer you will be presented with the Activation Wizard. You must activate Core Impact in order for it to operate.

1. When the Activation Wizard opens, click the Next button.
2. Select Activate automatically ... if you want to activate over the Internet. Select Activate via telephone or email if you don't have an active Internet connection. Then click the Next button.

   Activation Mechanism

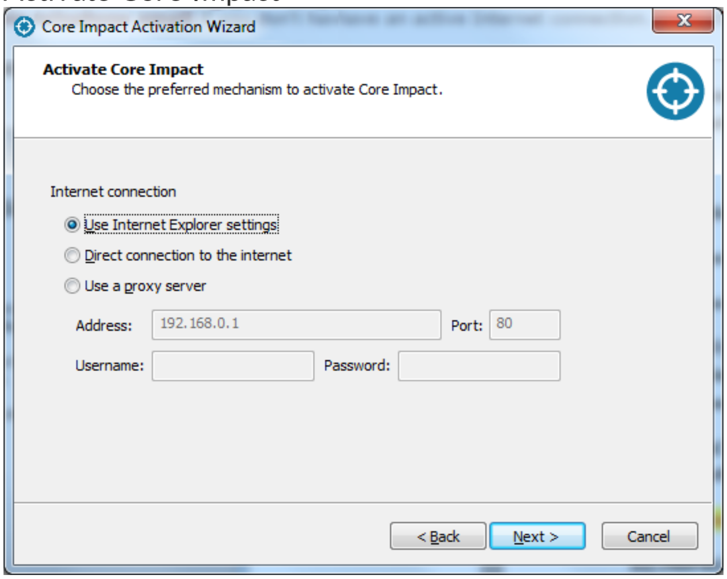


Activation Via Internet

If you have an active Internet connection on the computer where Core Impact is installed, the product can activate automatically through the network. Core Impact will connect to the Internet based upon settings that you enter during the activation process. You can configure Core Impact to:

- Use Internet Explorer settings: this is the default setting and assumes that you configured your Internet connection via Internet Explorer's Tools -> Internet Options -> Connections form.
- Use a Direct connection to the Internet
- Use a proxy server

Activate Core Impact



You can change these connection settings in Core Impact after the initial installation by navigating to the Tools -> Options -> Network configuration screen from the Core Impactconsole.

Activation Via Email or Phone

If the computer on which you are installing Core Impact does not have an active connection to the Internet, you can activate the product via email or by phone. The Activation Wizard will present you with a Reference Code specific to the computer on which Core Impact is running. Please contact Core Security via email or phone with the code referenced in the Wizard (see Contact Support for contact information) and you will be given an Activation Key to activate the product.

Database Creation Wizard

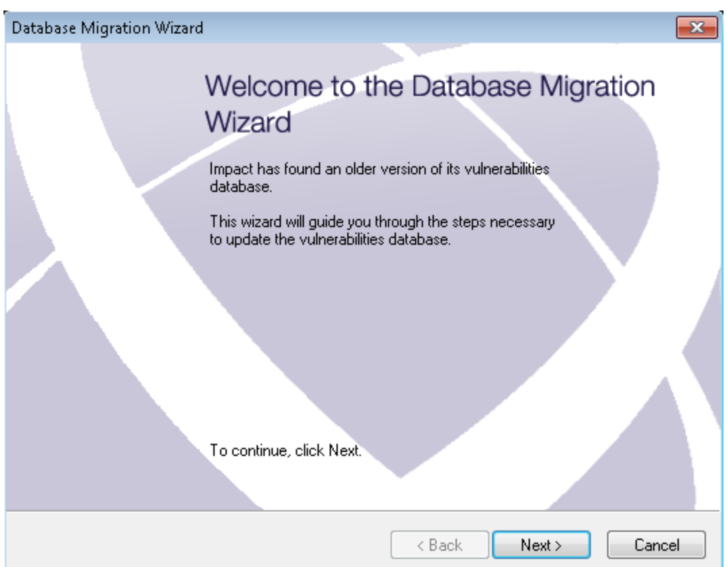
If you are installing Core Impact for the first time on a machine, the Database Creation Wizard will automatically begin when you launch Core Impact. Simply follow the on-screen prompts to complete the creation process.

Database Creation Wizard

Database Migration Wizard

If you install Core Impact after having an older version, the Database Migration Wizard will upgrade your database(s). If it is a brand new install of Core Impact, the Database Migration Wizard will create a database for you. Simply follow the on-screen prompts to complete the migration process.

Database Migration Wizard

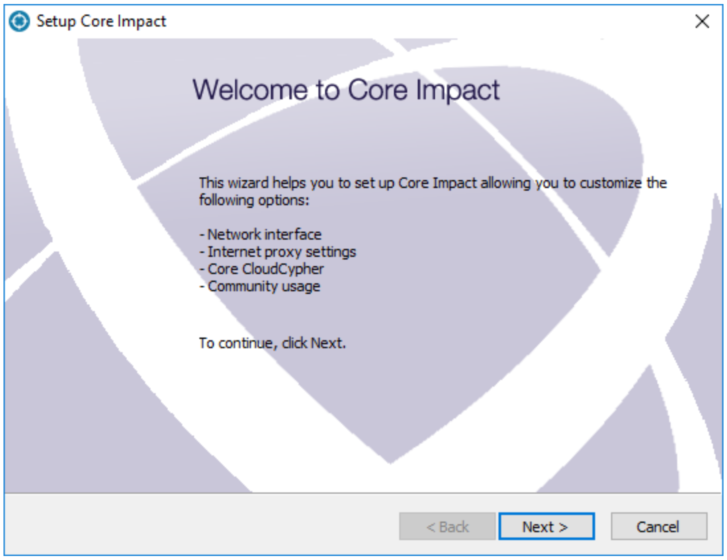


Set Up Core Impact

When you first launch Core Impact, the Setup Wizard will open which will allow you to set network configurations and community usage preferences. Network settings can be changed at any time by accessing Network Options in Core Impact. Community usage preferences can also be modified by accessing Community Usage Options.

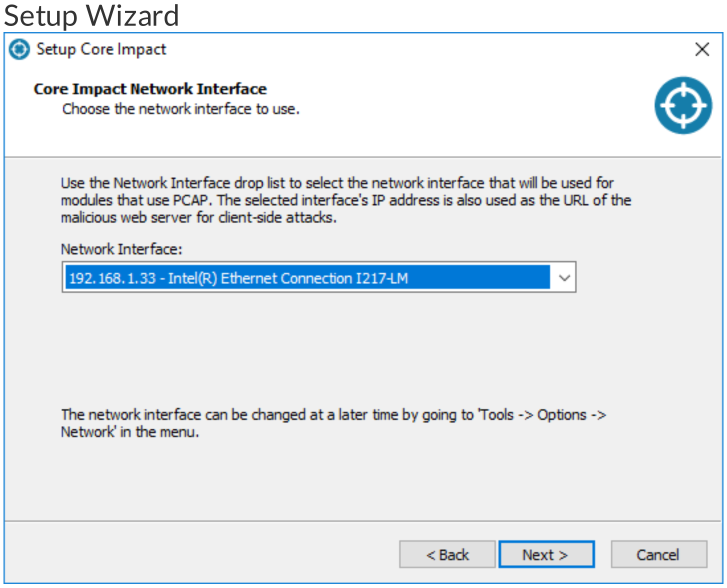
1. When the Setup Wizard opens, click the Next button.

   Setup Wizard

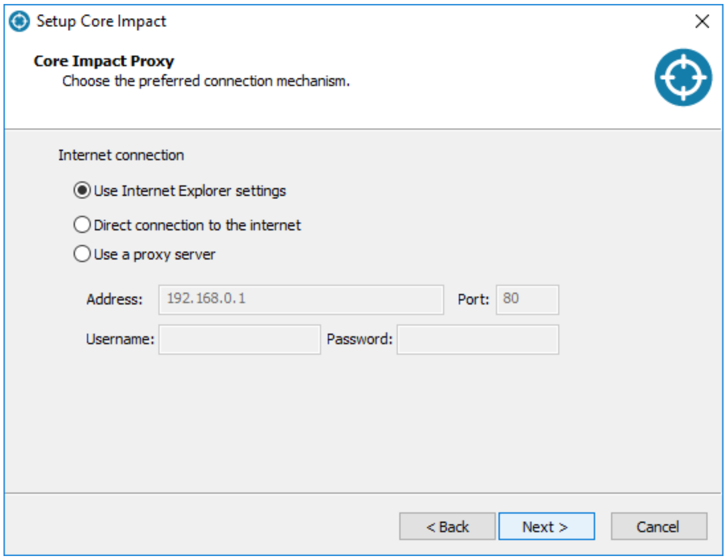
2. Select your preferred Network Interface from the drop-down menu, then click the Next button.

   Setup Wizard

3. Define how your system connects to the Internet. If you Use a proxy server, enter your proxy's connection details, then click the Next button.

   Setup Wizard

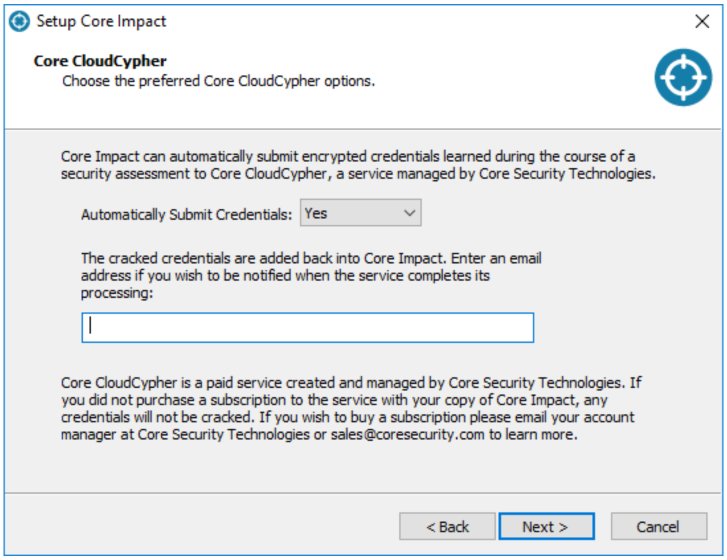


4. Core Impact provides the ability to connect to the Core CloudCypher, which is a paid web-based service that attempts to determine the plain text passwords for discovered NTLM Hashes from Windows machines. From the Automatically Submit Credentials drop down, select one of the following options:
   - Yes: Hashes will be automatically submitted to the CloudCypher service.
   - No: Hashes will not be automatically submitted to the CloudCypher service. You will still be able to submit them manually.
   - Never: The ability to send hashes to the CloudCypher service will not be available in your current installation of Core Impact.

   If you choose either Yes or No, you can modify this setting in the Core CloudCypher Options section of the Preferences, after the installation has been completed.

   You can also enter an email address to which notifications will be sent when a cracking process has completed.

   Setup Wizard



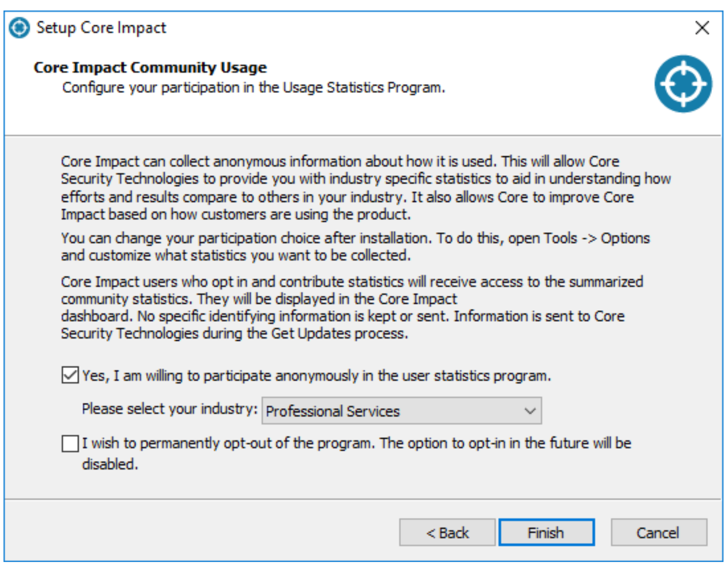
Then click the Next button.

5. Core Impact can gather general usage statistics about how the application is used. This allows Core Security to provide industry statistics to you as well as to improve Core Impact for future releases. To opt into the Usage Statistics Program, click the Yes, I am willing to participate ... check-box, optionally select your primary industry from the drop-down. You can later opt out or modify your usage statistics preferences in the Community Usage Options of Core Impact. See Usage Statistics for more information on this.

   If you check I wish to permanently opt-out of the program, your statistics will not be gathered and you will not have the option to enable usage statistics in Core Impact.

   If you do not check either option, your statistics will not be gathered unless you enable statistics in the Community Usage Options of Core Impact.

   Setup Wizard

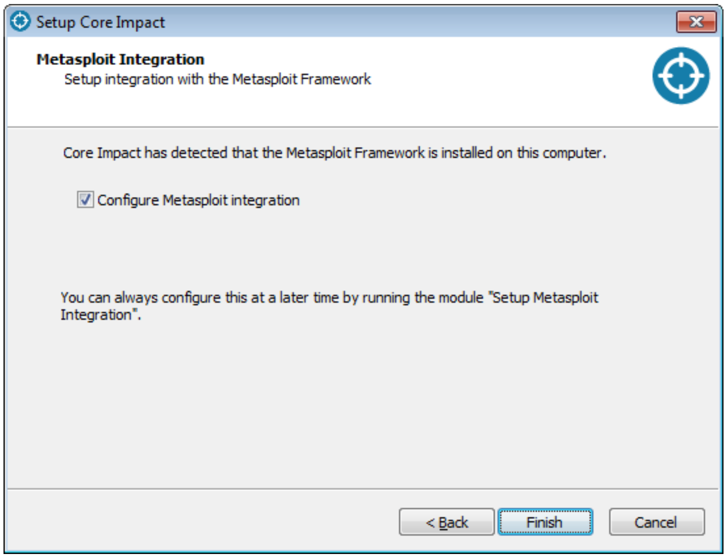


   Then click the Next button.

6. If Metasploit is installed on your machine when you first launch Core Impact, you will be given the option to add integration with Metasploit. Click the Configure Metasploit integration check-box. With this option checked, Core Impact will copy some integration files to your Metasploit installation directories.

   For information on using the Metasploit Framework with Core Impact, see Integration with Metasploit.

   Setup Wizard

   Then click the Finish button.

How to Integrate with Metasploit

This section describes how to integrate your Core Impact installation with Metasploit. For general usage, see Integration with Metasploit.

Automatic Integration with Metasploit

If Metasploit is installed on your machine when you first launch Core Impact, the Setup Wizard will offer you the option to add integration with Metasploit.

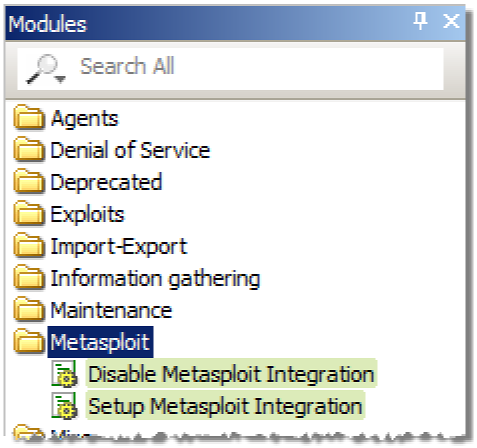
Manual Integration with Metasploit

If you install Metasploit after Core Impact has been used on your system, you can integrate them manually. To do this, execute the Setup Metasploit Integration module:

1. Open a Workspace.
2. Navigate to the Modules tab.

3. Locate and double-click the Setup Metasploit Integration module. (Open the Metasploit folder or use the search bar and search for "metasploit".)

   Setup Metasploit Integration Module

4. Click Ok on the module parameters window - there are no parameters for you to configure.

Your Core Impact installation will be configured to interact with the Metasploit Framework. See Integration with Metasploit for usage.

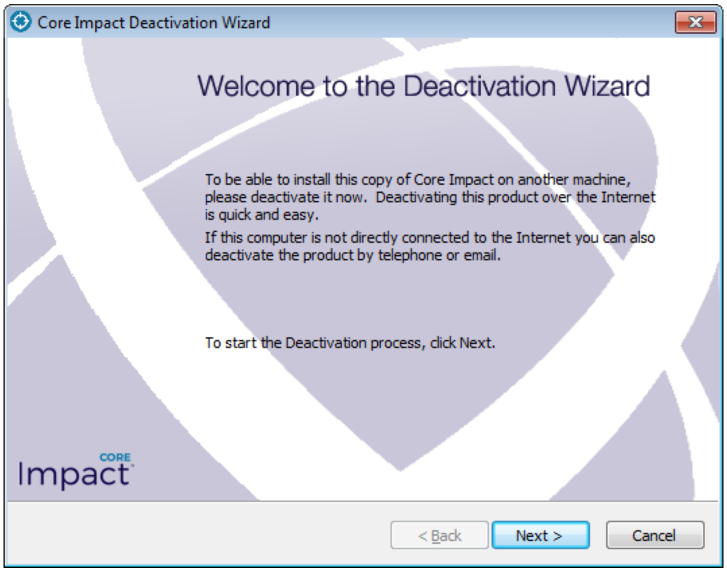
Transferring a Core Impact Installation

If you need to transfer an installed and activated version of Core Impact to a different computer because you are upgrading your hardware, you will need to follow the below steps:

1. Backup your Core Impact license (see Backup the Core Impact License).
2. Deactivate your Core Impact installation.
   a. From the Core Impact dashboard screen, select **Tools** -> Deactivate Core Impact

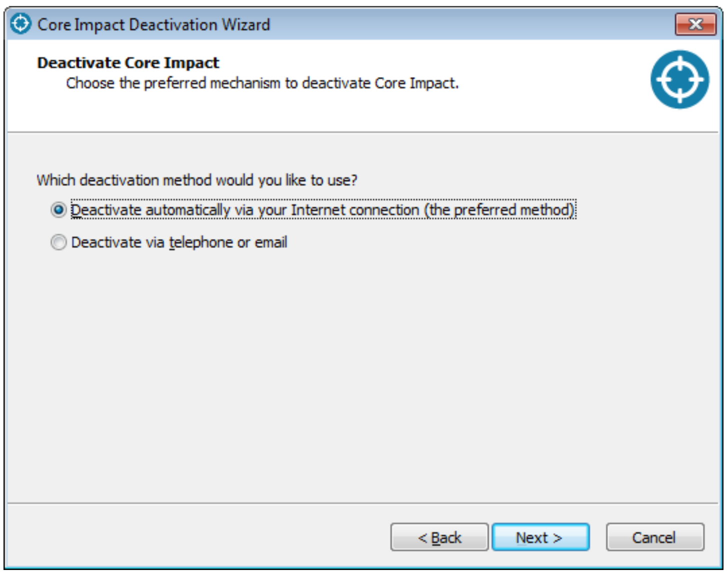
b. The Deactivation Wizard will appear. Click the Next button.

Deactivation Wizard



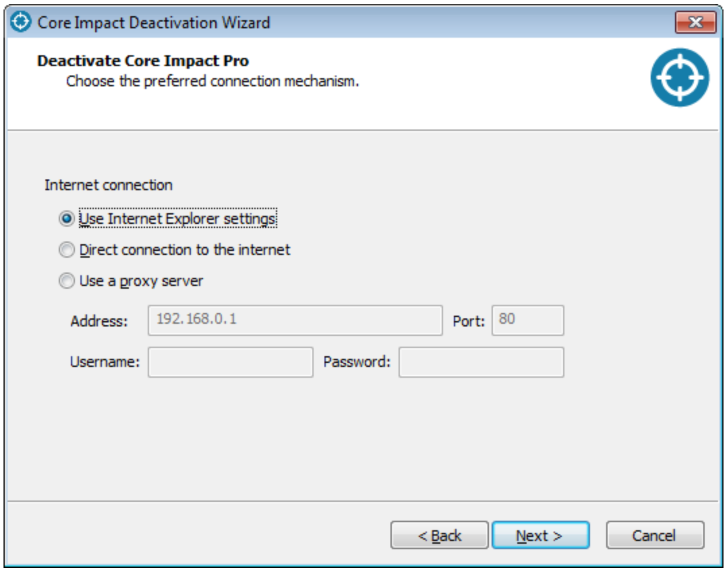
c. Select a Deactivation Method - either via Internet connection or via telephone or email - then click the Next button.

Deactivation Method



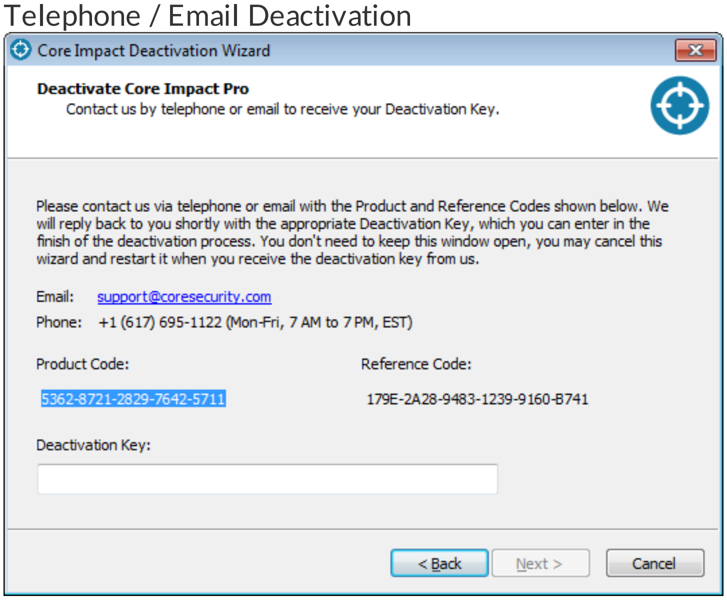
d. If deactivating via the Internet, you will then need to verify the Internet connection method.

Internet Connection



e. If deactivating via telephone or email, your next step will be to contact Core Security and provide them with the Reference Code in order to receive your deactivation key. Enter the deactivation key into the field provided.

Telephone / Email Deactivation



Click the Next button.

f. The deactivation will proceed and a notification will appear when complete. Now that Core Impact is deactivated, you can proceed with the un-install.

3. Un-install Core Impact (see Un-installing Core Impact).
4. Install Core Impact on the new computer.
5. Use the Restore License procedure with the license backed up in step 1.
6. Activate the new installation (see Activating Core Impact).

Usage Statistics

Core Impact can gather statistics about how the application is used and will report the information to Core Security for analysis. Conclusions drawn from the data will be used to provide you with industry statistics as well as to improve Core Impact in future releases. Before Core Impact transmits any usage information, the data is made anonymous (stripped of any identifying data) and encrypted. You can view your statistics by performing the following steps:

1. Open a Core Impact workspace.
2. Navigate to the Modules view and make sure the Network entity view is active.
3. In the Module search bar, enter the string "stats". This should cause the View Local Stats module to appear.
4. Double-click the View Local Stats module. The module's parameters will appear.
5. Set the ALL WORKSPACES parameter according to your preference.
    - NO: Will show statistics for current workspace only.
    - YES: Will show statistics for all workspaces.
6. Click the OK button.

   View the Module Log tab to monitor the module's progress. View the Module Output tab to view the statistics.

Statistics Gathered

Below is a list of statistics that can be collected. You can opt in or out of any or all of these by configuring the Community Usage Options in Core Impact.

Overall Usage

A summary of all systems discovered since the last usage report, including:

- Operating Systems discovered including version and service pack level
- Services discovered with operating system
- TCP open ports discovered
- UDP open ports discovered

Modules

- Total runtime of all modules since last usage report
- Average runtime of modules since last usage report
- Modules run manually
- Modules run via Wizard (RPT)

Workspaces

- Number of workspaces
- Number of hosts per workspace
- Number of web pages per workspace

Entities

Hosts, emails, web applications and their vulnerabilities (anonymized).

Exploit usage

Summary of exploits (successful and failed) from Attack & Penetration and Privilege Escalation that were run since the last usage report.

Non-Exploit modules

Summary of non-exploit modules (Information Gathering modules) that were run since the last usage report.

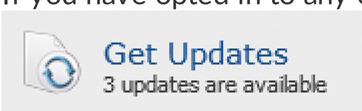
Reporting

Summary of reports run, including frequency and size of reports.

Pivot Usage and Depth

- Pivoting frequency and depth.
- List and count of modules used per agent.

If you have opted in to any of these categories, pressing the Get Updates button



will initiate the gathering and submission of statistics to Core Security.

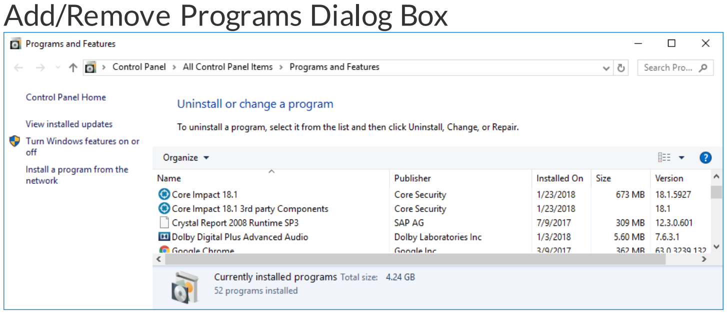
Un-installing Core Impact

If you are upgrading your hardware and you need to transfer your Core Impact software to a different machine, it is highly recommended that you first deactivate the software. If you fail to deactivate the software, you will not be able to activate Core Impact on another machine and you will need to contact Customer Support. Additional instructions describing the process of transferring your Core Impact installation to a new machine follow in section Transferring a Core Impact Installation.

To un-install Core Impact from your system, follow this procedure.

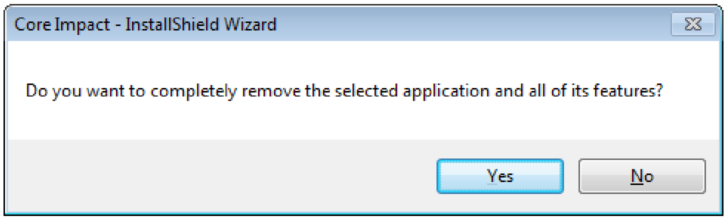
1. Open the Microsoft Windows Control Panel and select Programs and Features.
2. Select **Core Impact 19.1** and click the Uninstall button.

   Add/Remove Programs Dialog Box

3. The Windows Confirm Un-install Dialog Box will ask you if you really want to remove the product. Click Yes to continue with the un-install.

   Confirm Uninstall



All Core Impact files except configuration and database files will be removed from your system.

Understanding Licenses

Your Core Impact distribution is configured to work under one or more licenses. Licenses define the targets you can test with the product and also define the machine on which you can run Core Impact. Remember, you can add additional licenses to your distribution without reinstalling the product.

Navigate in Core Impact to Tools -> License manager to view your license details. A limited license has the following factors associated with it:

Starting date

The date on which the license becomes valid.

Expiration date

The date on which the license expires. When a license expires, targets within a workspace cannot be modified and new targets cannot be added.

IPs quantity

The maximum number of targets (unique IP addresses) that you can test with Core Impact.

Remaining IPs

The remaining number of IPs that you can test.

IP Changes

The maximum number of IPs that you can remove after testing.

Remaining Changes

The remaining number of IPs that you can change. Clicking the Used IPs button will allow you to remove IPs from the list.

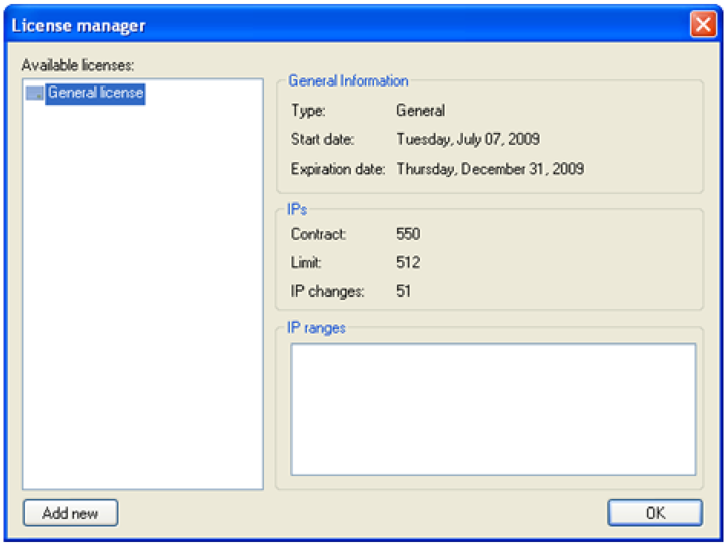
IP Ranges

The range of IP addresses that can be tested with the product. You can add and modify targets that belong to any of the listed ranges.

Managing Installed Licenses

You can use the License manager to view installed licenses and install new ones. To use the License manager, follow this procedure:

1. Select Tools -> License manager from Core Impact main menu.
   License manager Dialog Box



2. Click on any of the licenses listed in the Available licenses Panel to display its properties, or click on Add new to install a new license from a downloaded license file. You will then browse to its location and select it.

To purchase additional licenses, or if you wish to extend an existing license, contact Core Security.

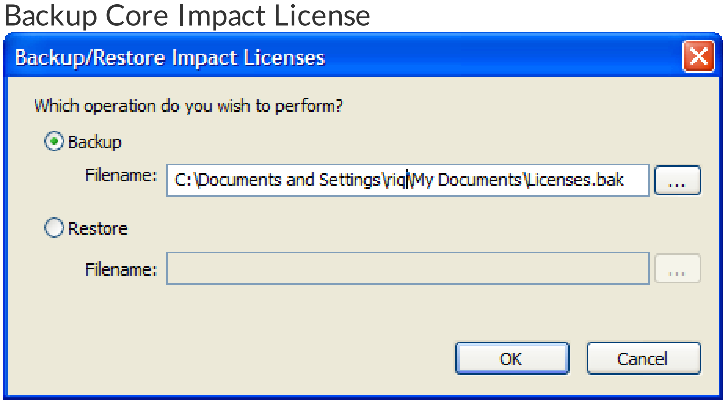
Backup/Restore Core Impact Licenses

Core Impact allows users a convenient way to back up and subsequently restore their license(s).

Backup the Core Impact License

1. Make sure all Workspaces are closed and click Tools -> Backup/Restore Impact Licenses...
2. Leave the Backup radio button selected.
3. Either type the full path or browse (using the ellipsis button) to the target file for the backup. The file will be a (`.bak`) file.

   Backup Core Impact License

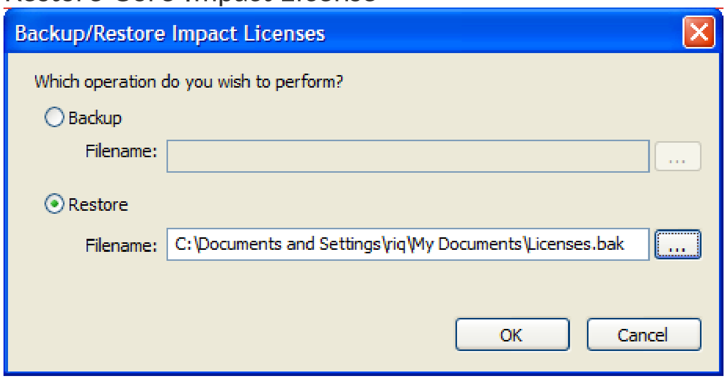


4. Click the OK button.
5. Click the OK button on the verification pop-up message.

Restore the Core Impact License

1. Make sure all Workspaces are closed and click Tools -> Backup/Restore Impact Licenses...
2. Select the Restore radio button.
3. Either type the full path or browse (using the ellipsis button) to the source `.bak` file of the backup.

   Restore Core Impact License

4. Click the OK button.
5. Click the OK button on the verification pop-up message.

Core Impact Architecture

Core Impact Architecture Features

Core Impact delivers the following features within its framework:

A repeatable process for penetration testing: Core Impact supports all the steps needed for a successful network, client-side and web applications penetration test. It approaches all phases of a penetration test in an intuitive and usable fashion, and consistently provides the user with an up-to-date view of all information accumulated during the current penetration test.

Flexibility: Core Impact provides a flexible penetration testing framework, capable of adopting methodologies defined by the user and adapting to different target configurations.

Scalability: Core Impact provides a highly scalable penetration testing solution:

- Test web applications with up to 200 web pages.
- Run client-side tests through over 3,000 target email accounts.
- Run network tests of up to 8 half-populated class-C networks.

Commercial-grade exploit code: Core Impact provides you with up-to-date support for a wide range of exploits for different platforms, operating systems, and applications, and multiple combinations of versions. These exploits allow you to gain and retain access on the target host or application.

A powerful framework for developing exploits and tools that aid in the penetration testing process: Core Impact's framework enables your team of Information Security experts to develop and customize new or existing tools quickly by providing a mechanism for acquiring and reusing knowledge and experience from successive penetration tests and different penetration-testing teams. When possible, it also enables the creation of exploit code and scripts that are independent of the target operating system or hardware architecture.

Some exploits/tools are platform-dependent due to the nature of the functionality they provide (for example, a 'chroot breaker' module will not work on a Windows system).

Transparent pivoting: Core Impact execution subsystem, together with its agent technology, enables modules to run from intermediate compromised hosts without modification. This powerful capability allows you to seamlessly stage or proxy attacks through intermediate hosts to probe further into the network.

Complete logging of test activities: All of the activities completed within Core Impact's framework are logged and stored in a database for later analysis and reporting.

It is not in the current scope of the product to provide a secure non-repudiable log of all the activities performed by the user (a log that would allow for "auditing the tester"), but it does greatly simplify the reporting and clean-up stages of the penetration test.

Architecture Components

At a basic level, Core Impact architecture achieves the following:

- Performs actions on behalf of the user (these actions are represented by modules).
- Deploys and controls agents on the target network. Agents perform the actions (modules) the user indicates.
- Centralizes the collection of information and keeps track of every performed action.
- Generates reports.

Core Impact architecture consists of a number of components working together to first compromise and then interact with the target host or application. The three primary components of the architecture are Agents, Modules and the Console. All knowledge obtained during assessments is consolidated in a central repository of information called the Entity Database. These components are described in the sections below.

Agents

Agents are a fundamental component of Core Impact's architecture. For Network and Client-side tests, an OS agent is a program that is installed by Core Impact on a compromised system immediately following a compromise. For Web Application tests, an agent represents knowledge of an exploitable vulnerability in the web application, but does not represent any code Core Impact has placed in the Web Application. The agent's primary purpose is to perform operations requested by the Console host (ultimately representing the user's orders) on the compromised system. Agents can also perform operations on other agents, a process known as "chaining." For more details about agents, see Controlling Agents.

Modules

Modules are individual operations, or a group of operations, that are executed by an agent. For example, modules can launch specific attacks against a target host, such as a web server, and perform information gathering tasks ranging from packet sniffing to active port scanning. Modules can also call and execute other modules.

See Working With Modules for more information on how to run and manage modules in Core Impact . If you are interested in developing modules for Core Impact, please refer to the "Core Impact Developer's Guide."

The Console

The Console consists of Core Impact Graphical User Interface and serves as an initial launching point for all modules, a management tool to visualize the network being attacked, and a reporting tool for outputting resultant information. The Console is the centralized gathering point for all information obtained from agents that may be deployed across multiple targets and varying operating systems. The Console provides visualization of data ranging from a specific network scan output to a module's successful exploit against a remote system.

The Console comes with an embedded agent that, by default, is the starting point of any penetration test. This agent is called the "localagent".

By interacting with the Console, you control the execution of Core Impact modules. Since modules run on a specific agent, there is always a selected agent for execution. This agent will be referred to in this document and in the Console itself as the default source agent. By default, when the Console starts, the "localagent" is selected as the default source agent.

Entity Database

The Entity Database constitutes the single and centralized repository of information gathered by Core Impact. It contains information such as module output, complete activity logs, information about target systems (hosts that are known, client-side information, operating systems, open ports, etc.), and agent deployment. This information is entered either manually by the user or through the automatic processing of module output. You can assess the state of the whole penetration test simply by looking at this database at any time.

Structured information such as target networks, hosts, client emails, vulnerable web pages, deployed agents, open ports on a host, and found user accounts are represented as objects in this database. These database objects are referred to in the product as "entities."

An entity is any object that can be managed by the database. All entities can serialize and de-serialize themselves to and from XML, allowing you to easily manipulate the data in other programs. Any findings of a module that can be shared are in the form of entities. Entities also include the functionality to compare different revisions of themselves and resolve conflicts (for example, allowing the user to choose between different port scan results for the same hosts). Upon initialization, some default entities are created and added to the database. These entities are:

- A host entity representing the local console host ('localhost')
- The local agent ('localagent')

See Core Impact Entities for a more in-depth look at the Entity Database and how to manage it from Core Impact's Console.

Core Impact Quickstart

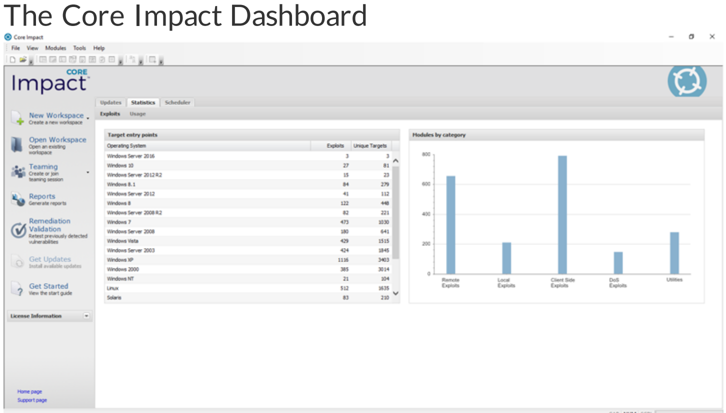
Getting Started: The Dashboard

After installing the latest version of the software (if you have not done so, please refer to Installing Core Impact for detailed installation instructions) look for the Core Impact folder in the START menu and select the Core Impact icon. You will be presented with the Core Impact Dashboard. The Dashboard is divided into several components, each presenting you with real-time information about your Core Impact installation as well as summaries of the product's market-leading commercial-grade exploit coverage.

The Dashboard will show:

- Product-related Alerts such as available software updates for Core Impact or license expiration notices.
- Updates Tab
  - A list of the currently-available exploits, utilities, and maintenance modules that are pending installation. These keep Core Impact current with the latest attack trends and vulnerability threats.
  - Graphical representations of the Modules Released over the previous 6 month period.
- Statistics Tab
  - A graphical summary of Core Impact’s exploit coverage in two summarized tables: Target Entry Points and Modules by Category.
  - If you have opted in to the usage statistics program (see Usage Statistics), you will see the Usage tab which will display details about the usage of your Core Impact installation.
- Scheduler Tab: Use this tab to view and create scheduled tests. See Using the Scheduler.
- Creating or Opening Workspaces
- Using Core Impact's Teaming features
- Generating Reports
- Remediation Validation

The Core Impact Dashboard



The real-time alerts for pending modules, new software updates, and 6-month tally of modules can be disabled by navigating to Tools -> Options -> Network and checking the Do not connect to the Internet to get news check-box.

Software Updates

After installation, and before starting to work with Core Impact, make sure your software version is the latest available and that it is up to date with the latest modules and exploits. As noted in the previous section, the Dashboard will display an alert when there is a new Core Impact release available, but you can also check for updates manually:

- To check for software updates, click Tools -> Check for new Impact Release...

Please note that new software downloaded through the Software Update feature is electronically watermarked with your active license. It will not work with other licenses.

Module Updates

In addition to having the most recent version of Core Impact installed, you will want to ensure that the software is up to date with the latest attack trends and vulnerability threats. Unlike Software Updates, Module Updates do not require a re-installation of the Core Impact application. Core Impact offers two methods of keeping users informed of new updates. Both methods require that a connection to the Internet is available, either directly or via proxy server:

1. **Dashboard.** The Dashboard will display a list of the currently-available exploits, utilities, and maintenance modules that are pending installation.
2. **Update Notifier.** The Update Notifier will appear in the system tray whenever there are updates available, regardless of whether Core Impact is running. The notifier will check for updates on a regular interval that you can define by navigating to Tools -> Options -> Other. If the Enable Update Notifier setting is checked, then the Update Notifier will check for updates as frequently as is specified in the minutes between checks field. If the Enable Update Notifier setting is un-checked, then it will not run at all.

   After you have been notified via one of the 2 methods above, click on the Get Updates button located on the left side of the Dashboard. This button will also initiate the transmission of usage statistics if you have opted in to the Usage Statistics program (see Usage Statistics).

   Core Impact 's update and news features access information over the Internet, using the method as configured in the Tools -> Options -> Network form. If you change locations from a non-proxy network to one that has a proxy server, you will need to update the Network settings accordingly.

The Scheduler

Core Impact allows you to run certain tests on an automated schedule, giving you a lights-out approach to your penetration tests. When you schedule a test, the test creates and runs in its own Workspace.

You can run the following tests with the Scheduler:

- [Vulnerability Scanner Validator]
- [Network Vulnerability Test]
- [Client-side Vulnerability Tests]
- [WebApps Vulnerability Scanner Validator]
- [WebApps Vulnerability Test]

With the Scheduler, you can do the following:

- Create new scheduled tests
- Manage existing scheduled tests
- View executed scheduled tests

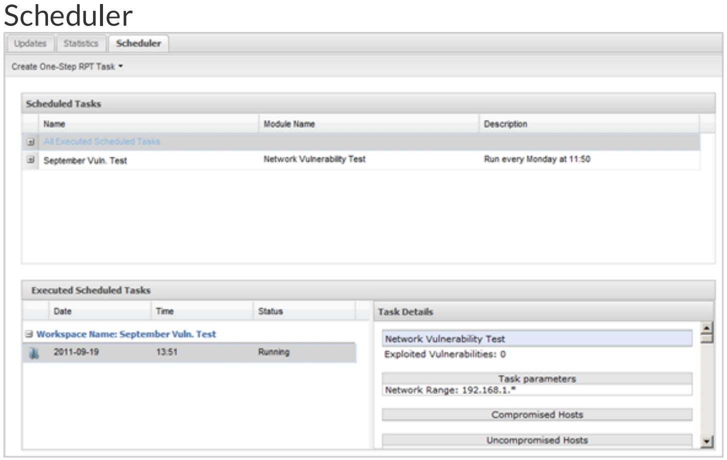
The Scheduler window contains the following components:

- The Scheduled Tasks pane shows all tests that are scheduled to run. It also lists their frequency, when they were last executed, and any errors that occurred during their last run.
- The Executed Scheduled Tasks pane shows a log of all tests that have been executed.
- The Task Details pane shows details of a task selected in the Executed Scheduled Tasks pane.

To create a new scheduled test:

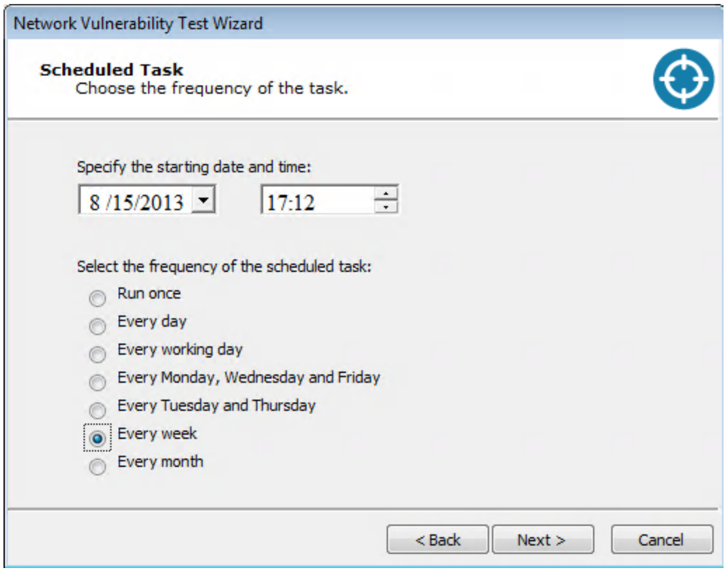
1. Navigate on the Dashboard to the Scheduler tab.

   Scheduler

2. Click Create One-Step RPT Task. A drop-down menu will open, showing the available tests.
3. Select from the drop-down of available tests. The respective RPT wizard will open.
4. Enter a Task Name for your Scheduled test, then complete the wizard.
5. The next form of the wizard will contain schedule frequency. Select the date and time that the test should first run. Then select how often the test should run.

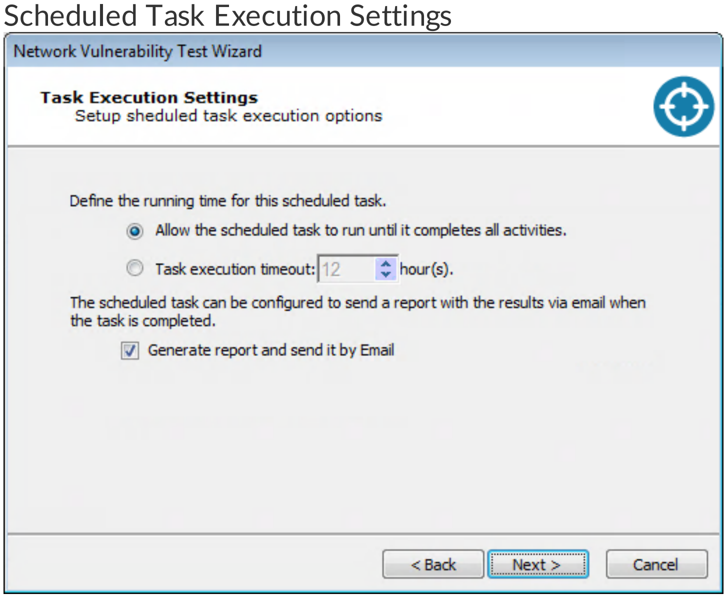
   Scheduled Task Frequency



Then click the Next button.

6. The next form of the wizard will contain Task Execution Settings.
   - Define the running time for the scheduled task:
     - Allow the scheduled task to run until it completes all activities
     - Set the **task execution timeout** in hours.
   - Generate report and send it by Email

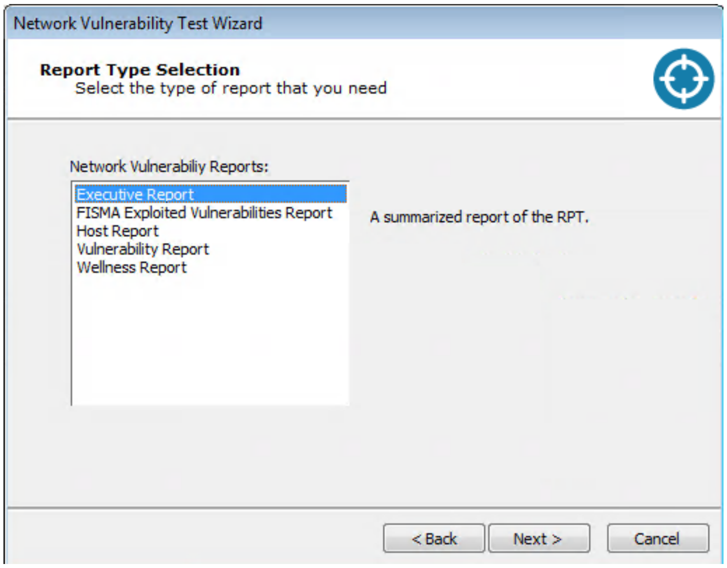
   Scheduled Task Execution Settings



Then click the Next button. If you have un-checked the **Generate report and send it by Email** option, click **Finish.**

7. If you opted to Generate report and send it by Email in the previous step, select the report you would like in this page of the wizard.

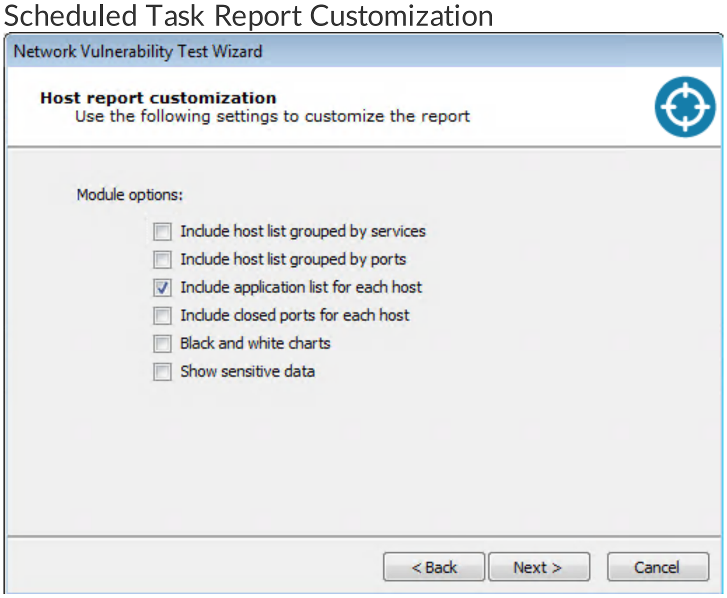
   Scheduled Task Report Type Selection



Then click the Next button.

8. Choose from the available **Report Customizations**. Settings will vary depending on the type of report you selected in the previous step.

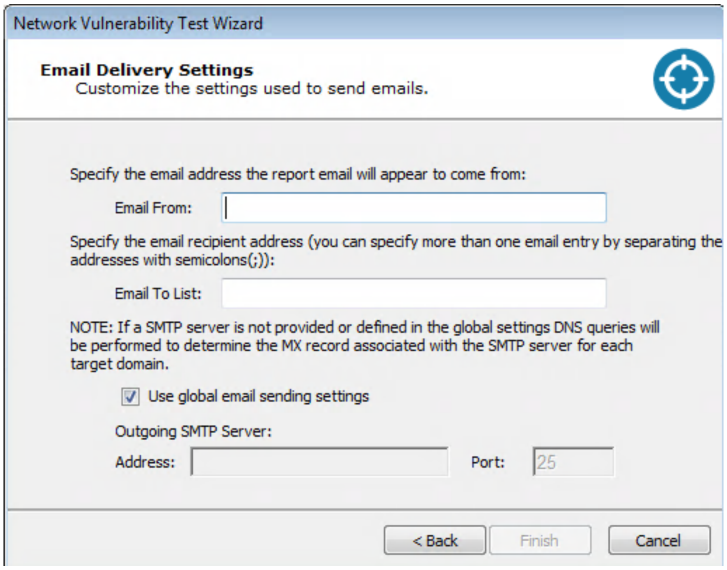
Scheduled Task Report Customization



Then click the Next button.

9. Enter Email Delivery Settings for delivery of the report:
   - **Email From**: Specify the email address he report will appear to come from
   - **Email To List**: Specify the email recipient address(es)
   - **Use global email sending settings**: Check this option if the SMTP settings have been defined in the Options. If not, uncheck this option and enter the **Outgoing SMTP** Address and Port number.

Scheduled Task Report Email Delivery Settings



Then click the Finish button.

The newly-scheduled test will appear in the Scheduled Tasks list.

- To remove a task from the scheduler, simply right-click on the task in the Scheduled Tasks list and select Delete.
- To start a task immediately, right-click on the task and select Start now.

Only 3 scheduled tasks can be running concurrently. If a 4th task begins, it will fail and will need to be run again manually or according to its next scheduled run. For this reason, be sure your scheduled tasks are set to run at appropriate intervals.

You can also see a list of tests that have run via the Scheduler in the Executed Scheduled Tasks pane.

- Click on a task to view its details and output in the Task Details pane.
- To stop a task, right-click the task and select Stop.
- Once a scheduled task has completed, it is listed in the Executed Scheduled Tasks pane. Each scheduled task runs in its own workspace. To view the task running in its own workspace, click the blue button to the left of the scheduled task or right-click on the task and select Open.

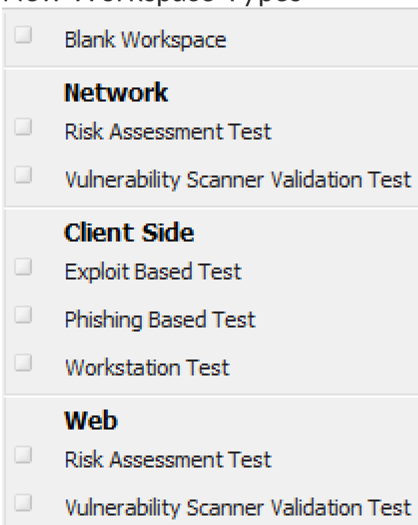
Create a Workspace

Every penetration test in Core Impact is run within a new or existing workspace. A workspace is a place where information regarding a specific test is stored. See Workspaces for more detailed information about workspaces and the New Workspace Wizard as well as how to create Teaming Workspaces. To create a new workspace:

1. Select the New Workspace button on the left side of the Welcome Window. This will open a drop-down menu with several Workspace types. Select a specific Workspace type,

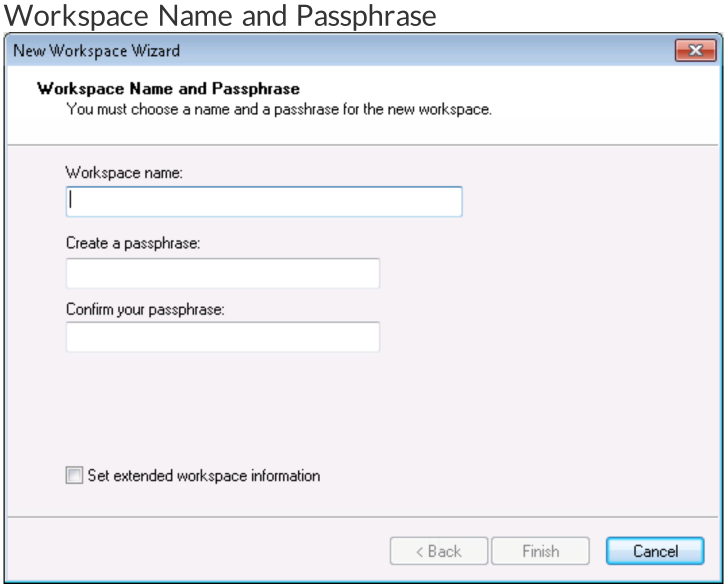
depending on your testing goals, or select Blank Workspace. The workspace types are designed as an Assisted Start and will automatically launch a web browser with documentation specific to the type you select. The resulting workspace, however, will be capable of executing any kind of penetration test. For example, if you create an Exploit Based Client Side workspace, you will still be able to run Network tests within it.

New Workspace Types



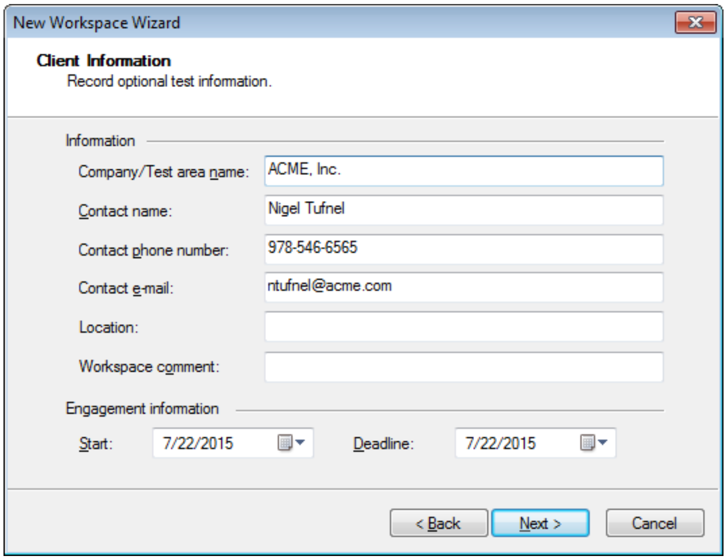
2. Enter a Workspace name and passphrase for your new workspace and click Finish. Optionally, you can enter extended workspace details by checking the Set extended workspace information box, then clicking Next.

Workspace Name and Passphrase



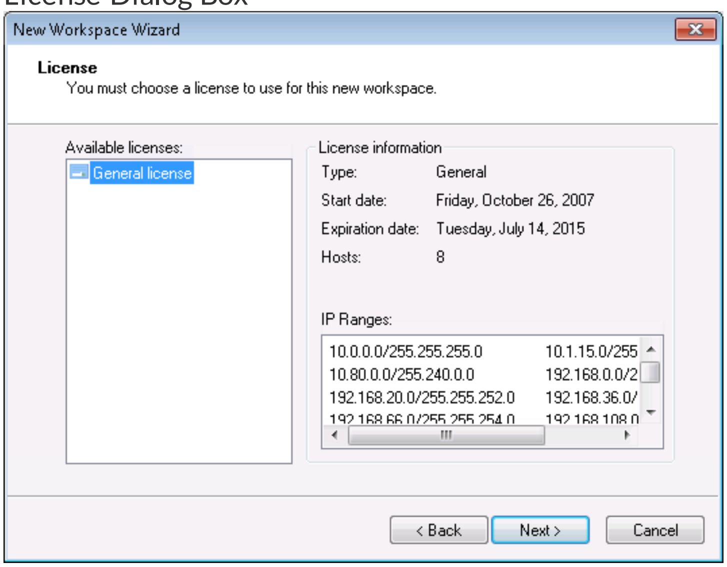
3. If you checked the Set extended workspace information box in the previous step, complete the form, then click Next.

Extended Workspace Information



4. Select a License for your new workspace and click Next.

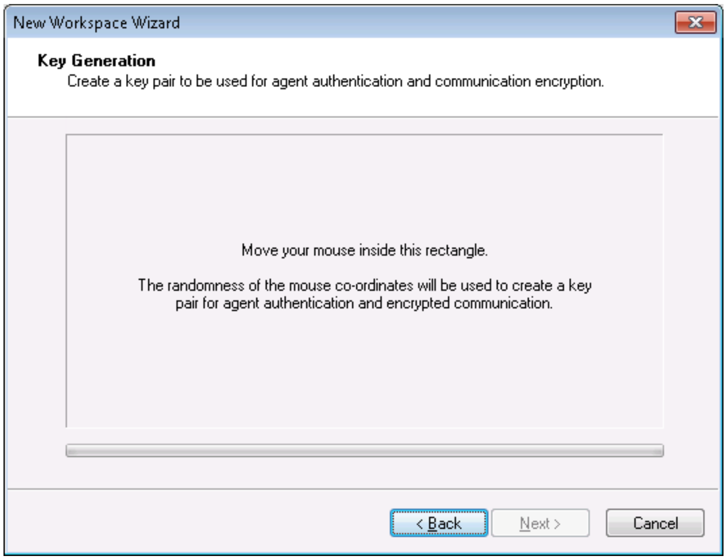
   License Dialog Box



5. A Workspace key is generated every time a new workspace is created. This key is only used for communication with remote agents that perform client authentication. This means that different users of Core Impact use different workspace keys and will not be able to connect to the same agents. It is important to note that this key does not currently protect the information inside Core Impact database, and that its sole purpose is to protect the workspace's deployed agents from being accessed by another Core Impact workspace.

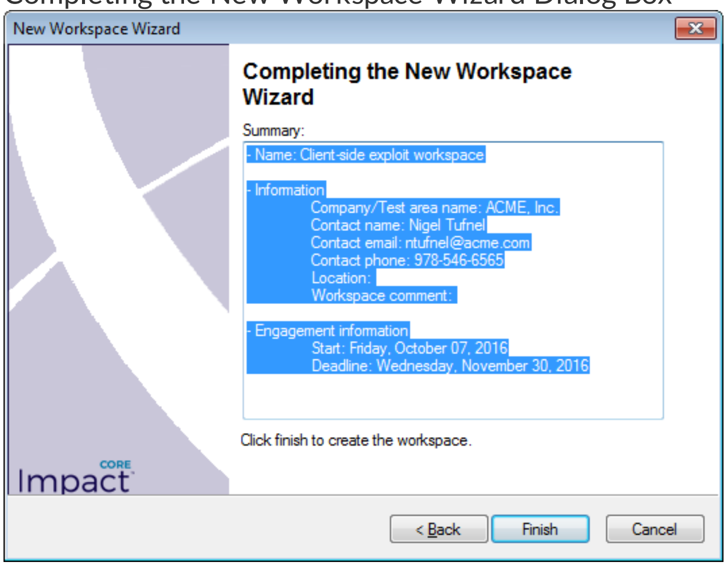
   Move your mouse inside the rectangle to generate a new key pair, and click Next. Refer to Crypto Channel for more information on how Core Impact uses this key pair.

   Key Generation Dialog Box



6. A summary of the new Workspace will appear. Click Finish.

   Completing the New Workspace Wizard Dialog Box

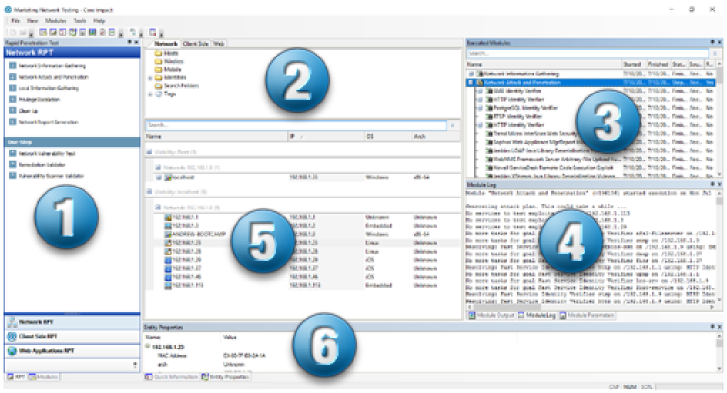


The Core Impact Console now appears, complete with the name of your workspace displayed in the title bar. You now have a workspace in which to run penetration tests.

Core Impact Console

After creating a new workspace, the Core Impact Console appears. The Console is the main window that you will use to start scans, launch attacks, and manage agent activity. The six panels that make up the Console are described in detail below.

Core Impact Console

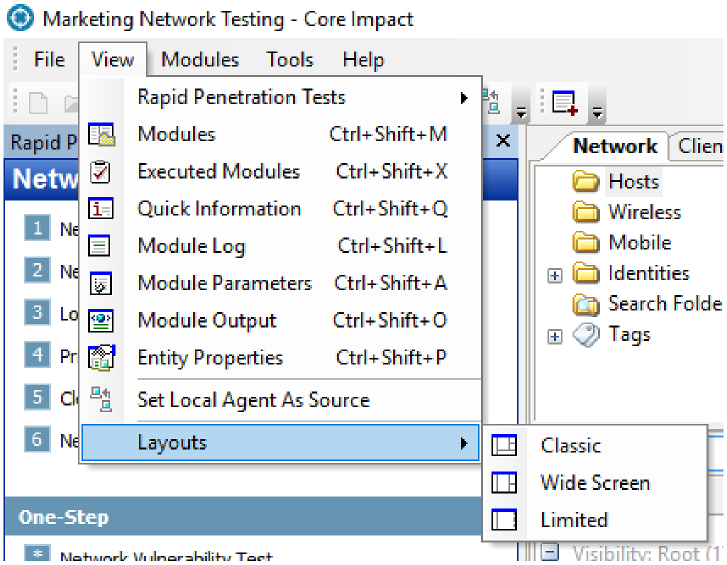


1. **The Modules Panel.** Provides access to Core Impact Modules. Modules are the actions you can perform during a penetration test. This panel has two views, Rapid Penetration Test (RPT) and Modules, accessed by corresponding tabs at the bottom of the panel. The steps in the RPT view are high-level actions that can be used to execute an automated penetration test. See Rapid Penetration Test (RPT) or Working With Modules for a detailed description of this panel and modules in general.
2. **The Entity View Panel.** Displays information about the target hosts, users, or web pages. This panel has three views, Network, Client Side and Web, accessed by the corresponding tabs at the top of the panel. Each view corresponds with the type of target, whether it be a computer host, user and email, or web application. See Core Impact Entities for more information about the Entity View Panel.
3. **The Executed Modules Panel.** Displays information about each one of the modules, or actions that a user has performed in Core Impact. Core Impact keeps a complete log of every executed module within its database. See the section called “Using the Executed Modules View” for more information.
4. **The Executed Module Info Panel.** Displays information about the currently selected completed action in the Executed Modules Panel directly above it. By default this panel displays information about the last executed module. It contains three tabs: Module Output (module output report), Module Log (module log lines) and Module Parameters (module parameters at execution time). See the section called “Analyzing Module Output” for more information.
5. **The Entity List.** Displays the list of entities for the active view. If viewing the Network view, you will see your discovered hosts in this panel as well as any agents. For the Client-side view, this panel will show email addresses and, for the Web view, you can view your web pages.
6. **The Quick Information Panel.** Displayed in the bottom part of the Console, the Quick Information Panel displays information about the currently selected item in the Entity View. For example, if you select a user entity, the panel displays details about that user. If you select a host, the panel displays information about that host. Refer to the section called “Entity Details” for more information about this panel.

If the panels in your layout become unmanageable, you can return them to their default locations by choosing the Reset Layout option from the View dropdown menu.

Navigation of the Core Impact Console is straight forward - simply click among the available panels and their tabs, or use the View drop-down menu to activate or hide a console component or toolbar. Within the View drop-down menu, you can also select from 3 Layouts to quickly show/hide various panels of the Core Impact Console. Choose from Classic, Wide Screen or Limited.

Layout Options



Rapid Penetration Test (RPT)

Core Impact's Rapid Penetration Tests (RPT) are step-by-step automations of the penetration testing process. Core Impact allows users to perform a RPT on a variety of target types but keep in mind that Core Impact also provides test capabilities for wireless networks as well as network devices such as routers and switches. The following RPTs are available in Core Impact:

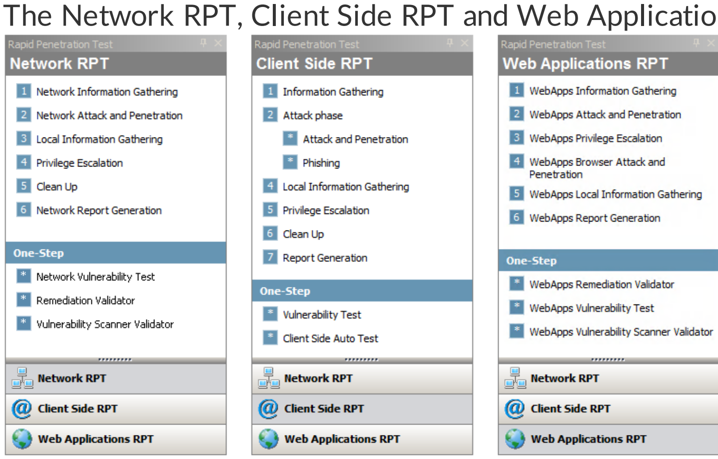
- Network RPT: Scan your systems (servers, network devices, surveillance cameras etc.) for known exploits and test their vulnerability. Attempt to capture and store identities (usernames/passwords, cookies, SSH keys, etc.) from targets. Core Impact also provides a One-Step Network Vulnerability Test and Vulnerability Scanner Validator Test.
- Client Side RPT: Simulate social engineering attacks to test the efficacy of your user-level security. The Attack Phase is separated into Attack and Penetration (for exploit-based attacks) and Phishing, for testing the vulnerability of your user community to Phishing attacks. Also provided is a One-Step One-Step Client-side Tests.
- Web Applications RPT: Evaluate the security of your web applications and make sure your organization is proactively assessing the OWASP Top 10 security risks. Core Impact also provides a One-Step WebApps Vulnerability Test and Remediation Validator Test.

With any of these RPTs, the end goal is to expose the exploitable vulnerabilities in a system by penetrating and analyzing that system. The RPTs sequence through steps that automate common and repetitive tasks typical of a penetration test, such as gathering information, executing attacks, learning about compromised systems, escalating privileges, cleaning up, and generating reports.

Each step defines a high-level task that has been automated with easy-to-use wizards. If you are a new user, this basic automation mode will simplify the use of the product. If you are an expert user, RPT will allow you to execute common tasks more efficiently. Individual module selection is always available to you using the Modules View (see Working With Modules for more information).

You can run each step of the RPT process individually, but running steps in the order outlined by the Panel is highly recommended as some steps might require information obtained in a previous step. For example, Network Attack and Penetration will automatically select attacks based on what is known about the specified targets. Because this information is typically provided by Network Information Gathering, it generally makes sense to gather information before initiating the attack Wizard.

The Network RPT, Client Side RPT and Web Applications RPT Panels



Remember, there are many modules in Core Impact that are not executed by the RPTs but that can be very powerful when used in a comprehensive security testing program. The Module Reference Guide (available via the Start menu) contains details about all available modules.

Network RPT

The Network RPT allows you to target your internal information systems and evaluate them for known exploits.

Network Information Gathering

The Network Information Gathering step provides you with information about a target network or individual machine. This step is typically accomplished by executing modules from the Information Gathering sub-category such as Network Discovery, Port Scanning, OS Identification, and Service Identification.

If you used a network mapping tool (such as Nmap) or a vulnerability scanner (such as Nessus) you can use the RPT to import your scanner data file and the Information Gathering will run on the host data within that file.

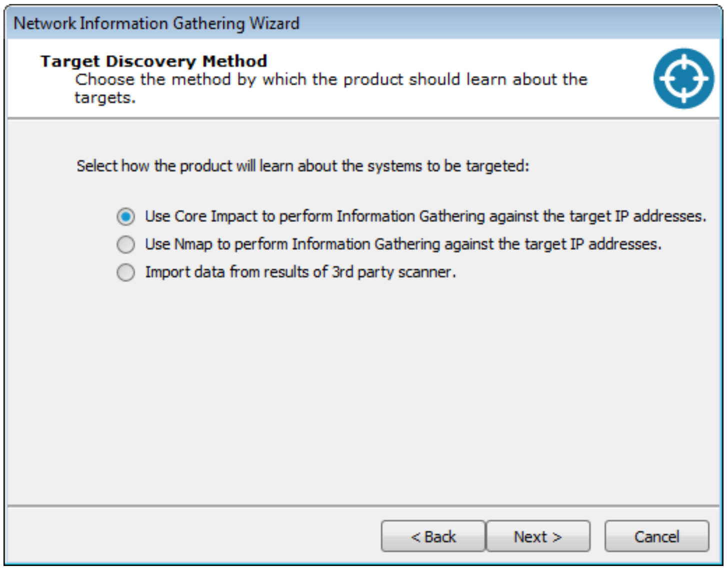
Use these links to learn how to run the Network Information Gathering RPT:

- Target specific IP addresses
- Use Nmap to perform Information Gathering
- Import data from 3rd party vulnerability scanner

Target specific IP addresses

To run the Network Information Gathering step, follow this procedure:

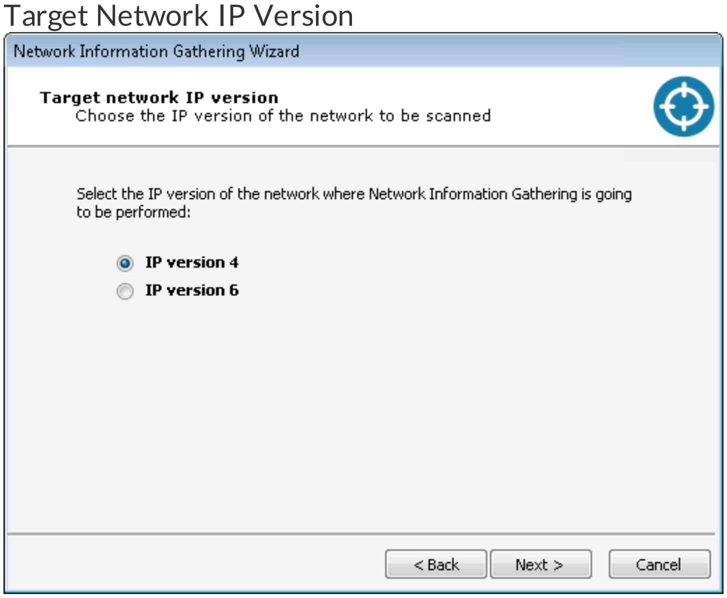
1. Make sure that the Network RPT is active.
2. Click on Network Information Gathering to open up the Information Gathering Wizard.
3. Select Use Core Impact to perform Information Gathering ....
   Target Discovery Method



Then click Next.

4. Select the IP version of the network where the RPT will run:
   - IP version 4: Skip to [IPv4 Network Range Selection](#).
   - IP version 6: [IPv6 Network Range Selection](#).

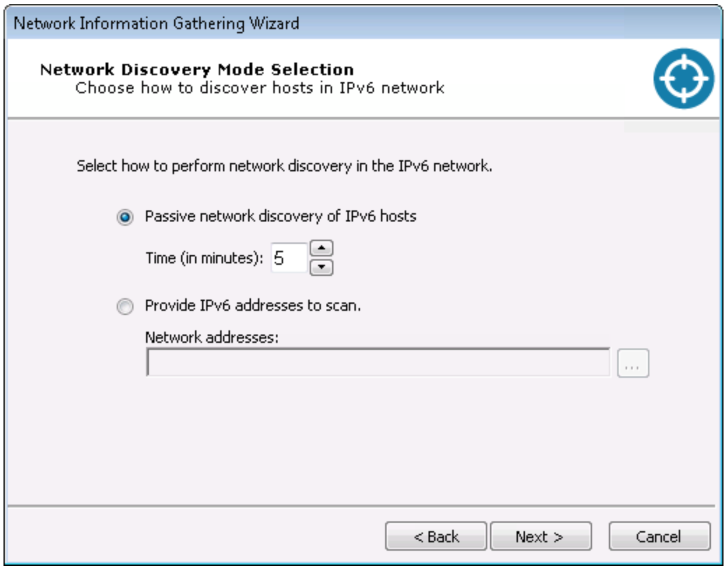
Target Network IP Version



Then click Next.

5. Select the type of scan you would like to perform:
   - Passive network discovery of the IPv6 network: The RPT will passively listen to network traffic and identify hosts that are transmitting on IPv6.
   - Provide IPv6 addresses to scan: Manually select addresses for the IPv6 network.

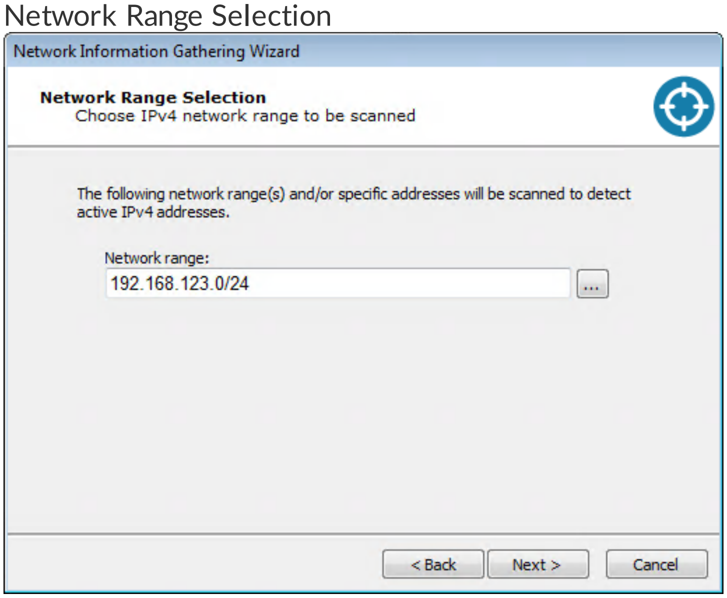
Network Discovery Mode Selection



Then click Next.

6. Specify the target IP ranges (IPv4) you want to scan. You can also click on the ellipsis ( ) button to the right of the Network range field to enter a Single IP, an IP Range, or CIDR Notation, as well as import a group of IP addresses from a file in the IP Address Ranges Selection dialog box. See [Specifying Host Ranges](#) for more information on IP ranges. After you have entered the range, click Next.

   Network Range Selection

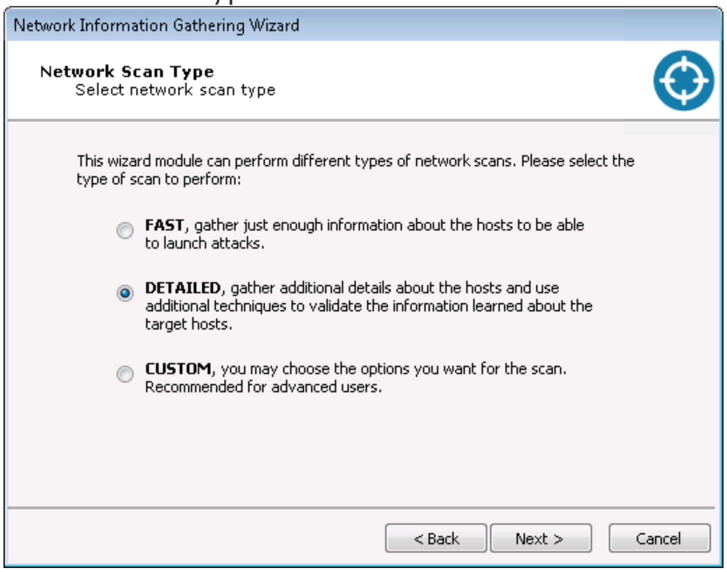


7. There are 3 network scan types you can perform:
   - FAST: The test captures the minimal amount of data needed in order to launch attacks. There will be no additional steps in the Wizard if you select this option.
   - DETAILED: The test runs more modules in order to discover additional, potentially useful details about target systems. There will be additional steps in the Wizard if you select this option.

- CUSTOM: You configure how Core Impact will execute the Information Gathering process. There will be additional steps in the Wizard if you select this option.

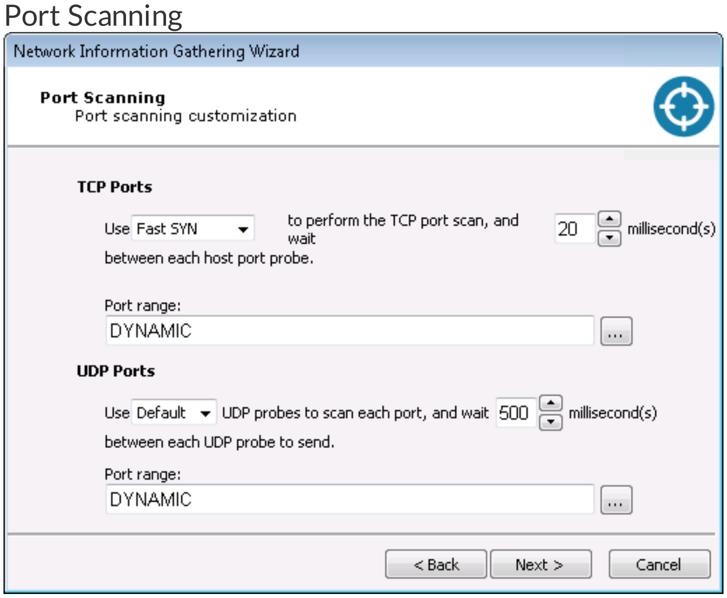
If you select FAST, click Finish to complete the Network Information Gathering RPT step. Or, if you selected DETAILED or CUSTOM, click Next and proceed to the next step in this procedure to enter additional information about your scan.

Network Scan Type



8. One or more port scanners may be executed as part of this RPT step. Use the Port Scanning Customization Dialog Box to customize how these port scans are performed.

Port Scanning



Select a scanning method to perform the TCP port scan.

- **Fast SYN.** Selecting Fast SYN will induce Core Impact to use this method if the operating agent has Pcap installed and is not the localagent. If the agent is not the localagent, and it does not have Pcap installed, then the scan method will default to TCP Connect.

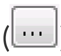
- **TCP Connect.** Selecting TCP Connect will induce this method irrespective of the agent in use. This is the slowest performing scan method.

Ultimately, the type of agent being used to launch the scan will influence the port scanning method, and your selection may be overridden. The below table shows which port-scanning methods can be used depending on where the Information Gathering is being launched.

Port Scanning Methods

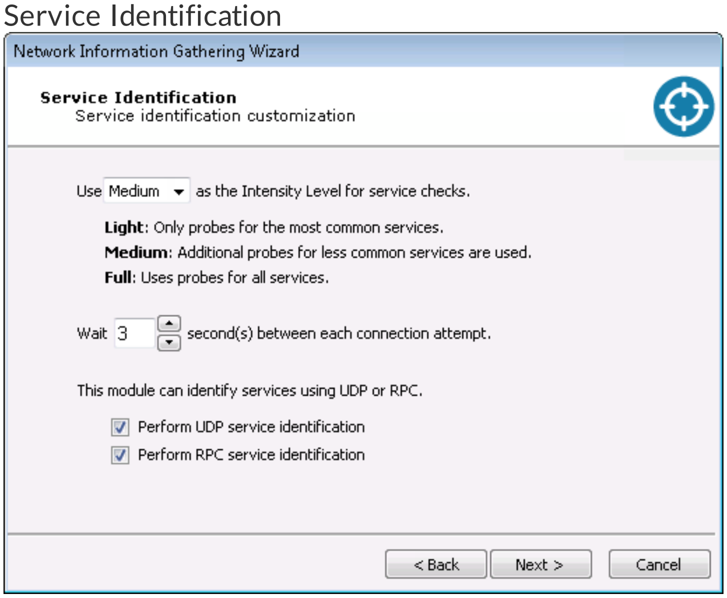
Launched from ...	Fast SYN	TCP Connect
localagent	YES	YES
Agent with WinPcap installed	YES	YES
Agent without WinPcap installed	NO	YES

Specify how many milliseconds to wait between each discovery attempt.

You can use the ellipsis () button to the right of the Port range field to change or add port range groups. See the section called “Specifying Port Ranges” for more information.

9. A service identification module may be used as part of this RPT step. Use the Service Identification Dialog Box to customize how service identification is performed.

Service Identification



The goal of the service identification module is to identify the network service listening on each available port. You can control the Intensity Level of the service identification module:

- Light: This setting will cause the module to use blind identification - each port will be labeled with its corresponding default service (e.g., 80 is assumed to be HTTP, 25 is assumed to be SMTP, etc).
- Medium: This setting will cause the module to interact with and try to identify less commonly used ports.

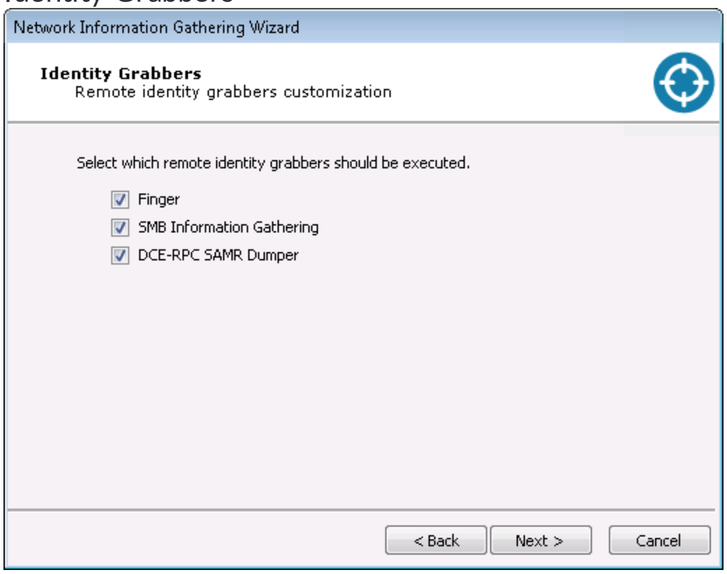
- Full: This setting will cause the module to connect to and interact with every open port and attempt to identify the network service listening on that port.

Adjust the interval (in seconds) between connections to a target port.

You can activate UDP and/or RPC service identification by checking the appropriate Perform service identification check-box(es).

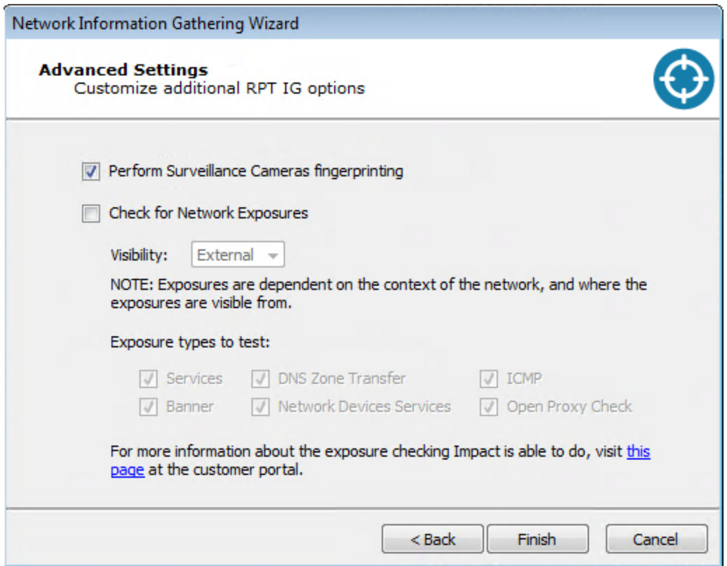
10. Core Impact can attempt to gather (grab) credentials from the target host(s). Any credentials that are found will then be stored in the Identities folder in the Network Entity Database. These credentials can optionally be sent to the Core CloudCypher service for cracking. Select which remote identity grabbers should be used during the Information Gathering test. Then click Next.

Identity Grabbers



11. The RPT can also check for Network Exposures in targeted hosts.
    - **Check for Network Exposures**: An information security *exposure* is a system configuration issue or a mistake in software that allows access to information or capabilities that can be used by a hacker as a stepping-stone into a system or network. Whereas an information security *vulnerability* is a mistake in software that can be directly used by a hacker to gain access to a system or network.

Advanced Settings



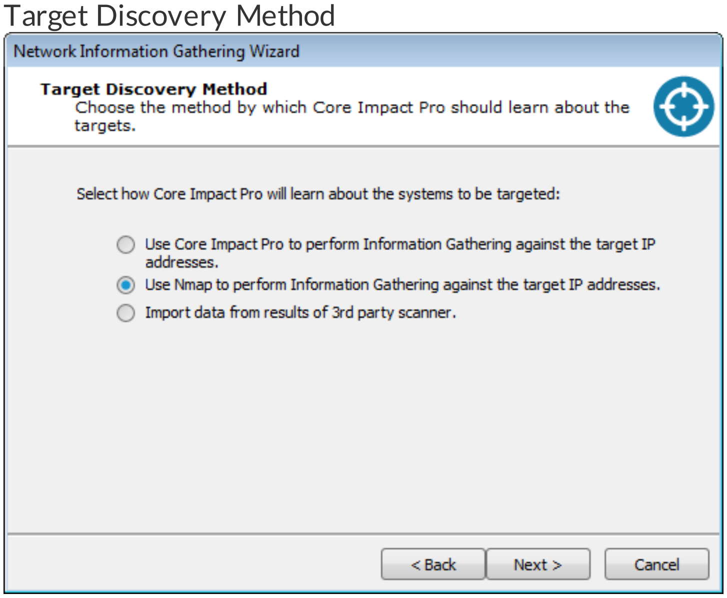
The module will run and information will be displayed on the Module Log Panel of the Console. You have now completed the first step of a Network Rapid Penetration Test.

Use Nmap to perform Information Gathering

To run the Network Information Gathering step, follow this procedure:

1. Make sure that the Network RPT is active.
2. Click on Network Information Gathering to open up the Information Gathering Wizard.
3. Select Use Nmap to perform Information Gathering against the target IP addresses.

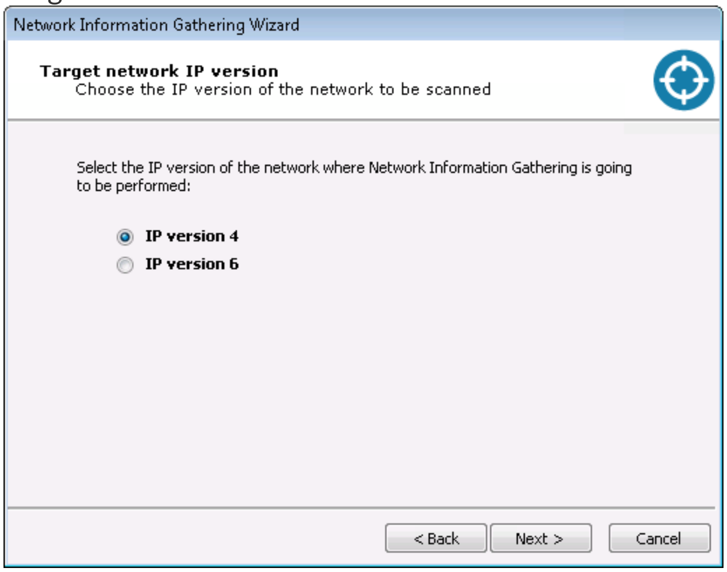
   Target Discovery Method

   Then click Next.

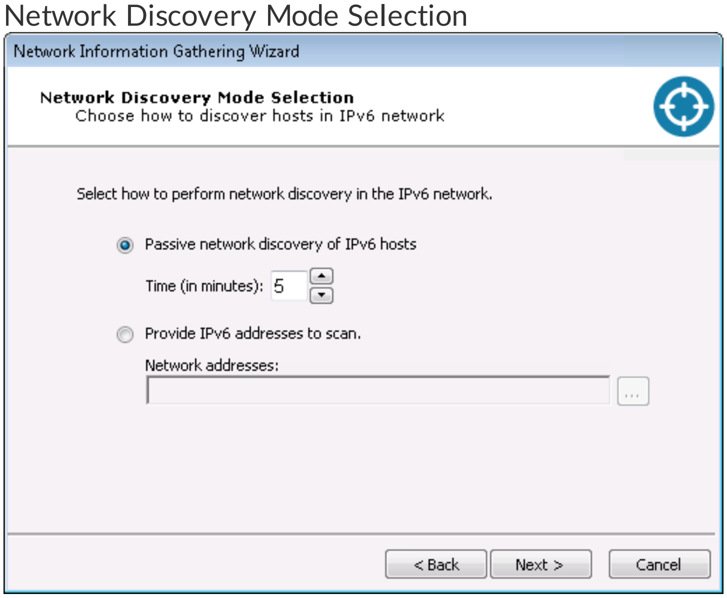
4. Select the IP version of the network where the RPT will run:
   - IP version 4: Skip to IPv4 Network Range Selection.
   - IP version 6: IPv6 Network Discovery Mode Selection.

   Target Network IP Version

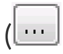
   

   Then click Next.
5. Select the type of scan you would like to perform:
   - Passive network discovery of the IPv6 network: The RPT will passively listen to network traffic and identify hosts that are transmitting on IPv6.
   - Provide IPv6 addresses to scan: Manually select addresses for the IPv6 network.

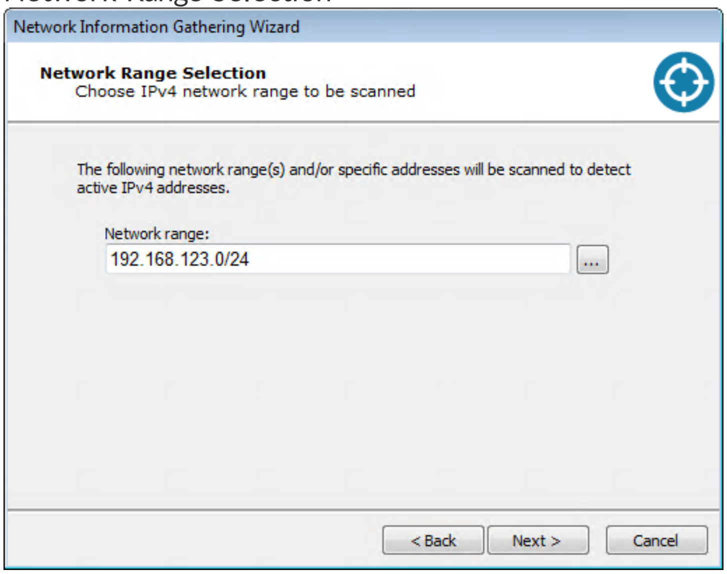
   Network Discovery Mode Selection

   Then click Next.

6. Specify the target IP ranges (IPv4) you want to scan. You can also click on the ellipsis (
) button to the right of the Network range field to enter a Single IP, an IP Range, or CIDR Notation, as well as import a group of IP addresses from a file in the IP Address Ranges Selection dialog box. See [Specifying Host Ranges]() for more information on IP ranges. After you have entered the range, click Next.

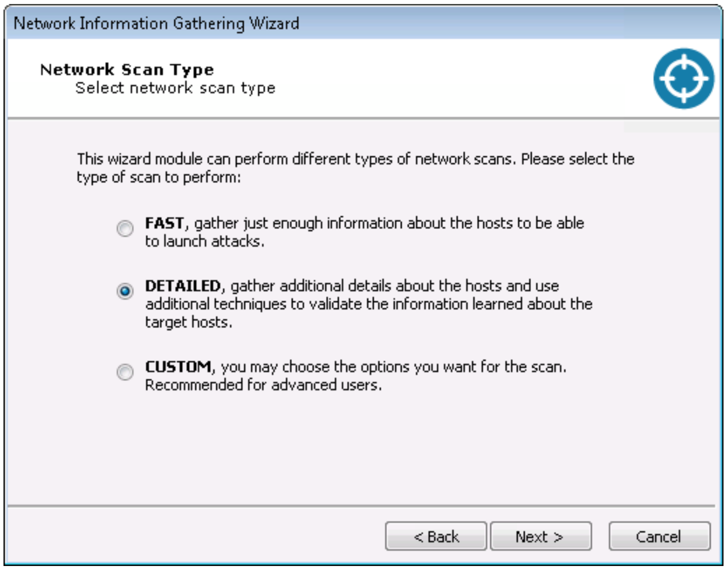
   Network Range Selection

7. There are 3 network scan types you can perform:
   - FAST: The test captures the minimal amount of data needed in order to launch attacks. There will be no additional steps in the Wizard if you select this option.
   - DETAILED: The test runs more modules in order to discover additional, potentially useful details about target systems. There will be additional steps in the Wizard if you select this option.
   - CUSTOM: You configure how Core Impact will execute the Information Gathering process. There will be additional steps in the Wizard if you select this option.

   If you select FAST, click Finish to complete the Network Information Gathering RPT step. Or, if you selected DETAILED, click Next and proceed to the [Advanced Settings]() of the wizard. If you selected **CUSTOM**, click **Next** step further customize the Nmap Information Gathering.

   Network Scan Type



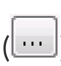
8. If you selected **CUSTOM** in the previous step, configure the Nmap Network Discovery settings. One or more port scanners may be executed as part of this RPT step; select a scanning method to perform the TCP port scan.
   - **Nmap Default**: Uses the Nmap Default scanning method.
   - **Fast SYN**. Selecting Fast SYN will induce Core Impact to use this method if the operating agent has Pcap installed and is not the localagent. If the localagent is in use, then the scan method will automatically default to Fast TCP, giving you the optimum available performance. If the agent is not the localagent, and it does not have Pcap installed, then the scan method will default to TCP Connect.
   - **TCP Connect**: Selecting TCP Connect will induce this method irrespective of the agent in use. This is the slowest performing scan method.
   - **ICMP**: Uses Internet Control Message Protocol to perform the TCP port scan.

   Ultimately, the type of agent being used to launch the scan will influence the port scanning method, and your selection may be overridden. The below table shows which port-scanning methods can be used depending on where the Information Gathering is being launched.

   Port Scanning Methods

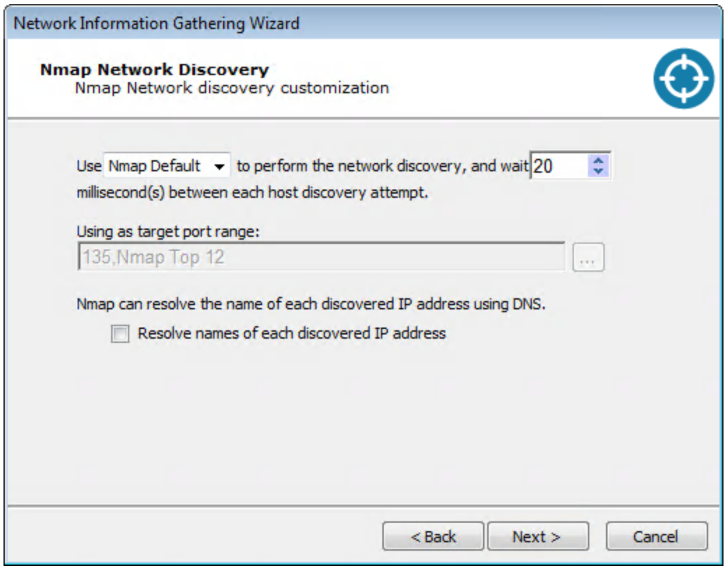
Launched from ...	Fast TCP	Fast SYN	TCP Connect
localagent	YES	YES	YES
Agent with WinPcap installed	NO	YES	YES
Agent without WinPcap installed	NO	NO	YES

   Specify how many milliseconds to wait between each discovery attempt.

   You can use the ellipsis () button to the right of the Port range field to change or add port range groups. See the section called “Specifying Port Ranges” for more information.

   Nmap can resolve the name of each discovered IP address using DNS. Check the **Resolve names ...** check box to enable this option.

   Nmap Network Discovery

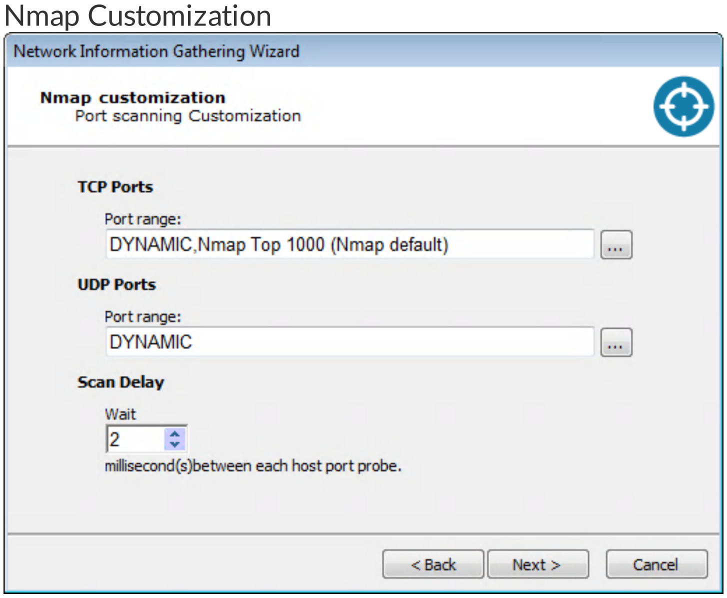


Then click Next.

9. Customize the Nmap scan:
   - TCP Port Range
   - UDP Port Range
   - Scan Delay

   Adjust the **Wait** interval (in seconds) between connections to a target port.

   Nmap Customization

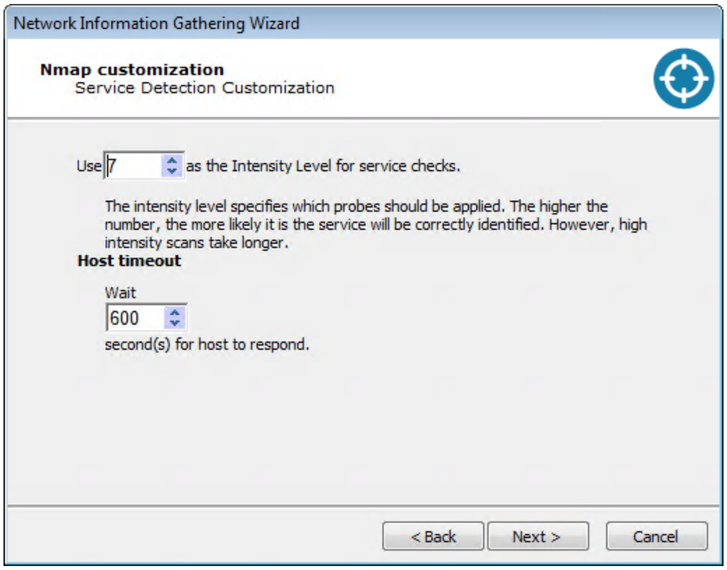


Then click Next.

10. The goal of the service identification module is to identify the network service listening on each available port. You can control the **Intensity Level** (1-9) of the service identification module.

    Adjust the **Wait** interval (in seconds) for host to respond before the scan times out.

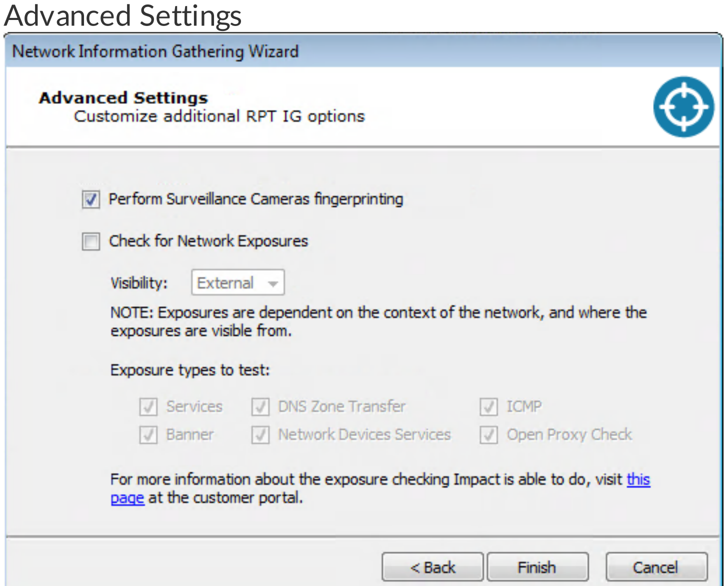
    Nmap Customization



Then click Next.

11. The RPT can also check for Security Cameras or Network Exposures in targeted hosts.
    - Security cameras are increasingly being added to corporate network infrastructures and can therefore be targets for network-based attacks. Checking the **Perform camera information gathering** option will instruct the RPT to identify active cameras within the range of targeted systems and identify potential vulnerabilities.
    - **Check for Network Exposures**: An information security *exposure* is a system configuration issue or a mistake in software that allows access to information or capabilities that can be used by a hacker as a stepping-stone into a system or network. Whereas an information security *vulnerability* is a mistake in software that can be directly used by a hacker to gain access to a system or network.

Advanced Settings



Then click Finish.

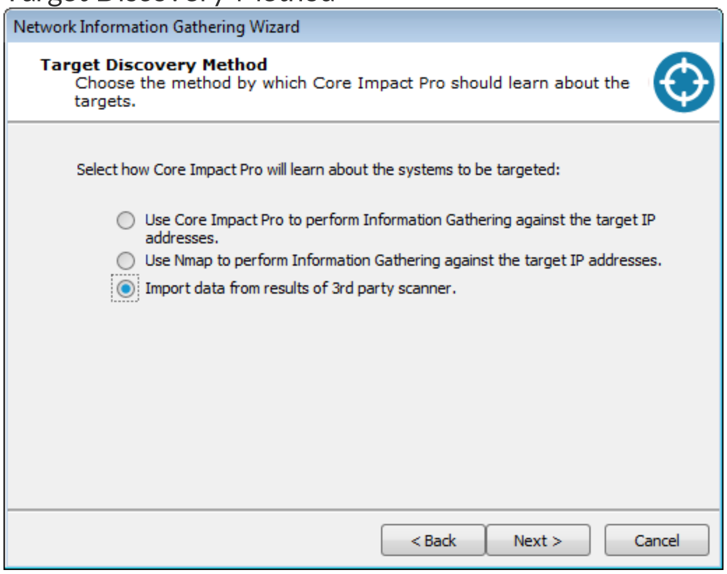
The module will run and information will be displayed on the Module Log Panel of the Console. You have now completed the first step of a Network Rapid Penetration Test.

Import data from 3rd party vulnerability scanner

To run the Network Information Gathering step, follow this procedure:

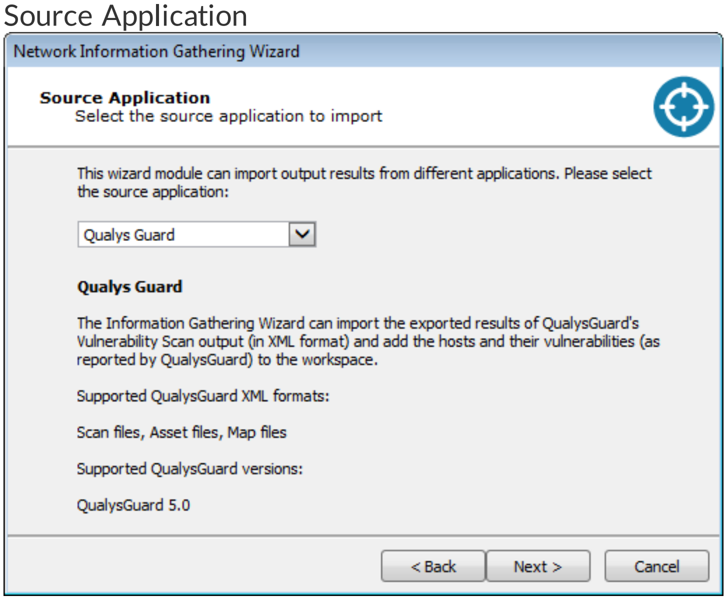
1. Make sure that the Network RPT is active.
2. Click on Network Information Gathering to open up the Information Gathering Wizard.
3. Select Import data from results of 3rd party scanner.

   Target Discovery Method

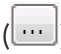
   

   Then click Next.
4. Select the application from which you have an output file:

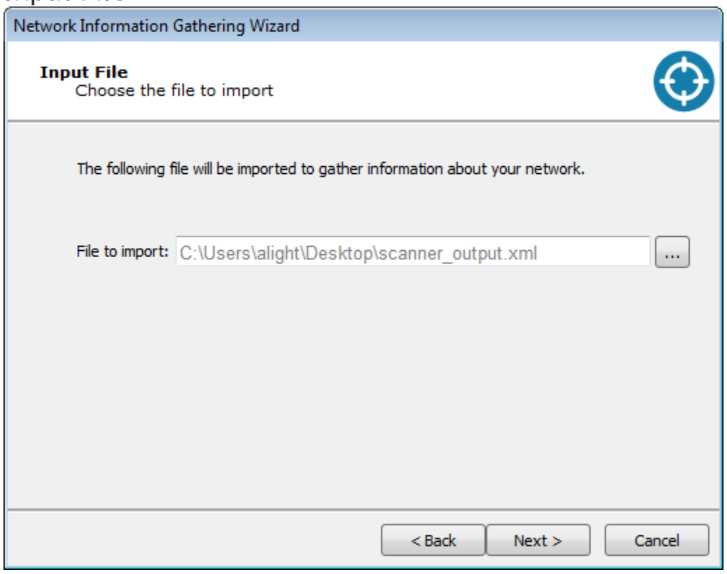
   Source Application

Then click Next.

5. Click the ellipsis () button and browse to and select the output file.

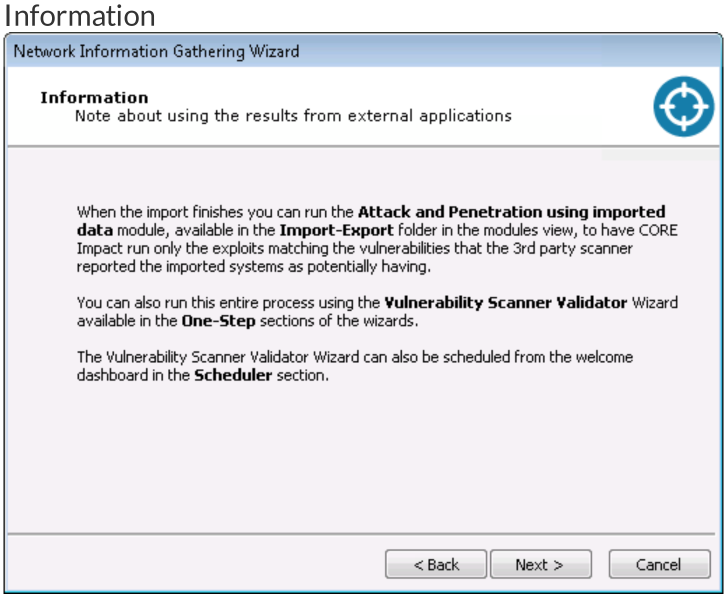
Input File



Then click Next.

6. The RPT will display a note about the results of external applications. Once you've read the note and are ready to proceed, click the Next button.

Information

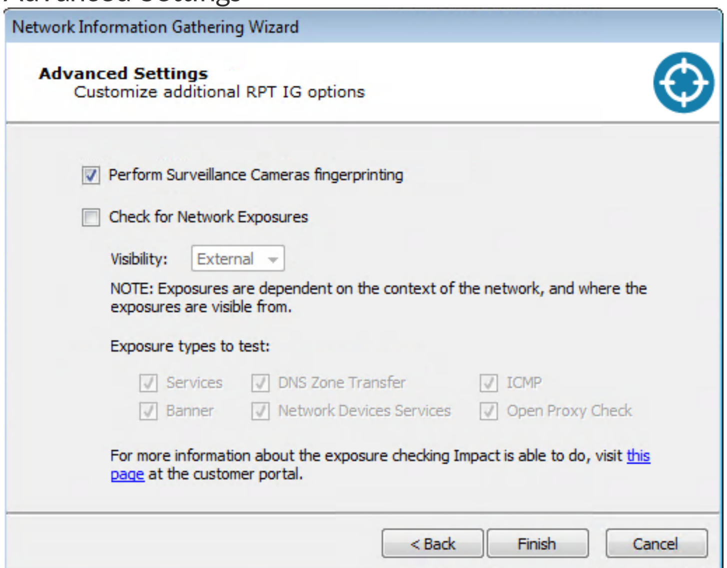


7. The RPT can perform camera information gathering and also check for Network Exposures in targeted hosts.
   - Security cameras are increasingly being added to corporate network infrastructures and can therefore be targets for network-based attacks. Checking the **Perform camera information gathering** option will instruct the RPT to identify active cameras within the range of targeted systems and identify potential vulnerabilities.

- **Check for Network Exposures**: An information security *exposure* is a system configuration issue or a mistake in software that allows access to information or capabilities that can be used by a hacker as a stepping-stone into a system or network. Whereas an information security *vulnerability* is a mistake in software that can be directly used by a hacker to gain access to a system or network.

Check the desired options, then click Finish to start the RPT. The module will run and information will be displayed on the Module Log Panel of the Console. You have now completed the first step of a Network Rapid Penetration Test.

Advanced Settings



Network Attack and Penetration

The Network Attack and Penetration RPT step uses previously-acquired information about the network (such as the information you gathered using the Network Information Gathering step) to automatically select and launch remote attacks.

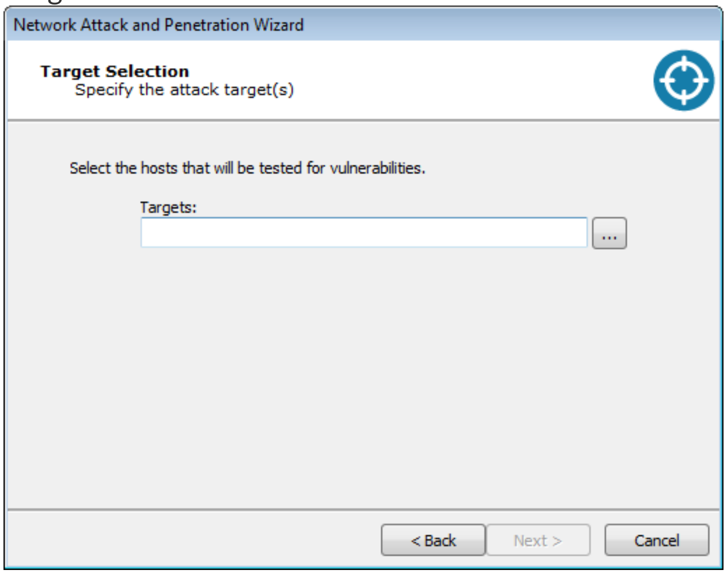
For each target host, this step requires the following information, all of which is obtained automatically by the Network Information Gathering step:

- **IP address:** The targets have to be in the Entity View. This can be done either by hand (Right-click -> New host in the Entity View) or by using a Network Discovery module.
- **OS and architecture:** In order to build the correct payload, attacks need to know the target host's operating system and architecture. This can be obtained by using the modules in the OS detection module folder or set by hand using the Entity Properties dialog. Refer to Entity Properties for more information.
- **Port and service information:** For each host, a listing of network services listening on specific ports is needed. This can be done by using a Port Scanning module and the service identification module (Service Identification) in the Information Gathering module folder, or set by hand using the Entity Properties dialog. Refer to Entity Properties for more information.

To run the Network Attack and Penetration step, click on the step and click Next when the Wizard appears.

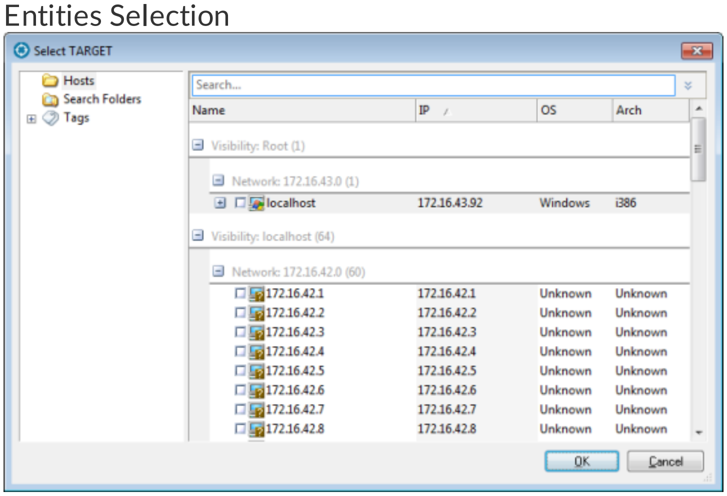
1. Click on the Network Attack and Penetration step, then click Next when the Wizard appears.
2. On the Target Selection screen, click the ellipsis (...) button.

   Target Selection

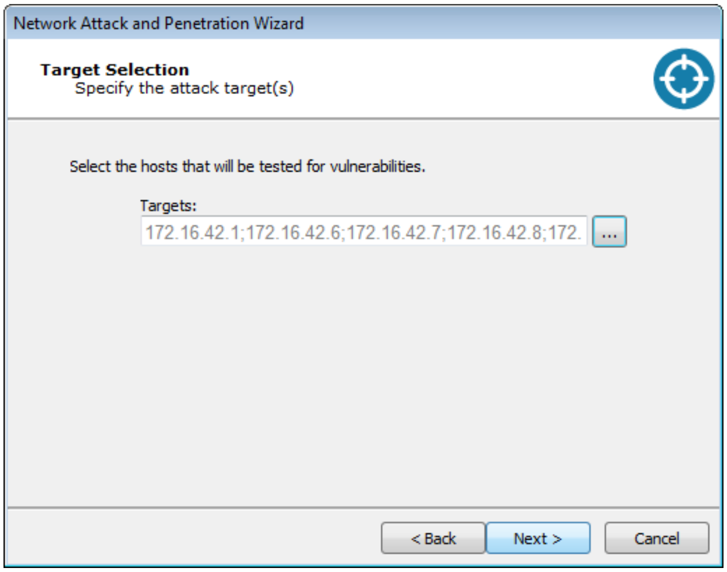
   The Entities Selection window will open.
3. In the Entities Selection window, select the host(s) that you wish to target with the Attack and Penetration. Only hosts that are represented in the Entity View can be targeted.

   Entities Selection

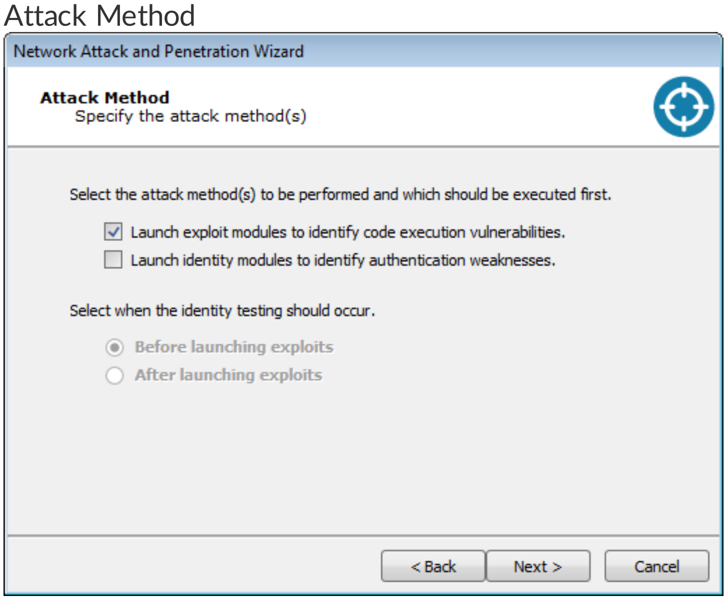
   Then click the OK button to return to the Wizard.
4. Click the Next button.

   Target Selection



5. On the Attack Method step of the Wizard, select the Attack method(s) to be performed and their sequence.
   - Select Launch Exploit modules to identify code execution vulnerabilities if you want the Attack and Penetration to attempt to find vulnerabilities in the target hosts' OS or any installed programs.
   - Select Launch Identity modules to identify authentication weaknesses if you want the Attack and Penetration to attempt to gather identities (usernames/passwords, cookies, SSH keys, etc.) from the target host(s).
   - If you select both of these options, select whether the identity testing should execute before or after the exploits are launched.

   Attack Method

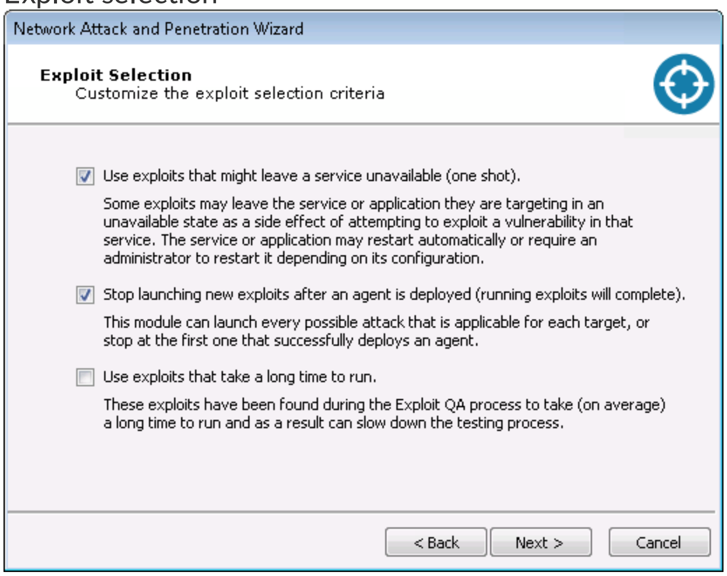
   

   Click the Next button.

6. Make Exploit Selection options.
    - Some exploits could potentially leave a target service unavailable. These exploits can be excluded from this test by unchecking the Use exploits that might leave a service unavailable check-box.
    - Check the Stop launching new exploits after an agent is deployed check-box if you want the attack to stop after the first agent is deployed.

      When more than one exploit are running concurrently against a host, they will be allowed to complete even after an agent is deployed. Because of this, more than one agent may be installed even when this option is checked.
    - Some exploits could take a long time to exploit a specific server, due to a long brute-force process. These exploits can be excluded from this step by unchecking the Use exploits that take a long time to run check-box.
    - If you want to attempt to penetrate any Network Devices that are among your targets, you can check the Use Authentication Weakness exploits against Network Devices check-box.

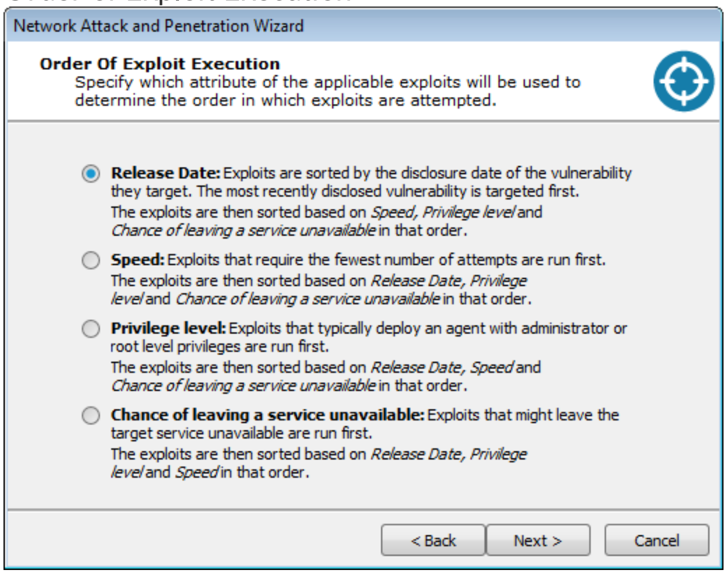
   Exploit selection

   Click the Next button.
7. This step specifies how exploits are prioritized by the RPT:
    - Release Date: Exploits are sorted by the disclosure date of the vulnerability they target.
    - Speed: Exploits that require on average the fewest number of attempts are run first.
    - Privilege Level: Exploits that deploy an agent with administrator privileges are run first.
    - Chance of Leaving a Service Unavailable: Exploits that might leave the target service unavailable are run first. This option will not be visible if you did not select the Use exploits that might leave a service unavailable option in the previous step.

   Each of the Order of exploit execution options operate at the port and service level of targeted hosts. Because port and service level attacks run in parallel, it may appear that your selection is not given priority over the others. For example, if you select Speed as the primary order attribute, a slow-running exploit may still run before fast ones if it is the only applicable exploit for a specific service on the target host.

Order of Exploit Execution

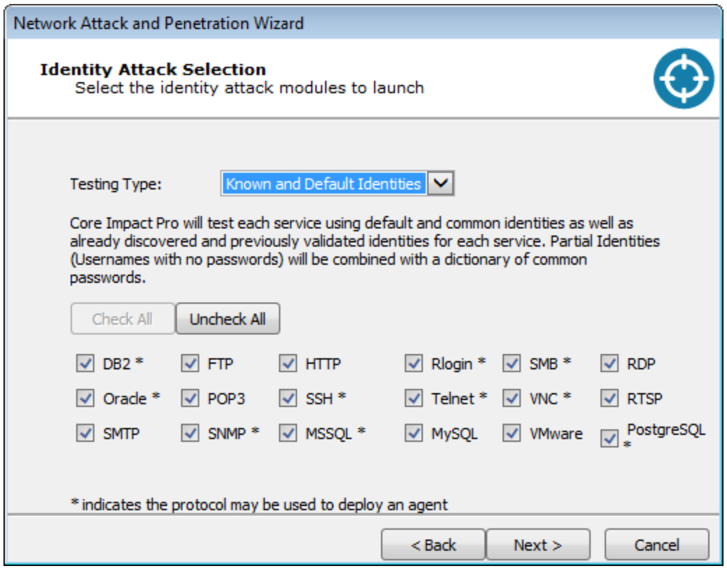


Then click the Next button.

8. If you opted to Launch Identity modules to identify authentication weaknesses, this step specifies which identity modules are run during the Attack and Penetration. First select a Testing Type - when you select a type, its description will appear below the drop-down menu.
   - Default Identities
   - Known Identities
   - Known and Default Identities
   - Dictionary Attack
   - Custom

   Next select the service for which you want Core Impact to test for identities.

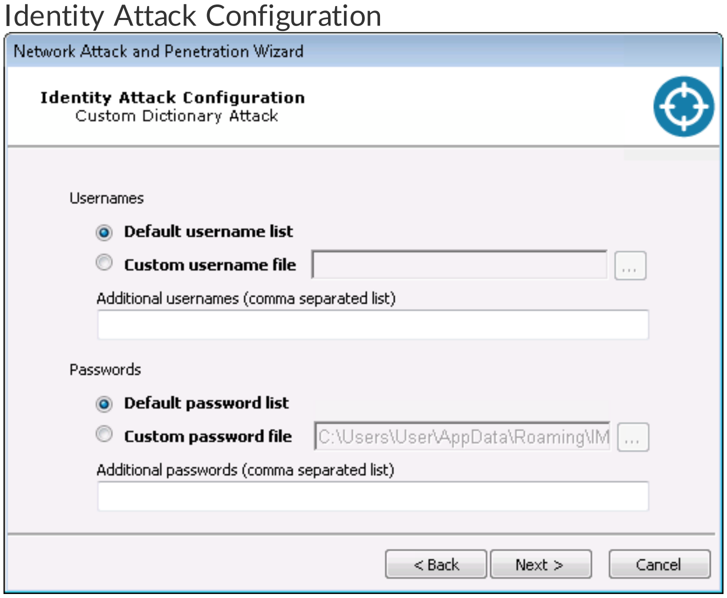
   Identity Attack Selection



Then click the Next button.

9. If you selected the Custom or Dictionary Attack in the previous step, you will need to define the Custom Dictionary Attack. For both Usernames and Passwords, you can supply a text file that contains the text strings you wish to use for the test and/or type in a list of text strings separated by commas.

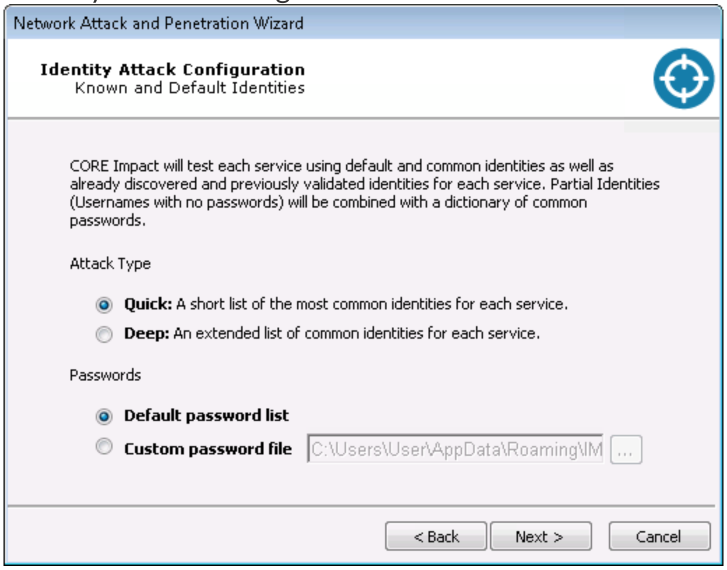
Identity Attack Configuration



Then click the Next button.

10. If you selected Default or Known Identities in the previous step, you will need to configure the test further.
    - Attack Type
        - Quick: A short list of the most common identities for each service will be used
        - Deep: An extended list of common identities for each service will be used
    - Passwords: Use the default password list or pass a custom file to Core Impact

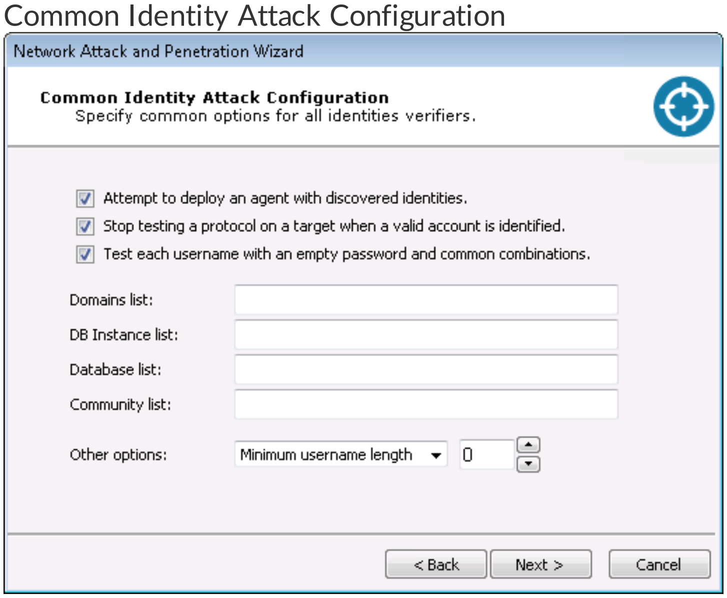
Identity Attack Configuration



Then click the Next button.

11. For Identity attacks, you will need to further configure the test to specify common selections for all identity verifiers. With this step in the Wizard, you can:
    - Attempt to deploy an agent with discovered identities
    - Stop testing that protocol on that machine when a valid account is identified
    - Test each username with an empty password and common combinations

Common Identity Attack Configuration



Then click the Next button.

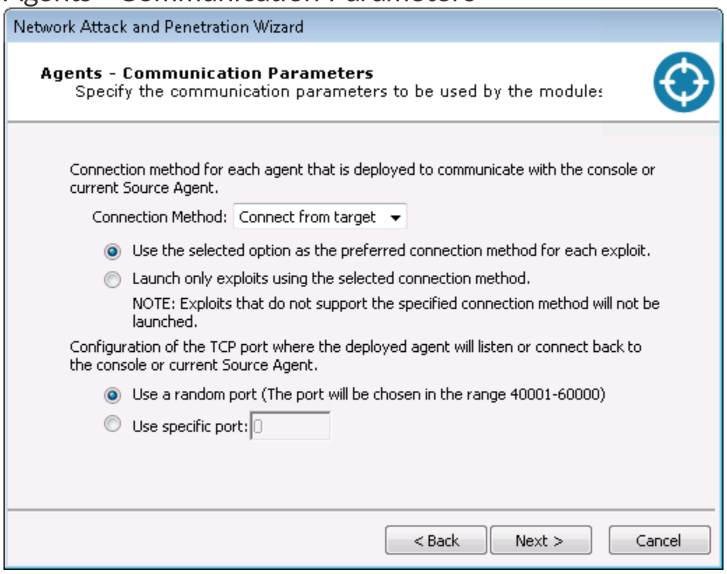
12. Select a Connection Method for deployed agents to use.
    - Default: The connection method will be determined by each individual exploit's default connection method.
    - Connect to target: A connection will originate from the source agent (usually Core Impact).

- Connect from target: A connection will originate from the remote agent on the target host.
- Reuse connection: The agent will reuse the same connection that was used to deliver the attack.

Only exploits with the specified connection method will be run (if you select "Reuse connection", only exploits with that capability will be selected). For more information regarding agent connection methods see Establishing Agent Communication Channels.

Set the port where the agent will listen by either checking the Use a random port check-box or entering the preferred agent port in the Use specific port field.

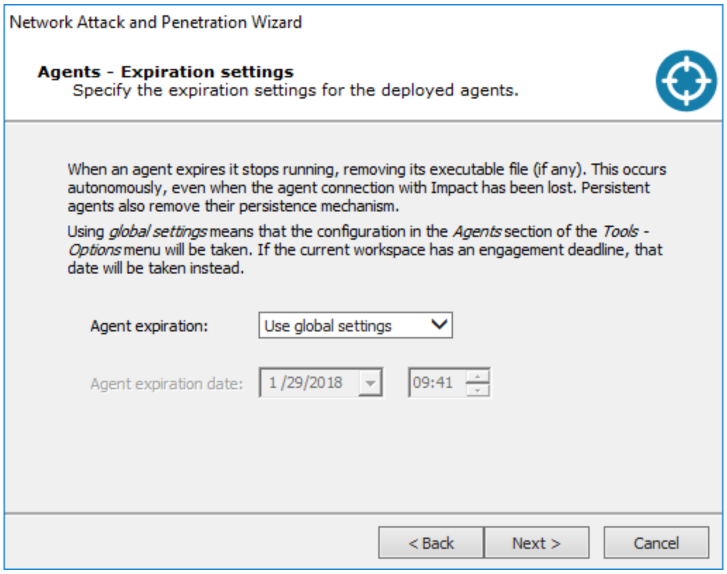
Agents - Communication Parameters



Click the Next button.

13. Select Expiration Settings for deployed agents to use. You can **Use global settings** (which are defined in the Agent Options), set a specific date, or disable expiration.

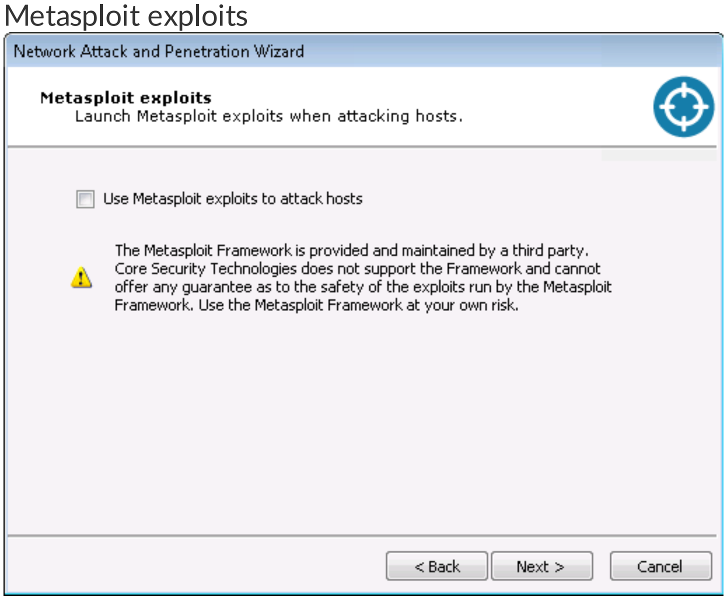
    Agents - Expiration Settings



Click the Next button.

14. If your Core Impact installation is integrated with the Metasploit Framework (see [How to Integrate with Metasploit]() on how to perform the integration steps), the Network Attack and Penetration RPT will offer to run Metasploit as a part of its test sequence. Core Impact will select which Metasploit exploits are appropriate for the targeted host(s).

    Metasploit exploits

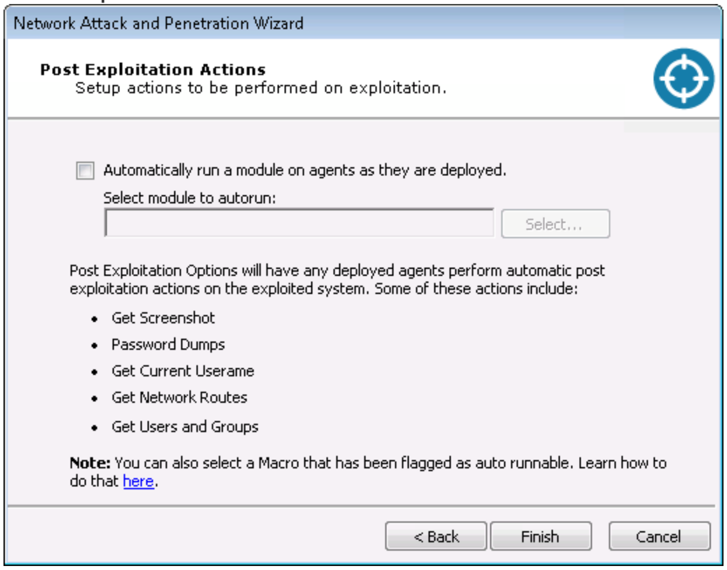
    

    Click the Next button.

15. If you want any modules to run as soon as an agent is connected, check the Automatically run modules on agents as they are deployed check-box. Then click the Change... button to select the module you wish to run.

    If you would like multiple modules to autorun, create a macro module (see [Create Macro Modules]()) that is made up of the modules you wish to run, then enter the macro module into the autorun field.

Post Exploitation Actions



Click the Finish button.

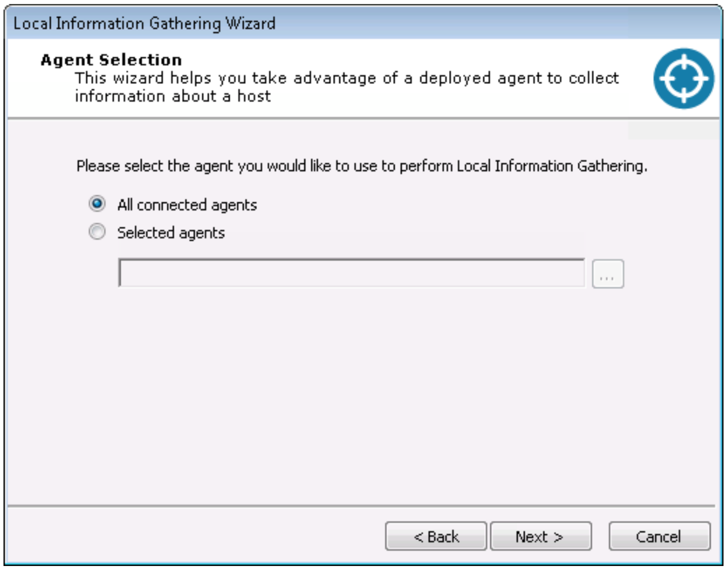
The module will run and information will be displayed on the Executed Module Info Panel of the Console. The Network Attack and Penetration step will run multiple attacks in parallel against each target host. Each exploit automatically launched by this step will be shown as a child of the Attack and Penetration module in the Execute Modules panel. You have successfully launched an attack.

Local Information Gathering

The Local Information Gathering RPT step collects information about hosts that have an agent deployed on them. This macro uses the deployed agent to interact with the compromised host and gather information such as precise OS information, agent privileges, users and installed applications.

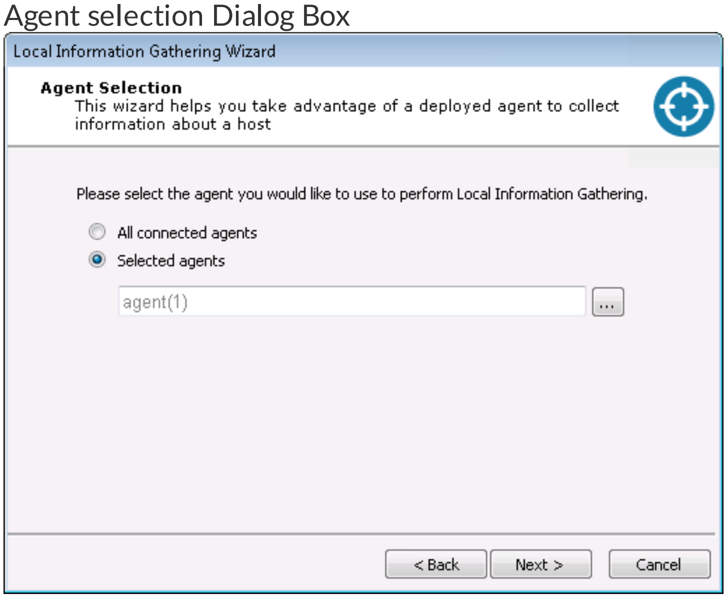
To run the Local Information Gathering step, click on the step and click Next when the Wizard appears.

Agent selection Dialog Box



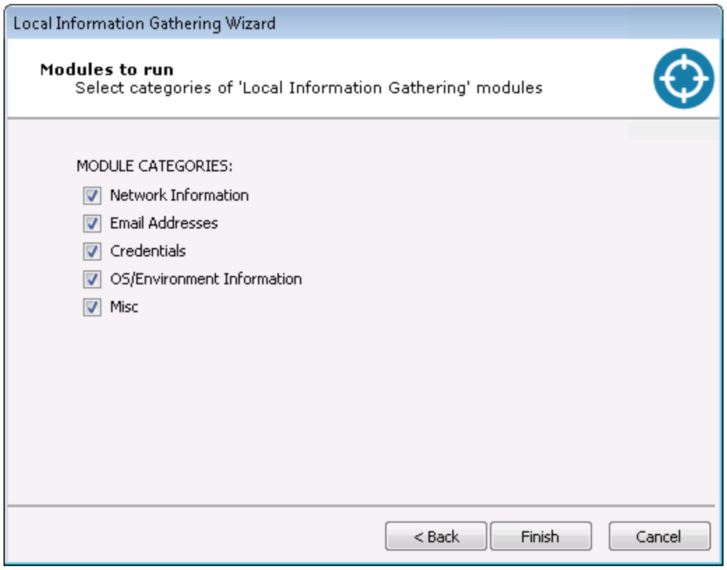
1. By default, information will be gathered on all connected agents. To select one or more specific agents, click the Selected agents radio button and then click the ellipsis (...) button next to the Selected agents field. Follow the prompts to select your desired agents.

   Agent selection Dialog Box

   Click the Next button.
2. Select the module categories that you want to run against the previously-selected agent (s). Then click Finish.

   Modules to run



The module will run and information will be displayed on the Module Output and Module Log panels of the Console.

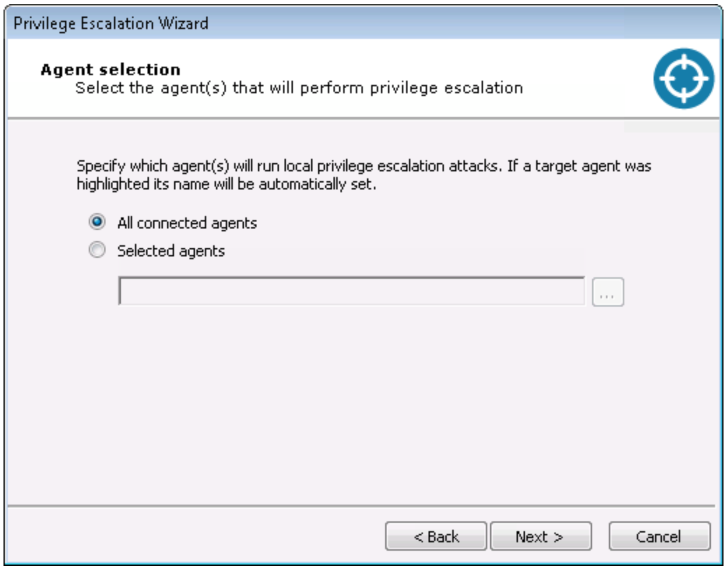
Privilege Escalation

The Privilege Escalation RPT step executes local privilege escalation attacks on connected agents not running as the super user or the administrator. This macro automatically selects and executes exploits from the Exploits/Local module folder and some modules from the Exploits/Tools folder, such as Revert To Self or Chroot Breaker.

After successfully running Privilege Escalation, you may want to run the Local Information Gathering step to obtain more information from the compromised hosts. If an in-depth penetration test is being performed (and depending on the target network's topology), it is possible to change the current source agent and cycle back to the Information Gathering step. Refer to Set as Source for information regarding the source agent. All the initial 4 steps will execute from any Core Impact agent.

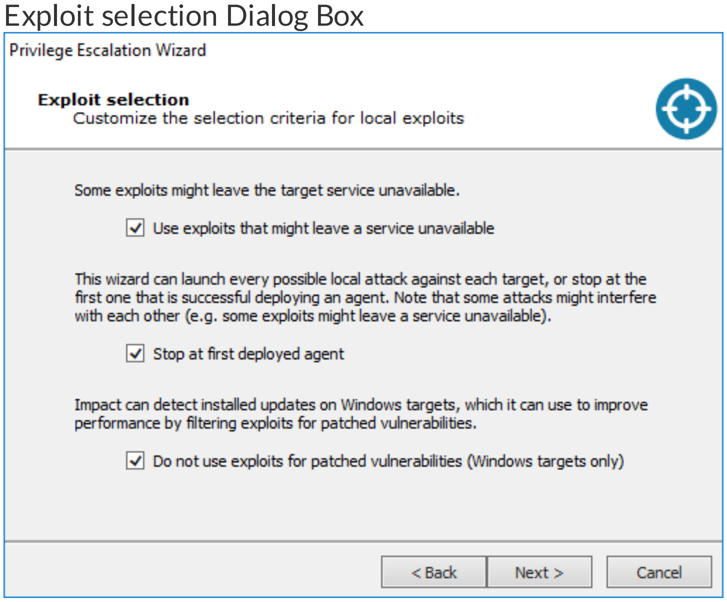
To run the Privilege Escalation RPT step, click on the step and click Next when the Wizard appears.

Agent selection Dialog Box



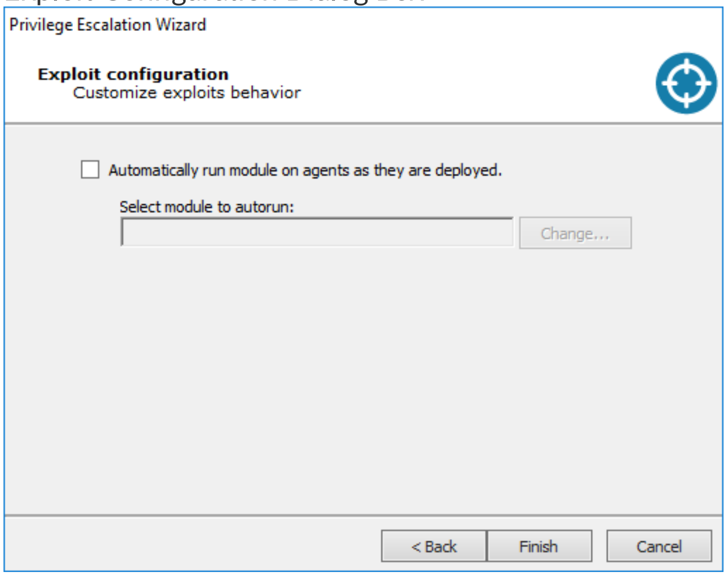
1. Specify which agents will run the Privilege Escalation macro. By default, all currently-connected agents will perform this step (All agents will perform a check to see if they are already running as SYSTEM or root. If they are, they will not attempt to perform Privilege Escalation.) An agent name will be automatically set if the macro was dropped over a specific agent. To choose one or more specific agents select the Selected agents radio button, then click the ellipsis (...) button to the right of the field. Follow the prompts to select your desired agents. Then click the Next button.
2. For each target host, this macro selects relevant attacks from the Exploits/Local Module folder based on the target's platform. The default selections on the Exploit selection screen are intended to minimize the risk of exploits leaving services unavailable and/or alter the modules' performance. For example, by checking the **Do not use exploits for patched vulnerabilities** option, Core Impact will potentially have less work to do, as it can skip exploits that it detects have been patched.

   Exploit selection Dialog Box

3. Select whether you want Core Impact to automatically run a module on agents as they are deployed. If you check this option, then click the **Change ...** button to select the specific Module to autorun.

   Exploit Configuration Dialog Box

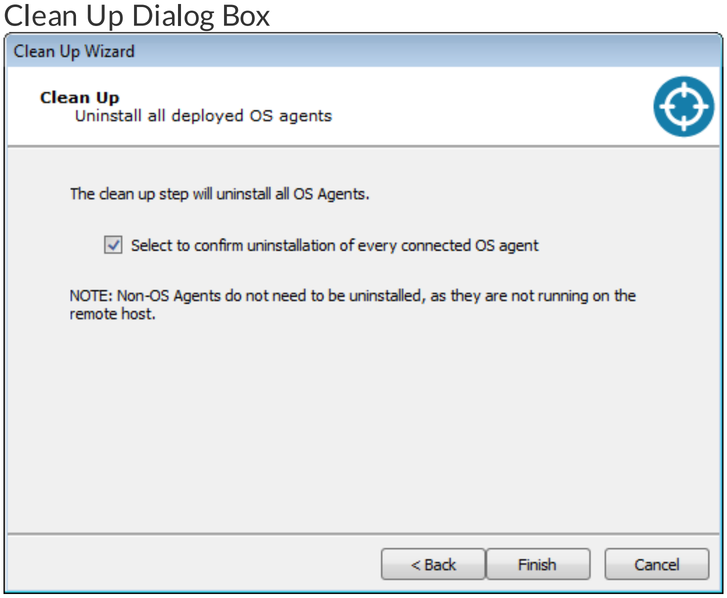
   

4. Click Finish. The module will run and information will be displayed on the Module Output and Module Log panels.

Clean Up

The Clean Up step automatically uninstalls every currently-connected agent. Agents are uninstalled in post order to support complex agent chains (see Agent Chaining). Check the Select to confirm uninstall of every connected agent check-box and then click Finish to clean up all deployed agents.

Clean Up Dialog Box



Network Report Generation

The Network Report Generation RPT step allows you to automatically generate robust system reports by processing information collected about the target systems and the different penetration tests you have performed. Report instructions are consolidated in the RPT Reports section.

One-Step Network RPT

The Network RPT includes the following One-Step tests that can be run in a single step, providing detailed reports of the test's findings.

- Network Vulnerability Test
- Remediation Validator
- Vulnerability Scanner Validator Test

One-Step Network Vulnerability Test

About the Network Vulnerability Test

Core Impact's One-Step Network Vulnerability test allows you to target one or more computers in order to evaluate their vulnerability to known exploits. When the test runs, Core Impact will access the computers and report back any vulnerabilities that are exploitable. Advanced options for One Step RPT actions are available in the One-step RPT Options, accessible via the Tools dropdown menu.

Before running the One-Step Network Vulnerabilities test, you will need to know the IP address (es) or address range of the computer(s) you want to test.

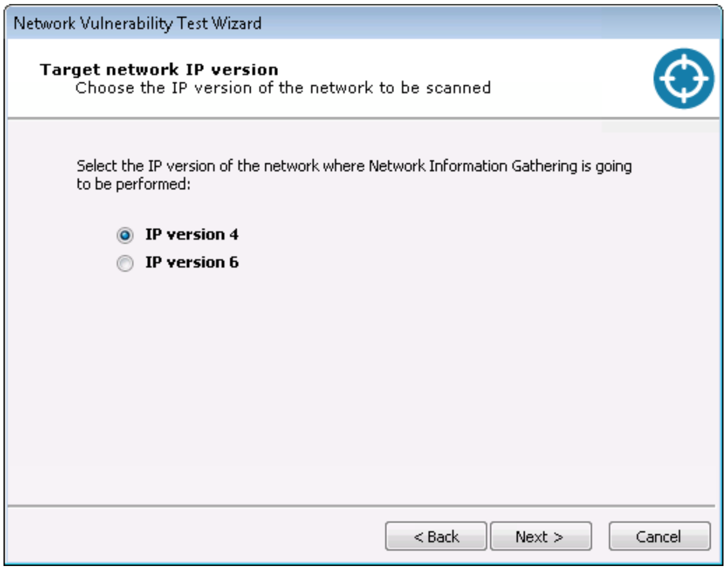
Starting the One-Step Network Vulnerability Test

The below steps illustrate how to run a One-Step Network Vulnerability Test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-Step Network Vulnerability test:

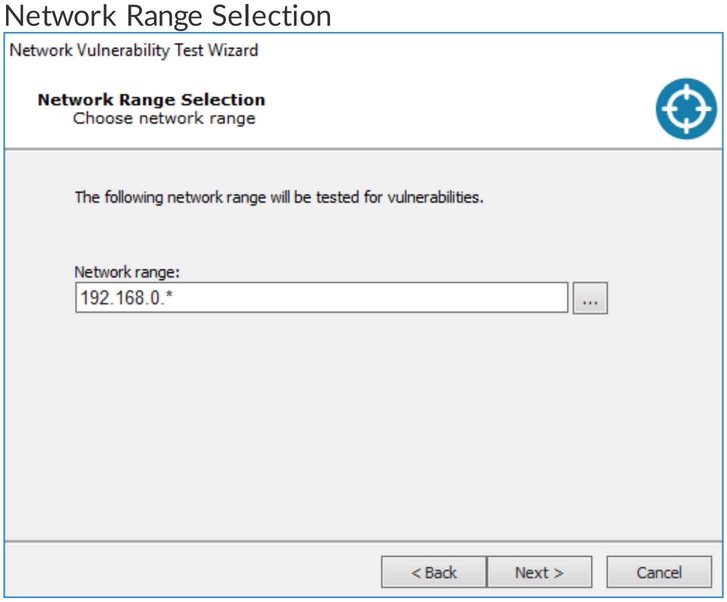
1. Make sure the One-Step RPT is active.
2. Click Network Vulnerability Test under the One-Step heading.
3. The Network Vulnerability Test Wizard will appear. Click the Next button to proceed with the Wizard.
4. In the Target network IP version step, select whether your targets use IP version 4 or IP version 6. Then click Next.

   Target network IP version



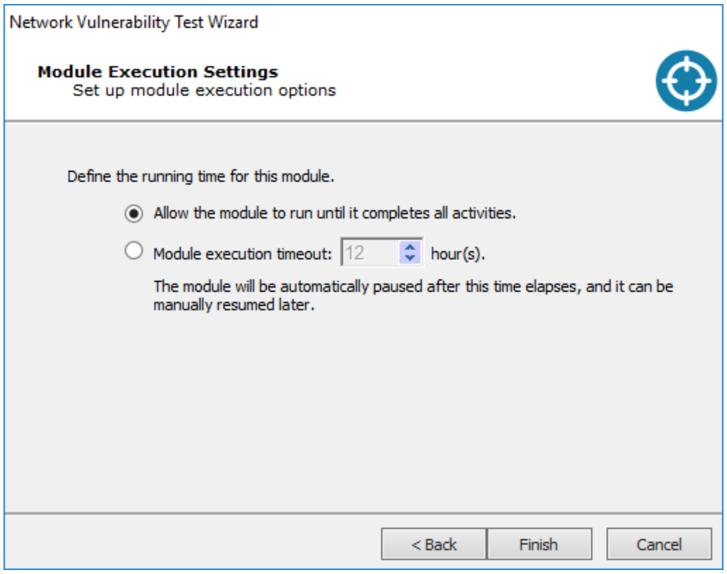
5. If you select IP version 4, you will then need to enter the IP address(es) that you want to test In the Network Range field,. Use a comma to separate IP addresses and an asterisk (*) as a wildcard - sample shown below.

   Network Range Selection



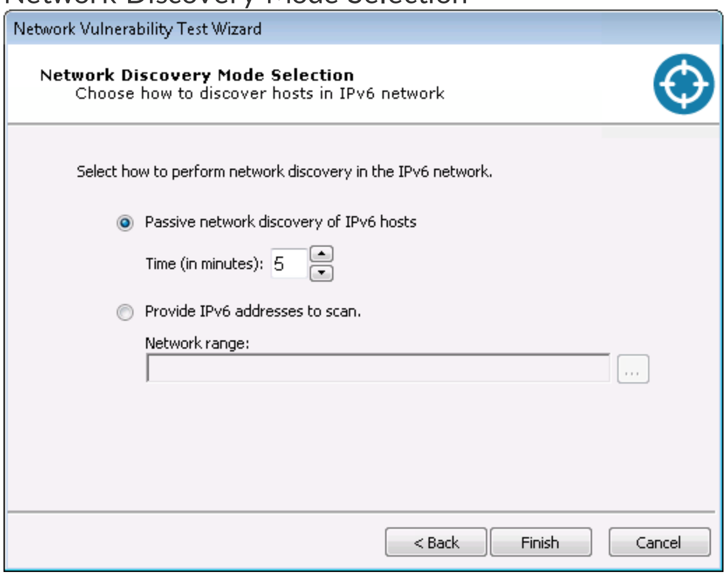
6. Define the running time for this module. Choose to **Allow the module to run until it completes all activities** or define a time frame (in hours) when the module execution should time out.

   Module Execution Settings



If you select IP version 6, you will then need to select how Core Impact should perform network discovery. It can either do a Passive network discovery, or you can manually provide IPv6 addresses.

Network Discovery Mode Selection



7. Click the Finish button to begin the test.

To check on the status of your test, click the Module Output tab.

One-Step Remediation Validator

About the Remediation Validator

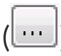
Core Impact's Remediation Validator test allows you to target one or more hosts in order to evaluate the success of remediation actions. If you identify vulnerabilities in a host, and those vulnerabilities are addressed, you can run the Remediation Validator to make sure that the remediation was successful.

Before running the One-Step Remediation Validator test, you will need to know the IP address (es) or address range of the computer(s) you want to test.

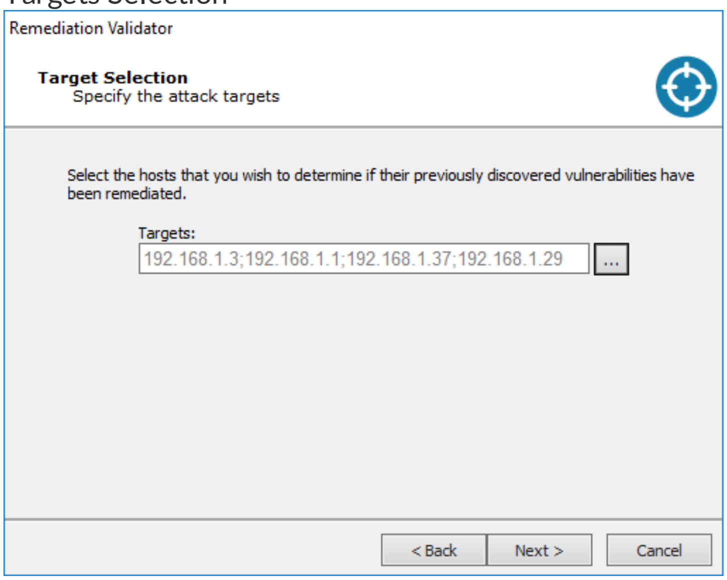
Starting the Remediation Validator

The below steps illustrate how to run a One-Step Remediation Validator manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-Step Remediation Validator test:

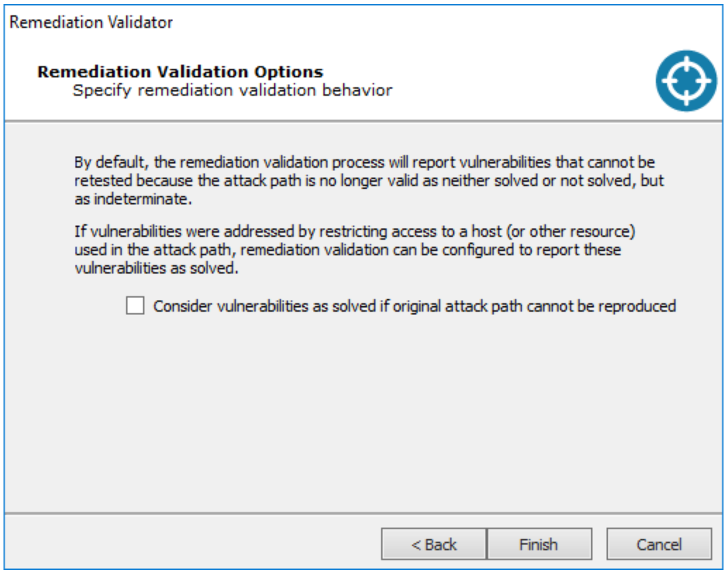
1. Make sure the One-Step RPT is active.
2. Click Remediation Validator under the One-Step heading.
3. The Remediation Validator Wizard will appear. Click the Next button to proceed with the Wizard.
4. In the Target Selection step, click on the ellipsis () button to the right of the Targets field and select the target(s) against which you want to run the Remediation Validator. Click the Next button.

   Targets Selection

5. In the Remediation Validation Options step, check the **Consider vulnerabilities as solved if original attack path cannot be reproduced** option if you want the test to mark vulnerabilities as "solved" (and not "indeterminate") if the original attack path cannot be used. Click the Finish button to begin the test.

   Remediation Validation Options



To check on the status of your test, click the Module Output tab. You can view the resulting report by using the RPT Reports function at any time

One-Step Vulnerability Scanner Validator

About the Vulnerability Validation test

If you use a third-party tool to run vulnerability scans against your information systems, you can feed the output from that tool into Core Impact's Vulnerability Scanner Validator. Core Impact will evaluate the scan's output and provide you with a prioritized validation of your system's weaknesses.

Before running a Vulnerability Scanner Validator, you will need to have the output file from a supported third-party vulnerability scanner. A list of supported scanners is shown as you begin the test.

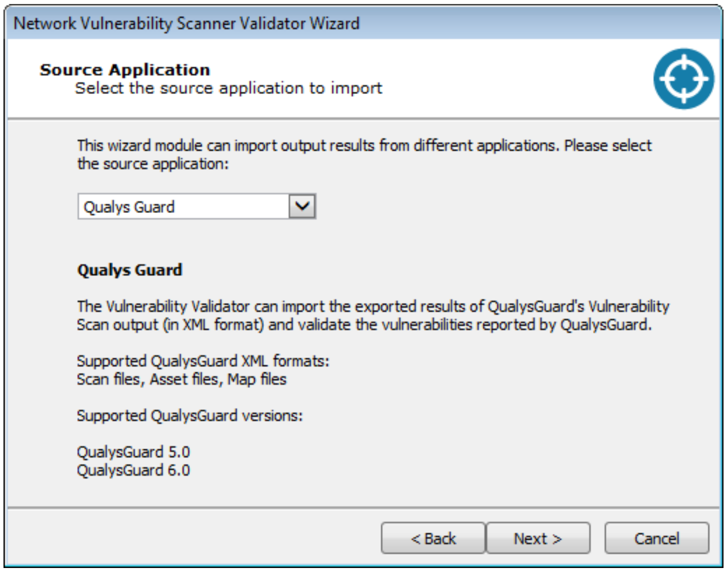
Starting a Vulnerability Scanner Validator

The below steps illustrate how to run a One-Step Vulnerability Scanner Validator test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-Step Vulnerability Scanner Validator test:

1. Make sure the One-Step RPT is active. The available one-step tests will appear.
2. Click Vulnerability Scanner Validator.
3. The Vulnerability Scanner Validator Wizard will appear. Click the Next button to proceed with the Wizard.
4. Select the third-party scanner from which you got your results.

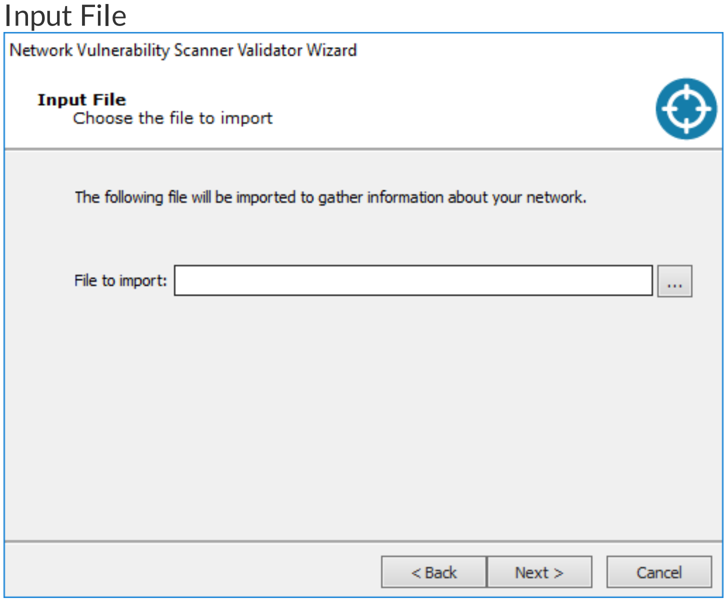
   Source Application



Click the Next button.

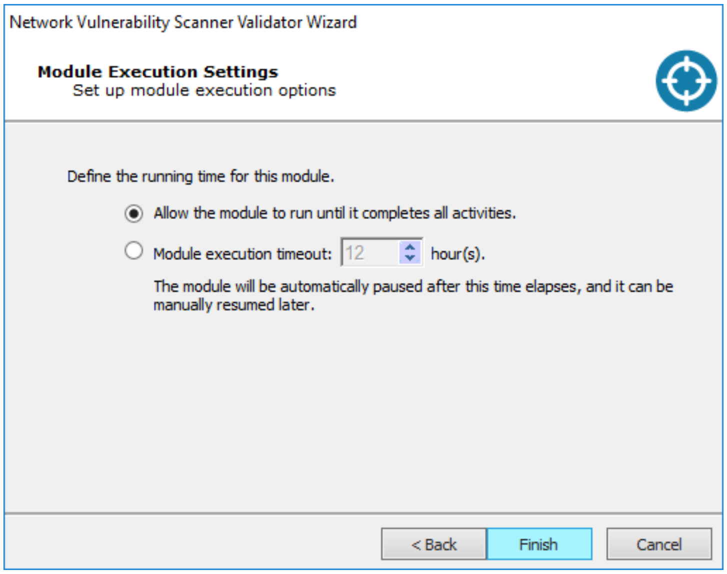
5. Enter the details of the scanner's output. The output format you are importing is dependent on the Vulnerability Scanner you selected in the previous step. Some scanners export their results to a file while others require you to access their data directly from the scanner's database.

Input File



6. Define the running time for this module. Choose to **Allow the module to run until it completes all activities** or define a time frame (in hours) when the module execution should time out.

Module Execution Settings



7. Click the Finish button to begin the test.

To check on the status of your test, click the Module Output tab.

Windows Domain IG Wizard

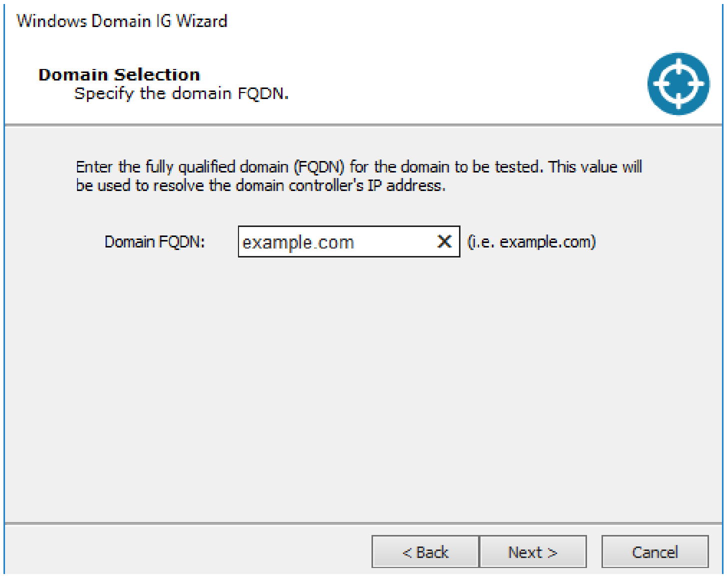
In addition to the Rapid Penetration Test that runs several modules in series automatically, there are several modules that you can run manually to run more advanced information gathering and attack steps. The Windows Domain IG Wizard module can be executed manually from the Modules tab. This module helps you perform information gathering automatically in a network where a Windows Domain is configured. It uses the following modules:

- Enumerate Trusted Domains
- Enumerate Domain Account Policies
- Enumerate Domain Administrators
- DCE-RPC SAMR dumper
- Enumerate Domain Groups
- Enumerate Domain Machines
- Enumerate User Accounts with SPNs

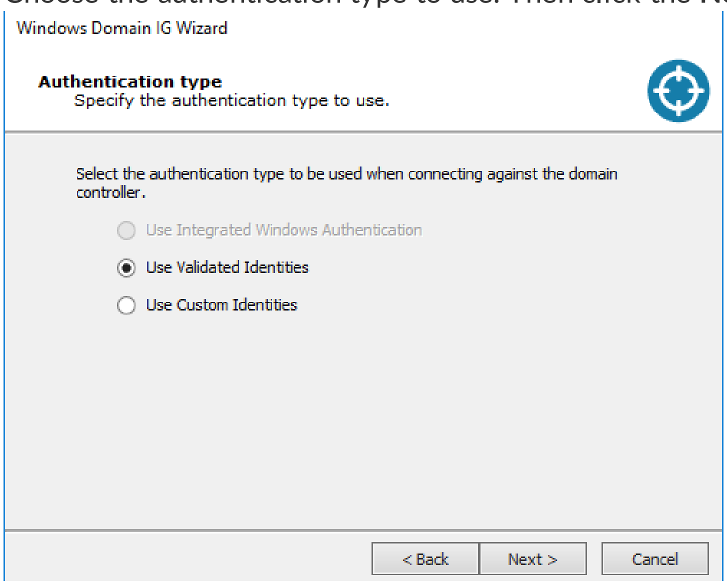
To run the Windows Domain IG Wizard:

1. Locate the **Windows Domain IG Wizard** module in the Modules tab and double-click it to launch.

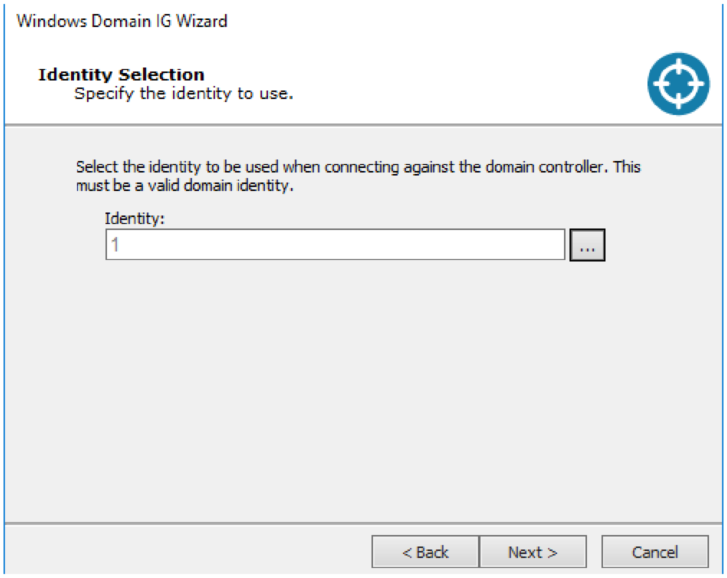
2. Enter the fully qualified domain name (FQDN) of the domain to be tested. Then click the **Next** button.



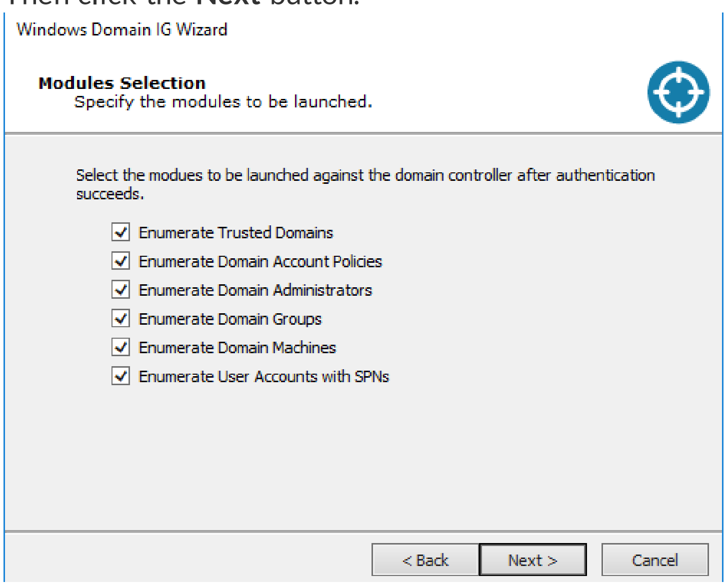
3. Choose the authentication type to use. Then click the **Next** button.



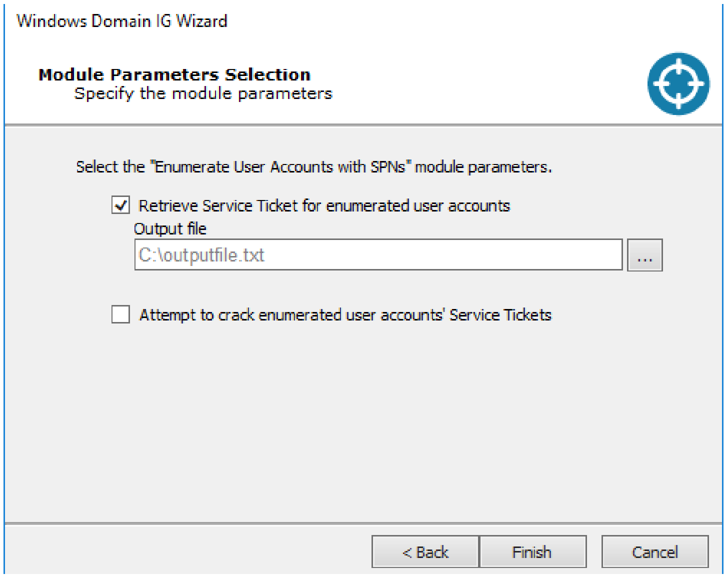
4. Click the ellipsis button and select an Identity to be used when connecting to the domain controller. Then click the **Next** button.



5. Check the modules that you would like to be used after authentication on the controller. Then click the **Next** button.



6. If using the **Enumerate User Accounts with SPNs** option, you will have additional options.
   - **Retrieve Service Ticket for enumerated user accounts**: Check this option to have Core Impact attempt to capture Kerberos service tickets for the user accounts it finds. Then define the path and name of the file in which the service tickets should be stored.
   - **Attempt to crack enumerated user accounts' Service Tickets**: If you opt to Retrieve Service Tickets, check this option if you would like Core Impact to try to crack the hashes of the obtained Service Tickets. If successfully cracked, the hashes will be stored as plain passwords in the Entity Database as Identities.



Then click the **Finish** button to begin the test.

Client Side RPT

In contrast with traditional remote exploits which target services that the penetration tester can see over the network or Internet, client-side exploits target applications running on users' workstations. Because these applications are under the control of the end-user and do not actively listen on the network, s uccessful exploitation typically requires some form of end-user interaction. This interaction might entail the end-user opening an email attachment, clicking on a specially-crafted URL, or browsing to a specific website. Convincing the end-user to perform the required action is often more dependent on social engineering than on technical expertise. For example, many contemporary attacks such as Phishing and some email viruses require user interaction, even though they are designed to exploit a technical vulnerability such as a buffer overflow.

Core Impact 's client-side exploits are an excellent representation of these attacks. The Client-side RPT allows you to simulate a social engineering attack by sending email to your community of users. The tests can be tailored by you to appear legitimate but will initiate an attack on any user's computer should they follow an action prompted by the email contents. The RPT begins by scouring the Internet, your intranet, or any other specific web site for email addresses that match a domain of your choice, just as an attacker might do. The test will also look for documents and search within them and their metadata to find data that could be used to craft a client-side attack. With the Client-side RPT, you can learn a) how prevalent your users' email addresses are on the Internet, b) how careful your user community is when they receive email, c) how vulnerable their desktop computers are to known exploits, and d) how effective your antivirus, email filtering, content filtering, intrusion prevention and intrusion detection policies are.

If you want to use a means other than email to deliver a client-side attack, see the Decoupling the Attack Vector from the Exploit Mechanism section.

Follow the below links to learn about the different Client-Side testing steps:

- *Client-Side Information Gathering* on page 90
- *Client-Side Attack Phase: Attack and Penetration* on page 100
- *Client-Side Attack Phase: Phishing* on page 117
- *Local Information Gathering* on page 124
- *Privilege Escalation* on page 125
- *Clean Up* on page 127

Client-side Report Generation

The Client-side Report Generation step allows you to automatically generate robust system reports by processing information collected about the target systems and the different penetration tests you have performed. Report instructions are consolidated in the RPT Reports section.

One-Step Client-side Tests

Core Impact provides 2 One-Step Client-side tests:

- One-Step Client-side Vulnerability Test This test targets specific applications on your users' computers. By sending an email to your users, they initiate the test and Core Impact reports back the results to you. Jump to Starting a Client-side Vulnerability Test.
- One-Step Client-side Auto Test: If you have a standard desktop image that you deploy to your desktop users, use the One-Step Client-side Auto Test to test a single machine with the build and expose it to many client-side exploits at one time. Jump to Starting a Client-side Auto Test.

Starting a Client-side Vulnerability Test

Before running a Client-side Vulnerability Test, you must:

1. Prepare a file that contains the email address(es) of your target users. This should be a `.txt` file that contains email addresses separated by commas.
2. Configure the Outgoing E-mail Information in the One-Step section of Core Impact's Options.
3. Determine which application on the users' computers you want to test.

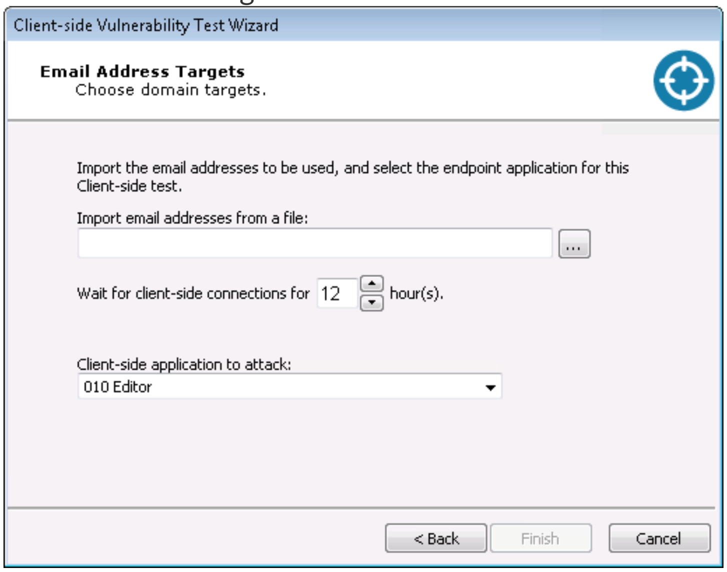
The below steps illustrate how to run a One-step Client-side Vulnerability test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-step Client-side Vulnerability Test:

1. Activate the Client-Side RPT.
2. Click Client-side Vulnerability Test under the One-Step heading.
3. The Client-side Vulnerability Test Wizard will appear. Click the Next button to proceed with the Wizard.

4. Click the ellipsis (...) button next to the Import email addresses from a file field and navigate to your email text file.

   Email Address Targets

   Select the file and click the Open button.

   Each address in the file will receive an email asking the recipient to click a link within the email, initiating the test on their computer.
5. Set the Wait for client-side connections for x hour(s) value according to your preference. If you set this value to 5 hours, then recipients of the email must act within 5 hours or their test will not contribute to your client-side vulnerability test results.
6. Select from the Client-side application to attack drop-down menu. This will determine the application that is tested when users click the link within the email they receive.
7. Click the Finish button.

To check on the status of your test, click the Module Output tab.

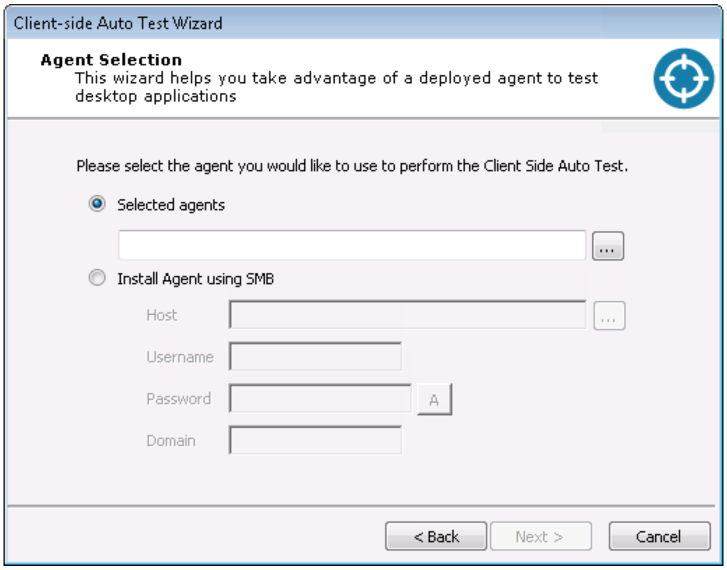
Starting a Client-side Auto Test

The below steps illustrate how to run a One-step Client-side Auto test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-step Client-side Auto Test:

1. Activate the Client-Side RPT.
2. Click Client-side Auto Test under the One-Step heading.
3. The Client-side Auto Test Wizard will appear. Click the Next button to proceed with the Wizard.
4. The test needs an agent in order to run on the target host. Select an existing agent or choose and configure the Install Agent using SMB option.

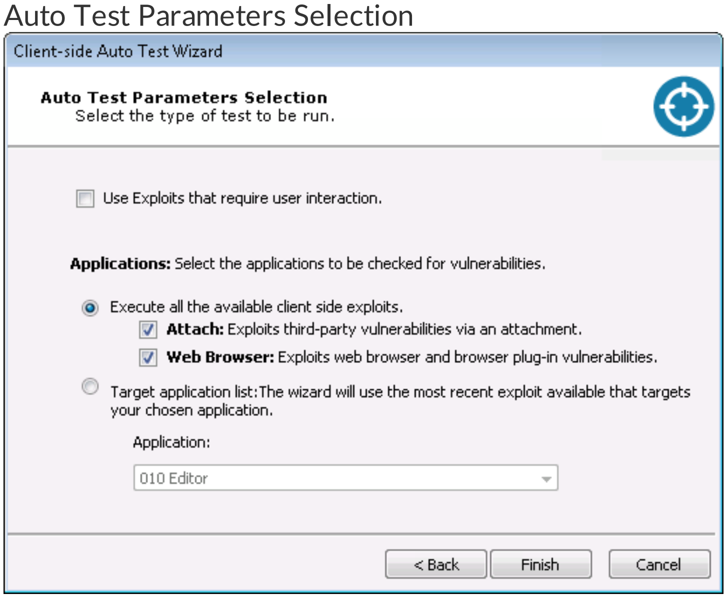
   Auto Test Agent Selection



Click the Next button.

5. On the Auto Test Parameters Selection form:
   - Check the Use Exploits that require user interaction if you want the test to use exploits that would require a user to take action in order for the exploit to succeed.
   - Select which applications are to be checked for vulnerabilities:
     - Execute all available client-side exploits (Attach and/or Web Browser exploits).
     - Select a specific application to target from the Application drop-down menu.

Auto Test Parameters Selection



6. Click the Finish button.

To check on the status of your test, click the Module Output tab.

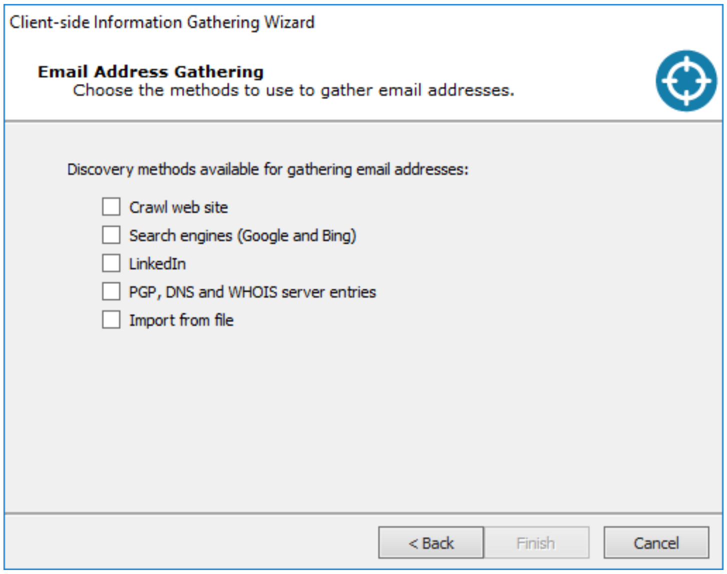
Client-Side Information Gathering

Using the Client-side Information Gathering wizard, you can harvest email addresses that are visible from the Internet or your intranet. Harvesting email addresses from your registered domain in the Internet gives you a good idea of your end-users' exposure to identification by external attackers. For example, email addresses of your employees can be collected by attackers externally through company press releases, trade show presentations, news articles, professional organizations, company web pages, and other public domain. The Client-side Information Gathering modules will also look for downloadable documents and search within them for email addresses. The Client-Side Information Gathering wizard also supports importing multiple email address targets from a text file or you can skip this step and manually enter email addresses into the Entity Database's Client Side view (see Client Side View).

To begin the Client-side Information Gathering:

1. Ensure that the Client-side RPT is activated.
2. Click Client-side Information Gathering and the Wizard will appear. Click the Next button to begin.
3. The first step of the Wizard is the Email Address Gathering form. This form determines what resources Core Impact should leverage to locate and add email addresses to its entity database. You can select more than one option and each option will have further configurations in subsequent steps of the wizard.
   - Crawl Web Site: Core Impact can search within a specific web site to explore for email addresses or documents.

     You must select Crawl Web Site if you want the Information Gathering step to search for documents. With this option selected, subsequent steps in the wizard will allow you to specify how the documents are handled and analyzed.
   - Search Engines: Use common search engines to locate email addresses in public on-line records. An attacker might use the exact same method to locate target email addresses.
   - LinkedIn: Select this option to have Core Impact search through the web site LinkedIn.com to locate users for a specific company.
   - PGP, DNS and WHOIS server entries: Use Public Internet Databases to locate email addresses.
   - Import from a file: Select this option if you have a local file that contains your target email addresses.



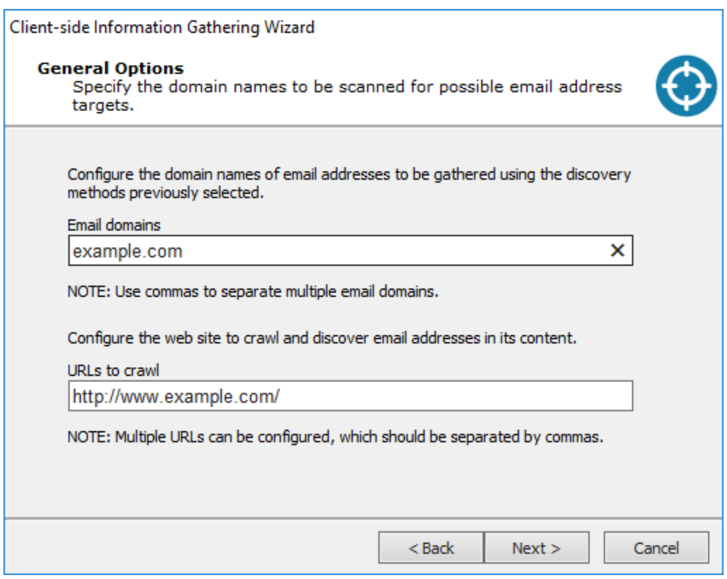
Below please find the configuration settings for each of the available options:

Crawl Web Site

1. General Options

   Enter the **Email domain(s)** for which you want to discover email addresses. For example, if you enter *company.com*, the crawler will search for and record all email addresses it finds that end in *@company.com*.

   Enter the root URLs to Crawl where the crawler should search.

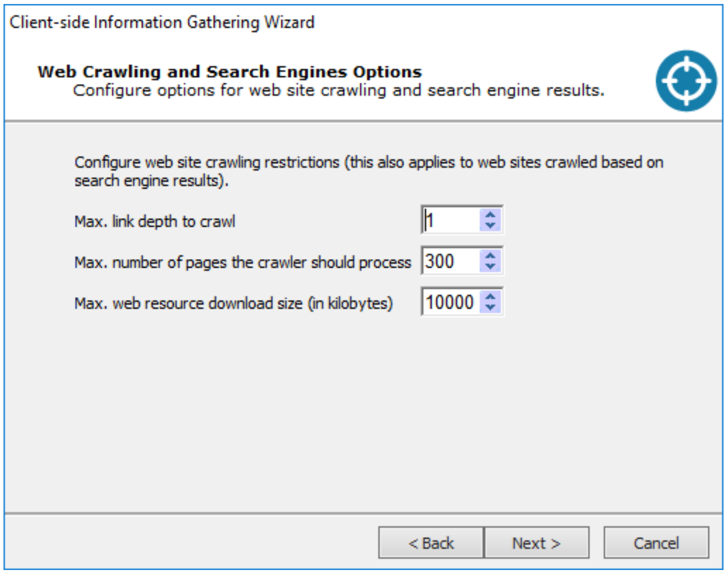
   

2. Web Crawling and Search Engines Options

   Set a Max. link depth to crawl to prevent the crawler for navigating too deeply into a site.

   Set the Max. number of pages the crawler should process to further limit the reach of the crawler by number of pages.

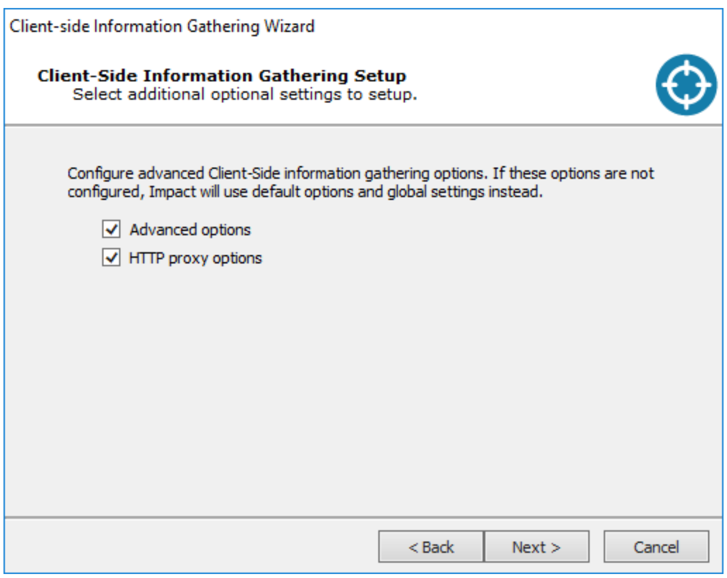
   Set the Max. web resource download size to limit the crawler by amount of content (in Kb).



3. Client-Side Information Gathering Setup

   Select Advanced options to enable additional settings in the wizard.

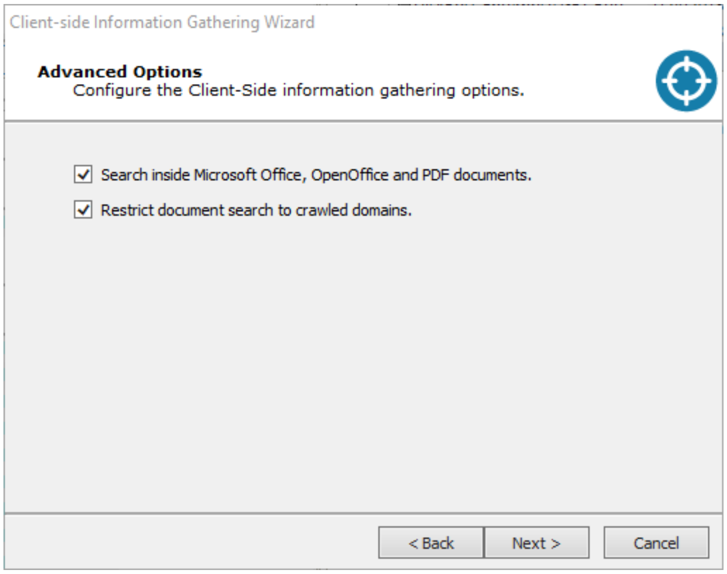
   Select HTTP proxy options to enable additional settings in the wizard.



4. Advanced Options

   Search inside Microsoft Office, OpenOffice and PDF documents: With this option, Core Impact will scan the metadata of any found documents and record any pertinent data such as the path the file was saved to, the original document author, etc.

   Restrict document search to crawled domains: Check this option if you do not want Core Impact to stray outside of the explicit target domain(s). Oftentimes, links to documents lead to other domains and this option will prevent Core Impact from retrieving those documents.



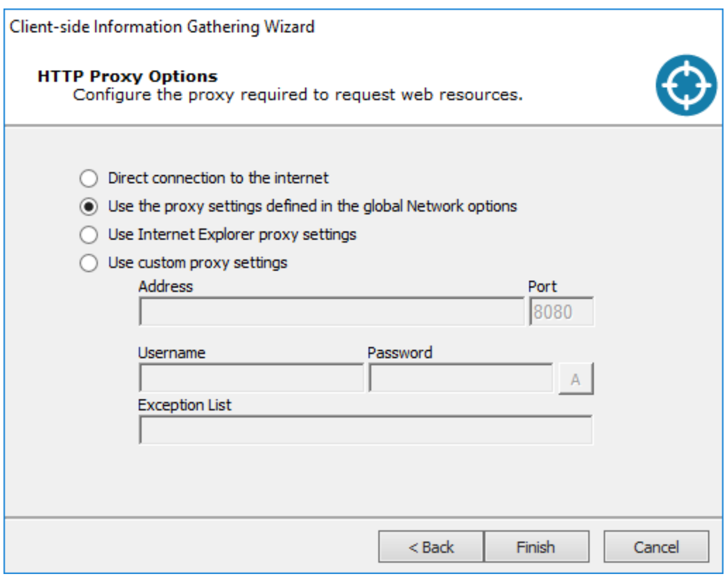
5. HTTP Proxy Options

   Direct connection to the Internet will connect to the Internet without connecting to a proxy server.

   Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.

   Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.

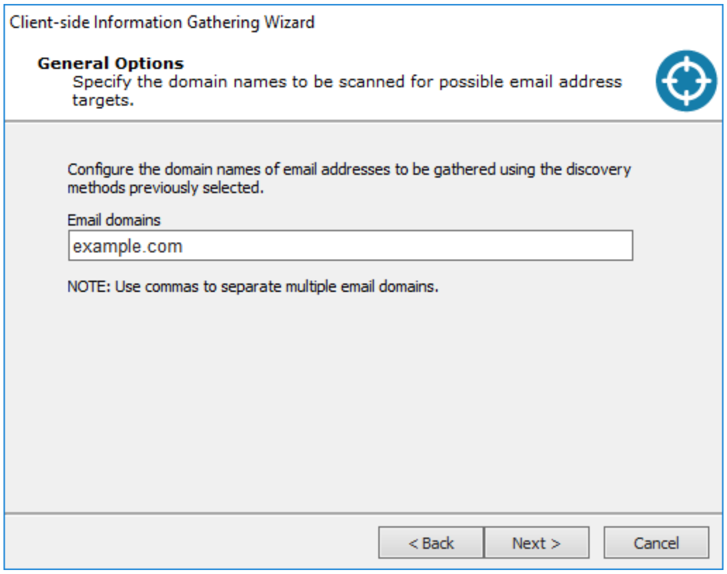
   Use custom proxy settings will follow the proxy settings in the fields just below.



Search Engines (Google and Bing)

1. General Options

   Enter the **Email domain(s)** for which you want to discover email addresses. For example, if you enter *company.com*, the crawler will search for and record all email addresses it finds that end in *@company.com*.



2. Web Crawling and Search Engines Options

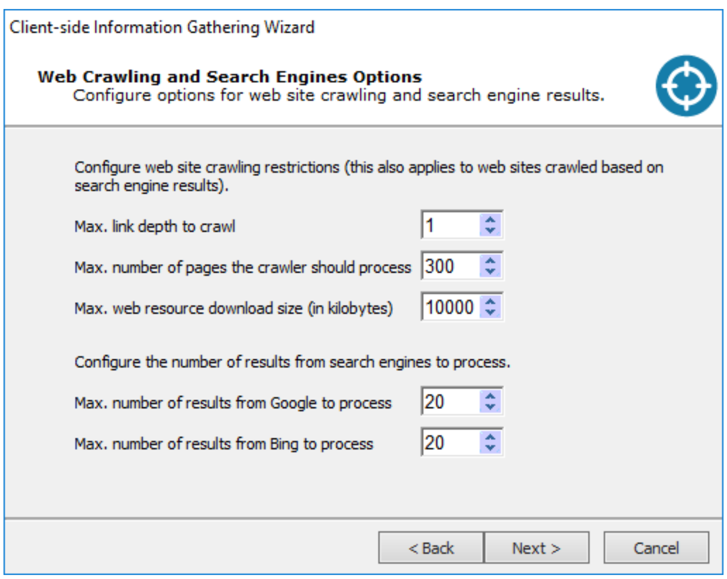
   Set a Max. link depth to crawl to prevent the crawler for navigating too deeply into a site.

   Set the Max. number of pages the crawler should process to further limit the reach of the crawler by number of pages.

   Set the Max. web resource download size to limit the crawler by amount of content (in Kb).

   Set the Max. number of results from Google to process.

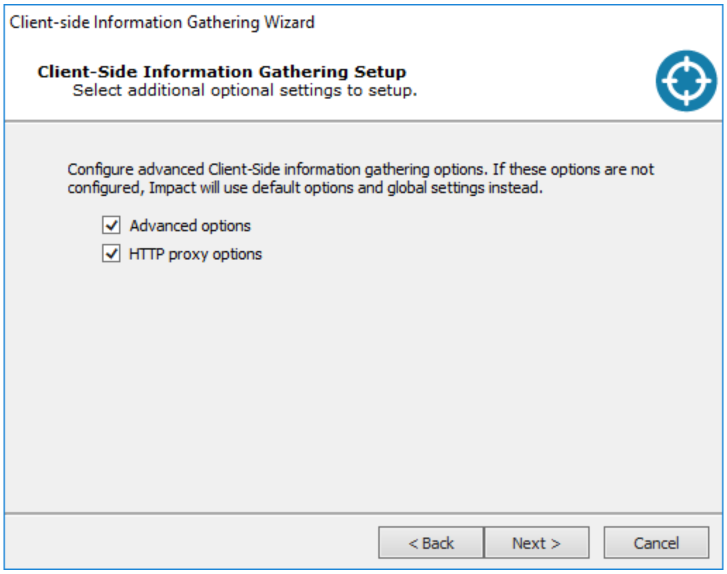
   Set the Max. number of results from Bing to process.



3. Client-Side Information Gathering Setup

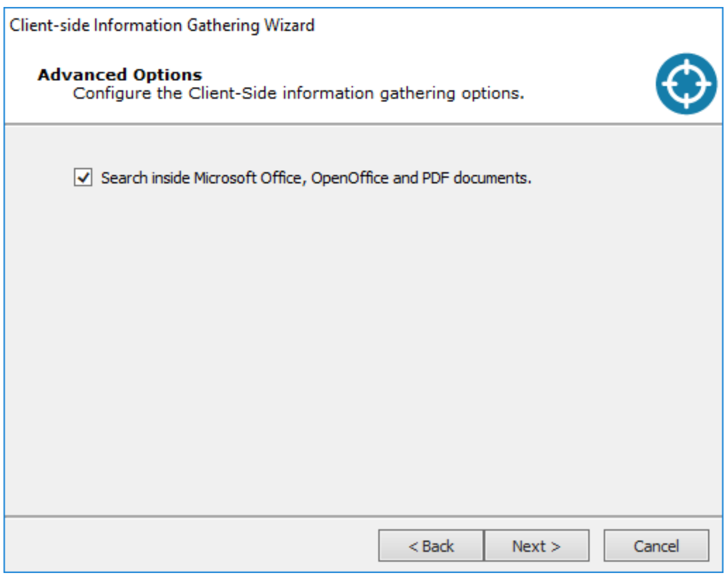
   Select Advanced options to enable additional settings in the wizard.

   Select HTTP proxy options to enable additional settings in the wizard.



4. Advanced Options

   Search inside Microsoft Office, OpenOffice and PDF documents: With this option, Core Impact will scan the metadata of any found documents and record any pertinent data such as the path the file was saved to, the original document author, etc.



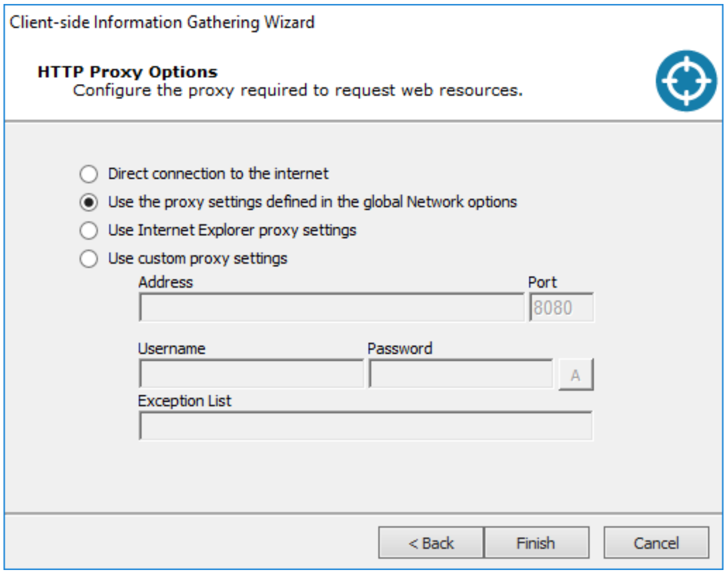
5. HTTP Proxy Options

   Direct connection to the Internet will connect to the Internet without connecting to a proxy server.

   Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.

   Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.

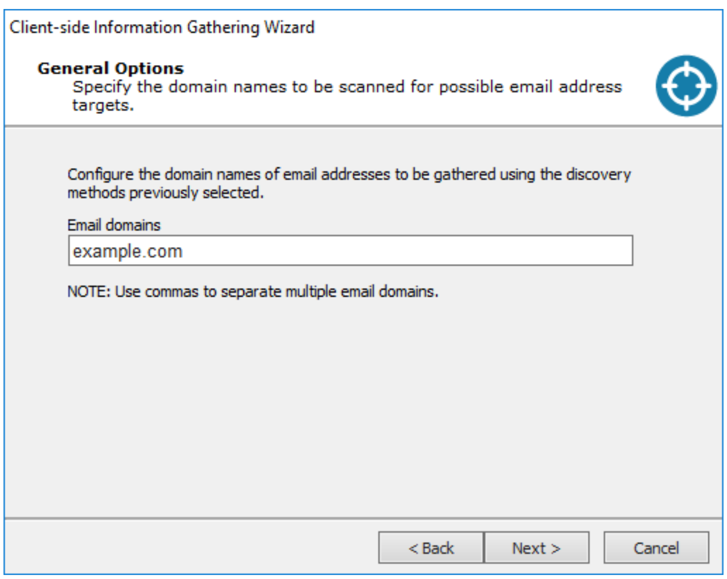
   Use custom proxy settings will follow the proxy settings in the fields just below.



LinkedIn

1. General Options

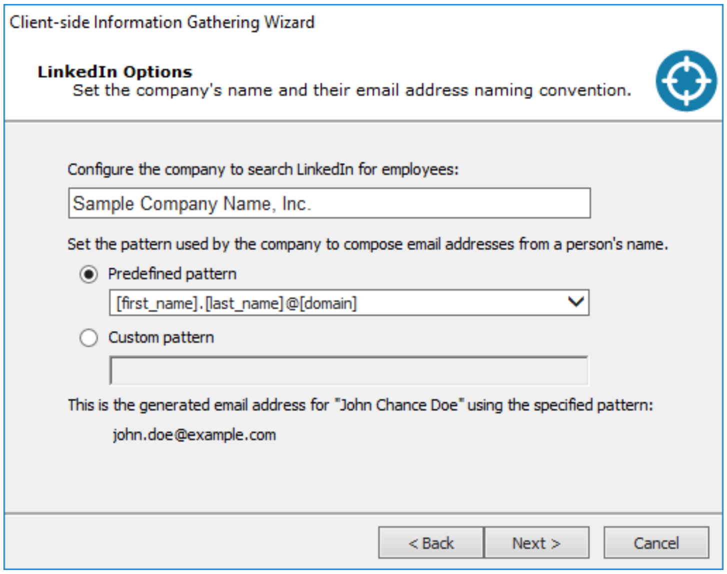
   Enter the **Email domain(s)** for which you want to discover email addresses. For example, if you enter *company.com*, the crawler will search for and record all email addresses it finds that end in *@company.com*.



2. LinkedIn Options

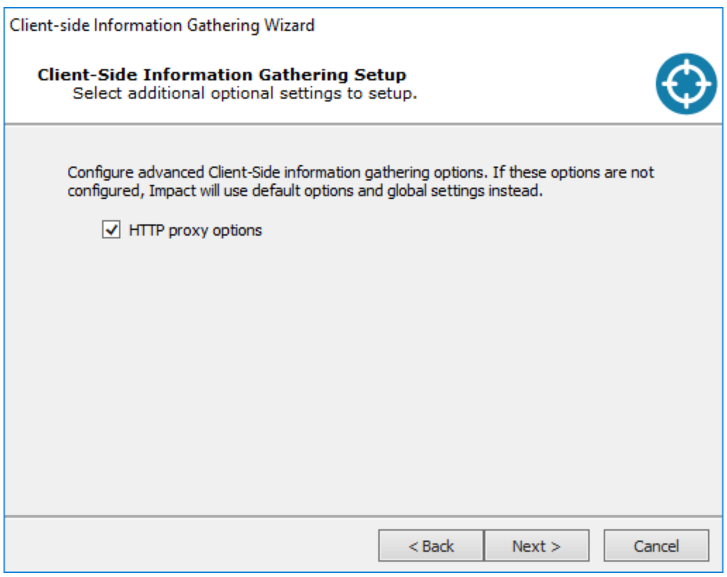
   In the Configure the company ... field, enter the name of the company whose users you want to discover. The search will attempt to locate the company in LinkedIn and then discover users of that company.

   In the Set the pattern used ... field, select a Predefined naming convention/pattern of the target email addresses or enter a custom pattern. Core Impact will attempt to create email addresses using this convention for the users it locates for the company name entered above.



3. Client-Side Information Gathering Setup

   Select HTTP proxy options to enable additional settings in the wizard.



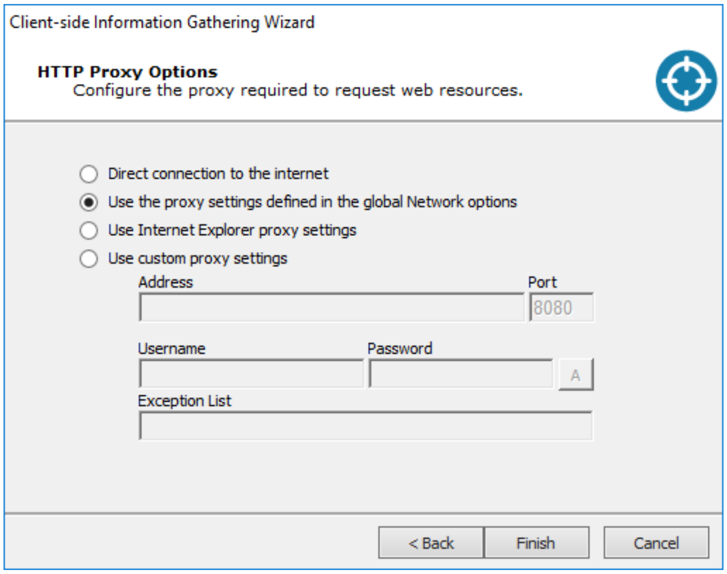
4. HTTP Proxy Options

   Direct connection to the Internet will connect to the Internet without connecting to a proxy server.

   Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.

   Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.

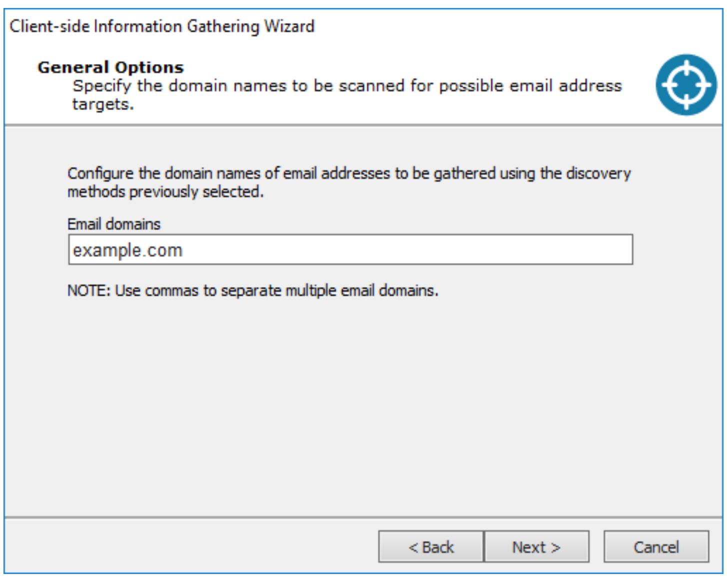
   Use custom proxy settings will follow the proxy settings in the fields just below.



PGP, DNS and WHOIS server entries

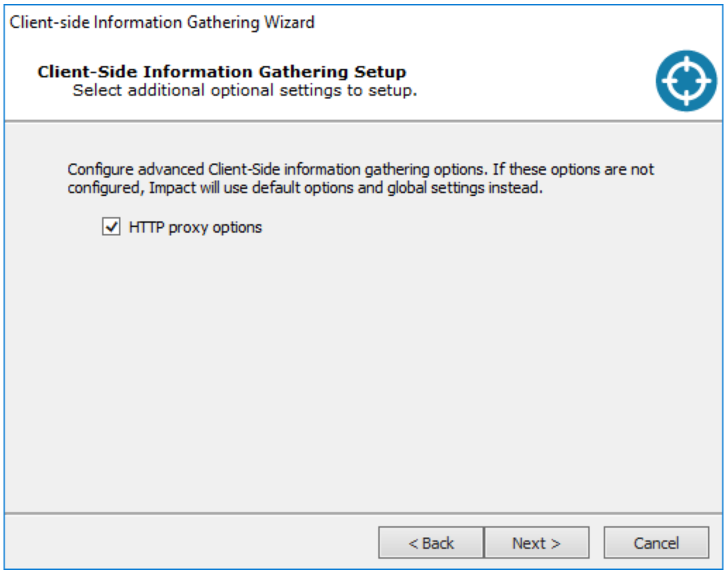
1. General Options

   Enter the **Email domain(s)** for which you want to discover email addresses. For example, if you enter *company.com*, the crawler will search for and record all email addresses it finds that end in *@company.com*.



2. Client-Side Information Gathering Setup

   Select HTTP proxy options to enable additional settings in the wizard.



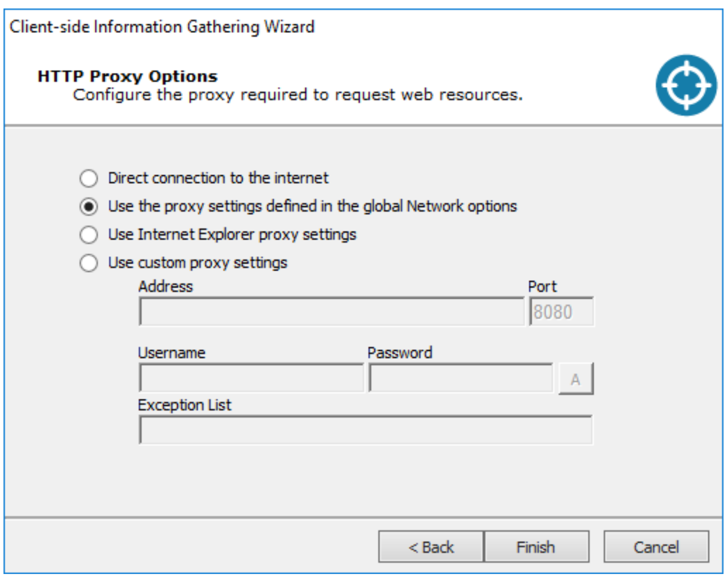
3. HTTP Proxy Options

   Direct connection to the Internet will connect to the Internet without connecting to a proxy server.

   Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.

   Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.

   Use custom proxy settings will follow the proxy settings in the fields just below.

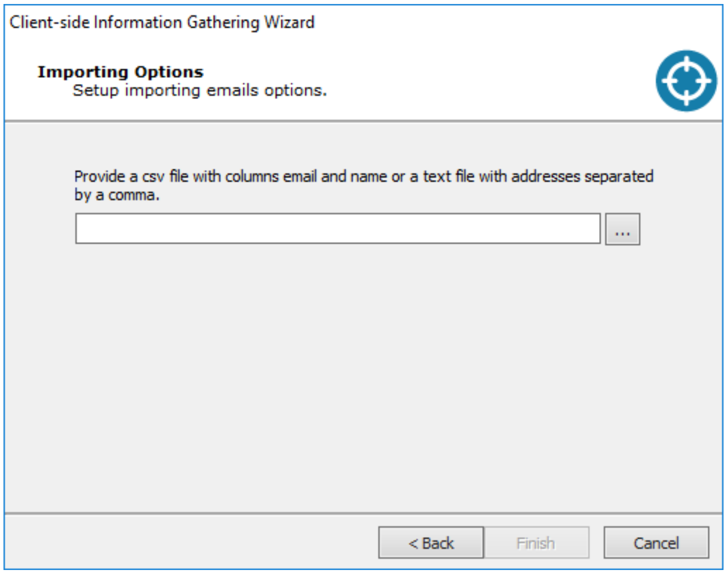


Import from file

1. Importing Options

Click the ellipsis (...) button and navigate to the import file containing the email addresses. The file can be one of the following:

- .CSV file: Use "email" and "name" columns
- .TXT file: email addresses delimited by a comma



When you have reached the end of your configurations, click the **Finish** button. The Wizard will close and the Client-side Information Gathering module will begin. You will be able to see its progress in the Executed Modules pane. Once completed, the Module Output pane will display the step's findings. Click to the Client Side tab of the Entity View to see the new email addresses that were found by the module (see Client Side View for more information).

Client-Side Attack Phase: Attack and Penetration

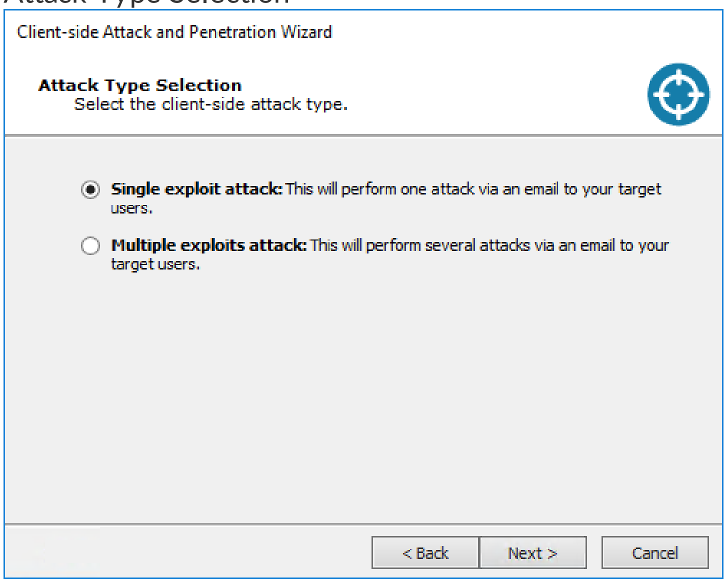
Once the target email addresses have been identified and added to Core Impact's database, you can then use the Client-side Attack and Penetration step of the Client-side RPT process to attack one or more end-users. This wizard guides you step-by-step through the process of selecting email address targets, the attack type, selecting the attack category (e.g., web browser, email client, attachment, or Trojan attack), and selecting an email template to use for the client-side attack. You can customize each email to increase the authenticity of the attack and the likelihood that an untrained end-user will fall for a social engineering attack. If an end-user's system is compromised with a client-side attack, an agent is deployed and you can then pivot (see Set as Source) from that agent to run network attacks using the Network RPT process from inside your network thus bypassing any perimeter defenses.

You can also opt to deliver a client-side exploit using a means other than email. For example, you may want to load the attack files onto a USB drive or otherwise distribute the files to target users. For details on this process see the Decoupling the Attack Vector from the Exploit Mechanism section.

The Client-side Attack and Penetration wizard has many option paths that can vary depending on the settings you choose. To begin the Attack and Penetration:

1. Click Client-side Attack and Penetration and the Wizard will appear. Click the Next button to begin.
2. Select the Attack Type
   - Single exploit attack: This option will send 1 attack in an email to your targets.
   - Multiple exploits attack: This option will send several different attacks via email to your targets.

   Attack Type Selection

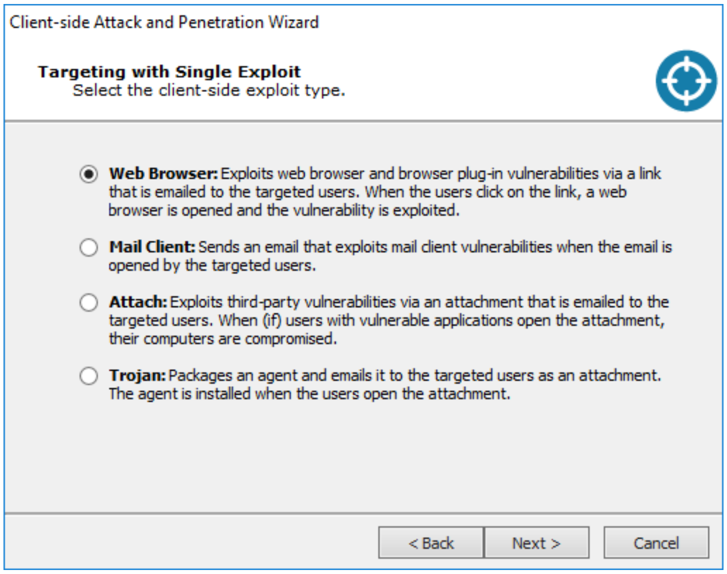
   

Below please find the configuration settings for each of the available options:

Single Exploit Attack

1. Targeting with Single Exploit.
   Select the desired Exploit type:
   - Web Browser: These attacks take advantage of web browser vulnerabilities or web browser plug-ins. The email recipient must click on a link that opens a web page. The web page will be pre-established by Core Impact to launch an attack against the user's system.
   - Mail Client: These exploits take advantage of vulnerabilities in the recipient's email client software.
   - Attach: These attacks require that an attachment be opened by the email recipient. The attachment will be pre-designed to exploit vulnerabilities in a third party application.
   - Trojan: These involve attaching an agent to the email. If a user executes the attachment, the agent is deployed on their machine. This option includes some

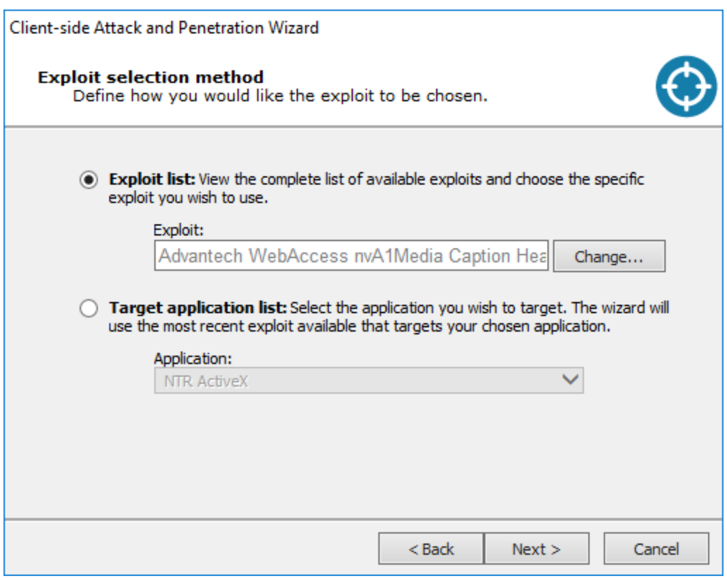
unique configurations - see *Settings for Trojan Attack on page 113*.



2. Exploit selection method

   Exploit List: Select this option if you want to specify which exploit should be targeted on compromised hosts. Then click the Change ... button to select an exploit or module name to send in your attack.

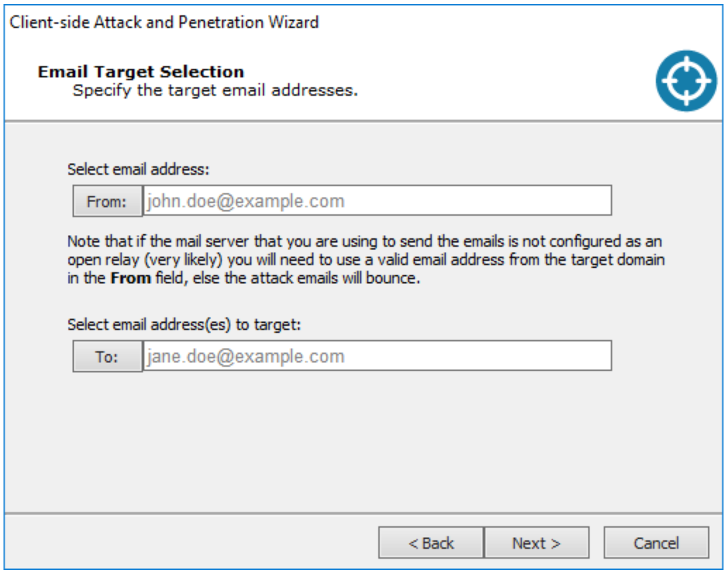
   Target Application List: Select this option if you want to specify an application to target, then select from the Application drop-down menu. Core Impact will send the most recent exploit for that application.



3. Email Target Selection

   Click the From: button to select an address that will appear in the header of the email being sent. Click the To: button to select recipient email addresses from the Entity Database's Client Side View.

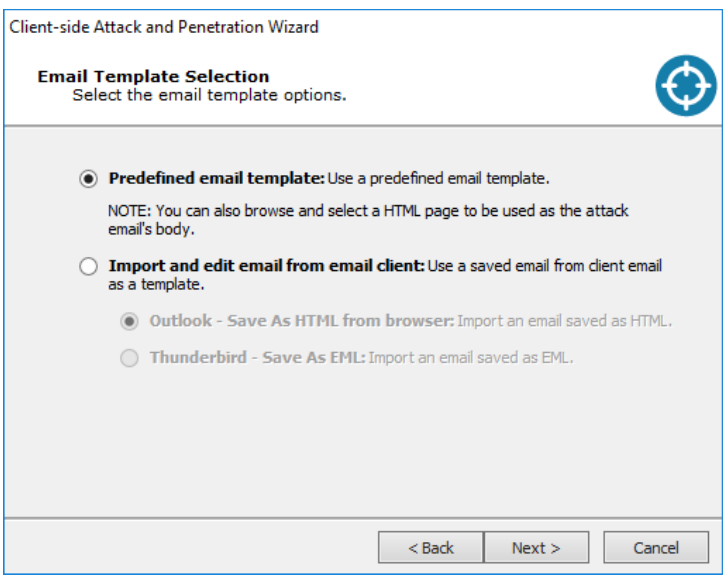
If the desired addresses are not yet in the Client Side View, you can add them using the same procedure as if you were working in the Client Side View directly. Right-click in the view, then select New..., then select Email.



4. Email Template Selection

   Predefined email template: Core Impact includes several email templates that you can use to craft your Client-side attack.

   Import and edit email from email client: You can use an actual email (from either Outlook or Thunderbird) as the basis for a new template.



5. End User Experience

   Core Impact ships with several email templates that are located in `%ProgramData%\IMPACT\components\modules\classic\install\templates`. You can customize these templates to maximize the chance that your users will take action in the email. Click the ellipsis button to select a new template, or to modify the one that is selected. When working on the Email template, click to the **Edit** tab (shown below) and modify as needed. In addition to customizing the body text, you can add tags to the email so that it contains data that is specific to the recipient and will therefor appear more legitimate.

Email Subject: Enter the text you would like to appear as the subject of the email. This will be populated by default but you can over-write the text.

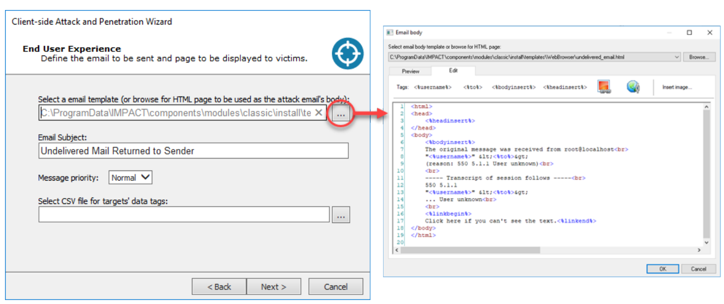
Select CSV file for targets' data tags: By default, the email templates only include a handful of basic tags. If you'd like to add more tags to the email, you can import the tags and their values using a .csv file. The .csv file must be formatted in the following way:

- Row 1: the names of the tag fields. **The first tag name must be 'target'**
- Rows 2 - x: the values of the tags. **The 'target' value must be the email address of the target**

Below is an example of how the .csv may appear:

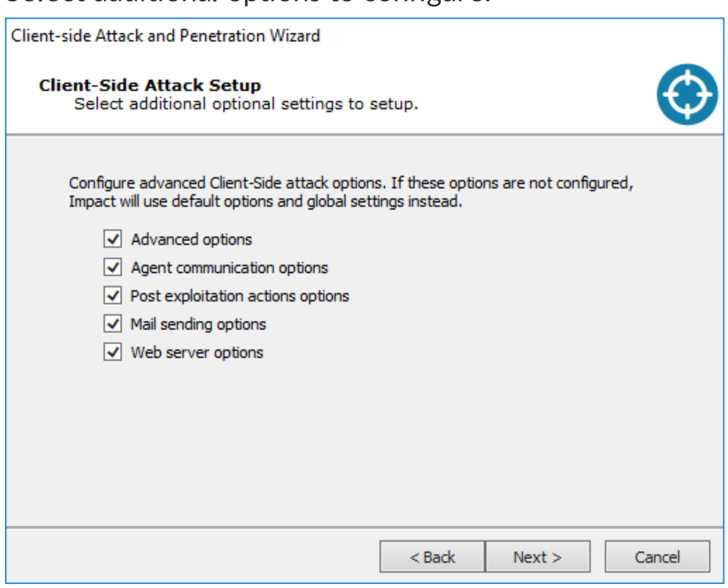
target,	**nickname,**	**company,**	**position**
john.doe@example.com,	Johnny,	JD Corp,	VP of Customer Support
az@core.sec,	Azzo,	JD Corp,	Secretary

After importing the .csv file, you can edit the template and reference content from the .csv file by using the custom tag: <%csv:[field_name]%>. For example, <%csv:nickname%> or <%csv:position%>.



6. Client-side Attack Setup

   Select additional options to configure.



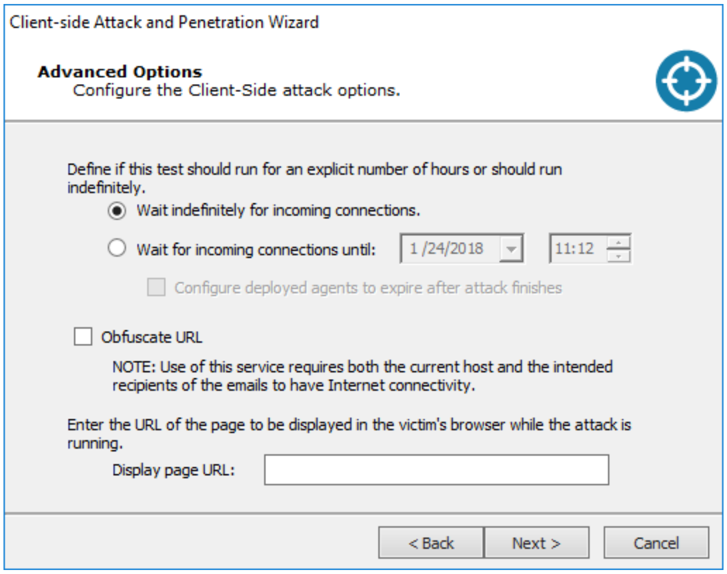
7. Advanced Options

   Wait indefinitely for incoming connections: Core Impact will wait indefinitely for connections from email recipients.

   Wait for incoming connections until: You can specify the date and time when Core Impact will stop accepting incoming connections from email recipients and, optionally, whether the deployed agents should expire following the completion of the attack.

   Optionally select a URL obfuscation service to mask the URL that will be used in the email.

   Enter a Display Page URL which represents the web page the attack target user will see while the attack is in progress.

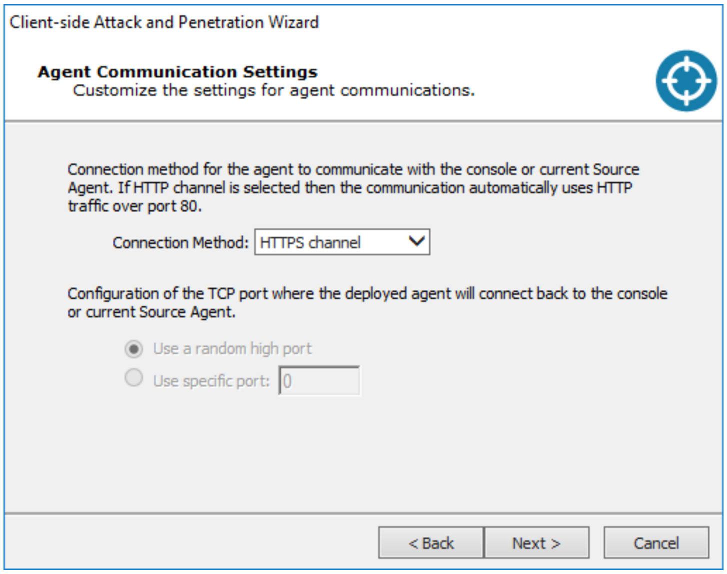


8. Agent Communication Settings

   Select a **Connection Method** as one of the following:

   - Connect from target
   - HTTP Channel
   - HTTPS Channel

   Optionally, enter an Incoming connection port for agents to connect to on the Core Impact console or the current Source Agent.



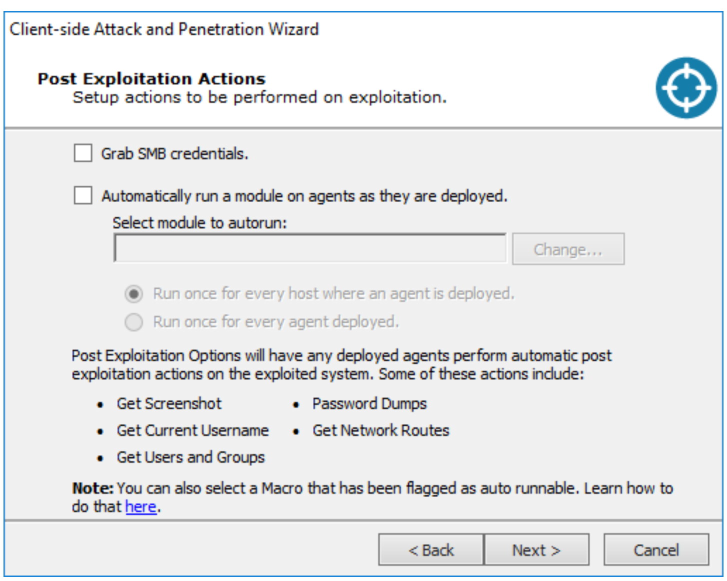
9. Post Exploitation Options

   Grab SMB credentials

   With this option checked, Core Impact will attempt to force the target to authenticate to the web server with its encrypted SMB credentials (NTLM challenge/response). If successful, Core Impact operators can export these challenge/responses in John the Ripper format. Check the **SMB Encrypted Credentials Exporter** module for more information.

   Automatically run modules on agents as they are deployed

   With this option checked, Core Impact will automatically run a module that you select when an agent is deployed on a target system. You can then determine whether the module is executed once per exploited host or once per deployed agent. In the below example, the Make Agent Persistent module will be run for each host where an agent is deployed.

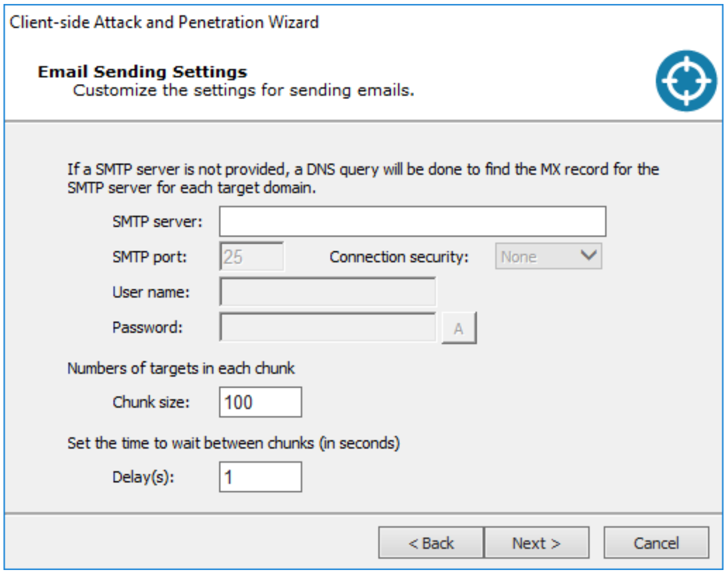


10. Email Sending Settings

    Enter the SMTP Server and SMTP Port for your email SMTP server. Optionally, choose **STARTTLS** as the **Connection security** and then enter the **Username** and **Password** for your SMTP server.

    If you want to limit the number of emails that are sent at one moment, set a Chunk Size. This value will determine the maximum number of emails that will be sent at one time.

    Enter the Delay (in seconds) that you want Core Impact to wait in between sending chunks of email in this attack.

11. Web Server Settings

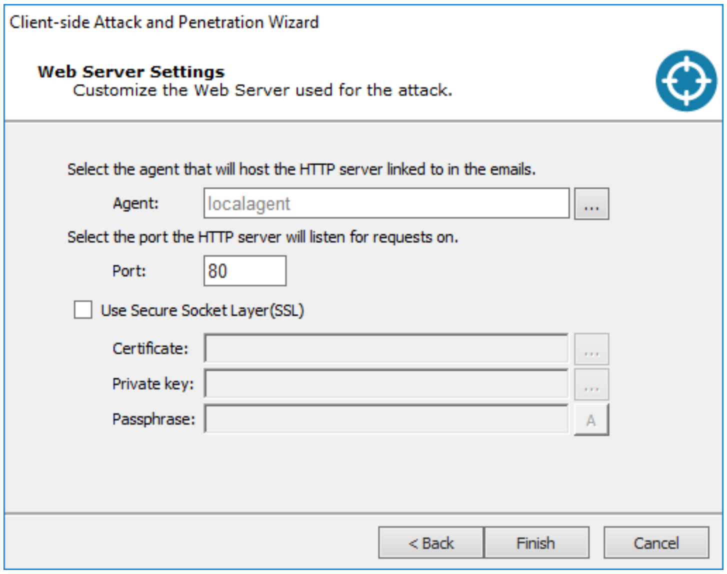
    The web server used in the attack can be run on any active agent that was previously deployed. This feature is convenient in situations where the potential targets might not be able to connect directly to the machine where Core Impact is running. When using the localagent (the default) for the web server, make sure the target workstations will be able to connect to it. If the computer running Core Impact is sitting behind a NAT device, you must activate and configure the NAT support in Network Options and configure your NAT device to redirect the appropriate ports back to the computer running Core Impact. Check to ensure that the Port value of the Web Server module (80 by default) is also redirected.

    Enter the Agent and URL components to be sent to attack target users:

    Agent: Select the agent that will host the HTTP server linked to in the emails.

    Port: Enter the port on which the HTTP server will listen.

    Check the **Use Secure Socket Layer** option and configure, if using.

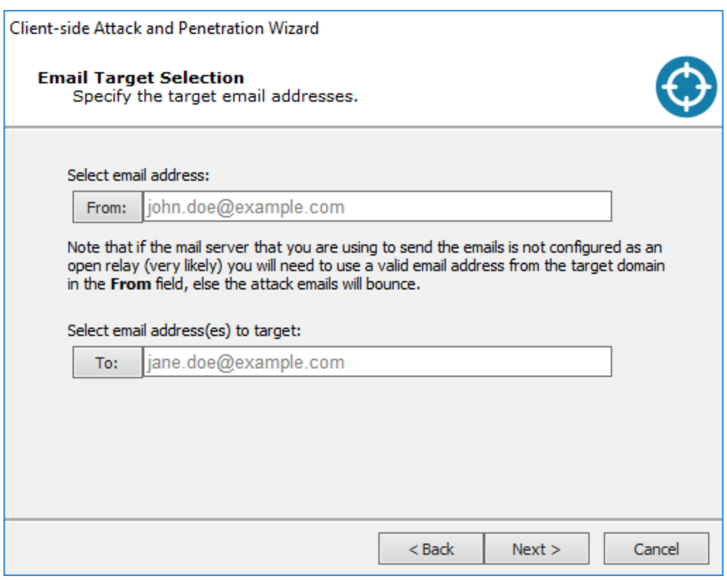


Multiple Exploit Attack

1. Email Target Selection

   Click the From: button to select an address that will appear in the header of the email being sent. Click the To: button to select recipient email addresses from the Entity Database's Client Side View.

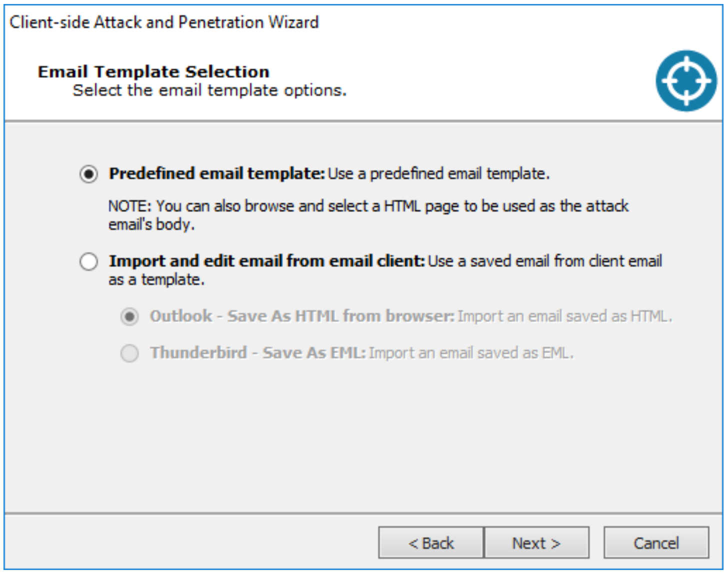
   If the desired addresses are not yet in the Client Side View, you can add them using the same procedure as if you were working in the Client Side View directly. Right-click in the view, then select New..., then select Email.



2. Email Template Selection

   Predefined email template: Core Impact includes several email templates that you can use to craft your Client-side attack.

   Import and edit email from email client: You can use an actual email (from either Outlook or Thunderbird) as the basis for a new template.



3. End User Experience

   Core Impact ships with several email templates that are located in `%ProgramData%\IMPACT\components\modules\classic\install\templates`. You can customize these templates to maximize the chance that your users will take action in the email. Click the ellipsis button to select a new template, or to modify the one that is selected.

   Email Subject: Enter the text you would like to appear as the subject of the email. This will be populated by default but you can over-write the text.

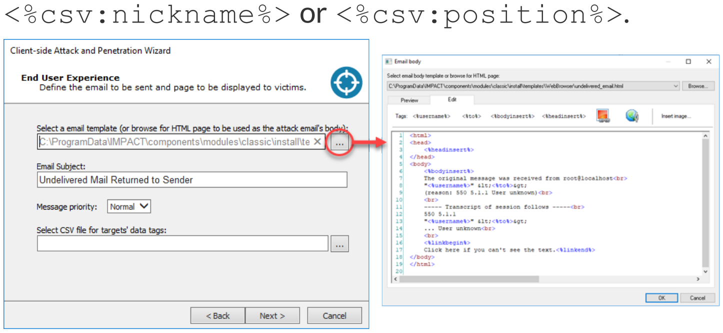
   Select CSV file for targets' data tags: By default, the email templates only include a handful of basic tags. If you'd like to add more tags to the email, you can import the tags and their values using a .csv file. The .csv file must be formatted in the following way:

   - Row 1: the names of the tag fields. **The first tag name must be 'target'**
   - Rows 2 - x: the values of the tags. **The 'target' value must be the email address of the target**

   Below is an example of how the .csv may appear:

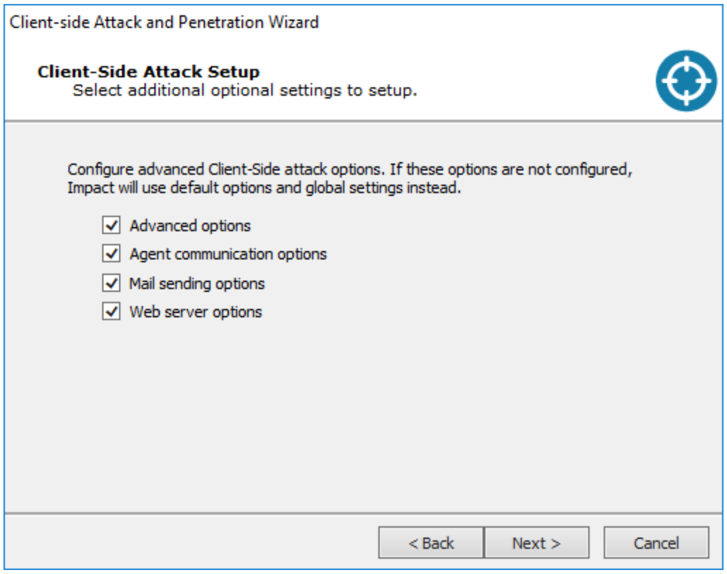
target,	**nickname,**	**company,**	**position**
john.doe@example.com,	Johnny,	JD Corp,	VP of Customer Support
az@core.sec,	Azzo,	JD Corp,	Secretary

   After importing the .csv file, you can edit the template and reference content from the .csv file by using the custom tag: `<%csv:[field_name]%>`. For example, `<%csv:nickname%>` or `<%csv:position%>`.



4. Client-side Attack Setup

   Select additional options to configure.



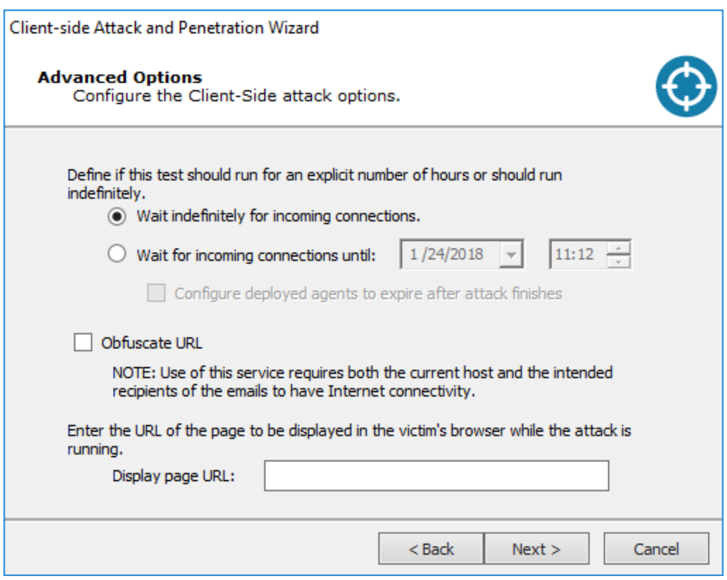
5. Advanced Options

   Wait indefinitely for incoming connections: Core Impact will wait indefinitely for connections from email recipients.

   Wait for incoming connections until: You can specify the date and time when Core Impact will stop accepting incoming connections from email recipients and, optionally, whether the deployed agents should expire following the completion of the attack.

   Optionally select a URL obfuscation service to mask the URL that will be used in the email.

   Enter a Display Page URL which represents the web page the attack target user will see while the attack is in progress.

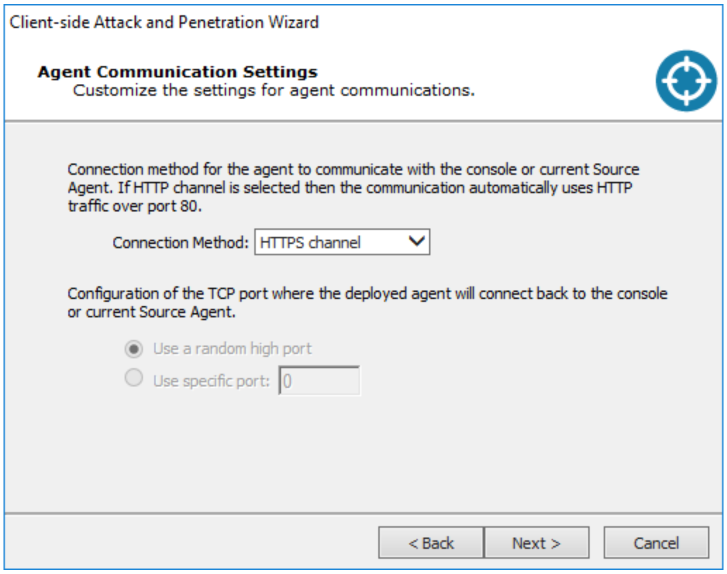


6. Agent Communication Settings

   Select a **Connection Method** as one of the following:

   - Connect from target
   - HTTP Channel
   - HTTPS Channel

   Optionally, enter an Incoming connection port for agents to connect to on the Core Impact console or the current Source Agent.

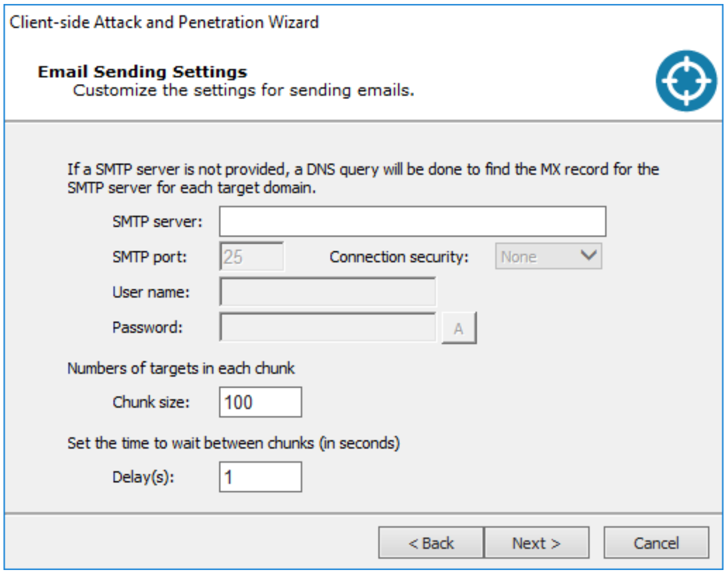
   

7. Email Sending Settings

   Enter the SMTP Server and SMTP Port for your email SMTP server. Optionally, choose **STARTTLS** as the **Connection security** and then enter the **Username** and **Password** for your SMTP server.

   If you want to limit the number of emails that are sent at one moment, set a Chunk Size. This value will determine the maximum number of emails that will be sent at one time.

   Enter the Delay (in seconds) that you want Core Impact to wait in between sending chunks of email in this attack.



8. Web Server Settings

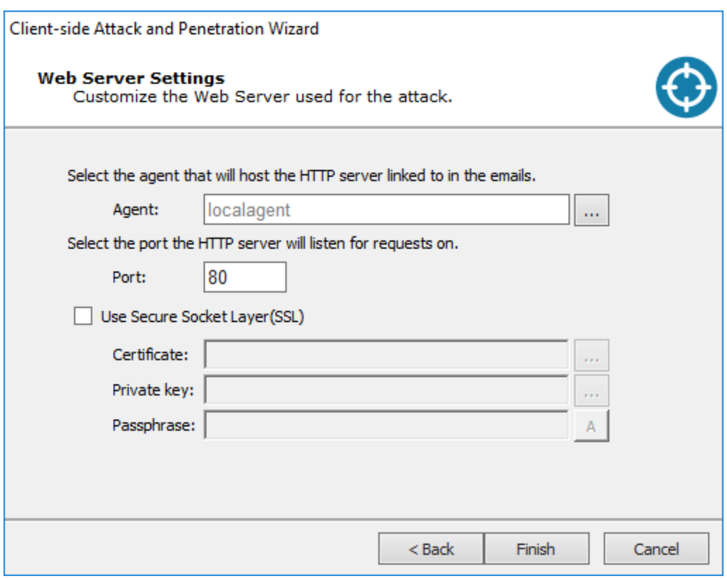
   The web server used in the attack can be run on any active agent that was previously deployed. This feature is convenient in situations where the potential targets might not be able to connect directly to the machine where Core Impact is running. When using the localagent (the default) for the web server, make sure the target workstations will be able to connect to it. If the computer running Core Impact is sitting behind a NAT device, you must activate and configure the NAT support in Network Options and configure your NAT device to redirect the appropriate ports back to the computer running Core Impact. Check to ensure that the Port value of the Web Server module (80 by default) is also redirected.

   Enter the Agent and URL components to be sent to attack target users:

   Agent: Select the agent that will host the HTTP server linked to in the emails.

   Port: Enter the port on which the HTTP server will listen.

   Check the **Use Secure Socket Layer** option and configure, if using.



When you have reached the end of your configurations, click the **Finish** button. The Wizard will close and the Client-side Attack and Penetration modules will begin. You will be able to see progress in the Executed Modules pane. Once completed, the Module Output pane will display the step's findings.

Settings for Trojan Attack

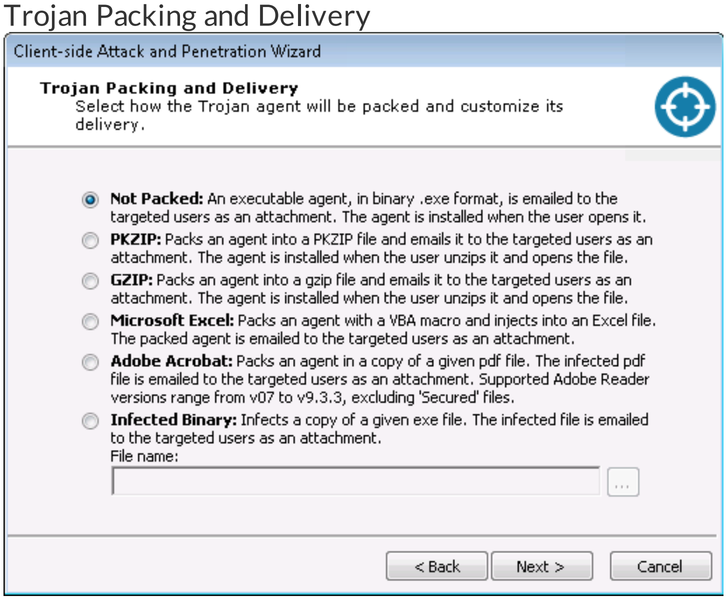
1. Select the Trojan Packing and Delivery:

   This step allows you to determine how the Trojan attack is packaged before it is emailed to your targets. Select from the following options:

   - Not Packed: Trojan will be sent as an executable file (.exe).
   - PKZIP: Trojan will be sent as a PKZIP compressed file.
   - GZIP: Trojan will be sent as a GZIP compressed file.
   - Microsoft Excel: This option will package the trojan inside of a Microsoft Excel macro. Browse to select your Excel file and then click the Next button to configure the Duration of Client-side Attack.
   - Adobe Acrobat: This option will package an agent into a .pdf file. Browse to select your .pdf file and then click the Next button to configure the Duration of Client-side Attack.
   - Infected binary:This option will package an agent into an .exe file. Browse to select your .exe file and then click the Next button to configure the Duration of Client-side Attack.

   Then click the Next button.

   Trojan Packing and Delivery

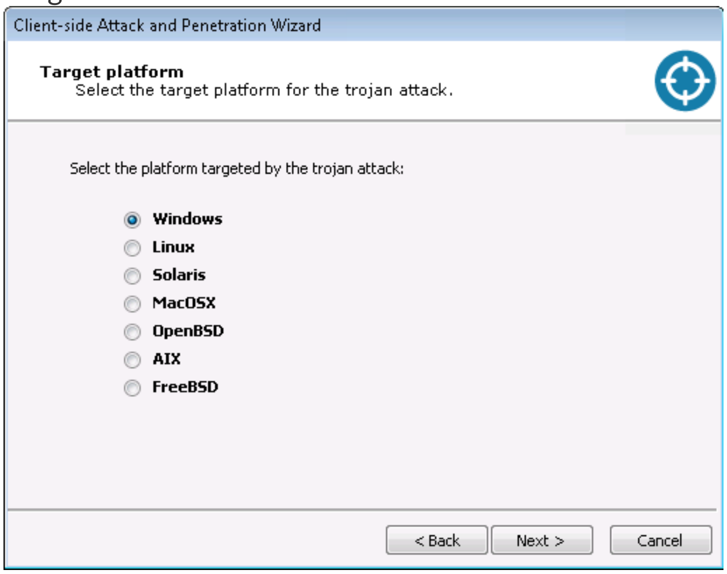
   

2. Select the Target Platform:

   For Trojan attacks, select the platform of the system where the Trojan is going to be received and launched.

   Then click the Next button and skip to the Duration of Client-side Attack section of this guide.

Target Platform



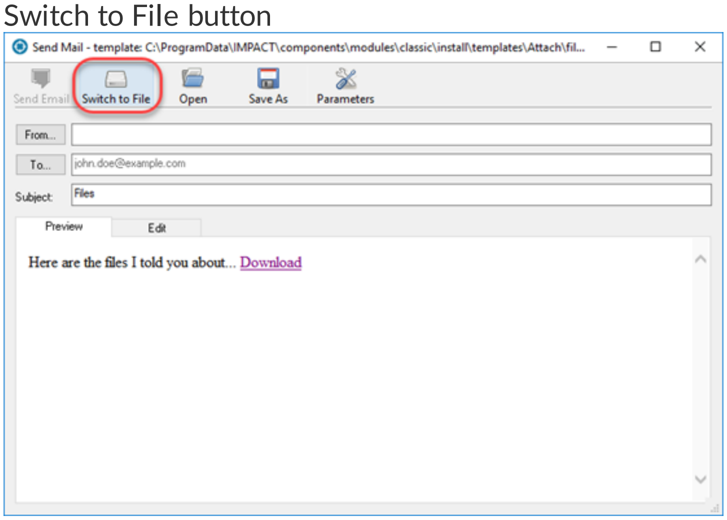
Advanced Client-Side Attack Options

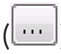
Decoupling the Attack Vector from the Exploit Mechanism

Client-side testing in Core Impact allow you to send email to target users and have their actions in the email trigger an exploit. You may, however, wish to deliver the attack with a means other than email (e.g. a file share server or site or via a USB stick). If so, you can accomplish this by launching the exploit module manually and changing the delivery method. To do this:

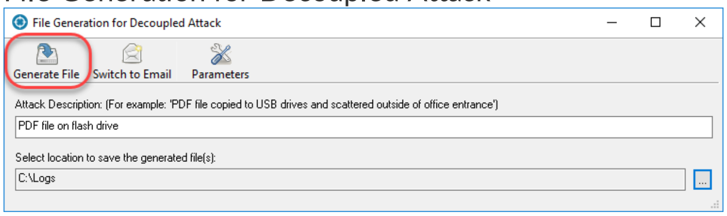
1. Click the Modules tab to access the Modules View (make sure the Client Side tab in the Entity view is active).
2. Expand the Exploits folder, then the Client Side folder.
3. Under the Client Side folder, double-click the exploit that you wish to launch. This will open the exploit's email template.
4. On the template window, click the Switch to File button.

Switch to File button



5. The form will change to the File Generation for Decoupled Attack form that contains 2 fields:
   - Attack Description: A text description of the attack file.
   - Select location to save ... : The path to the folder on your system where you want Core Impact to save the attack file. Use the ellipsis () button to navigate to the desired location.

   File Generation for Decoupled Attack

   Complete the 2 fields and press the Generate File button.
6. Core Impact will generate the attack file(s) and place it in the location you specified. You can then deliver the attack according to your test plan.

Agent Auto Injection

Client-side exploits automatically enable the deployed agent to escape to a different process rather than running in the one originally exploited. This is an important discriminator of Core Impact commercial-grade exploits because it ensures that the agent will continue working even after the end-user exits the client-side application or if the client-side application becomes unstable after exploitation.

For example, the IE IFRAME Buffer Overflow exploit takes advantage of a vulnerability in IE and deploys an agent into IE's iexplore.exe process. After exploitation, IE may become unresponsive, and it is very likely that the end-user driving it will restart it, eliminating the agent in the process. In this example, after the agent is successfully deployed the Module Log says:

escaping to process: c:\winnt\explorer.exe, pid: 1408

This log line indicates that the agent will attempt to escape to the explorer.exe process on PID 1408. After injecting a new agent into this process, the new agent will connect back to the console and the old agent will terminate. That is why you will see two new agents appear on the Entity View (one alive and one uninstalled) when using exploits with this functionality. To learn more about agent auto injection see Agent Auto Injection.

Agent Connection Parameters

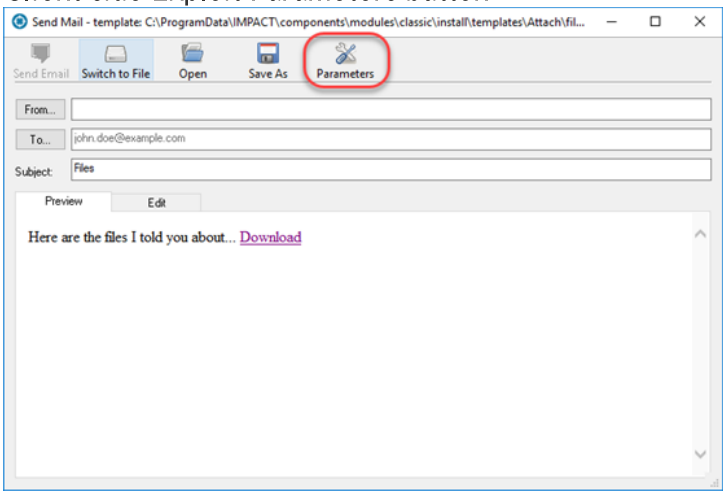
By default, when a Client-side exploit is executed, the new agent communicates back to the source agent (usually the localagent). If you want to use a different agent for this, you can do so by configuring and launching the exploit manually through the Modules View.

To do this:

1. Click the Modules tab to access the Modules View.
2. Expand the Exploits folder, then the Client Side folder.

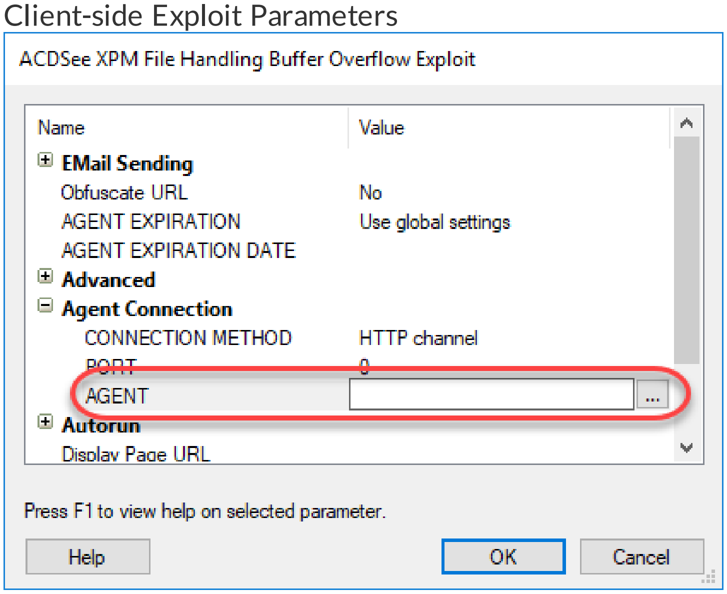
3. Under the Client Side folder, double-click the exploit that you wish to launch. This will open the exploit's email template.
4. On the template window, click the Parameters button.

   Client-side Exploit Parameters button

   The exploit's parameters form will open.
5. Expand the Agent Connection section.
6. To select a different agent for the exploit's agent to communicate back to, click in the Agent field and then click the ellipsis () button.

   Client-side Exploit Parameters

7. In the Select Agent Connection window, locate and place a check next to the desired agent, then click the OK button.
8. Continue to configure the client-side exploit and launch the attack.

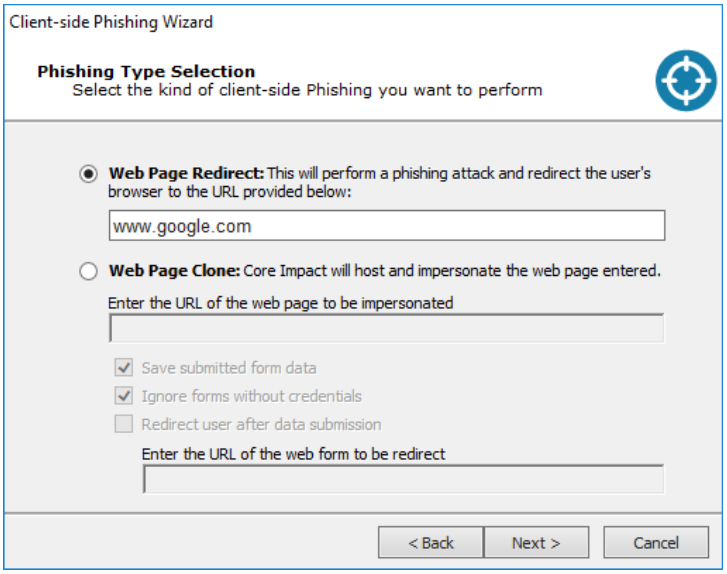
Client-Side Attack Phase: Phishing

Once the target email addresses have been identified and added to Core Impact's database, you can then use the Client-side Phishing RPT process to attack one or more end-users with a Phishing attack. This wizard guides you step-by-step through the process of selecting email address targets, selecting the Phishing type (browser redirect or web page clone), and selecting an email template to use for the Phishing attack. You can customize each email to increase the authenticity of the attack and the likelihood that an untrained end-user will fall for a social engineering attack. You can even import an actual email (from Outlook or Thunderbird) to create your Phishing email. If an end-user is fooled by a Phishing attack and clicks the link or enters sensitive information, Core Impact will record this information.

The Client-side Phishing wizard has many option paths that can vary depending on the settings you choose. To begin the Phishing attack:

1. Click Phishing and the Wizard will appear. Click the Next button.
2. On the Phishing Type Selection form, select which type of Phishing attack you want to run:
    - Web Page Redirect: This option will simulate the first component of a Phishing attack whereby users receive an email containing a link and, if users click the link, their email address will be flagged in the Client Side entity view. This test will illustrate how careful your user community is when receiving links via email. If selecting this test, enter the URL where the browser is redirected after the user clicks the link.
    - Web Page Clone: This option will simulate a complete Phishing attack whereby users receive an email containing a link and, if users click the link, they are taken to a false front web page and are prompted to enter sensitive data (username, password, etc). If selecting this test, enter the URL of the web form that you want Core Impact to impersonate. For example, if you want the test to impersonate a bank login screen, enter the URL for the actual site (e.g. http://www.samplebank.com). When Core Impact executes the test, it will navigate to and copy the framework of the actual page and host it as a landing spot for users who click the link within the test's email. The page that Core Impact hosts will look exactly like the real site.
        - If any users enter data into the test's web form, Core Impact will save the data they entered, illustrating how a real Phishing attack can capture sensitive data. Uncheck the Save submitted form data option if you do not want Core Impact to save this data.
        - Redirect user after data submission: If users enter data into the test's web form - falling victim to your simulated Phishing attack - you might want to redirect them to a web page that tells them of their error and reiterates the caution one must take when clicking links within emails. Check this option and enter a URL for the redirect page.

    Phishing Type Selection



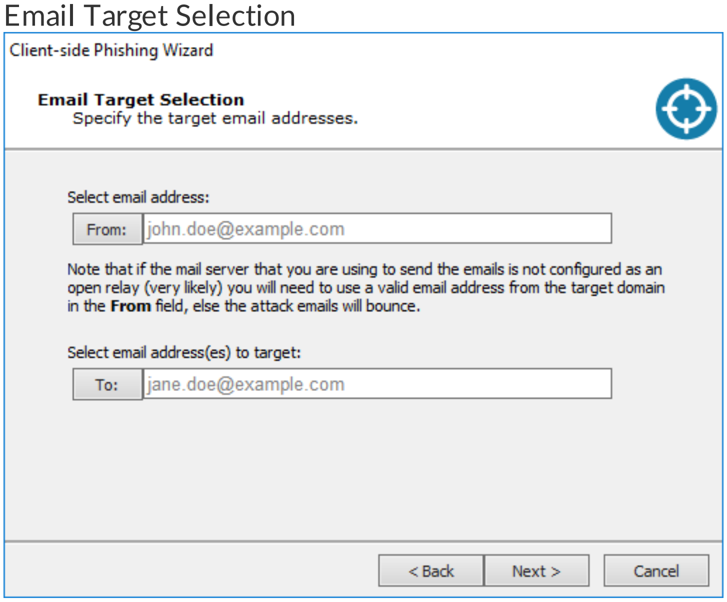
Click Next.

3. Click the From: button to select an address that will appear in the header of the email being sent. Click the To: button to select recipient email addresses from the Entity Database's Client Side View.

   If the desired addresses are not yet in the Client Side View, you can add them using the same procedure as if you were working in the Client Side View directly. Right-click in the view, then select New..., then select Email.

   Click the Next button.

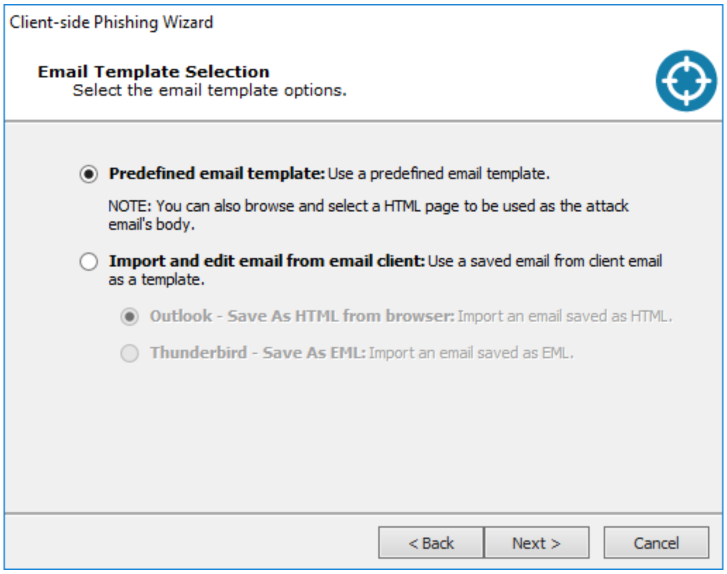
   Email Target Selection



4. Email Template Selection

   Predefined email template: Core Impact includes several email templates that you can use to craft your Client-side attack.

Import and edit email from email client: You can use an actual email (from either Outlook or Thunderbird) as the basis for a new template.



5. Complete the End User Experience form. Core Impact ships with several email templates that are located in `%ProgramData%\IMPACT\components\modules\classic\install\templates`. You can customize these templates to maximize the chance that your users will take action in the email. Click the Change button to select a new template, or to modify the one that is selected.
6. **Email Subject**: Enter the text you would like to appear as the subject of the email. This will be populated by default but you can over-write the text.

   Select CSV file for targets' data tags: By default, the email templates only include a handful of basic tags. If you'd like to add more tags to the email, you can import the tags and their values using a .csv file. The .csv file must be formatted in the following way:

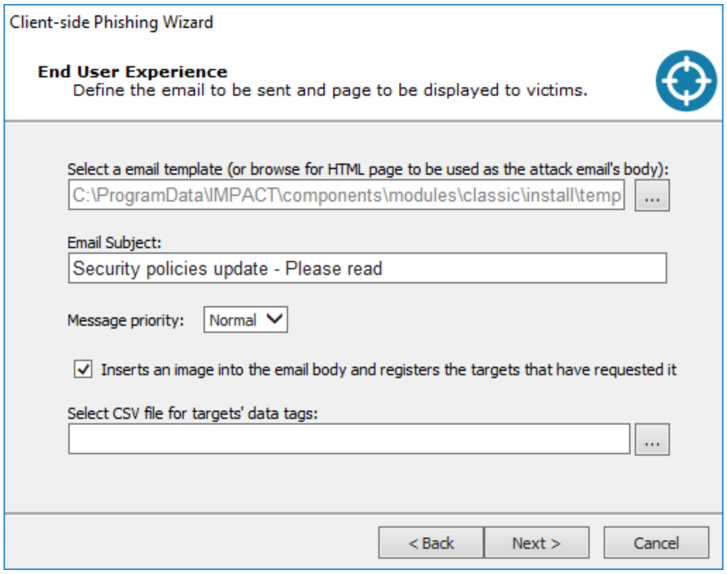
   - Row 1: the names of the tag fields. **The first tag name must be 'target'**
   - Rows 2 - x: the values of the tags. **The 'target' value must be the email address of the target**

   Below is an example of how the .csv may appear:

target,	**nickname,**	**company,**	**position**
john.doe@example.com,	Johnny,	JD Corp,	VP of Customer Support
az@core.sec,	Azzo,	JD Corp,	Secretary

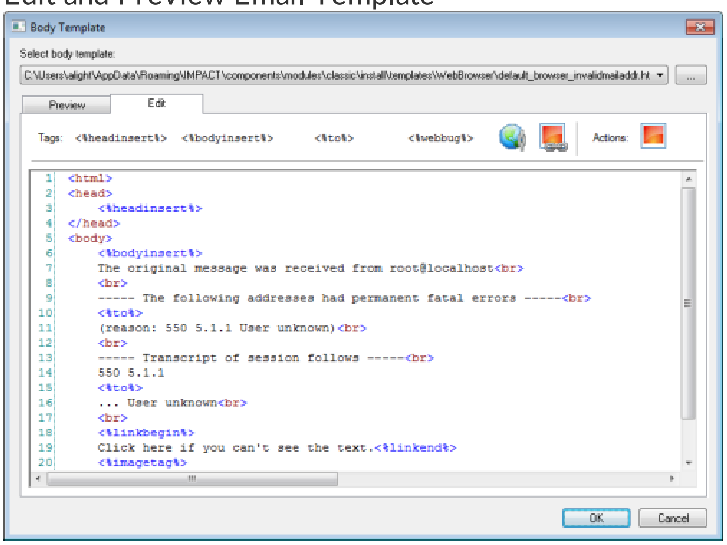
   After importing the .csv file, you can edit the template and reference content from the .csv file by using the custom tag: `<%csv:[field_name]%>`. For example, `<%csv:nickname%>` or `<%csv:position%>`.

   End User Experience



- The template form has Preview and Edit tabs. Make any changes on the Edit tab and use the Preview tab to see how your email will appear to recipients.

  Edit and Preview Email Template



  Within the email template file, you can include several tags that may bring further authenticity to the email:

  - <%to%> target email address
  - <%from%> source email address (spoofed)
  - <%subject%> Subject entered in the email
  - <%linkbegin%> This text will appear linked to the attack url <%linkend%>
  - <%username%> Replaces the name of the target

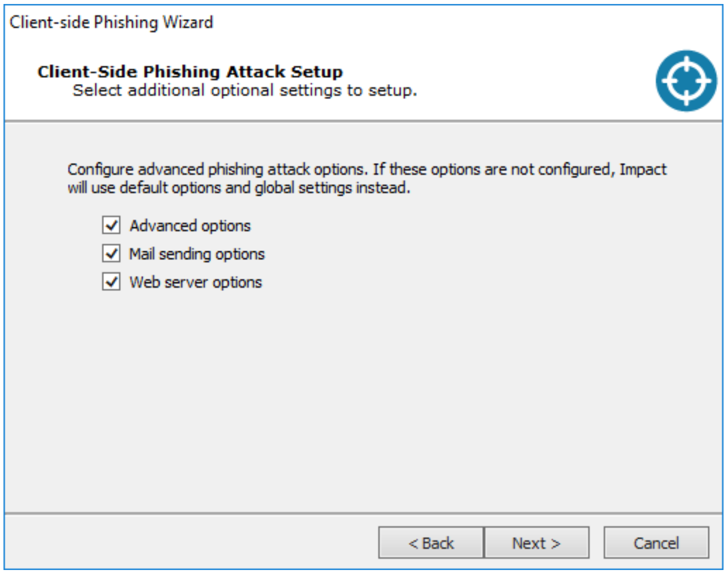
- <%imagetag%> This tag will render to a 1 pixel image. If the email recipient allows their email client to display external elements, this image will be requested of the Core Impact web server. Core Impact will then record that the email has been viewed.

Click the OK button when your template is complete.

Click the Next button.

7. Client-side Phishing Attack Setup

   Select additional options to configure.



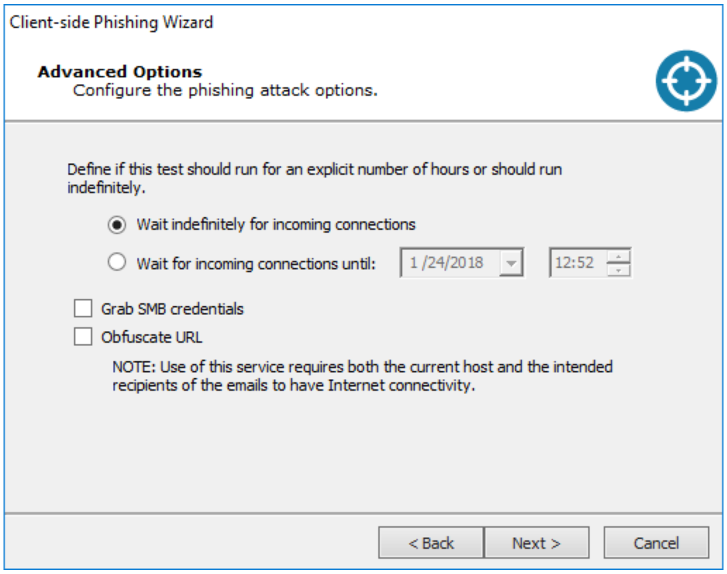
8. Advanced Options

   Wait indefinitely for incoming connections: Core Impact will wait indefinitely for connections from email recipients.

   Wait for incoming connections until: You can specify the date and time when Core Impact will stop accepting incoming connections from email recipients and, optionally, whether the deployed agents should expire following the completion of the attack.

   Grab SMB credentials: With this option checked, Core Impact will attempt to force the target to authenticate to the web server with its encrypted SMB credentials (NTLM challenge/response). If successful, Core Impact operators can export these challenge/responses in John the Ripper format. Check the **SMB Encrypted Credentials Exporter** module for more information.

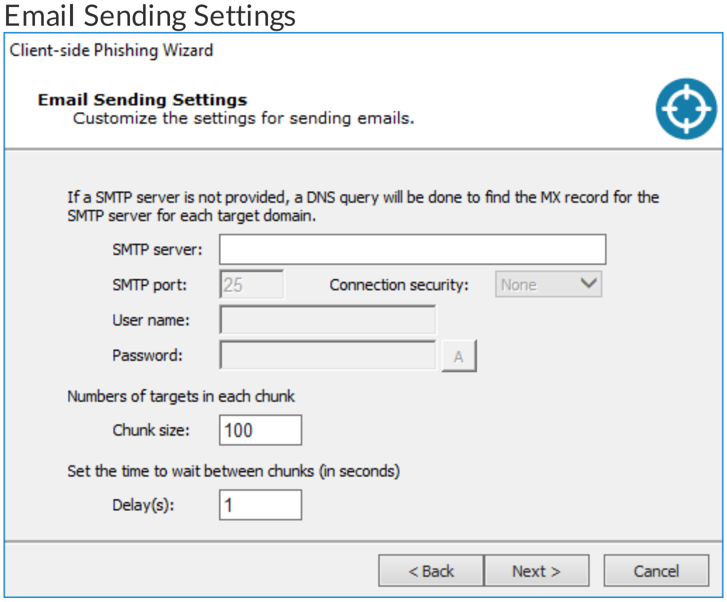
   Optionally select a URL obfuscation service to mask the URL that will be used in the email.



9. On the Email Sending Settings form:
    a. Enter the SMTP Server and SMTP Port for your email SMTP server. Optionally, choose **STARTTLS** as the **Connection security** and then enter the **Username** and **Password** for your SMTP server.
    b. If you want to limit the number of emails that are sent at one moment, set a Chunk Size. This value will determine the maximum number of emails that will be sent at one time.
    c. Enter the Delay (in seconds) that you want Core Impact to wait in between sending chunks of email in this attack.

    Then click the Next button.

    Email Sending Settings



10. Web Server Settings

    The web server used in the attack can be run on any active agent that was previously deployed. This feature is convenient in situations where the potential targets might not be able to connect directly to the machine where Core Impact is running. When using the localagent (the default) for the web server, make sure the target workstations will be able to connect to it. If the computer running Core Impact is sitting behind a NAT device, you must activate and configure the NAT support in Network Options and configure your NAT device to redirect the appropriate ports back to the computer running Core Impact. Check to ensure that the Port value of the Web Server module (80 by default) is also redirected.

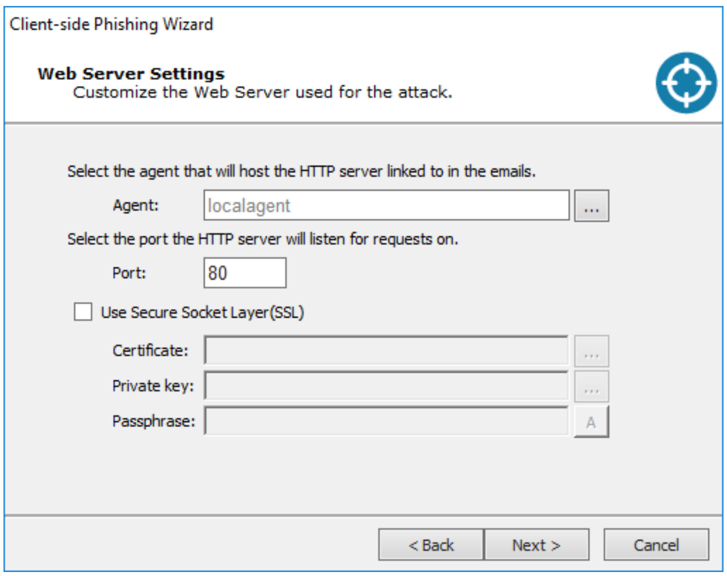
    Enter the Agent and URL components to be sent to attack target users:

    Agent: Select the agent that will host the HTTP server linked to in the emails.

    Port: Enter the port on which the HTTP server will listen.

    Check the **Use Secure Socket Layer** option and configure, if using.

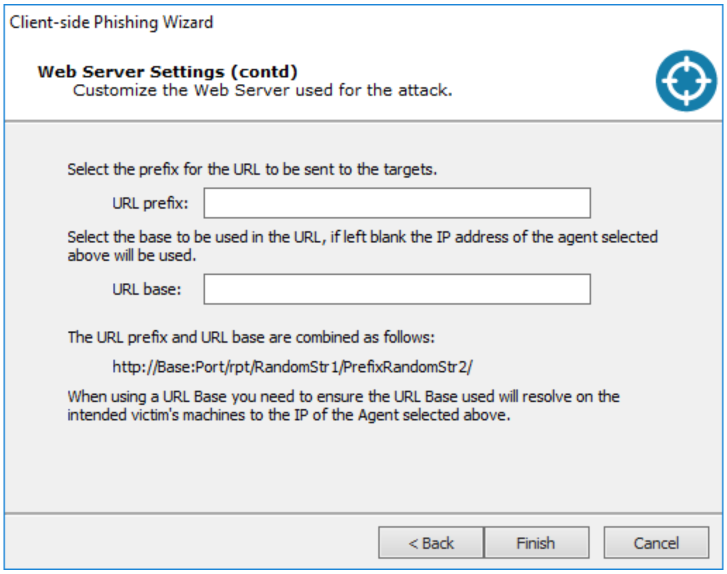
    Then click the Next button.

11. Web Server Settings (contd)

    URL Prefix: Enter the prefix for the URL to be sent to target users.

    URL Base: Enter the URL base.



When you have reached the end of your configurations, click the **Finish** button. The Wizard will close and the Client-side Phishing modules will begin. You will be able to see progress in the Executed Modules pane. Once completed, the Module Output pane will display the test's findings.

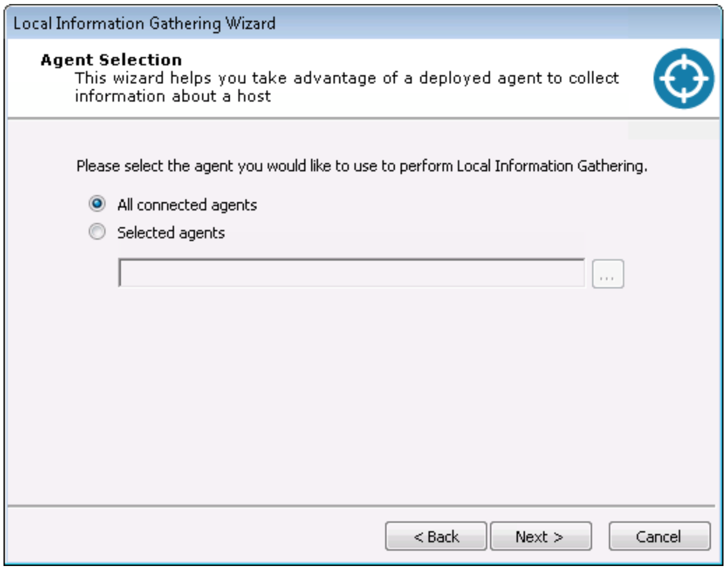
Local Information Gathering

The Local Information Gathering RPT step collects information about hosts that have an agent deployed on them. This macro takes advantage of the deployed agent to interact with the compromised host and gather information such as precise OS information, agent privileges, users and installed applications.

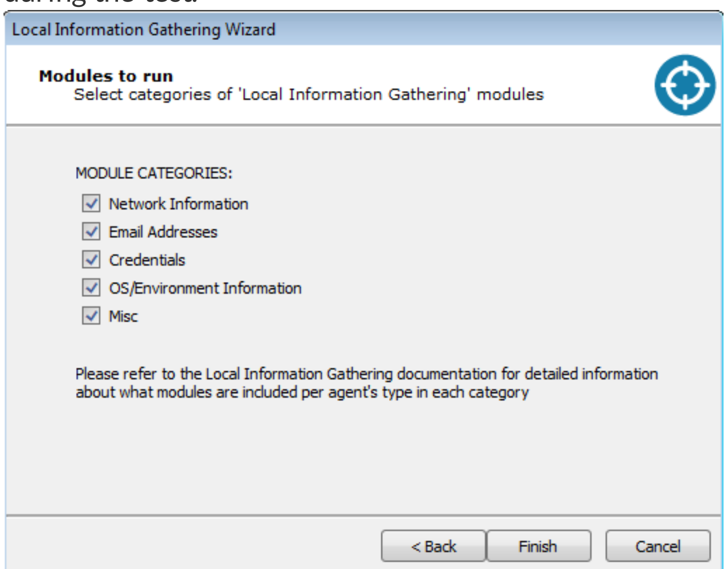
To run the Local Information Gathering step, click on the step and click Next when the Wizard appears.

1. By default, information will be gathered on all connected agents. To select one or more specific agents, click the Selected agents radio button and then click the ellipsis (...) button next to the Selected agents field. Follow the prompts to select your desired agents.

   Agent selection Dialog Box



2. On the Modules to run step, select the Module Categories that you want to execute during the test.



   To learn which modules are run in each category, refer to the Core Impact Module Reference guide or view the Quick Information pane while the Local Information Gathering module is selected in your Core Impact workspace.

3. Click Finish. The module will run and information will be displayed on the Module Output and Module Log panels of the Console.

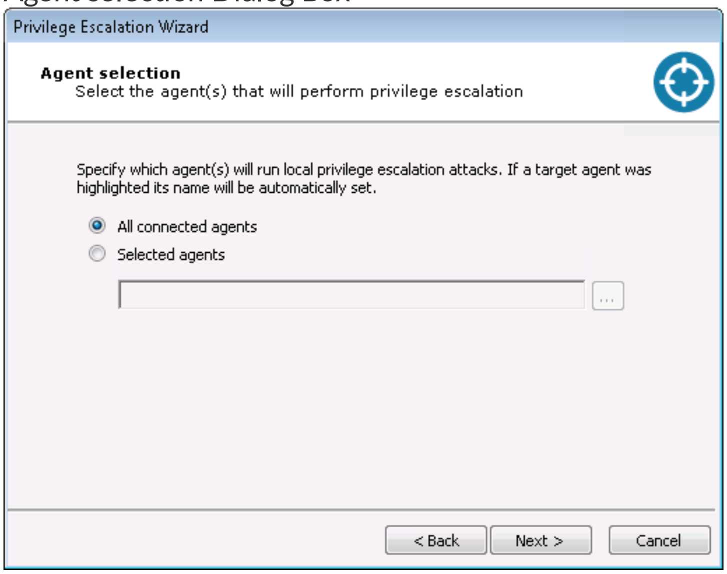
Privilege Escalation

The Privilege Escalation RPT step executes local privilege escalation attacks on connected agents not running as the super user or the administrator. This macro automatically selects and executes exploits from the Exploits/Local module folder and some modules from the Exploits/Tools folder, such as Revert To Self or Chroot Breaker.

After successfully running Privilege Escalation, you may want to run the Local Information Gathering step to obtain more information from the compromised hosts. If an in-depth penetration test is being performed (and depending on the target network's topology), it is possible to change the current source agent and cycle back to the Information Gathering step. Refer to [Set as Source](#) for information regarding the source agent. All the initial 4 steps will execute from any Core Impact agent.

To run the Privilege Escalation RPT step, click on the step and click Next when the Wizard appears.

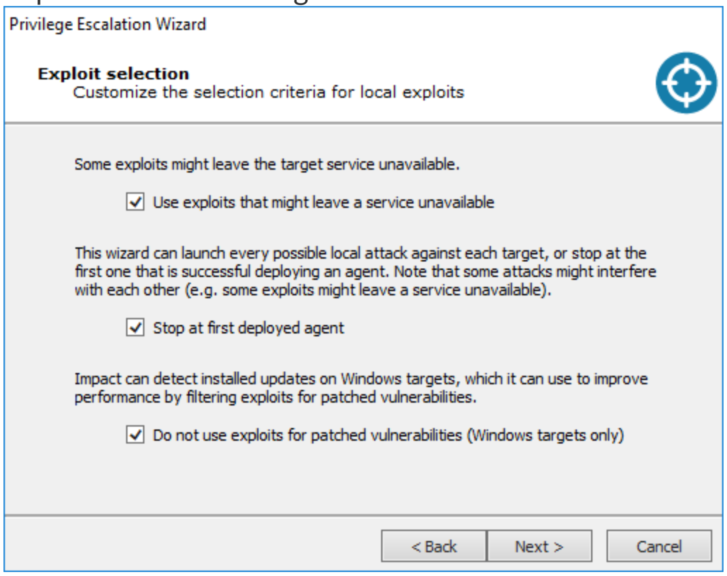
Agent selection Dialog Box



1. Specify which agents will run the Privilege Escalation macro. By default, all currently connected agents will perform this step (All agents will perform a check to see if they are already running SYSTEM or root-level access. If they are, they will not attempt to perform Privilege Escalation.) An agent name will be automatically set if the macro was dropped over a specific agent. Uncheck the All connected agents check-box if you wish to only target that agent. To choose a single agent other than the one displayed, or to select multiple agents on which to escalate privileges, uncheck the All connected agents check-box and click the ellipsis () button next to the Only on agent field. Follow the prompts to select your desired agents.

2. Click Next.

   Exploit selection Dialog Box

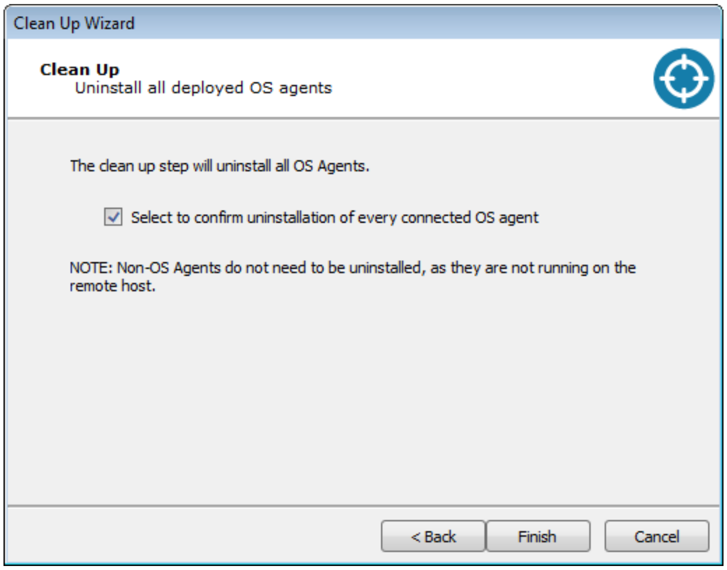
   

3. For each target host, this macro selects relevant attacks from the Exploits/Local Module folder based on the target's platform. The default selections on the Exploit selection screen are intended to minimize the risk of exploits leaving services unavailable. For a more aggressive attack strategy, check or uncheck the appropriate check-boxes.
4. Click Finish. The module will run and information will be displayed on the Module Output and Module Log panels.

Clean Up

The Clean Up step automatically uninstalls every currently-connected agent. Agents are uninstalled in post order to support complex agent chains (see Agent Chaining). Check the Select to confirm uninstallation of every connected OS agent check-box and then click Finish to clean up all deployed agents.

Clean Up Dialog Box



Web Applications RPT

With software being increasingly deployed over the Internet, the threat of attacks specific to web applications is a growing concern. Core Impact's WebApps RPT lets users test the vulnerability of their web-based applications or mobile application backends and gives them an opportunity to address any vulnerabilities. The Web Applications RPT tests the following attack types:

- SQL Injection attacks occur when SQL queries are passed through the user interface of a web application and are executed in the database. Core Impact also tests for Blind SQL Injection attacks which can pose an additional threat to web applications.
- PHP Remote File Inclusion vulnerabilities allow malicious users to execute their own PHP code on the vulnerable web application.
- PHP Local File Inclusion vulnerabilities
- Cross Site Scripting (XSS) occurs when attackers are able to inject arbitrary code into vulnerable web servers. The malicious code is ultimately executed by the web browsers of unsuspecting users of the vulnerable web application.
- Hidden Web Pages: It is not uncommon for web applications to contain active pages that are not directly linked to from within the application. These tend to be "secret" pages for use by application administrators who know their direct URLs. Core Impact will attempt to locate these pages and add them to your scenario for further vulnerability assessment.
- WebDav implementations that are configured poorly can be exploited and used to change, remove, or replace important files on a web server. Core Impact will alert you if this capability exists.
- OS Command Injection vulnerabilities occur if the application takes user input as a system-level command.
- Sensitive Information vulnerabilities are those where an application does not encrypt data stored in its database.

- Weak Credentials vulnerabilities exist when an application's authentication functions have not been implemented with strong passwords. Applications with weak credentials are susceptible to dictionary attacks.
- Weak SSL Ciphers: If a web application supports weak SSL ciphers, it may be vulnerable to traffic interception and modification.

WebApps Information Gathering

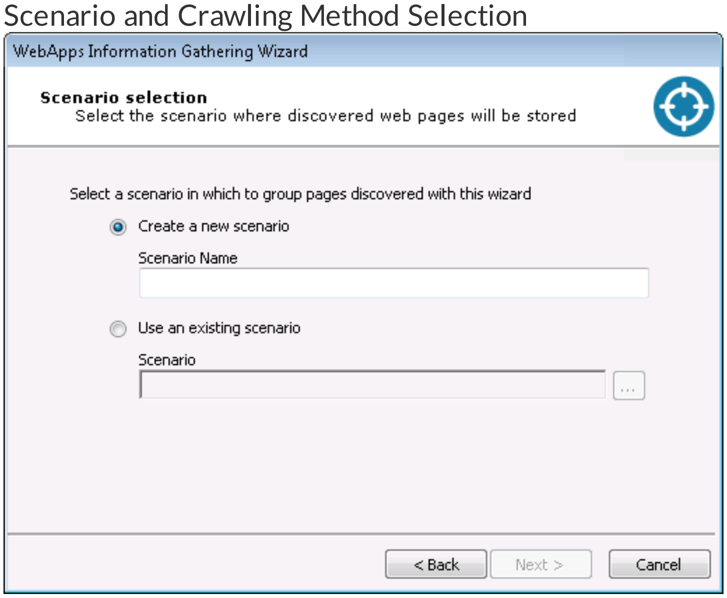
The WebApps Information Gathering step scans the domain of a known web-based application and identifies pages and/or web services that may be vulnerable to potential attacks. To begin Information Gathering:

1. Click the Web View tab of the Entity View. The WebApps RPT steps will appear in the RPT Panel.
2. Click WebApps Information Gathering and the Wizard will commence. Click the Next button.
3. The WebApps RPT applies to Scenarios that you define.

   A Scenario serves as a context in which you can test a web application and it will provide clarity to the results of the WebApps modules. You can use multiple scenarios to test the same web application with varying settings, or segment a web application and test each part independently in a different scenario.

   If you are creating a new Scenario, enter its name in the Scenario Name field. If you wish to Use an existing scenario, click the appropriate radio button and click the ellipsis (...) button to select the desired Scenario. For this option to work, a scenario must already exist in the Web View.

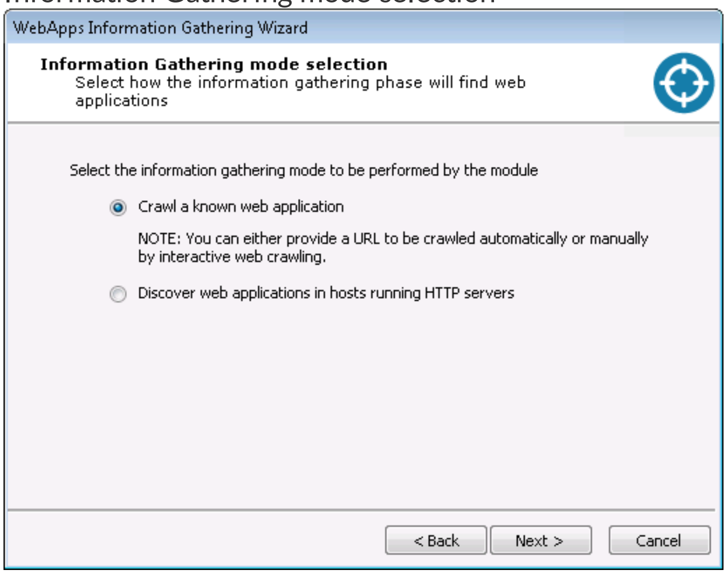
   Scenario and Crawling Method Selection

   Click the Next button.

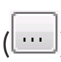
4. On the Mode selection step of the wizard, select from the following options:
   - Crawl a known web application: With this option, Core Impact will crawl a web application whose address you provide and attempt to locate pages that it can subsequently test for vulnerabilities. If you select this option, see Crawling Mode Selection.
   - Discover web applications in hosts running HTTP servers: If you already have hosts in your Network Entity tab, some of them may have HTTP servers running which can be an indicator that they are hosting web applications. This option will cause Core Impact to evaluate those hosts and attempt to identify web pages. If you select this option, see Discover WebApps in Hosts.

   Information Gathering mode selection

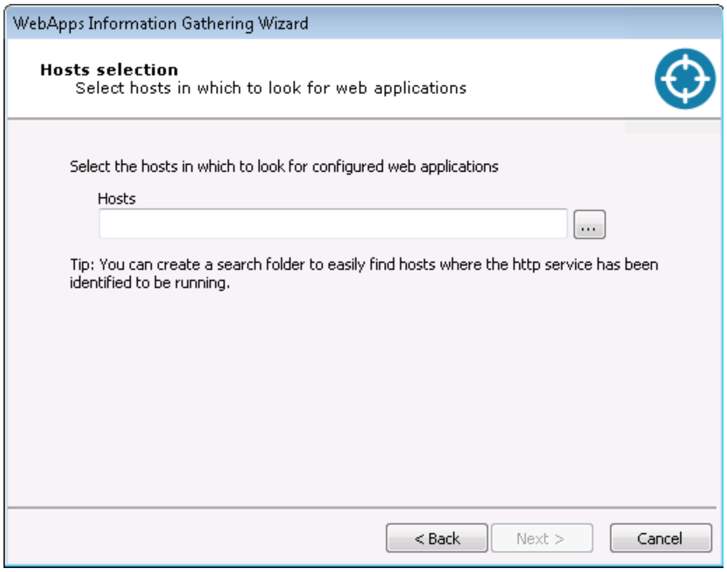
   

   Click the Next button.

Discover WebApps in Hosts

1. On the Hosts selection step, click the ellipsis () button and select the host(s) that you want Core Impact to scan for Web Applications.

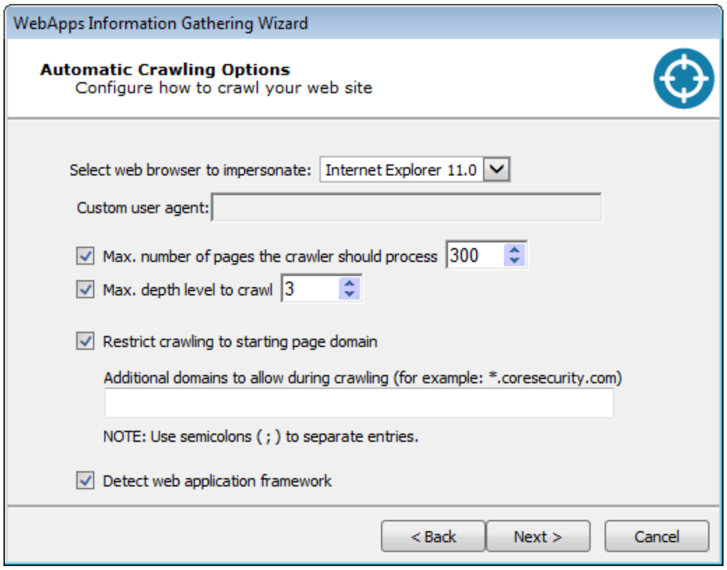
   Hosts selection



Click the Next button.

2. Set the Automatic web site crawling configuration options:
    - Use the Select a browser to impersonate drop-down menu to determine which browser type and version the WebApps RPT should run the test as.
    - If you want to set a Max. number of pages the crawler should process, check the box and enter a numeric value.
    - Select the Max. depth level to crawl. This value dictates how many links deep into the web application the RPT will go. Keep in mind that, even with a low value in this field, there could be many links that the crawler will follow.
    - If you want the RPT to not venture outside of the domain you entered in step 1, check the Restrict crawling to starting page domain check-box. If you check this option, you can then enter specific domains other than the starting page domain that are open to the RPT.
    - Check Detect web server and application framework if you want the RPT to try and discover structural details about the web application.

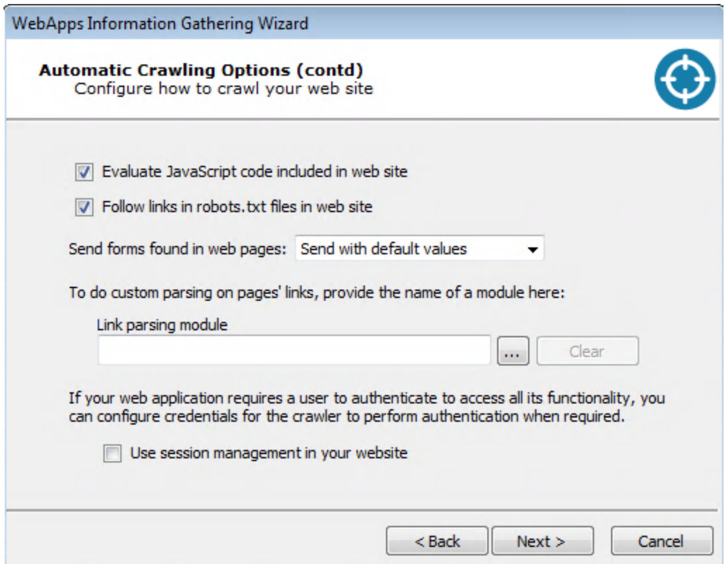
Automatic Web Crawling Options



Click the Next button.

3. Set the Automatic web site crawling configuration options:
   - Check Evaluate JavaScript code included in web site if you want Core Impact to evaluate JavaScript code for known vulnerabilities.
   - Check Follow links in robots.txt files in web site if you would like Core Impact to try and locate a `robots.txt` file that may exist in the root of the target web application's web server. Oftentimes, web application administrators will use a `robots.txt` file to instruct search engines and other web robots to not search certain pages. If the Core Impact web crawler locates the `robots.txt` file, it can follow the links listed in the file and try to locate further vulnerabilities. Note that this setting will respect the Restrict crawling to starting page domain option.
   - The Send forms found in web pages option will instruct the crawler to try and submit any forms that it finds in the web application. With this option, pages that are available only after the form is submitted can be accessed and lead to potential vulnerabilities. The crawler can Send with default values - use whatever default values are assigned to the field(s) or it can Send with auto-generated data.

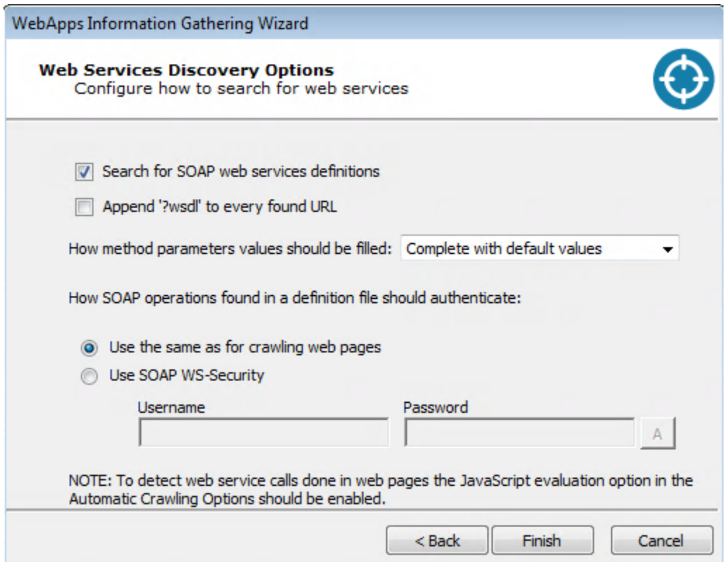
   Automatic Crawling Options (contd)



Click the Next button.

4. On the **Web Services Discovery Options** form, you can opt for the RPT to look for any SOAP-based web services. Select from the available parameters. If any web services vulnerabilities are identified, they will be listed in the Web view of the entity database.
   - **Search for SOAP web services definitions**: Check this option if you want the RPT to look SOAP-based web services. Core Impact will look for links to .wsdl files. If any are found, they will be parsed and Core Impact will capture the details of the target web service in the entity database.
   - **Append '?wsdl' to every found URL**: It is possible that a web application will use a SOAP-based web service but not have an explicit link to a .wsdl file within its pages. Select this option if you want Core Impact to automatically append any found link with the '?wsdl' extension. Keep in mind that this will double all of the requests made by Core Impact and will cause the Information Gathering step to run longer.
   - **How method parameters values should be filled**: Select an option for determining values that the target web service may request.
     - **Complete with default values**: For any functions provided by the web service, Core Impact will select the **single** most likely value to satisfy each function.
     - **Complete with autogenerated data**: For any functions provided by the web service, Core Impact will select **multiple** likely values for each function.
   - Define the authentication method for SOAP operations:
     - **Use the same as for crawling web pages**: Use this option if the SOAP operations will not require authentication, or if authentication is required but you have already entered it for use in Web Crawling.
     - **Use SOAP WS-Security**: Manually enter a Username and Password for Core Impact to use to satisfy the SOAP WS-Security.

   Web Services Discovery Options



Core Impact can detect SOAP-based or RESTful web services. Because SOAP-based web services always have a .wsdl file, these can be detected using Automatic or Interactive web crawling. RESTful web services employ no such definition file so, in order to detect RESTful web services, you must use Interactive web crawling so that Core Impact can try and detect JSON type calls in the web traffic.

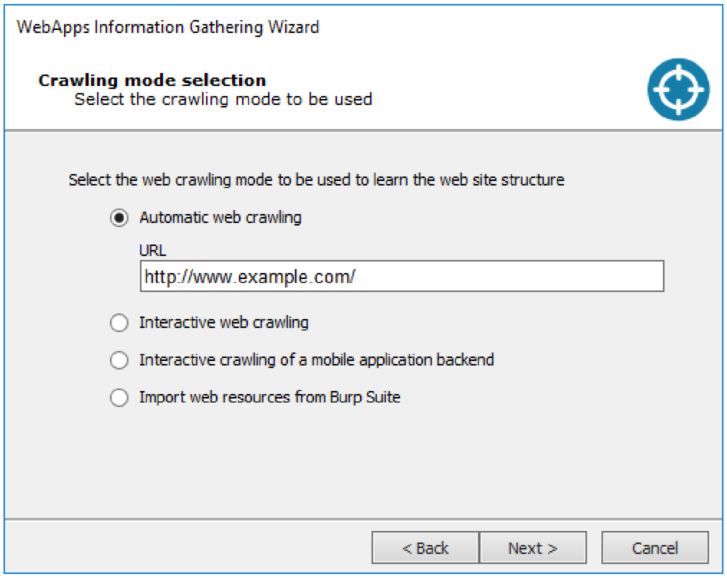
5. Click the Finish button. The RPT will begin and you can monitor its progress in the Executed Modules pane.

Crawling Mode selection

The Automatic and Interactive web crawling methods have different configurations options. Skip to the appropriate section of this document:

- Automatic Web Crawling: Enter the URL where the RPT should begin scanning for pages then click the Next button. See Automatic Web Crawling for additional steps and configurations.
- Interactive Web Crawling: Navigate the target web site and Core Impact will capture all visited web pages. See Interactive Web Crawling.
- **Interactive crawling of a mobile application backend**: See Interactive Crawling of a Mobile Application Backend.
- **Import web resources from Burp Suite**: Using this option, users can import the output file from Burp Suite Professional. On the following page, browse to and locate the .xml file and click **Finish** to start the wizard.

Crawling mode selection

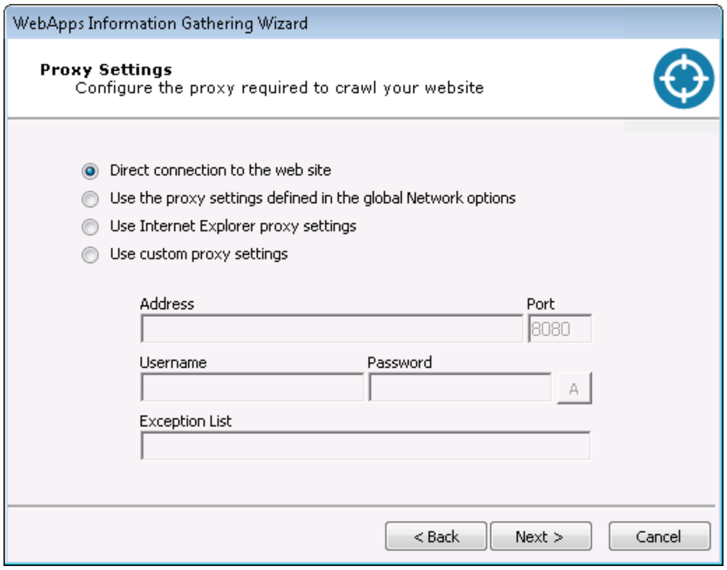


Automatic Web Crawling

With Automatic web crawling, the RPT scans for web pages. Any pages that are found are then displayed in the Web View tab of the entity view.

1. If a proxy server is needed to access the web application, select the appropriate proxy option and, if necessary, enter the server details.
    - Direct connection to the Internet will connect to the Internet without connecting to a proxy server.
    - Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.
    - Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.
    - Use custom proxy settings will follow the proxy settings in the fields just below.

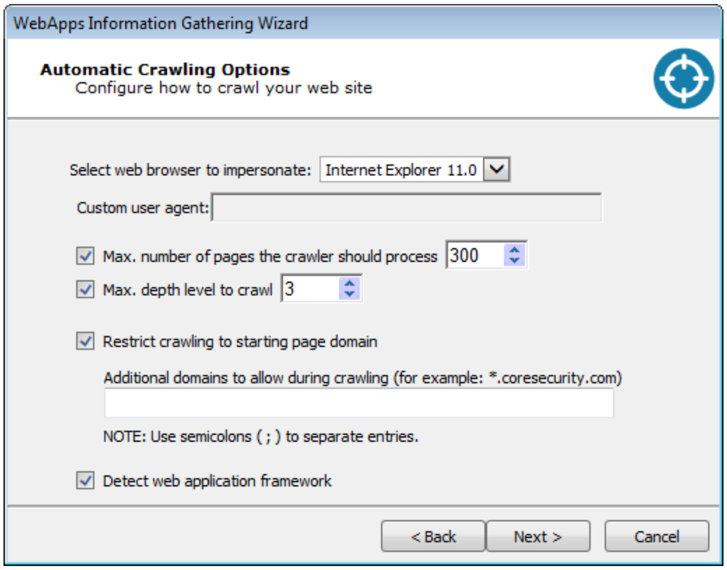
    Proxy Settings



Click the Next button.

2. Set the Automatic web site crawling configuration options:
   - Use the Select a browser to impersonate drop-down menu to determine which browser type and version the WebApps RPT should run the test as.
   - If you want to set a Max. number of pages the crawler should process, check the box and enter a numeric value.
   - Select the Max. depth level to crawl. This value dictates how many links deep into the web application the RPT will go. Keep in mind that, even with a low value in this field, there could be many links that the crawler will follow.
   - If you want the RPT to not venture outside of the domain you entered in step 1, check the Restrict crawling to starting page domain check-box. If you check this option, you can then enter specific domains other than the starting page domain that are open to the RPT.
   - Check Detect web server and application framework if you want the RPT to try and discover structural details about the web application.

   Automatic Web Crawling Options

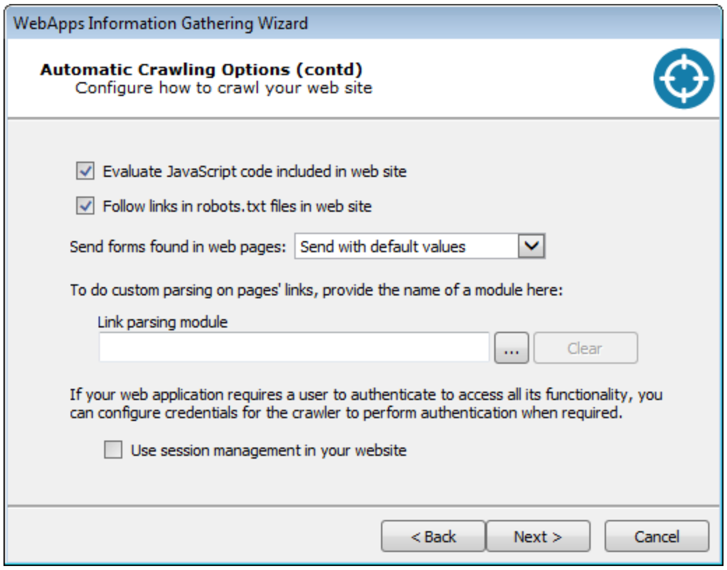


Click the Next button.

3. Set additional Automatic web site crawling options:
   - Check Evaluate JavaScript code included in web site if you want Core Impact to evaluate JavaScript code for known vulnerabilities.
   - Check Follow links in robots.txt files in web site if you would like Core Impact to try and locate a `robots.txt` file that may exist in the root of the target web application's web server. Oftentimes, web application administrators will use a `robots.txt` file to instruct search engines and other web robots to not search certain pages. If the Core Impact web crawler locates the `robots.txt` file, it can follow the links listed in the file and try to locate further vulnerabilities. Note that this setting will respect the Restrict crawling to starting page domain option.
   - The Send forms found in web pages option will instruct the crawler to try and submit any forms that it finds in the web application. With this option, pages that are available only after the form is submitted can be accessed and lead to potential vulnerabilities. The crawler can Send with default values - use whatever default values are assigned to the field(s) or it can Send with auto-generated data.
   - Use the Link parsing module field to assign a module to handle dynamic hyperlinks within the web application. This is an advanced feature that requires users to create the custom module.

     Please contact Core Security's Customer Support (see Contact Core Security) for a sample plugin module.
   - If you want the web crawler to log in to the web application, check the Use session management in your website check-box. Checking this box will add 2 additional steps to the Wizard.

Automatic Web Crawling Options (contd)

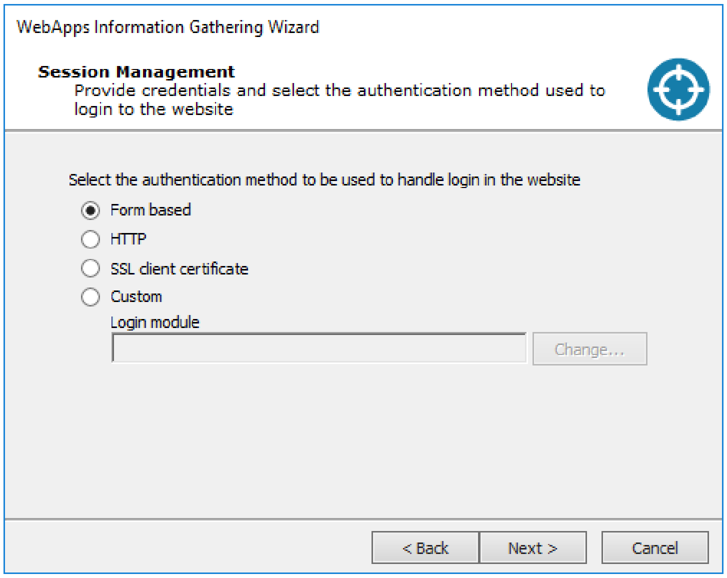


Click the Next button.

4. If you opted in step the above form to have the web crawler log in to the web application (Session Management):
   - Form based: Use this type if the web application has a login page that contains username and password fields. You will be asked in the next page of the wizard to enter a username and password or to select an existing Identity.
   - HTTP: Use this type if the web application presents users with integrated Windows authentication (Kerberos or NTLM) before allowing them to view any pages from the application.
   - SSL client certificate: Use this option to provide a certificate to the Information Gathering step (jump to Session Management - SSL).
   - Custom: Use this type if the web application has a login page but does not use standard login fields (e.g. username and password). You will need to create a custom module that will match your web application's authentication requirements. The Login on Forms module is provided as a template for use when developing your own custom module (see Custom Modules).
   - If applicable, enter the Username and Password that should be used to authenticate against the web site.
   - **Recorded login steps**: If you have recorded the login steps for your target web application, select this option and the web crawler will use that recording to log into the site. Core Impact will prompt you if it requires any manually input data (CAPTCHA, etc) when it uses the recorded login steps. See Recording Login Steps for information on recording login steps.

   Click the Next button.

   Session Management

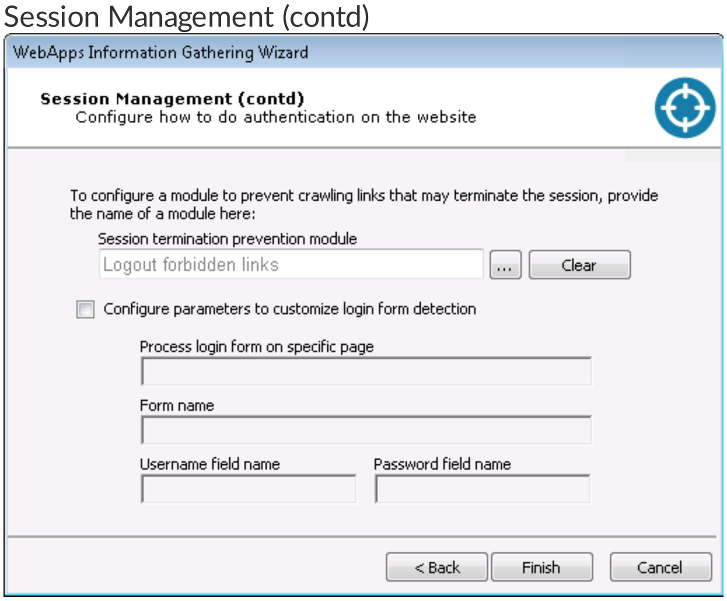


5. Continue with Session Management options by selecting a Core Impact module that will prevent the RPT from executing links that might terminate the session.

   You can extend Core Impact's functionality by writing your own custom modules. For more information about writing custom modules, please contact Customer Support (see Contact Support).

   If you chose to Do form based authentication in the previous step, the RPT step will attempt to automatically detect the web application's login page, login form, and user name and password fields. Because there are no standards for login forms, this automatic detection may not succeed, in which case you should opt to Configure parameters to customize login form detection. Once this option is checked, you can enter a specific page, form and username/password fields that the RPT step should use for session management.

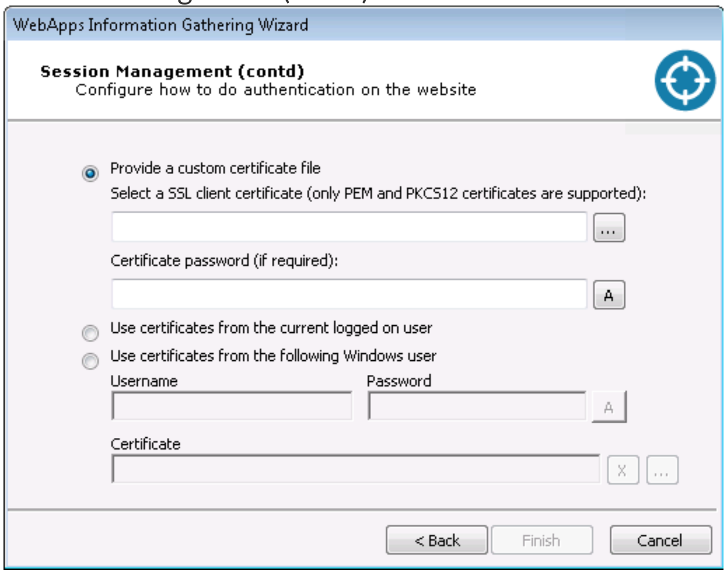
   Session Management (contd)



   Click the Finish button.

6. If you chose to Do SSL client certificate authentication in the previous step, configure the certificate details that Core Impact should use for the test.

   Session Management (contd)

   Click the Finish button.

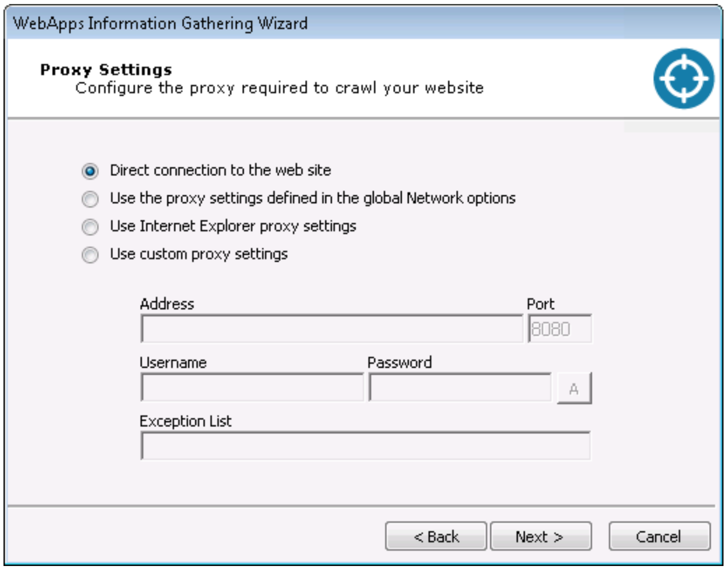
Once the Wizard closes, the RPT will proceed and attempt to identify pages - if any are found, they will be saved in the Web View under the appropriate scenario.

Interactive Web Crawling

With interactive web crawling, you set your web browser to use Core Impact as a proxy and then navigate your web application. As you navigate the web application, Core Impact will capture each page that you view and add them to the Web View under the appropriate scenario. After selecting the Interactive Web Crawling radio button, continue to configure the RPT:

1. If a proxy server is needed to access the web application, select the appropriate proxy option and, if necessary, enter the server details.
   - Direct connection to the Internet will connect to the Internet without connecting to a proxy server.
   - Use the proxy settings defined in the global Network options will follow the settings that are in the Tools > Options > Network form.
   - Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.
   - Use custom proxy settings will follow the proxy settings in the fields just below.

     Proxy Settings

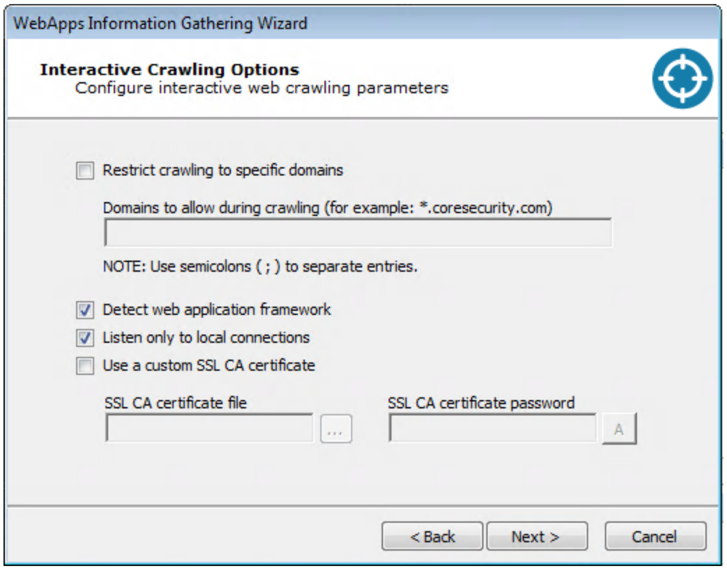


Click the Next button.

2. Set the **Interactive Crawling Options**.
    - Restrict crawling to specific domain : If you want the RPT to not record pages outside of a specific domain, check the Restrict crawling to specific domain check-box. If you check this option, you must then enter the specific domain(s) to which the crawler will be restricted.
    - Detect web application framework: The Detect web application framework is checked by default. This setting will cause the RPT step to find out details about the underlying web application platform.

      Core Impact can detect SOAP-based or RESTful web services. Because SOAP-based web services always have a .wsdl file, these can be detected using Automatic or Interactive web crawling. RESTful web services employ no such definition file so, in order to detect RESTful web services, you must use Interactive web crawling so that Core Impact can try and detect JSON type calls in the web traffic.
    - Listen only to local connections: By default, the **Listen only to local connections** option is enabled, which means that only connections from the machine where Core Impact is installed can connect to the proxy for Interactive Web Crawling. If you uncheck this option, any device with access to the proxy can connect to it and Core Impact will capture and evaluate the web traffic for pages and web services.
    - **Use a custom SSL CA certificate**: This option is necessary for instances when the web app connects to the application server using https (SSL) and authenticates by checking the certificate provided by the server. When the application server is using a certificate authority controlled by the user, you can provide the SSL CA certificate file and the password associated with it, so that Core Impact's web proxy module can generate the necessary certificates on-the-fly for the hosts accessed by the web application during the interactive crawling session.
        - **SSL CA Certificate file**: Browse to and select the certificate file
        - **SSL CA certificate password**: Enter the password associated with the SSL CA Certificate

   Interactive Crawling Options

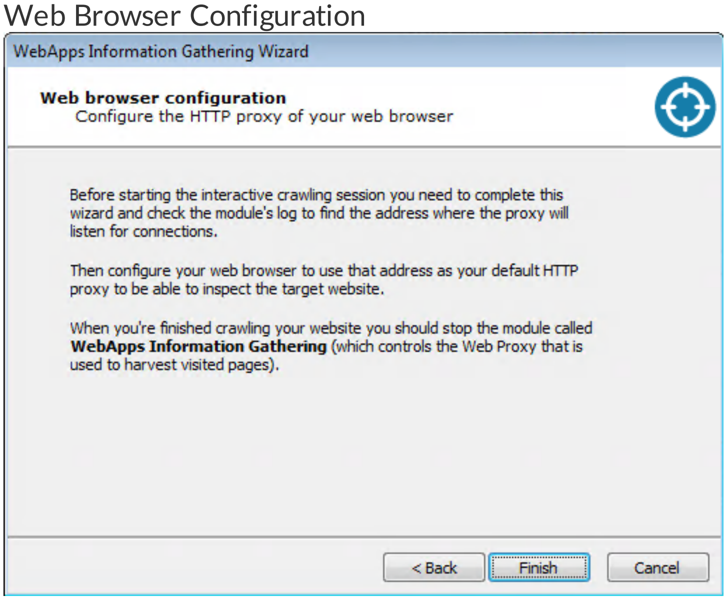


Click the Next button.

3. The final page of the interactive web crawling Wizard contains a notification about how to proceed with the RPT step. You will need to configure your web browser to use 127.0.0.1:8080 as its web proxy before you begin navigating your web application. When you are finished browsing the application, you will then need to manually terminate the WebApps Information Gathering module in Core Impact.

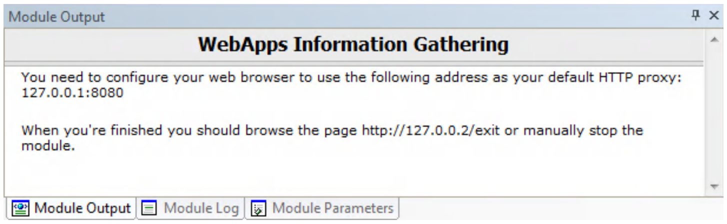
   Click the Finish button.

   Web Browser Configuration



Once the Wizard closes, check the Module Output pane to learn the HTTP Proxy, then set your browser to use that proxy.

Module Output



You will manually access and navigate the target web application - Core Impact will save the pages you visit in its entity view under the appropriate scenario.

Interactive Crawling of a Mobile Application Backend

With **Interactive web crawling of a mobile application backend**, you configure your mobile device to use Core Impact as a proxy and then use your application on your mobile device. As you use the mobile application, Core Impact will harvest the requests being made on the server and use these requests as baselines to test the target backend web services and try to identify vulnerabilities in them.

More on Mobile Application Backend:

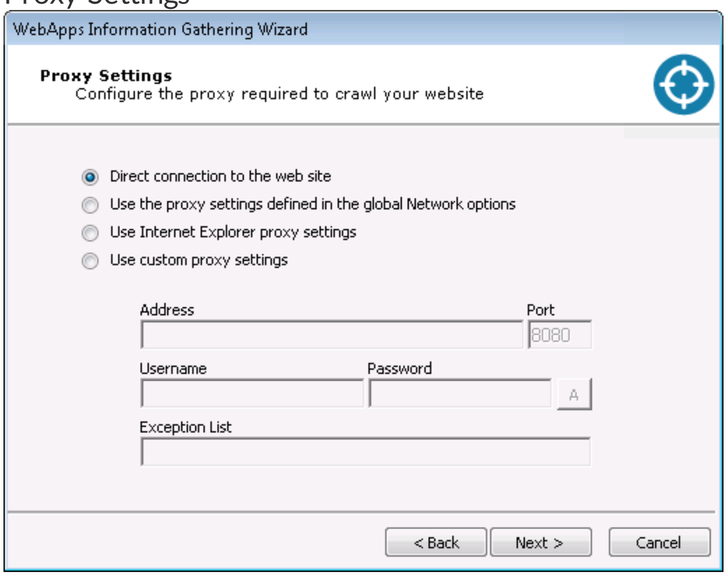
When a user runs an application (app) on a mobile device, that app typically requires a connection to a backend server. For example, an app providing the weather will need to connect to a remote server using web services in order to receive the latest weather data, then display it on the mobile device.

When performing Mobile Application Backend Testing in Core Impact, you are essentially running a WebApps test whereby Core Impact sits in between a mobile app and its backend server. Core Impact will then harvest the requests being made on the server and use these requests as baselines to test the target backend web services and try to identify vulnerabilities in them. This simulates what a malicious person may do in order to exploit and extract information from the servers.

With Core Impact Mobile Application Backend Testing capabilities, you can make sure that the web services used as the backend of your mobile app are not vulnerable to a malicious attack. Use the **Interactive crawling of a mobile application backend** option when performing WebApps Information Gathering in order to leverage Core Impact's web services testing capabilities to further extend your penetration testing practice.

1. If a proxy server is needed to access the mobile application backend, select the appropriate proxy option and, if necessary, enter the server details.
   - Direct connection to the Internet will connect to the Internet without connecting to a proxy server.
   - Use the proxy settings defined in the global Network options will follow the settings that are in the Tools -> Options -> Network form.
   - Use Internet Explorer proxy settings will follow the settings as defined in your Internet Explorer preferences.
   - Use custom proxy settings will follow the proxy settings in the fields just below.

   Proxy Settings

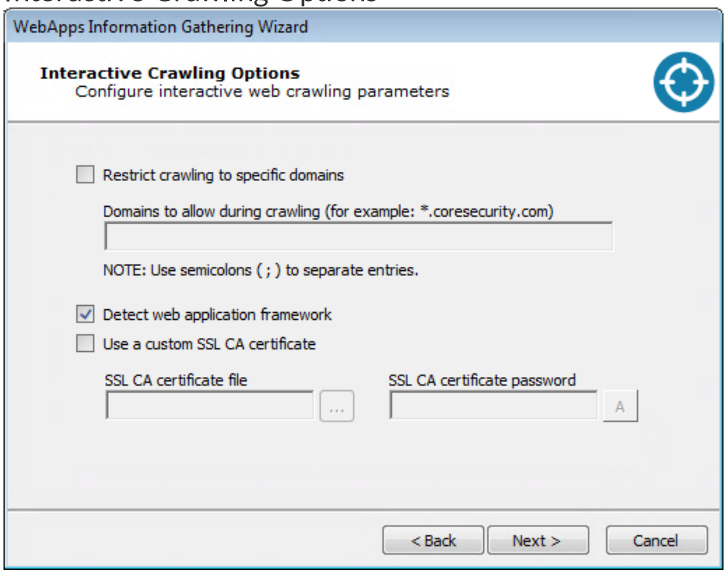
   

   Click the Next button.
2. Set the **Interactive Crawling Options**.
   - Restrict crawling to specific domain : If you want the RPT to not record pages outside of a specific domain, check the Restrict crawling to specific domain check-box. If you check this option, you must then enter the specific domain(s) to which the crawler will be restricted.
   - Detect web application framework: The Detect web application framework is checked by default. This setting will cause the RPT step to find out details about the underlying mobile application backend platform.

     Core Impact can detect SOAP-based or RESTful web services. Because SOAP-based web services always have a .wsdl file, these can be detected using Automatic or Interactive web crawling. RESTful web services employ no such definition file so, in order to detect RESTful web services, you must use Interactive web crawling so that Core Impact can try and detect JSON type calls in the web traffic.

- **Use a custom SSL CA certificate**: This option is necessary for instances when the mobile app connects to the application backend using https (SSL) and authenticates by checking the certificate provided by the server. When the application backend is using a certificate authority controlled by the user, you can provide the SSL CA certificate file and the password associated with it, so that Core Impact's web proxy module can generate the necessary certificates on-the-fly for the backend hosts accessed by the mobile application during the interactive crawling session.
  - **SSL CA Certificate file**: Browse to and select the certificate file
  - **SSL CA certificate password**: Enter the password associated with the SSL CA Certificate

Interactive Crawling Options

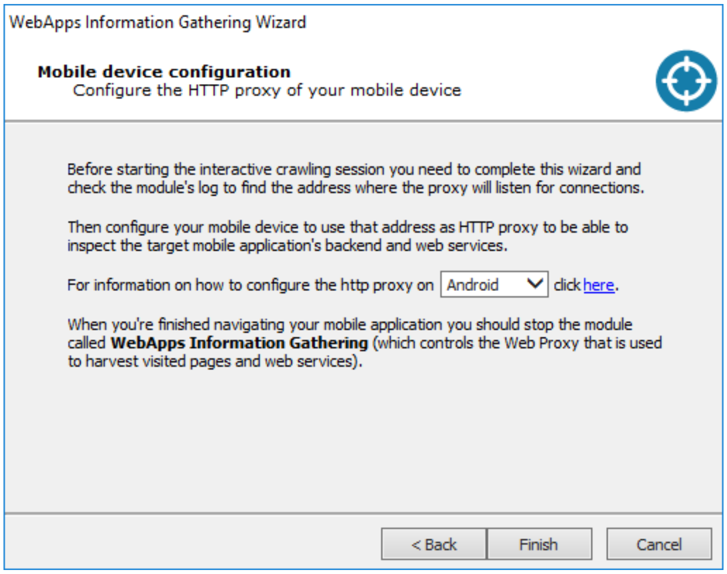


Click the Next button.

3. The final page of the **Interactive crawling of mobile application backend** wizard contains a notification about how to proceed with the RPT step. You will need to:
   - Complete the wizard and check the **Module Output** to learn the address where the proxy will listen for connections
   - When you are finished using the application, you will then need to manually terminate the WebApps Information Gathering module in Core Impact.

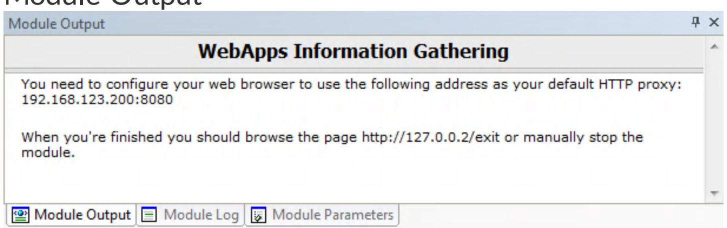
   Click the Finish button.

   Mobile device configuration



Once the Wizard closes, check the Module Output pane to learn the HTTP Proxy address, then set your mobile device to use that proxy.

Module Output



You will manually access and navigate the target mobile application - Core Impact will evaluate the traffic and identify web services that may be vulnerable to subsequent attack.

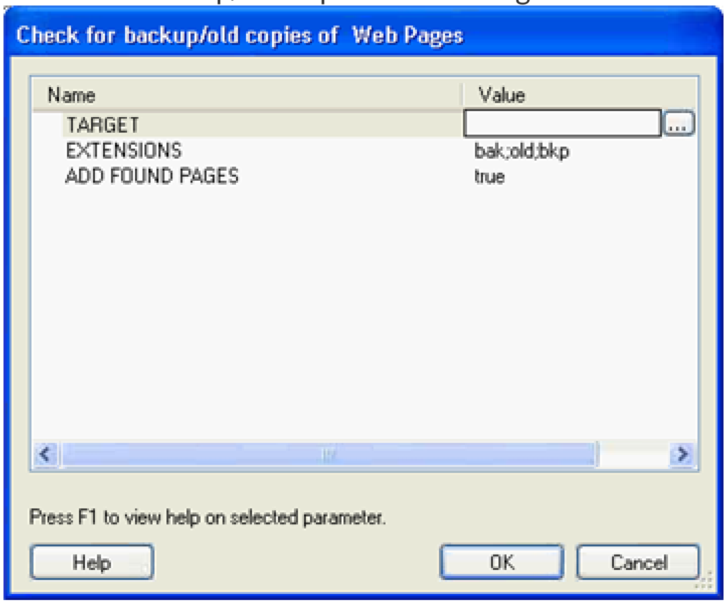
Checking for Backup/Old Copies of Web Pages

It is not uncommon for web application administrators to backup or store old copies of web pages on the server along with the active pages for the web application. Core Impact's Check for backup/old copies of Web Pages module - when run - will attempt to locate these pages for a given scenario and then add them to the scenario for further vulnerability assessment. To execute the module:

1. Navigate to the Modules view and make sure that the Web entity tab is active.
2. Type the string "backup" into the module search field. This should reveal the Check for backup/old copies of Web Pages module.
3. Double-click the Check for backup/old copies of Web Pages module. The module's parameters will appear.
4. Set the module's parameters to reflect your preferences:
    - TARGET: The scenario that the module will target.
    - EXTENSIONS: The module will scan for files that include these extensions (commonly used for backup or old files). Modify this list to expand the search.

- ADD FOUND PAGES: If set to "true", any pages that are found by the module will be added to the scenario in the TARGET field. If set to "false", the pages will not be added.

Check for backup/old copies of Web Pages Module Parameters



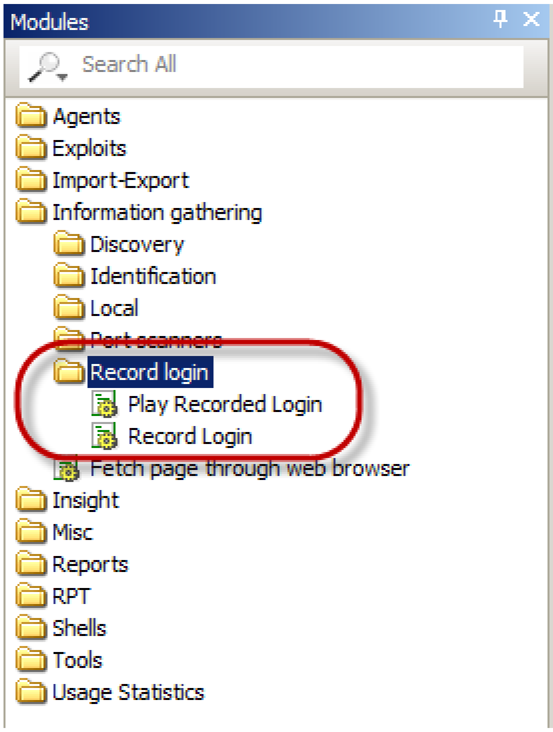
5. Click the OK button. The Module will run - check the Module Log pane for output and/or error details.

Recording Web Site Login Steps

It is not uncommon for web applications to require additional login steps, after a username and password have been provided. For example, usage agreements must be accepted, or *captchas* must be passed. In these situations, Core Impact cannot successfully pass these steps in an Automatic Web Crawling session and therefor cannot find the pages in the web app. To address this, you can record the login steps for the web application and then, in the Session Management step of the WebApps Information Gathering wizard, instruct Core Impact to use the recording in order to log in.

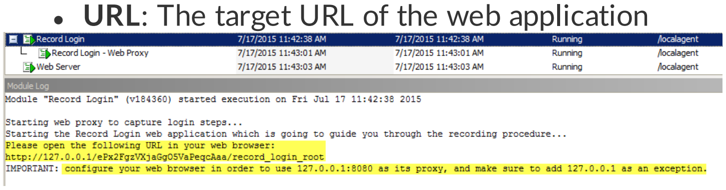
To record the login steps:

1. Navigate to the Modules view and make sure that the Web entity tab is active.
2. Type the string "record" into the module search field. This should reveal the Record Login modules.



3. Double-click the Record Login module. The module's parameters will appear.
4. Set the module's parameters to reflect your preferences:
   - TARGET: The scenario that the module will target.
   - START URL: The URL for the web site where the recording will start.

   There are several other parameters that may apply to your environment, but the above are the primary settings for the recording.
5. Click the OK button.
6. View the **Module Log** tab for the **Record Login** module in the **Executed Modules** pane. This will contain information you need in order to complete the recording:
   - **Proxy**: Configure your web browser to the proxy as indicated
   - **URL**: The target URL of the web application



7. After setting your web browser's proxy as indicated, navigate in your browser to the URL provided. The **Record Login Assistant** will open.
8. Click the **Start record login procedure** button and the Record Login Assistant will present your target web page in the lower frame. Log into the site and perform all necessary steps that Core Impact will need in order to locate the pages within the web application.

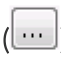
9. If your web application requires user input that could change between uses - such as a captcha - click the **Start Interactive Steps** button prior to taking the steps in the recording session. Once the steps are completed, click **Stop Interactive Steps**. When the login steps are subsequently played back in Core Impact, the interactive steps will be presented and the user can satisfy them as the test is executed.
10. When you are finished, click the **Stop** button. You can then close the web browser window and Core Impact will save the recording for use in WebApps Automatic Web Crawling. If Core Impact requires your input as it plays out the recording, you will be prompted to provide input.

WebApps Attack and Penetration

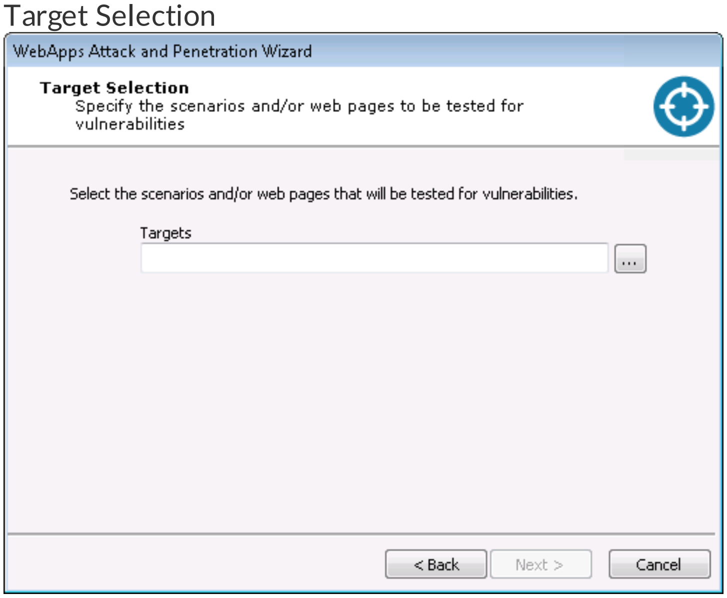
If the WebApps Information Gathering step identifies target pages and/or web services, the WebApps Attack and Penetration step can detect whether those pages will be vulnerable to a number of different attack types. To begin the WebApps Attack and Penetration step:

1. Click WebApps Attack and Penetration in the RPT process panel. The Wizard will begin.

   Click the Next button.

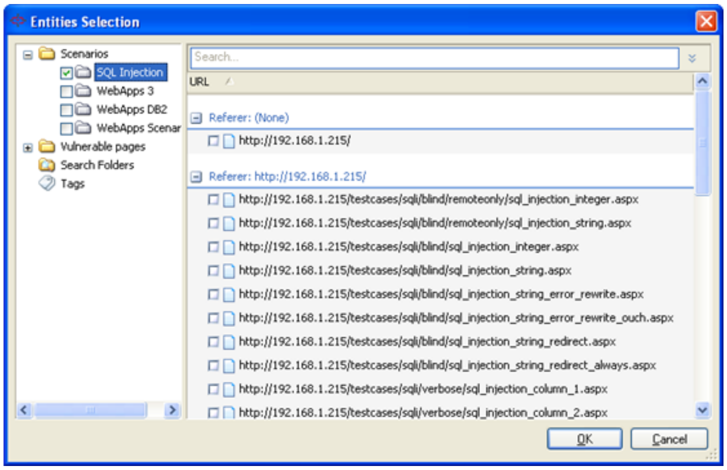
2. On the Target Selection page, click the ellipsis () button to display a list of existing scenarios.

   Target Selection

   The Entities Selection box will appear.
3. Place a check next to each scenario that is to be tested for vulnerabilities. You can alternatively check individual pages within the scenario.

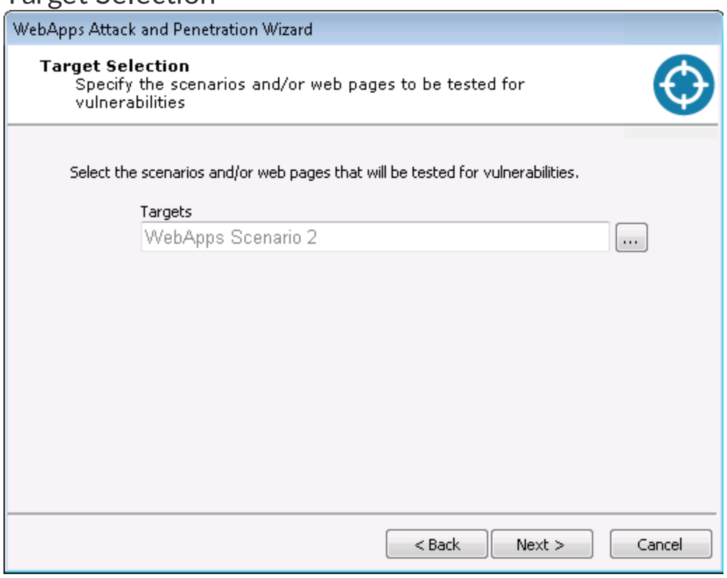
   Entities Selection



Click the OK button.

4. You will return to the wizard. Click the Next button.

Target Selection



There are many options in the WebApps Attack and Penetration wizard and several combinations of attacks you can perform. For the sake of documenting the options, we will provide instructions on each attack path individually, but please understand that these options can be combined to undertake a complex and comprehensive test.

On the Risk Types pages of the Wizard, select any of the following options. These security risks correlate with the OWASP Top 10 security risks for web applications (see the OWASP web site for more info):

A1:2017 - Injection

A2:2017 - Broken Authentication

A3:2017 - Sensitive Data Exposure

A4:2017 - XML External Entities

A5:2017 - Broken Access Control

A6:2017 - Security Misconfiguration

A7:2017 - Cross Site Scripting (XSS)

A8:2017 - Insecure Deserialization

A9:2017 - Using Components with Known Vulnerabilities>

Other

- Look for PHP Remote or File Inclusion vulnerabilities
- Look for unvalid redirects and Forwards
- Look for hidden/backup pages

Execute exploits for known vulnerabilities of checked risk types: Check this option if you want Core Impact to attempt to execute exploits as a part of the test.

Click the Finish button and then the WebApps Attack and Penetration step will commence. You will be able to see module progress in the Executed Modules panel and specific output in the Module Log panel.

If the WebApps Attack and Penetration is successful, depending on the test, a WebApps Agents may appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents. Additionally, if a vulnerability is found, it is assigned a Vulnerability ID which will allow Core Impact users to track reported vulnerabilities after testing. The Vulnerability ID will appear in the "Information" pane when the vulnerable web page is selected and also in the name of the agent that is deployed for the page. For example, if the SQLi Analyzer finds a vulnerability and assigns it ID 7, an agent configured from that vulnerability will be named "SQL Agent (7)".

If the WebApps Attack and Penetration successfully penetrated a known web service, a WebApps agent will be installed. These agents function the same as those on web pages, but they exploit vulnerabilities in the web service.

Running Cross Site Request Forgery (CSRF)

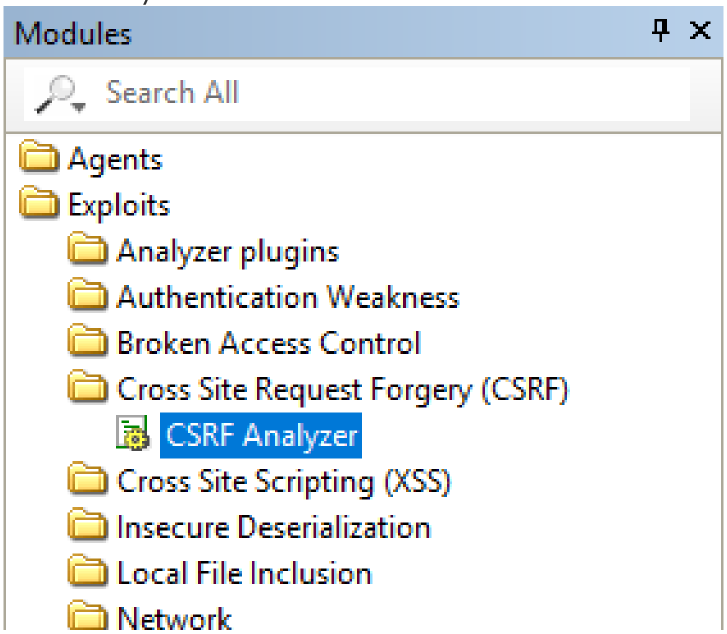
If a web application contains a form in which Cross Site Request Forgery (CSRF), this does not necessarily mean there is a security risk. For example, if a form does not have the capability to make any database changes or return database content, CSRF cannot be used to do any harm. For this reason, Core Impact requires that tests for CSRF risks be interactive - Core Impact will identify where CSRF is possible and you will determine whether these instances are security risks.

To run a Cross Site Request Forgery test:

1. Click the Web entity tab, then click the Modules tab to view the Modules list.

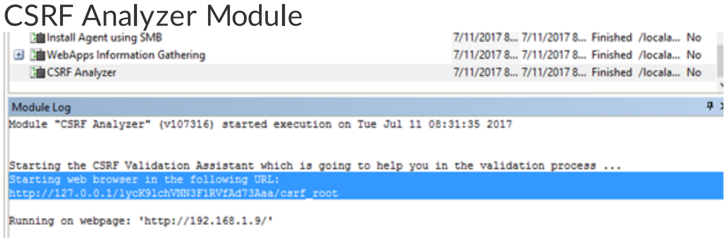
2. Locate and double-click the module named CSRF Analyzer.

   CSRF Analyzer Module

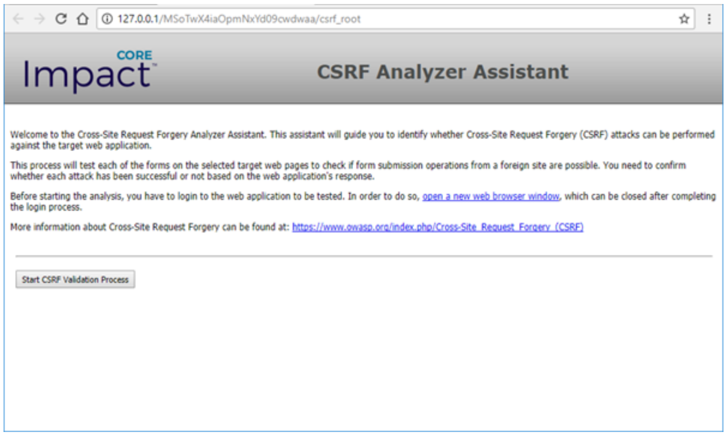
3. Select the TARGET page(s) that you want to test for CSRF vulnerabilities. Then click OK.
4. Navigate to the Executed Modules pane and select the line item that corresponds with the CSRF Module.
5. In the Module Log pane, look for a log entry that reads "Please open the following URL in your web browser" and a URL immediately following. Core Impact will automatically attempt to open this URL in your default web browser.

   CSRF Analyzer Module

6. Core Impact will present you with a web page - the CSRF Validation Assistant - that will step you through the form data as identified in the target page(s). Click the Start CSRF Validation Process button.

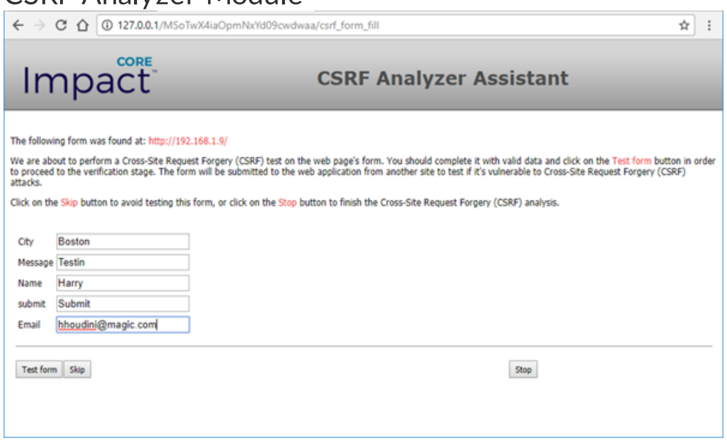
   CSRF Analyzer Module



7. Core Impact will display the first form that it identified from the target page(s). Enter data into the field(s) and click the Test Form button to test the form. If you know that the form is not a security risk or do not want to test the form, click the Skip button to move to the next form.

   In the below screenshot, the form appears to be creating a new user in a web application, so you would want to enter valid information to see if you are able to successfully create a user.

   CSRF Analyzer Module



8. The next form will display the results of the action. You must then determine whether the form presents a security risk. If it does, click the Attack worked button. If not, click the Attack didn't work button.

   In the below example, the target page returned the confirmation "User added", indicating that we were successful in creating a new user in the system using CSRF. Because this is a security risk, we would click the Attack worked button.

   CSRF Analyzer Module

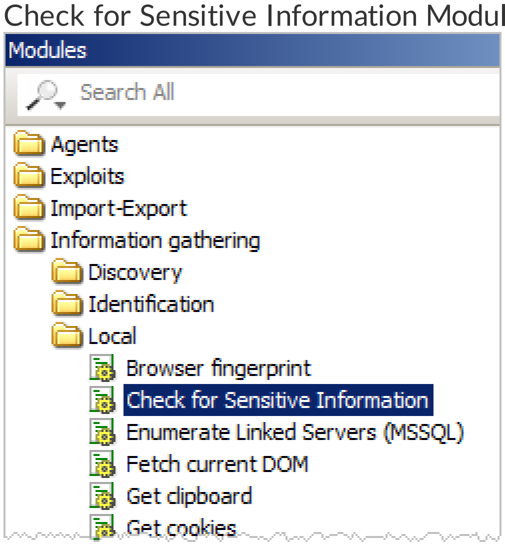
9. If you click Attack worked for any of your web pages, those pages will be visible in the CSRF folder of the Web entity view.

Running Insecure Cryptographic Storage

This is a post-exploit test that tries to access and identify sensitive information in the web application's database. If there is a SQL agent for a target, you can test this risk in the following ways:

- Local Information Gathering: The WebApps Local Information Gathering RPT step will automatically attempt to locate sensitive data in the database.
- Check for Sensitive Information module: If you want to test for this risk manually, make sure you have a SQL agent on the target page(s) and then run the module called Check for Sensitive Information.

  Check for Sensitive Information Module

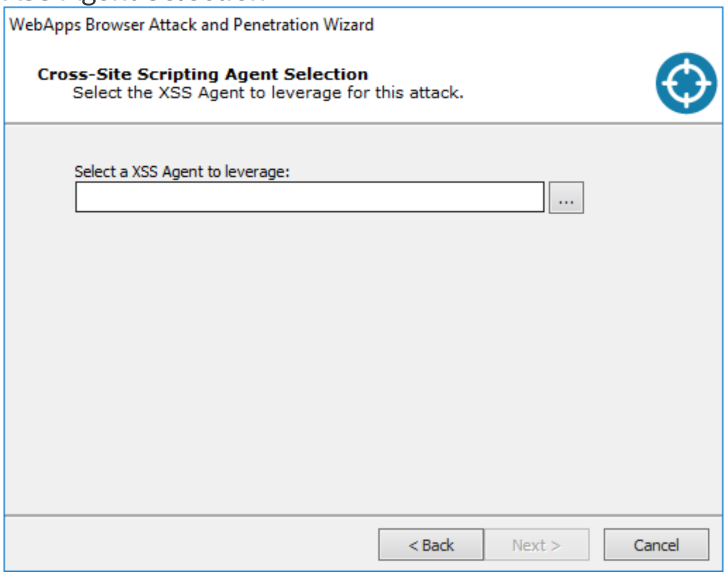


WebApps Browser Attack and Penetration

If you opted to search for Cross Site Scripting vulnerabilities in the WebApps Attack and Penetration step, then you can run the WebApps Browser Attack and Penetration step to exploit any vulnerable web pages. This RPT step will send to your list of recipients an email with a link that will simulate a XSS attack. To run the WebApps XSS Attack and Penetration wizard:

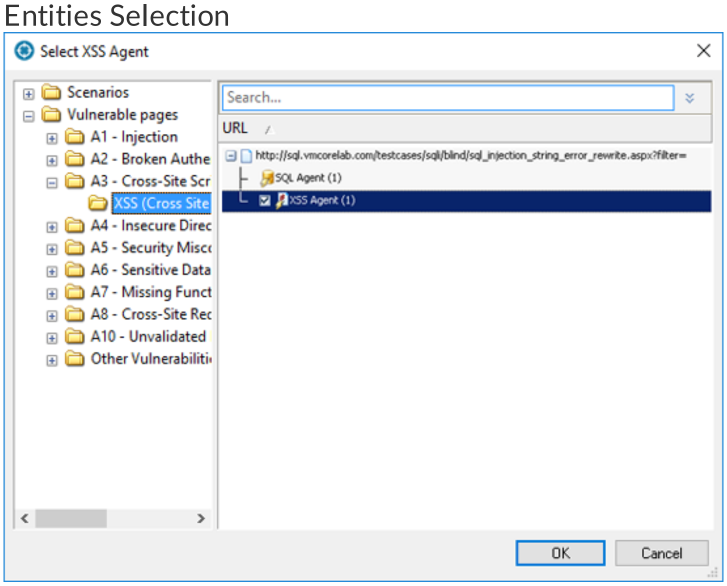
1. Click the WebApps Browser Attack and Penetration step to begin. The Wizard will open. Click the Next button.
2. On the XSS Agent Selection form, click the ellipsis (...) button to Select an XSS Agent to leverage.

   XSS Agent Selection



3. The Entities Selection window will open. Navigate to the XSS folder under Vulnerable pages, then locate and select an XSS Agent.

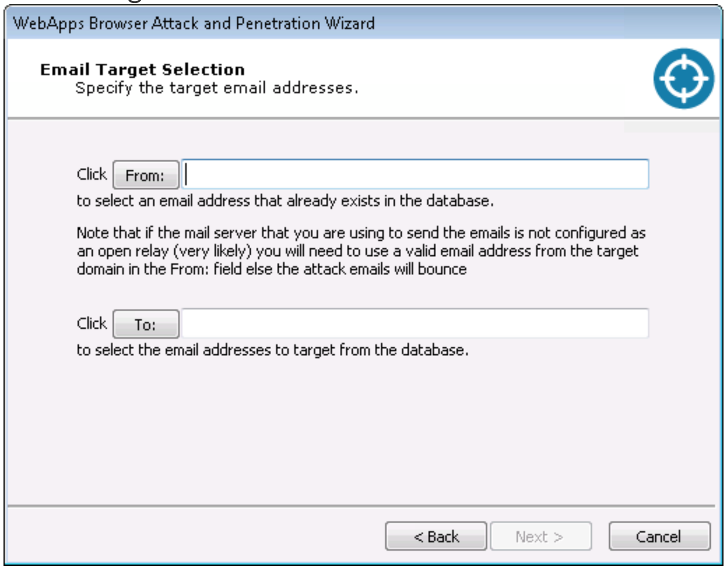
   Entities Selection



   Click the OK button to return to the wizard form.

4. On the Email Target Selection form, use the From: button to select an email address from the entity database that will serve as the sender of the test email. Use the To: button to select email address(es) from the entity database that will serve as recipients of the test email.

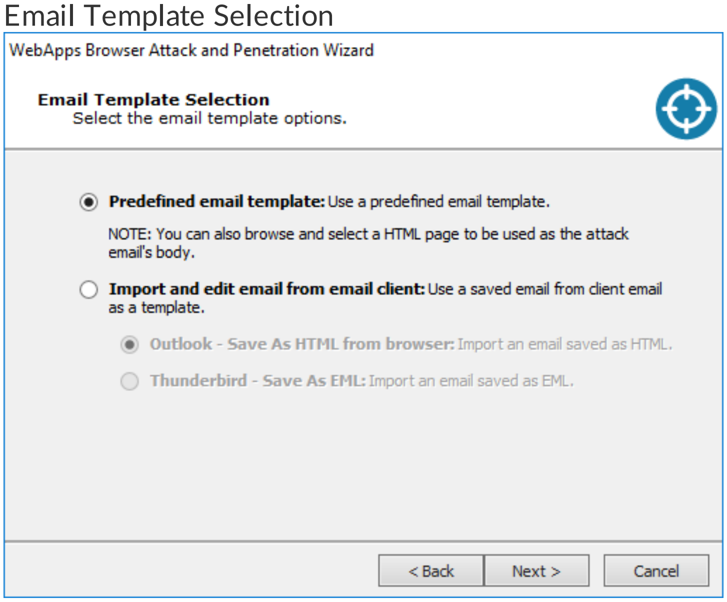
Email Target Selection



Click the Next button.

5. Use the Change button to modify the template of the email that will be sent to target users. Then set the Email Subject so that it entices users to open and take action in the email.

   Email Template Selection



   Then click the Next button.

6. End User Experience

   Core Impact ships with several email templates that are located in `%ProgramData%\IMPACT\components\modules\classic\install\templates` . You can customize these templates to maximize the chance that your users will take action in the email. Ensure that the email template and email Email Subject are set appropriately for your test. Click the ellipsis button to select a new template, or to modify the one that is selected.

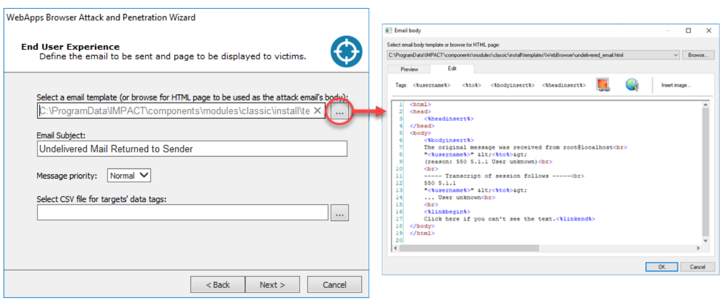
Select CSV file for targets' data tags: By default, the email templates only include a handful of basic tags. If you'd like to add more tags to the email, you can import the tags and their values using a .csv file. The .csv file must be formatted in the following way:

- Row 1: the names of the tag fields. **The first tag name must be 'target'**
- Rows 2 - x: the values of the tags. **The 'target' value must be the email address of the target**

Below is an example of how the .csv may appear:

target,	**nickname,**	**company,**	**position**
john.doe@example.com,	Johnny,	JD Corp,	VP of Customer Support
az@core.sec,	Azzo,	JD Corp,	Secretary

After importing the .csv file, you can edit the template and reference content from the .csv file by using the custom tag: `<%csv:[field_name]%>`. For example, `<%csv:nickname%>` or `<%csv:position%>`.

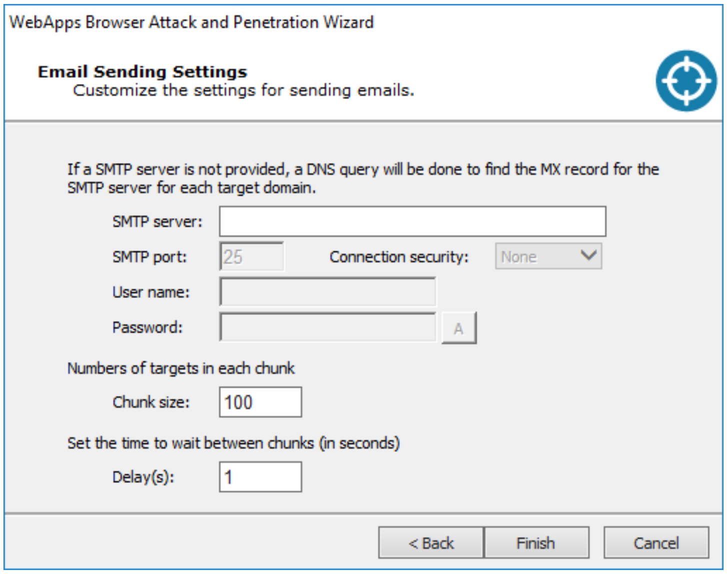


7. Email Sending Settings

   Enter the SMTP Server and SMTP Port for your email SMTP server. Optionally, choose **STARTTLS** as the **Connection security** and then enter the **Username** and **Password** for your SMTP server.

   If you want to limit the number of emails that are sent at one moment, set a Chunk Size. This value will determine the maximum number of emails that will be sent at one time.

   Enter the Delay (in seconds) that you want Core Impact to wait in between sending chunks of email in this attack.



The WebApps Browser Attack and Penetration step will commence. You will be able to see module progress in the Executed Modules panel and specific output in the Module Log panel. Note that a Web Server module will also start. This web server will deliver the simulated attack to the users when they click the link in the email they received.

WebApps Local Information Gathering

The WebApps Local Information Gathering RPT step performs information gathering using SQLi and PHP-RFI Agents that are already in your entity database.

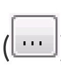
For SQLi and PHP-RFI Agents, the following modules will run:

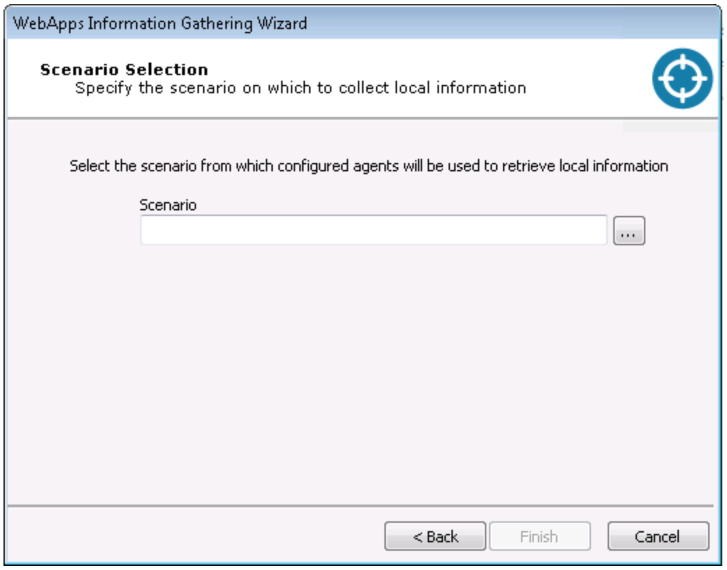
- Get Databases Version
- Get Databases Logins
- Get Databases Schema
- Check for Sensitive Information

For PHP-RFI Agents the following module will run:

- Get Local Path of web page using RFI Agent (PHP)

To run a WebApps Local Information Gathering:

1. Click the WebApps Local Information Gathering step to begin. The Wizard will open.Click the Next button.
2. Click the ellipsis () button to select a Scenario on which to run the RPT step.
   Then click the Finish button.
   WebApps Information Gathering Wizard



The Local Information Gathering will run, displaying its progress and results in the Module Log and Module Output panes.

WebApps Report Generation

The WebApps Report Generation RPT step allows you to automatically generate robust system reports by processing information collected about target web pages you have identified. Report instructions are consolidated in the RPT Reports section.

One-Step WebApps RPT

The WebApps RPT includes the following One-Step tests that can be run in a single step, providing detailed reports of the test's findings.

- WebApps Remediation Validator
- WebApps Vulnerability Scanner Validator
- WebApps Vulnerability Test

One-Step WebApps Remediation Validator

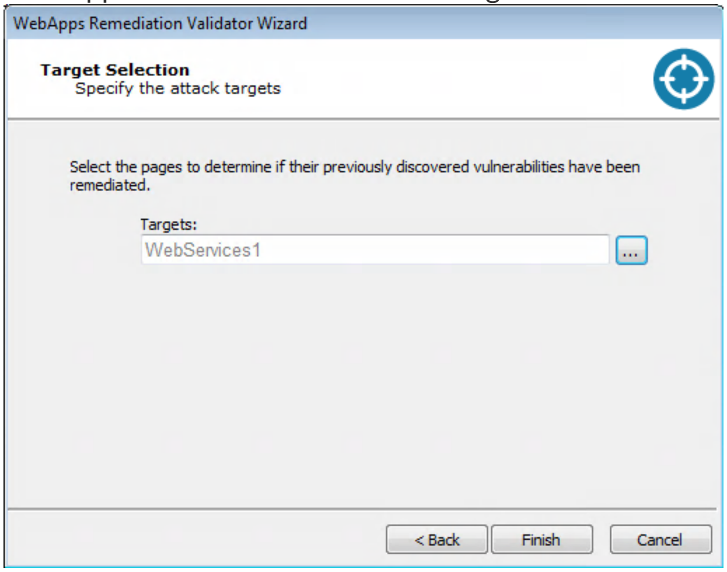
Oftentimes, the team who tests for vulnerabilities is different than the team who fixes them. Core Impact's One-Step WebApps Remediation Validator allows testers to easily re-test systems that have already been identified as vulnerable.

To run a One-Step WebApps Remediation Validator test:

1. Make sure the One-Step RPT is active. The available one-step tests will appear.
2. Click WebApps Remediation Validator.

3. The Remediation Validator Wizard will appear. Click the Next button to proceed with the Wizard.
4. Select the Target WebApps (or Scenario) that you want to test.

   WebApps Remediation Validator: Target Selection

   Click the Finish button. Core Impact will re-test the vulnerable targets and verify whether the vulnerabilities still exist.

To check on the status of your test, click the Module Output tab.

One-Step WebApps Vulnerability Scanner Validator

If you use a third-party tool to run vulnerability scans against your existing web applications, you can feed the output from that tool into Core Impact's Vulnerability Scanner Validator. Core Impact will evaluate the scan's output and provide you with a prioritized validation of your system's weaknesses.

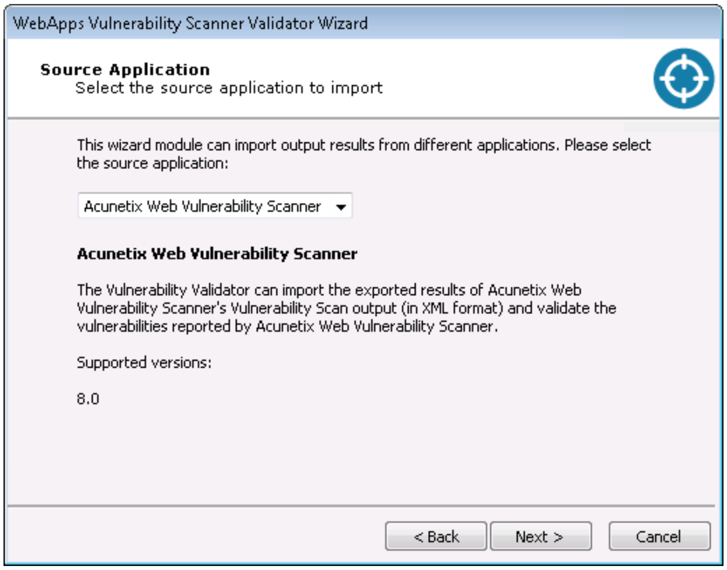
Before running a Vulnerability Scanner Validator, you will need to have the output file from a supported third-party vulnerability scanner. A list of supported scanners is shown as you begin the test.

The below steps illustrate how to run a One-Step WebApps Vulnerability Scanner Validator test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-Step WebApps Vulnerability Scanner Validator test:

1. Make sure the One-Step RPT is active. The available one-step tests will appear.
2. Click WebApps Vulnerability Scanner Validator.
3. The Vulnerability Scanner Validator Wizard will appear. Click the Next button to proceed with the Wizard.
4. Select the third-party scanner from which you got your results.

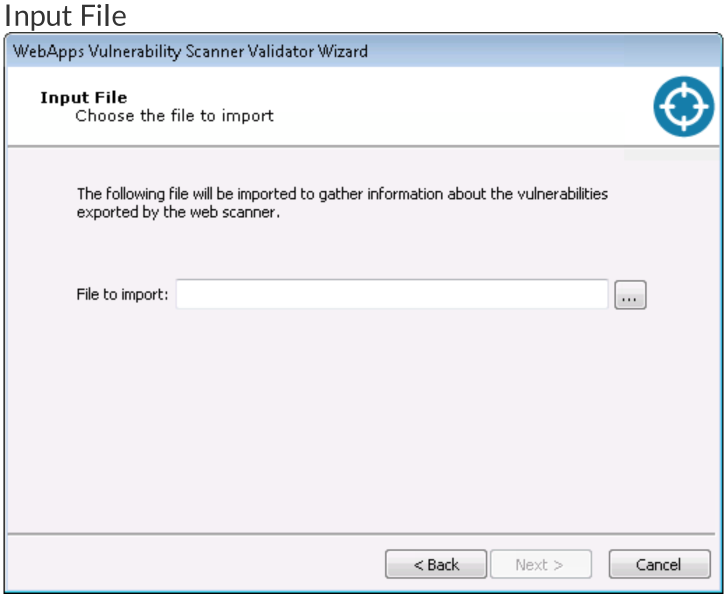
   Source Application



Click the Next button.

5. Enter the details of the scanner's output. The output format you are importing is dependent on the Vulnerability Scanner you selected in the previous step. Some scanners export their results to a file while others require you to access their data directly from the scanner's database.

   Input File



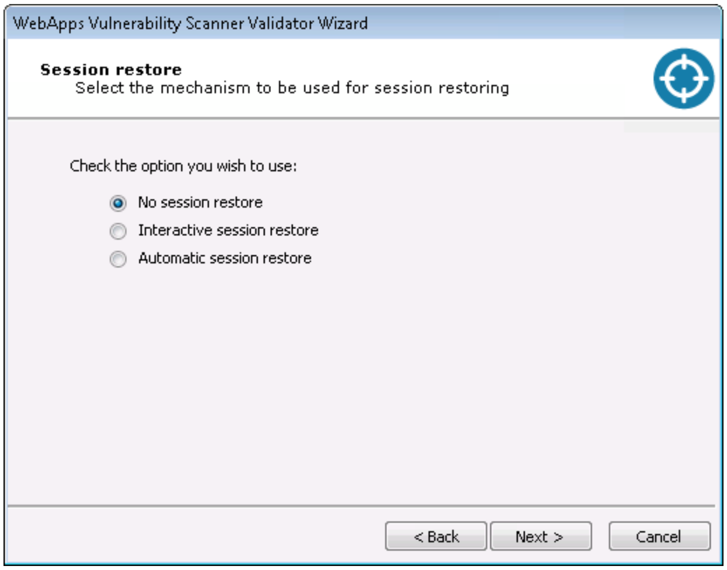
Click the Next button.

6. Select the method that the test should use to reestablish a connection to the target web application.
   - No session restore: With this option, Core Impact will not attempt to log into the target web application.
   - Interactive session restore: With this option, you set your web browser to use Core Impact as a proxy and then authenticate in your web application. Core Impact will then use the resulting session to validate the vulnerability scanner information. This

method is similar to Interactive Web Crawling and presents similar options after this step in the wizard. For details on these options, see the section on Interactive Web Crawling.

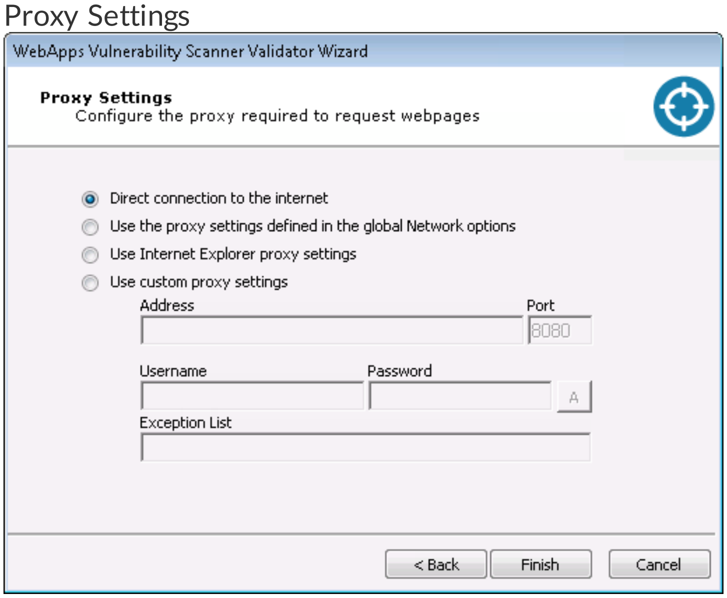
- Automatic session restore: With this option, you define the credentials Core Impact should use in authenticating in your web application. This method is similar to Automatic Web Crawling and presents similar options after this step in the wizard. For details on these options see the section on Automatic Web Crawling.

Session Restore



7. Select the method that the test should use to connect to the target web application.

Proxy Settings



8. After you have further configured the one-step test according to your preferences, click the Finish button.

To check on the status of your test, click the Module Output tab.

One-Step WebApps Vulnerability Test

Core Impact's One-Step WebApps Vulnerability Test allows you to target a web applications in order to evaluate its vulnerability to known exploits as well as the OWASP Top 10 security risks. When the test runs, Core Impact will access the web application and attempt to locate pages that contain vulnerabilities to any of the risks you select. This One-step test conveniently combines the WebApps Information Gathering (Automatic Web Crawling only) and WebApps Attack and Penetration RPT steps into a single test that you can easily schedule or execute in a single test step.

The One-Step WebApps Vulnerability Test does not require you to create a Scenario before initiating the test as is the case with the WebApps RPT. When you run the One-step WebApps Vulnerability Test, Core Impact will automatically create a new Scenario in which you can view and manage the test results.

The following section describes how to run a One-Step WebApps Vulnerability Test manually. You can also execute this test using the Scheduler - see Using the Scheduler for more details.

To manually run a One-Step WebApps Vulnerability Test:

1. Make sure the One-Step RPT is active.
2. Click WebApps Vulnerability Test under the One-Step heading.
3. The WebApps Vulnerability Test Wizard will appear. Click the Next button to proceed with the Wizard.
4. The One-step test uses wizard steps from the WebApps Information Gathering wizard and the WebApps Attack and Penetration wizard. Please view those sections for details on the screens that follow.
5. Click the Finish button to begin the test.

To check on the status of your test, click the Module Output tab.

Core Impact and the OWASP Top 10

Core Impact is designed to make it easy for your organization to assess the OWASP Top 10 security risks for web applications (see http://www.owasp.org for details on OWASP). You can identify OWASP Top 10 2017 exposures with Core Impact 19.1 in the following ways:

A1:2017-Injection

- Safely identify both traditional and blind SQL injection vulnerabilities
- Dynamically create and inject SQL queries in an attempt to access the database
- Interact with the compromised database
- Detect and exploit OS Command Injection weaknesses in web applications
- Reveal the implications of a breach by taking control of the web server

A2:2017-Broken Authentication

Guess usernames and passwords

A3:2017-Sensitive Data Exposure

- Identify unencrypted data upon successfully accessing a SQL database
- Identify exposed credit card numbers, social security numbers and email addresses
- Define custom searches for other types of sensitive data
- Flag weak encryption in HTTPS-secured sites

A4:2017-XML External Entities (XXE)

- Identify XML External Entities vulnerabilities affecting different programming languages, libraries and methods:
    - Java 1.8+, Python, PHP 5, PHP 7 and ASP
    - XML payloads included in GET, POST and request body
- Leverage identified XXE vulnerabilities to perform post-exploitation actions, such as reading from the file system.

A5:2017-Broken Access Control

- Search, follow and identify:
    - hidden pages
    - backup/old pages
    - robots.txt files
- Access admin, backup and old pages via authenticated and unauthenticated sessions
- Record multiple authentication profiles and identify pages having broken or lacking access control mechanisms.

A6:2017-Security Misconfiguration

- Identify WebDAV attacks
- Identify common/default credentials present

A7:2017-Cross-Site Scripting (XSS)

- Identify and confirm the exploitability of GET- and POST-based XSS vulnerabilities, including:
    - URL-based, reflective XSS
    - persistent (or stored) XSS
    - XSS in dynamic Adobe Flash objects

A8:2017-Insecure Deserialization

- Launch exploits for known insecure deserialization vulnerabilities affecting common frameworks and applications.
- Leverage insecure deserialization issues to pivot to the underlying server.

A9:2017-Using Components with Known Vulnerabilities

- Leverage multi-vector testing to identify security misconfiguration issues across:
  - the web application
  - the underlying server
  - the backend environment

A10:2017-Insufficient Logging & Monitoring

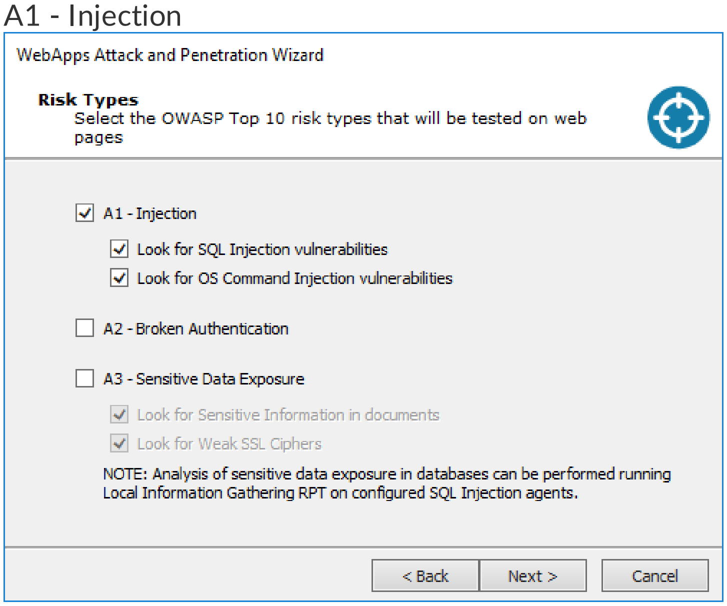
- Record all testing activities within Impact and match them against the application's logs and monitoring output to manually validate coverage and identify potential blind spots.

A1:2017 Injection

Below we document the steps to test the **OWASP A1:2017 Injection** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A1 - Injection** and any of the following options:
   - Look for SQL Injection vulnerabilities
   - Look for OS Command Injection Vulnerabilities

   A1 - Injection

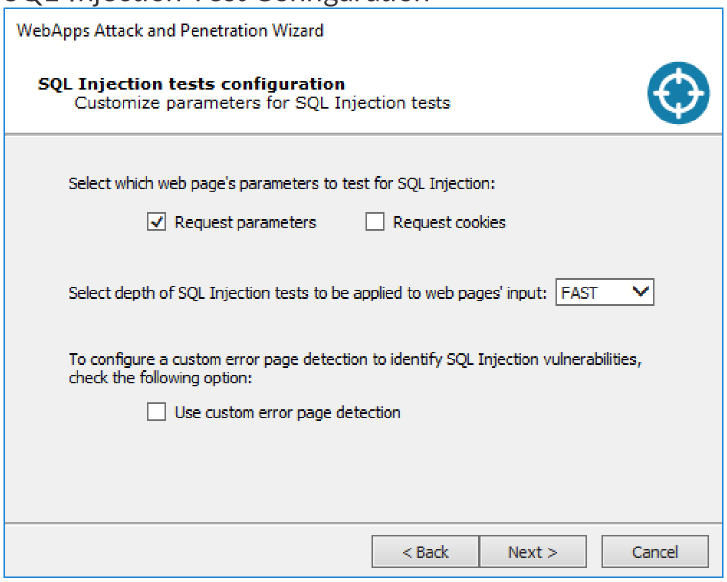
   Then click Next until you are past the Risk Types selection. For the following steps we will have ONLY selected A1 - Injection.

2. SQL Injection tests can be performed for any of the following page parameters:
   - Request parameters
   - Request cookies

   Select any of these by placing a check next to the desired option(s).

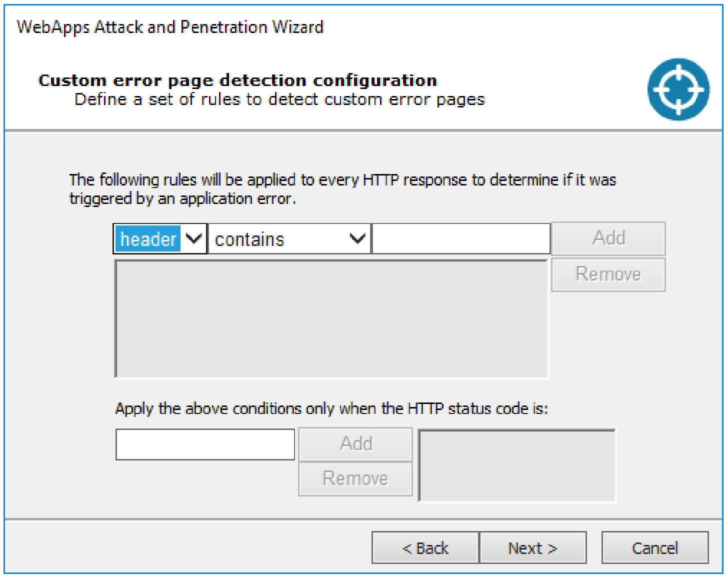
3. The WebApps Attack and Penetration step can exert varying levels of testing on the web page's parameters. Select the depth of the test using the drop-down menu:
   - FAST: quickly runs the most common tests
   - NORMAL: runs the tests that are in the FAST plus some additional tests
   - FULL: runs all tests
4. If you know in advance how the target web application's error pages will appear - what text will be in the body or the header - check the Use custom error page detection check-box. You will further configure this feature in a subsequent step in the Wizard.

   SQL Injection Test Configuration

5. If you opted to Use custom error page detection in the earlier step, you can add one or more rules that Core Impact will check when it receives data from the web application. Each rule can apply to the header of the document or the data content. You then can define whether the header or data does or does not contain certain text strings. For example, if you know that the web application will produce error pages that contain in the page body the sentence "We're Sorry. An unknown error occurred while processing your request. Please try again", then you could create a custom error configuration as shown below:

   Custom Error Page Detection Configuration



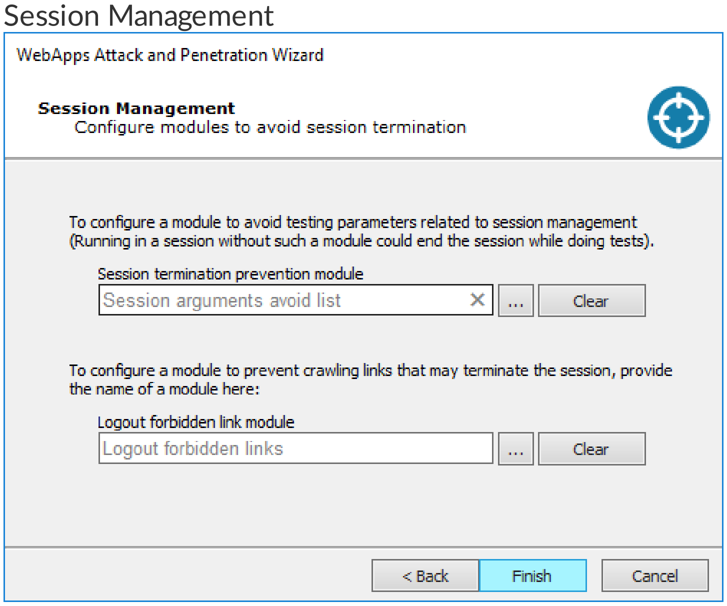
If Core Impact identifies an error page, it will then evaluate whether it (or the conditions that produced the error page) are vulnerable to SQL Injection attacks.

Use the Apply the above conditions when the HTTP status code was: list to indicate that custom error rules should only be applied if Core Impact receives a specific HTTP status code with the page.

6. To configure a module to avoid testing pages that could terminate the session, use the ellipsis (...) button. By default, the Session arguments avoid list module will be enabled for this purpose. Click the Clear button if you do not want any module to perform this function.

You can extend Core Impact's functionality by writing your own custom modules. For more information about writing custom modules, please contact Customer Support (see Contact Support).

Session Management



7. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

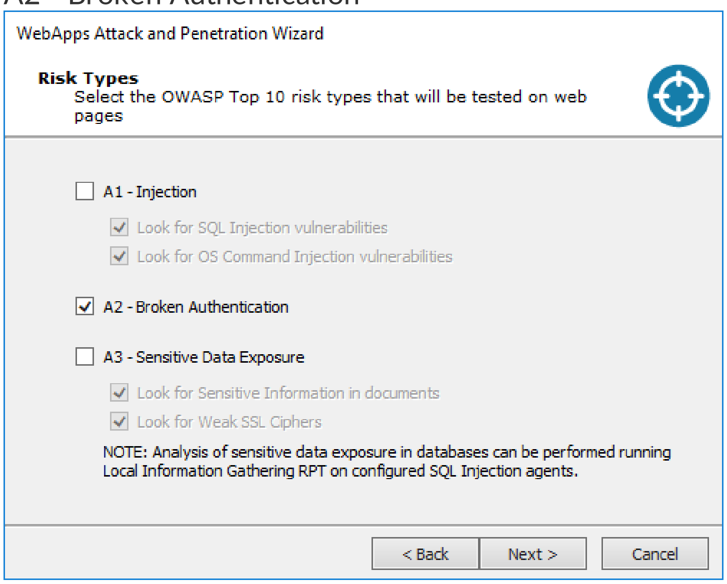
If the WebApps Attack and Penetration is successful, then WebApps Agents will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents. Additionally, if a vulnerability is found, it is assigned a Vulnerability ID which will allow Core Impact users to track reported vulnerabilities after testing. The Vulnerability ID will appear in the "Information" pane when the vulnerable web page is selected and also in the name of the agent that is deployed for the page. For example, if the SQLi Analyzer finds a vulnerability and assigns it ID 7, an agent configured from that vulnerability will be named "SQL Agent (7)".

A2:2017 Broken Authentication

Below we document the steps to test the **OWASP A2:2017 Broken Authentication** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A2 - Broken Authentication**

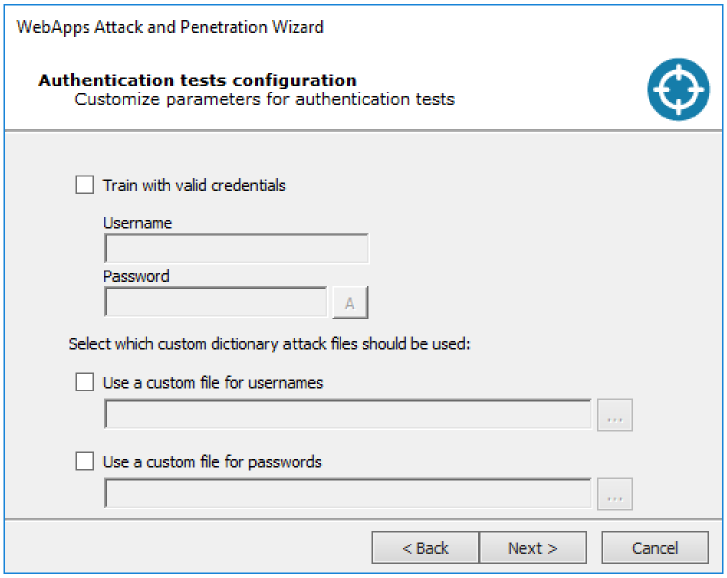
   A2 - Broken Authentication

   Then click **Next** until you are past the Risk Types selection. For the following steps we will have ONLY selected A2 - Broken Authentication.

2. Check the Train with valid credentials box and then enter a Username and Password if you would like the RPT to log into the web application so that it can learn (be trained) how a valid login appears. Alternatively, you can select custom dictionary files from which Core Impact can draw usernames and/or passwords.

   Authentication tests configuration



3. Check the Use a custom file for usernames option if you want to provide a file that contains a list of usernames the RPT can use in the test.
4. Check the Use a custom file for passwords option if you want to provide a file that contains a list of passwords the RPT can use in the test.
5. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

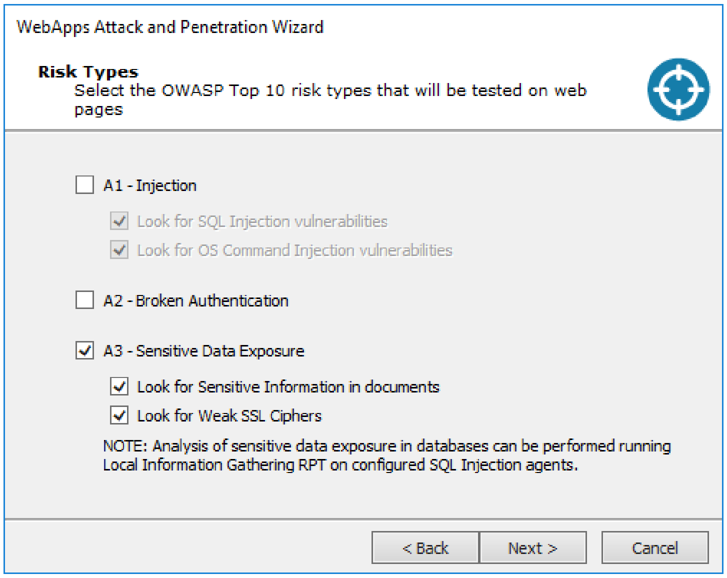
If the WebApps Attack and Penetration is successful, then WebApps Agents will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents. Additionally, if a vulnerability is found, it is assigned a Vulnerability ID which will allow Core Impact users to track reported vulnerabilities after testing. The Vulnerability ID will appear in the "Information" pane when the vulnerable web page is selected.

A3:2017 Sensitive Data Exposure

Below we document the steps to test the **OWASP A3:2017 Sensitive Data Exposure** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A3 - Sensitive Data Exposure** and optionally one of the following options:
   - **Look for Sensitive Information in Documents**: In addition to searching through HTML pages for sensitive data, Core Impact can search through documents that are linked from the HTML pages.
   - **Look for Weak SSL Ciphers**: Check this option if you want Core Impact to look also for weak SSL ciphers in the target web pages.

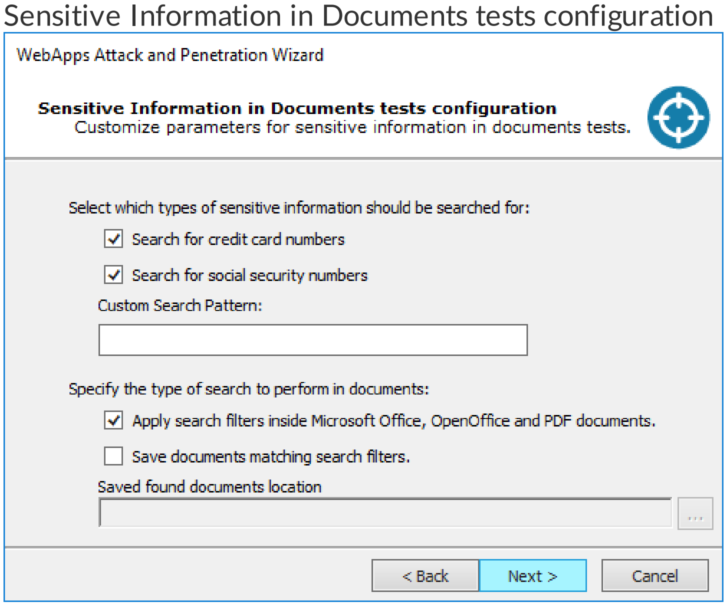
   A3 - Sensitive Data Exposure



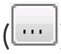
Then click **Next** until you are past the Risk Types selection. For the following steps we will have ONLY selected A3 - Sensitive Data Exposure and its related options.

2. If you selected **Look for Sensitive Information in documents**, you will have the below form to configure. You can instruct Core Impact to **Search for credit card numbers** or **Search for social security numbers** in any documents it finds. Additionally, add a **Custom Search Pattern** to help Core Impact find specific data - enter an extended regular expression and that would be run across all the HTML pages that the wizard is targeting.

   Sensitive Information in Documents tests configuration

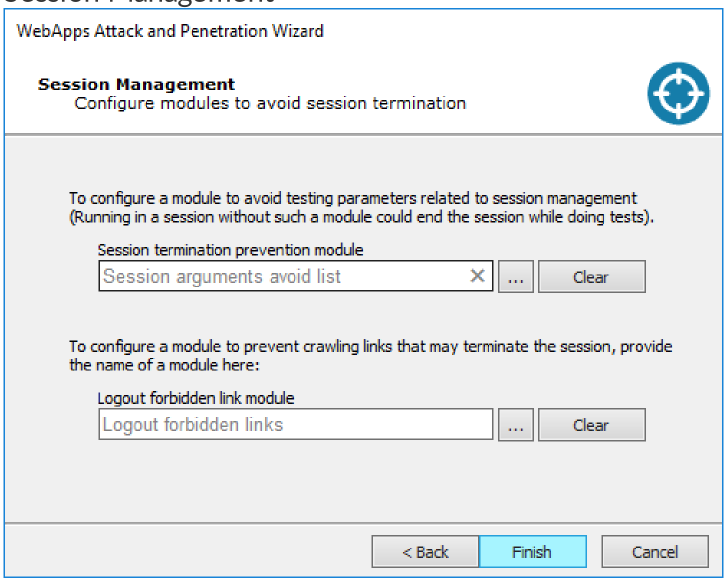


3. Check the Apply search filters inside Microsoft Office, OpenOffice and PDF Documents option if you want the test to search inside of documents that are linked from the HTML pages.
4. Check the Save documents matching search filters option if you want Core Impact to save any documents where it locates sensitive data. Then provide a path where the documents should be saved.

5. To configure a module to avoid testing pages that could terminate the session, use the ellipsis () button. By default, the Session arguments avoid list module will be enabled for this purpose. Click the Clear button if you do not want any module to perform this function.

   You can extend Core Impact's functionality by writing your own custom modules. For more information about writing custom modules, please contact Customer Support (see Contact Support).

   Session Management

6. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

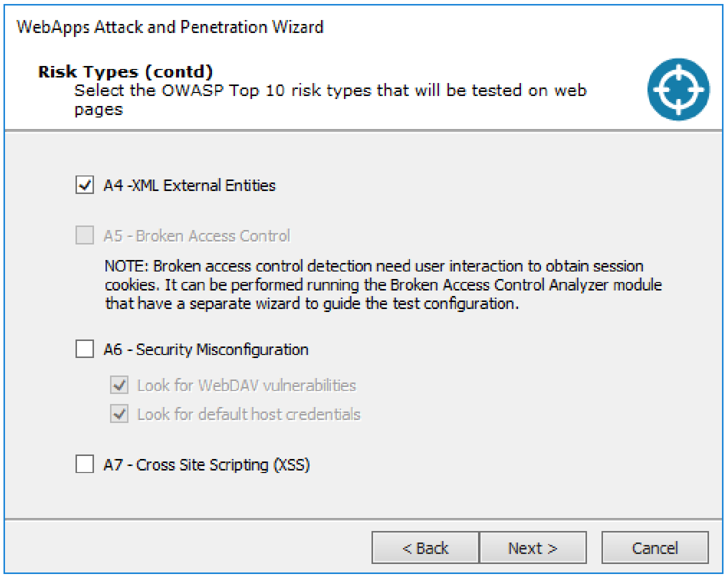
A4:2017 XML External Entities

Below we document the steps to test the **OWASP A4:2017 XML External Entities** security risk only. This test is used to identify XML External Entities (XXE) vulnerabilities on web pages and currently supports the following vulnerable libraries:

- Java 1.8+
- Python
- PHP 5
- PHP 7 (XML External Entities resolutions disabled by default)
- ASP

1. On the Risk Types pages of the Wizard, select **A4 - XML External Entities**

   A4 - XML External Entities



Then click **Next** until you are past the Risk Types selection. For the following steps we will have ONLY selected A4- External Entities.

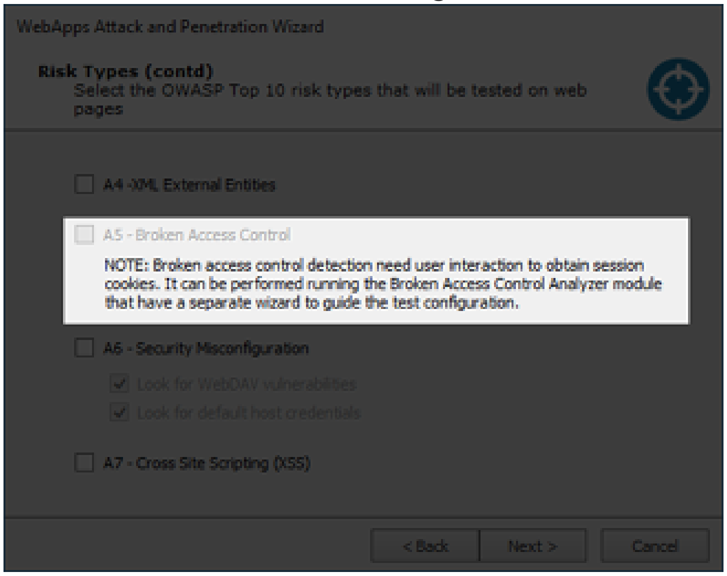
2. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

If one or more vulnerable pages are found, then a new XXE Agent will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents.

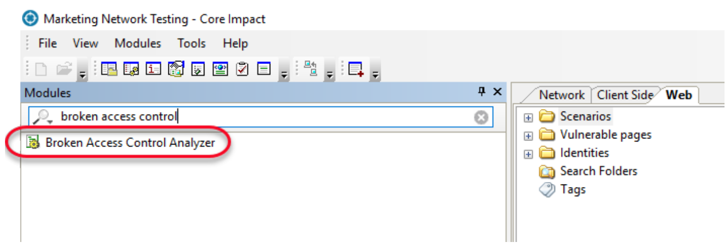
A5:2017 Broken Access Control

Below we document the steps to test the **OWASP A5:2017 Broken Access Control** security risk only. This test will navigate your target web application first as an admin user, then as a user with lesser privileges. The output will be a delta report, showing how the access differs between the 2 user accounts. As is noted on the WebApps Attack and Penetration Wizard, the **A5 - Broken**

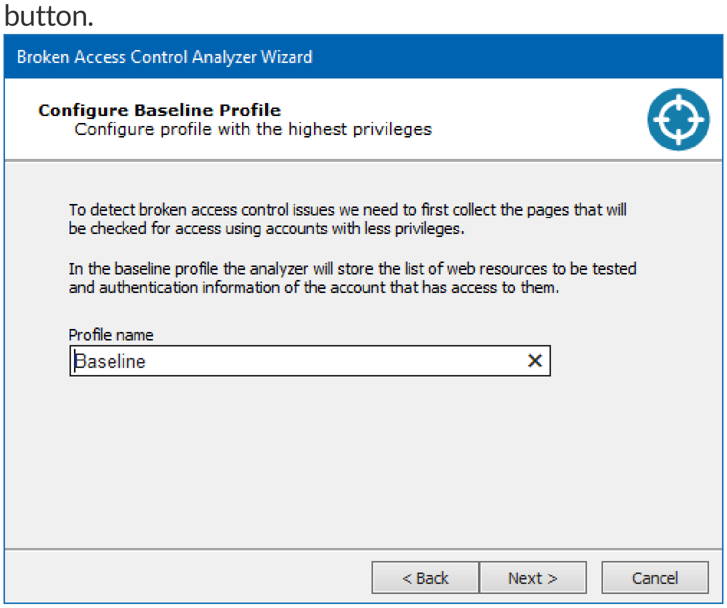
Access Control risk is tested using the **Broken Access Control Analyzer** module.



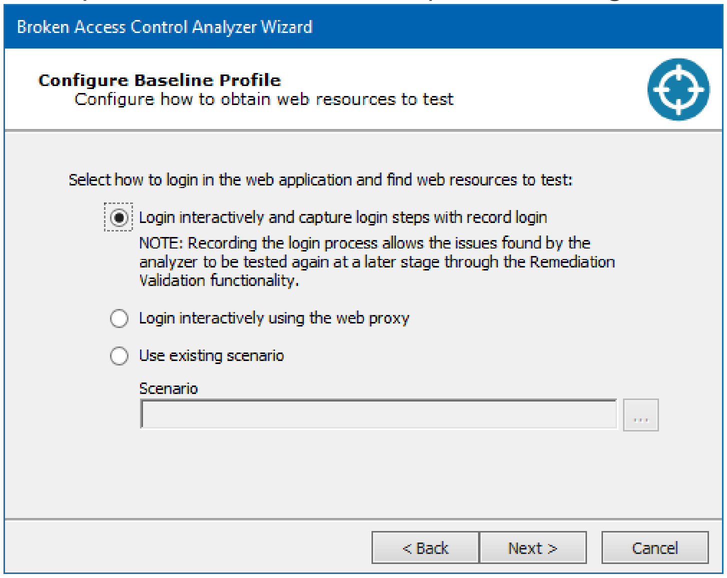
1. To execute a test for **Broken Access Control**, open the **Modules** tab and make sure the **Web** entity database is active.
2. Navigate to or search for the **Broken Access Control Analyzer** module.
3. Double-click the module to start the wizard.



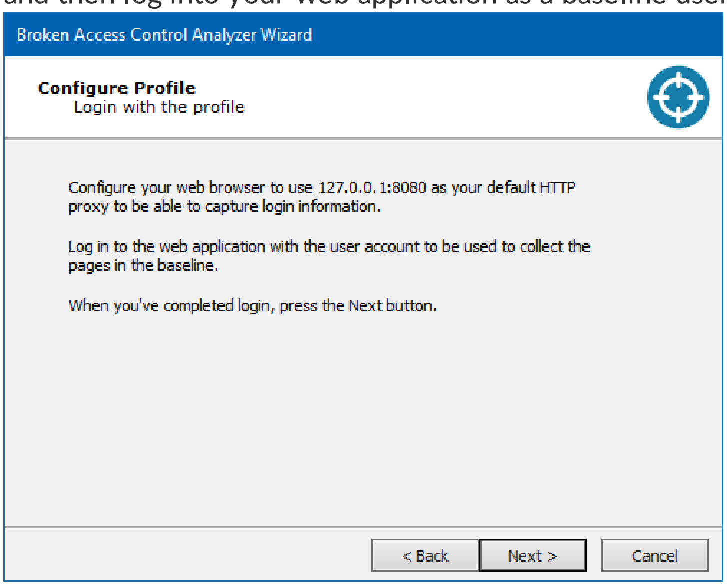
4. Enter the name of the baseline profile, or leave the default name, then click the **Next** button.



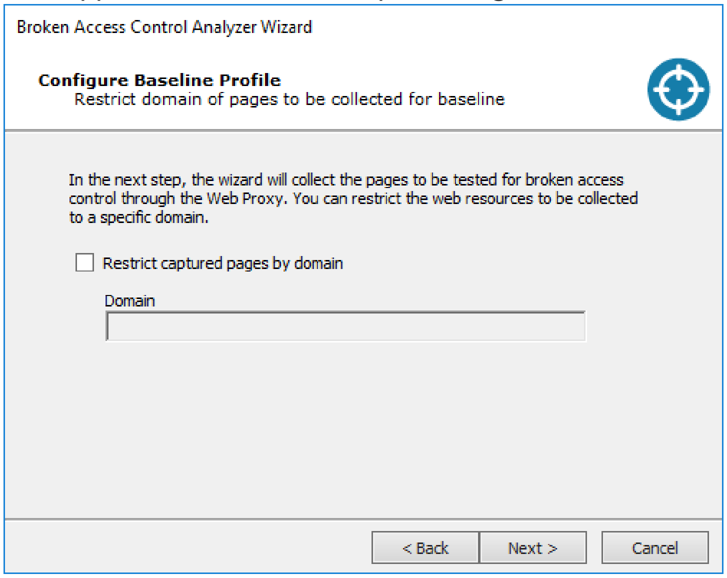
5. Configure how Core Impact can log in to your web application. With the first option, Core Impact will allow you to log in to your web application but it will record your steps so that it can perform them automatically at a later stage. Click the **Next** button.



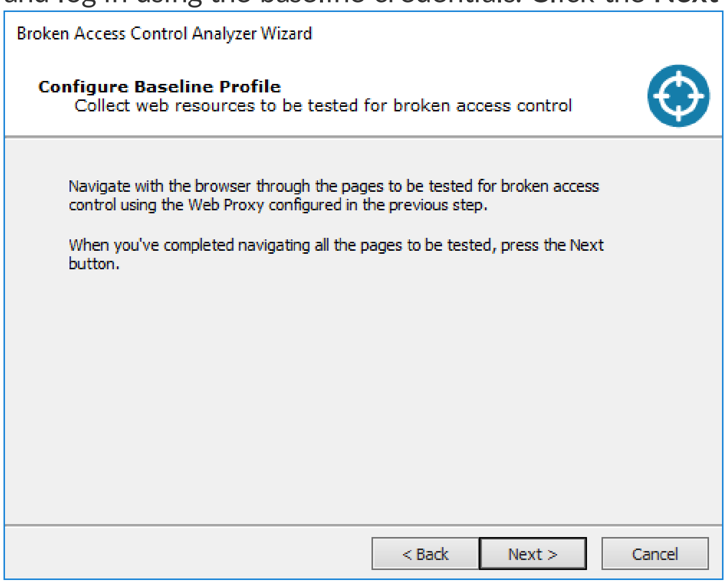
6. When Core Impact is ready, it will instruct you to set up a proxy for your web browser and then log into your web application as a baseline user. Click the **Next** button.



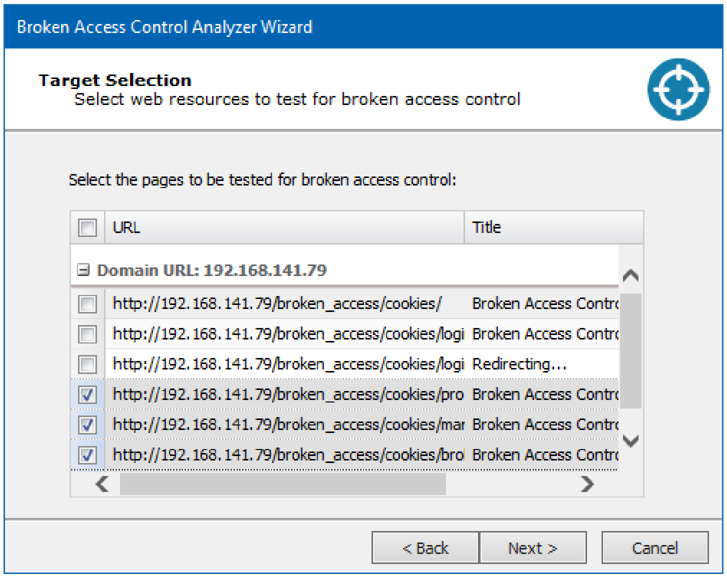
7. Optionally Restrict captured pages by domain if you want place limits on where in the web application that Core Impact can go. Click the **Next** button.



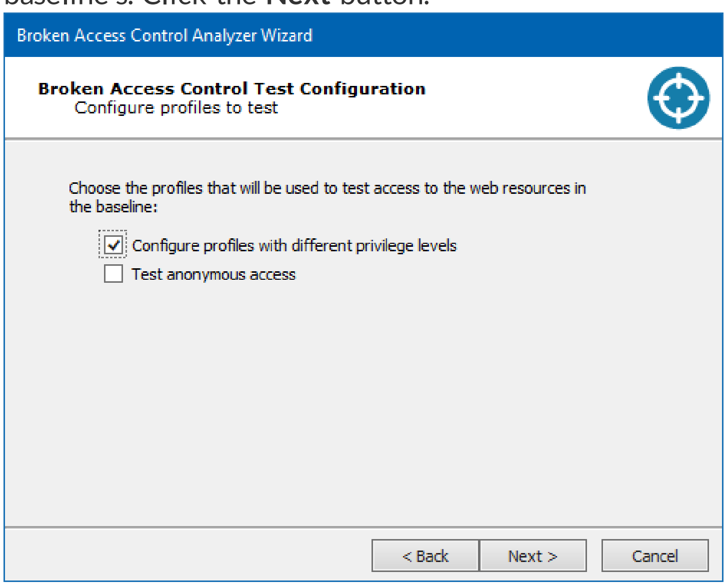
8. Using the web browser and previously-defined proxy, navigate to your web application and log in using the baseline credentials. Click the **Next** button.



9. Core Impact will present you with a list of pages found. Select which one(s) you want to test for broken access control. Click the **Next** button.

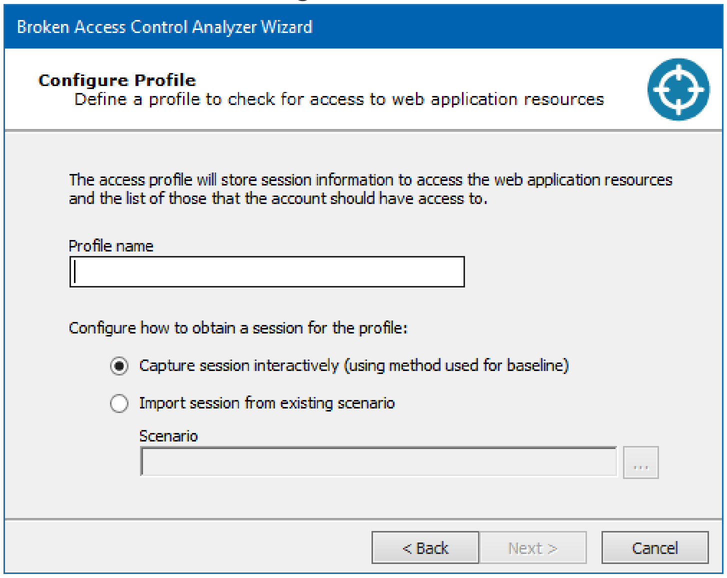


10. Select the type of profiles to be tested - the profile's test will be compared to the baseline's. Click the **Next** button.

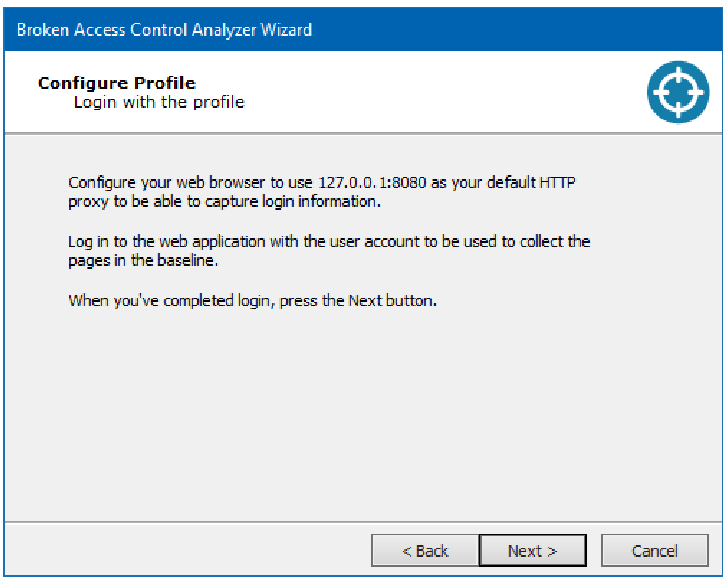


11. Enter a **Profile Name** and then configure how to obtain a session for the profile. You can capture the session interactively - as was done for the Baseline - or you can import the

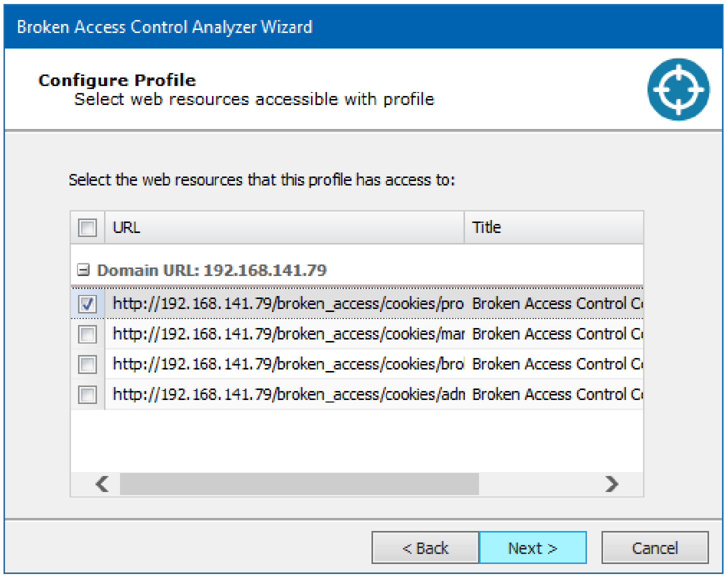
session from an existing scenario. Click the **Next** button.



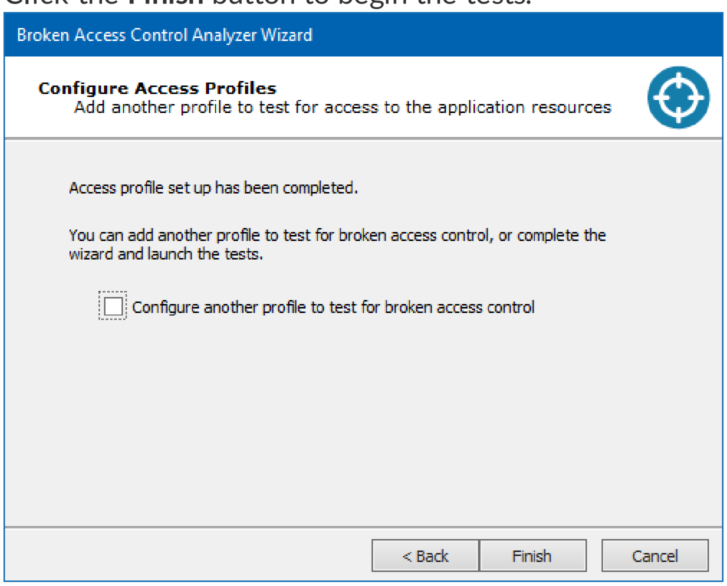
12. Just as was done with the Baseline, navigate to your web app and log in with the new Profile's credentials. Click the **Next** button.



13. Select the pages that you would like Core Impact to test as the Profile user. Click the **Next** button.



14. Click the **Finish** button to begin the tests.



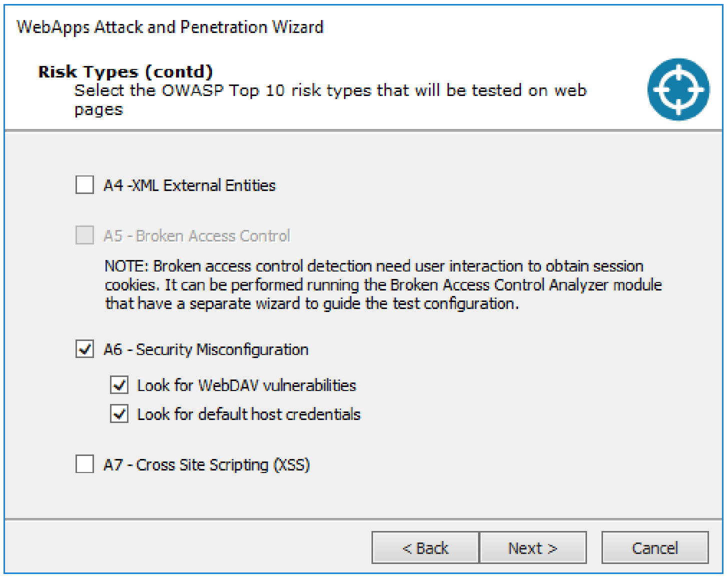
If the WebApps Attack and Penetration is successful, then WebApps Agents will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents.

A6:2017 Security Misconfiguration

Below we document the steps to test the **OWASP A6:2017 Security Misconfiguration** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A6 - Security Misconfiguration**

   A6 - Security Misconfiguration



- **Look for WebDAV vulnerabilities**: Check this option if you want the test to locate pages that have WebDAV vulnerabilities. If found, Core Impact will create a WebDAV agent which represents the knowledge of how to exploit a poorly configured web server.
- **Look for default host credentials**: Check this option if you want the test to locate pages that use default usernames and passwords.

Then click **Next** until you are past the Risk Types selection. For the following steps we will have ONLY selected A6 - Security Misconfiguration

6. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

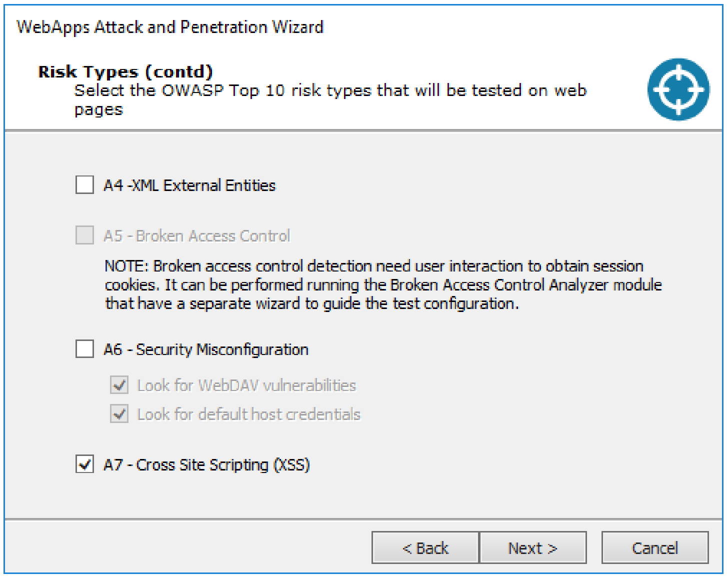
If the WebApps Attack and Penetration is successful, then a new XXE Agent will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents.

A7:2017 Cross Site Scripting (XSS)

Below we document the steps to test the **A7:2017 Cross Site Scripting (XSS)** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A7 - Cross Site Scripting (XSS)**

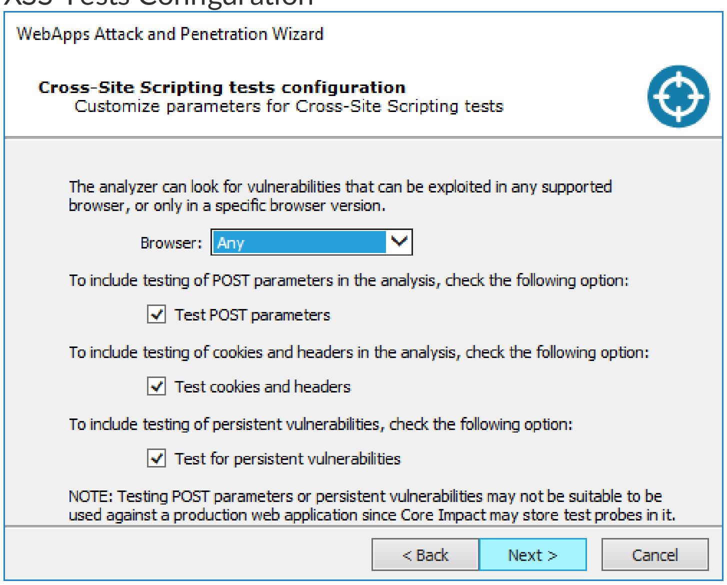
   A7 - Cross Site Scripting (XSS)



Then click **Next** until you are past the Risk Types selection. For the following steps we will have ONLY selected A7 - Cross Site Scripting (XSS).

2. Select the specific browser that you would like to target, or select Any to target all types.

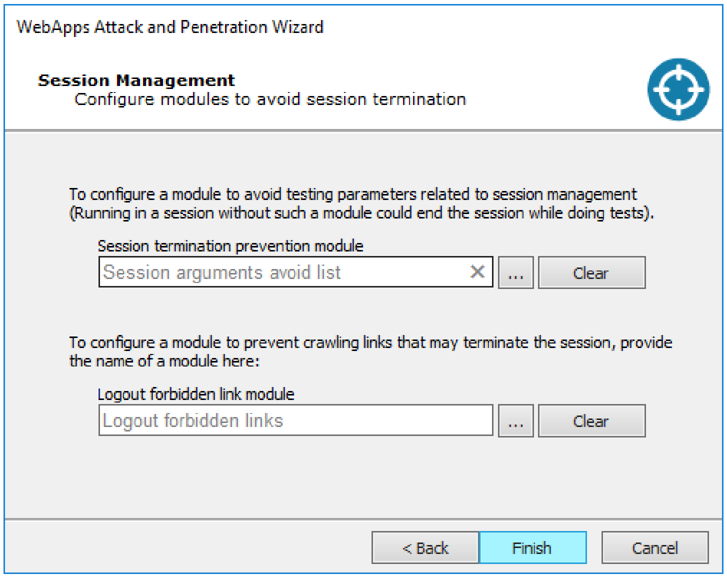
XSS Tests Configuration



3. To configure a module to avoid testing pages that could terminate the session, use the ellipsis (...) button. By default, the Session arguments avoid list module will be enabled for this purpose. Click the Clear button if you do not want any module to perform this function.

You can extend Core Impact's functionality by writing your own custom modules. For more information about writing custom modules, please contact Customer Support (see Contact Support).

Session Management



4. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

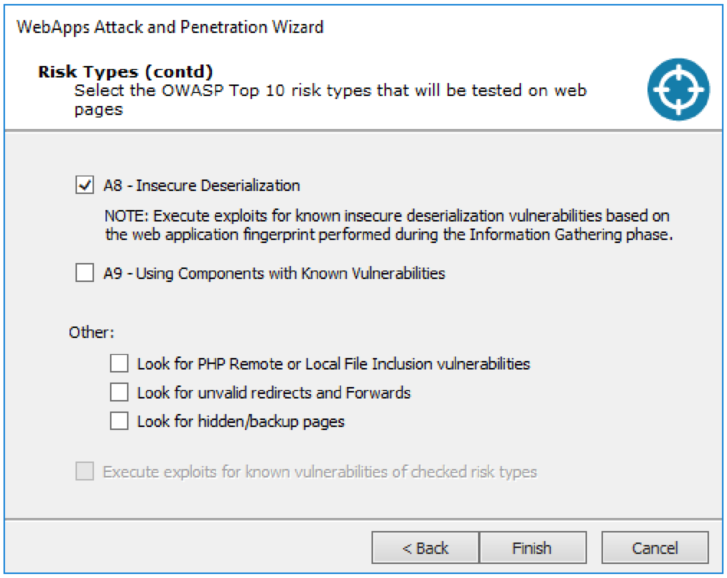
If the WebApps Attack and Penetration is successful, then WebApps Agents will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents. Additionally, if a vulnerability is found, it is assigned a Vulnerability ID which will allow Core Impact users to track reported vulnerabilities after testing. The Vulnerability ID will appear in the "Information" pane when the vulnerable web page is selected and also in the name of the agent that is deployed for the page. For example, if the SQLi Analyzer finds a vulnerability and assigns it ID 7, an agent configured from that vulnerability will be named "SQL Agent (7)".

A8:2017 Insecure Deserialization

Below we document the steps to test the **A8:2017 Insecure Deserialization** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A8 - Insecure Deserialization**

   A8 - Insecure Deserialization



2. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

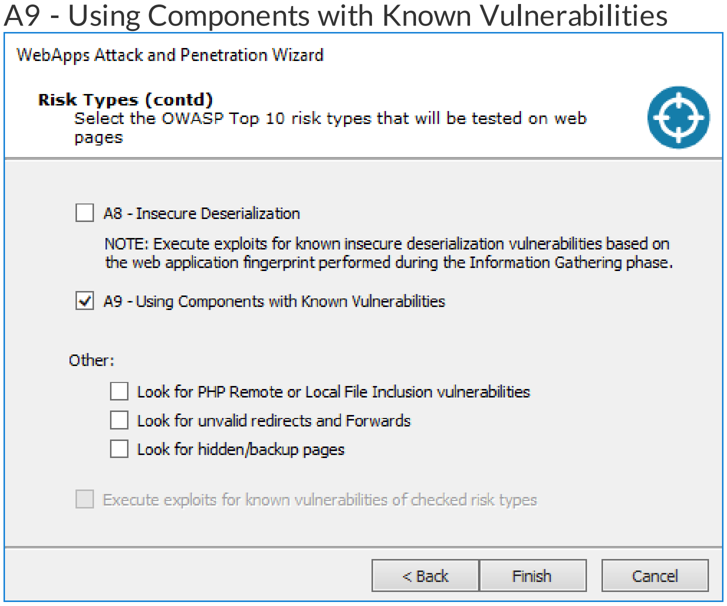
If the WebApps Attack and Penetration is successful, it will execute exploits for known insecure deserialization vulnerabilities based on the web application fingerprint performed during the Information Gathering phase.

A9:2017 Using Components with Known Vulnerabilities

Below we document the steps to test the **A9:2017 Using Components with Known Vulnerabilities** security risk only. Please note that you can combine tests and run more than one on a specific target or set of targets.

1. On the Risk Types pages of the Wizard, select **A9 - Using Components with Known Vulnerabilities**

   A9 - Using Components with Known Vulnerabilities



2. Click the **Finish** button to begin the test. If you had selected other Risk Types, click **Next** to make additional configurations.

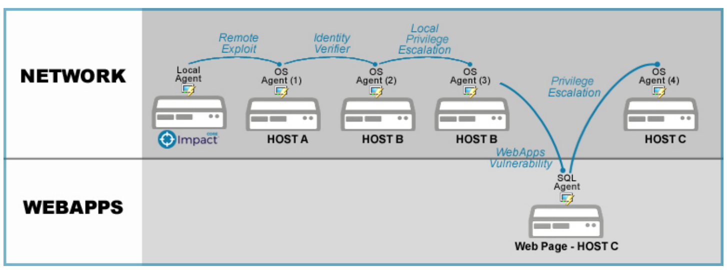
If the WebApps Attack and Penetration is successful, then a new XXE Agent will appear under vulnerable pages in the Entity View. See Interacting with WebApps Agents for information about how to leverage the WebApps Agents.

Remediation Validation

Core Impact allows testers to efficiently re-test Network and Web assets that have previously been identified as vulnerable. Because the remediation responsibilities usually fall on a different team, Remediation Validation is an important step for penetration testers. Core Impact's Remediation Validation test results will be output to a report, comparing new results with original results. In many cases, the Remediation Validator supports agent redeployment and remediation on testing scenarios where OS agents, WebApps agents, and Network SQL agents are used together to detect vulnerabilities.

View illustration

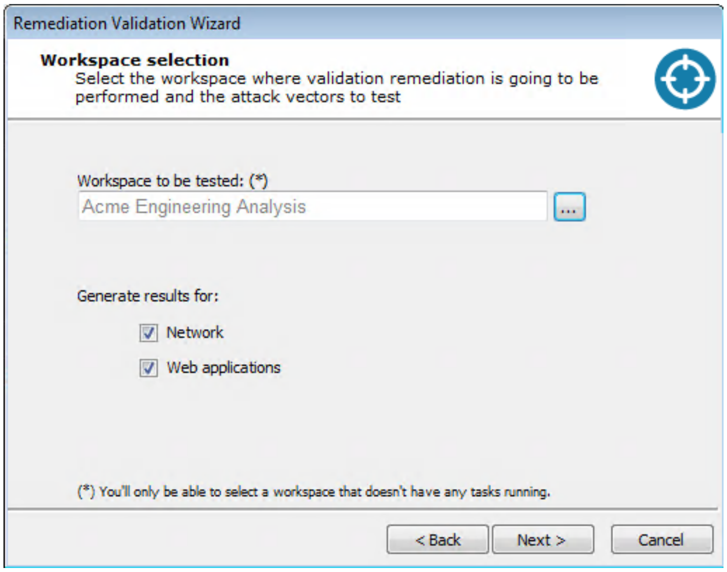
In the below illustration, Host C is compromised as Core Impact is able to leverage vulnerabilities in Hosts A and B. When performing Remediation Validation on this scenario, Core Impact will attempt to recreate the same attack path and redeploy the same agents in order to determine if the vulnerabilities have been remediated.



Using Core Impact, testers have several methods of initiating a Remediation Validation test:

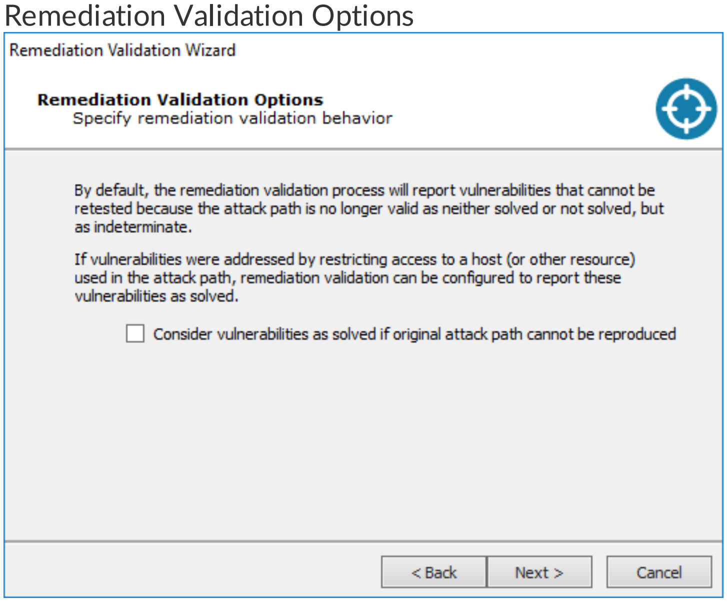
- **From within a Workspace**: Network and WebApps RPTs provide One-step Remediation Validation tests. Jump to those sections to learn more.
- **From the Dashboard**:
    1. From the Core Impact dashboard, click the **Remediation Validation** button. The Remediation Validation wizard will open.
    2. Select a Workspace in which you want the validation to occur, select whether you would like results for **Network**, **Web applications**, or both, then click **Next**.

       Workspace Selection



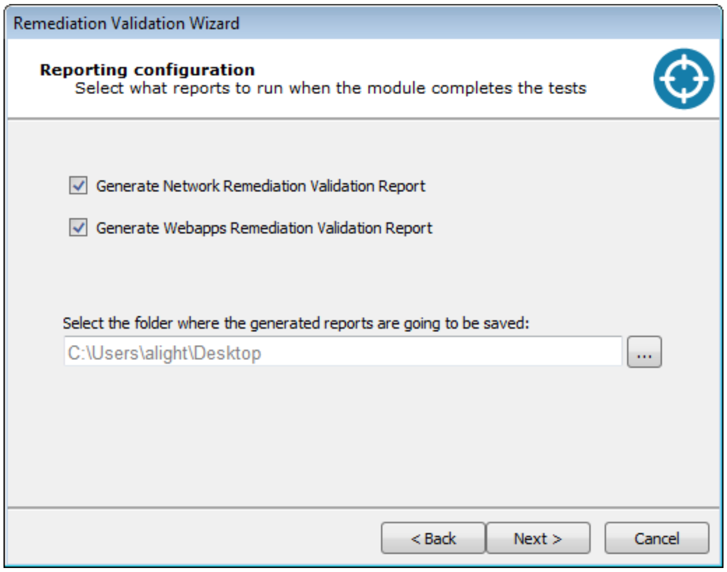
3. Check the **Consider vulnerabilities as solved if original attack path cannot be reproduced** option if you want the test to mark vulnerabilities as "solved" (and not "indeterminate") if the original attack path cannot be used. Then click **Next**.

   Remediation Validation Options

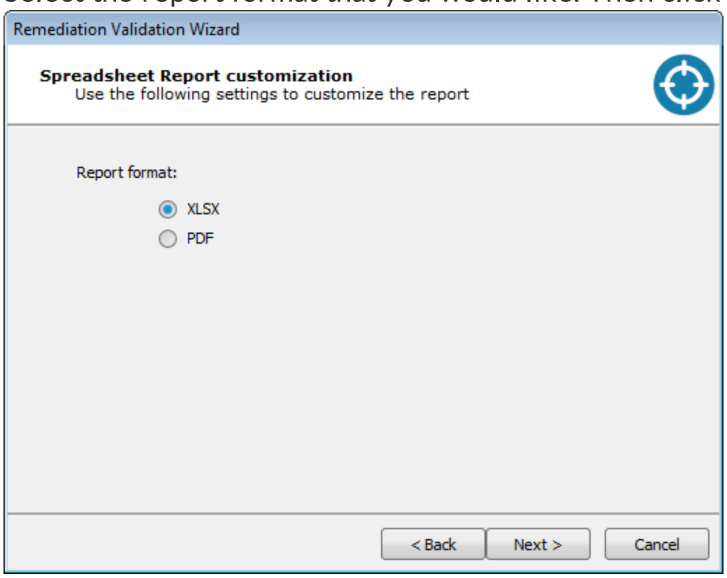


4. Select the report(s) that you would like Core Impact to generate and select a local folder where the report(s) should be saved. Then click **Next**.

   Reporting Configuration

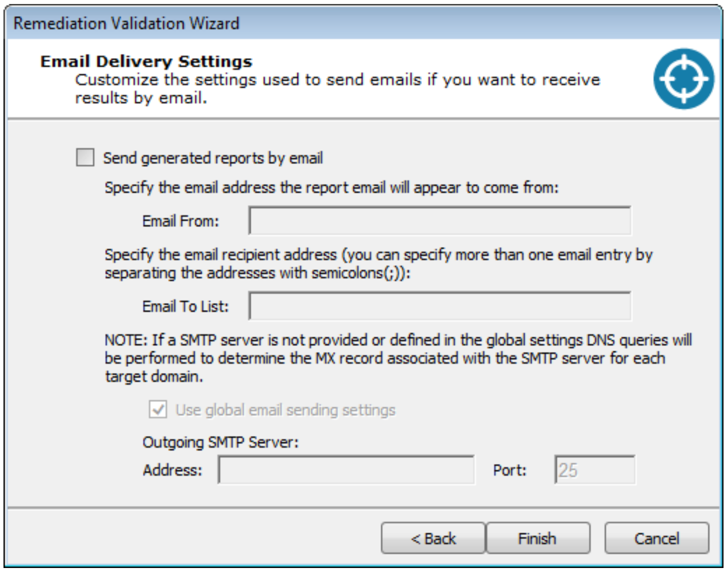


5. Select the report format that you would like. Then click **Next**.



6. If you would like to receive the reports via email, check the Core Impact option and complete the remainder of the form. Then click **Finish**.

   Reporting Configuration



The targeted workspace will open and the Remediation Test will automatically run. You can then check the Module Output for status and completion information.

Reports

Each of the Rapid Penetration Tests provides rich reports that can be used to consolidate, view and distribute your test findings as well as to plan ongoing prevention and remediation efforts. Reporting options are similar for each RPT and several reports are available for multiple RPTs.

- Types of Reports
- List of Available Reports
- Running Crystal Reports
- Running Spreadsheet Reports
- Creating User Spreadsheet Reports
- Running Reports from the Dashboard

For any report that consolidates data for more than one workspace, unique IP addresses and unique email addresses are treated differently for data summaries. For example, if the same IP address is discovered in 3 different workspaces, the report's Summary of Discovered Hosts will show a count of 3 hosts. Alternatively, if the same email address is reported in 3 different workspaces, the report's Summary of Targeted Users will show a count of 1 email address.

Types of Reports

- **Crystal Report**: This option uses SAP Crystal Reports as the engine to generate report data. Jump to Running Crystal Reports. Some reports are available only as Crystal Reports.
- **Spreadsheet**: Some Core Impact reports use Excel as the reporting engine. Check only the **Spreadsheet** checkbox to see which reports qualify. Jump to Running Spreadsheet Reports.

- **User Spreadsheet**: Any report that is available as a **Spreadsheet** report can be modified and customized to suit your specific business requirements. Once a report has been customized, it will be listed in the **User Spreadsheet** category. Jump to Creating User Spreadsheet Reports.

List of Available Reports

Network Host Report

Available in the Network and Client-side RPTs, this is a detailed report about the hosts you tested using Core Impact, grouped by host IP address unless otherwise configured. Reported data Includes:

- Number of compromised hosts
- Services and applications found on each host
- Average number of exploited vulnerabilities on those hosts
- The CVE names of the vulnerabilities found on each compromised host
- If available, a screen shot from the compromised host.

This report is closely linked to the Vulnerability report (see below). (For Network RPT and Client-side RPT only)

Customization options:

- Host Selection: You can select specific hosts on which to run the report, or report on all known hosts.
- Include host list grouped by services: Select this option to have the host data grouped by the services they were running.
- Include host list grouped by ports: Select this option to have the host data grouped by
- Include application list for each host: Select this option to include detected applications for each host in the report.
- Include closed ports for each host: Select this option to include detected closed ports for each host in the report.
- Black and white charts: Select this option to have charts created in black and white instead of in color.

Full Executive Report

Available in the General category, this is a report presents a summary of the penetration test conducted by Core Impact.

Identity Report

This report provides details about discovered identities harvested by brute force or post-exploitation actions. When executing up the report, you have the following options:

- Report format: Select either XLSX or PDF.
- Show hashes and passwords: Select either Yes or No.

Network Exposure Report

This report details the exposures that were found during the Information Gathering stage of the

RPT. Exposures are information that while not being a vulnerability might help an attacker to conduct information gathering activities. When executing up the report, you have the following options:

- Report format: Select either XLSX or PDF.

Network Report

This report provides detailed information about hosts found and all vulnerabilities found that were successfully exploited. When executing up the report, you have the following options:

- Report format: Select either XLSX or PDF.
- Show hashes and passwords: Select either Yes or No.

Network Mitigation Report

This report provides detailed information about the vulnerabilities found, organized as a checklist to serve as a reference document for issues that need to be addressed. When executing up the report, you have the following options:

- Report format: Select either XLSX or PDF.

Network Vulnerability Validation report

Available in the Network RPT, this is a report containing validation information for vulnerabilities imported from external vulnerability scanners. When executing the report, you have the following options:

- Report format: Select either XLSX or PDF.

PCI Vulnerability Validation report

Available in the Network RPT, this is a report containing validation and severity information for vulnerabilities imported from external vulnerability scanners.

Customization options:

- Host Selection: You can select specific hosts on which to run the report, or report on all known hosts.
- Black and white charts: Select this option to have charts created in black and white instead of in color.

Network Remediation Validation report

Available in the Network RPT, this is report compares the Workspace's original results with those after remediation efforts have been performed.

Network Video Camera report

Available in the Network RPT, this report provides detailed information about the video cameras found during the testing carried out by Core Impact and the risks and weaknesses associated to them

When executing the report, you have the following options:

- Report format: Select either XLSX or PDF.

Vulnerability Report

Available in the Network, Client-side and WebApps RPTs, this is a detailed report about the vulnerabilities that were successfully exploited on each host (versus potential vulnerabilities). This report provides details for each of the exploited vulnerabilities listed for compromised hosts in the Host Report. Data includes Common Vulnerabilities and Exposure (CVE) as well as Common Vulnerability Scoring System (CVSS) details.

When executing the report, you have the following options:

- Report format: Select either XLSX or PDF.

Network Wellness Report

Available in the Network RPT, this report indicates the amount of testing that was performed and shows which tests resulted in a vulnerability being found on the selected targets. When executing the report, you have the following options:

- Report format: Select either XLSX or PDF.

Client-Side Penetration Test Report

Available in the Client-side RPT, this is a detailed report of Client-side Penetration Tests including:

- Summary of client-side attack types
- Email messages sent to deliver attacks or lure users to a malicious web site
- Exploits used in client-side attacks

Customization options:

- Black and white charts: Select this option to have charts created in black and white instead of in color.

Client-Side Phishing Report

Available in the Client-side RPT, this is a detailed report of Client-side Phishing test results, including:

- Summary data of client-side targets
- Percentage of targets who viewed the attack email
- Percentage of targets who visited the Phishing web site
- Percentage of targets who entered data into the Phishing web site

Customization options:

- Black and white charts: Select this option to have charts created in black and white instead of in color.

User Report

Available in the Client Side RPT, this is a detailed report about all the users that were discovered and targeted as a part of the penetration test.

Customization options:

- Black and white charts: Select this option to have charts created in black and white instead of in color.

Host Based Activity Report

Available in the Network RPT, this is a report showing all modules run for each detected host.

Customization options:

- Host Selection: You can select specific hosts on which to run the report, or report on all known hosts.
- Black and white charts: Select this option to have charts created in black and white instead of in color.

FISMA Exploited Vulnerabilities Report

Available in the Network and Client Side RPTs, this is a report that shows a summary and detailed information of vulnerabilities exploited by Core Impact. This report is designed to comply with standards and requirements of the U.S. Government Federal Information Security Management Act (FISMA) and can help you achieve NIST SP 800-53A compliance.

Customization options:

- Black and white charts: Select this option to have charts created in black and white instead of in color.
- Show additional information for vulnerabilities: Select this option to include more details about vulnerabilities included in the report.
  - Include identities: Select this option to include identities in the report output.
  - Obfuscate plain text password: If including identities, check this option to mask any passwords.
  - Group validated identities by: If including identities, identities will be grouped by Host or by Service.

Delta Report

Available in the Network, Client-side and WebApps RPTs, the Delta Report will show a side-by-side comparison of test statistics for any 2 workspaces.

Customization options:

- Select 2 workspaces to compare.

Trend Report

A Trend report is a summary report which shows graphically the changes across 2 or more workspaces. This report is only available when Running Reports from the Dashboard.

Customization options:

- Timeline to be used in the report: Select the scale of the report as daily, weekly, monthly, quarterly, or yearly.
- Select attack categories to be included in the report: Select from Network, Client-Side, and Web.

- Black and white charts: Select this option to have charts created in black and white instead of in color.
- Show numbers in charts: Select this option to have numbers visible on output chart.

Executive Report

Available in the Network, Client-side and WebApps RPTs, this is a summary report of all completed penetration test activities and their results. Reported data includes:

- Summary of exploited vulnerabilities
- Summary of discovered hosts and network devices
- Summary of targeted users
- Most exploited vulnerabilities (overall and by operating system)

Customization options:

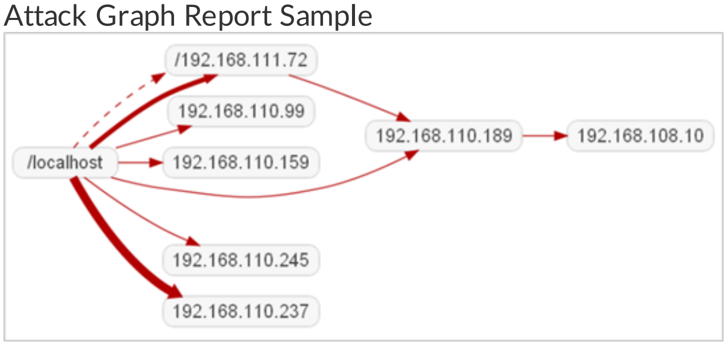
- Black and white charts: Select this option to have charts created in black and white instead of in color.

The Network Executive Report is available as a Spreadsheet Report

Attack Graph Report

For any attack vector where you have successfully penetrated a system, you can obtain a graphical representation of the test by running the Attack Graph report. The Attack Graph illustrates your penetration test by using nodes and edges as in this example:

Attack Graph Report Sample



A **node** represents any participant in the attack - either a system or application.

An **edge** (arrowed line) represents an attack. The type of edge indicates the type of attack according to the below key:

- Solid  Network attacks
- Dashed  Client-side attacks
- Dotted  WebApps attacks

Attack Graphs are created using Graphviz, which can be downloaded at www.graphviz.org. Graphs can be produced in a raw `.dot` format which can then be edited with Graphviz' `gvedit.exe` as well as other 3rd party tools.

Customization options:

- Output filename: The name of the file that will contain the attack graph. If you don't change the Output Filename, the resulting report file will be saved in `%programfiles%/core security/Impact/bin`.
- Edge color: The color of the attack lines between nodes (red or black).
- Edge detail: Select Full if you want the graph to display each exploit as its own edge. So if there were 14 exploits used, you will see 14 edges. Select Compacted to show a single edge for each attack type between two nodes. In Compacted mode, you will see edges with different thicknesses. The thick edges indicate that several attacks were performed between the same two nodes but using different exploits.
- Node detail: This setting determines how much information is displayed per node. With any of these options, the nodes are shown in tiers based on their distance from the localhost node.
    - Full: In this mode, the node displays verbose identification information (IP address, URL or web browser and version). All other Node Detail modes are compacted in that they display icons to indicate the type of node.
    - Compacted BFS (Breadth-First Search): In this mode, each node contains a number in parentheses that represents the order in which the node was attacked.
    - Compacted In Degree: In this mode, the nodes contain two numbers. The first number (not in parentheses) shows the number of distinct exploits with which the node was attacked (this number would correspond with the number of edges connecting to the node). The number in parentheses is a rank (starting at 0) based on number of attacks received. For example, a node showing 34 (0) was attacked with 34 exploits and it was also the node that received the most attacks. In this mode, you should see localhost as having the highest number rank and no number of attacks.
    - Compacted Out Degree: In this mode, the nodes contain two numbers. The first number (not in parentheses) shows how many attacks originated from the node. The number in parentheses is a rank (starting at 0) based on number of attacks performed. For example, a node showing 2 (5) performed 2 attacks and there were 5 nodes that performed the same or more attacks.

Activity Report

Available in the Network, Client-side and WebApps RPTs, this is a detailed report of all modules executed in Core Impact, grouped by date/time run and module.

Customization options:

- Log detail level: select from Low, Medium or High.
- Include only parent level tasks: Select this option to prevent the report from showing details on sub-modules.

Network Wireless Report

Available in the Network RPT, this report shows detail on all known wireless relationships that have been found while Testing a Wireless Environment. When executing the report, you have the following options:

- Report format: Select either XLSX or PDF.

WiFi Fake Access Points Report

Available in the Network RPT, this report provides a summary of information about attacks while Testing a Wireless Environment using a Fake Access Point.

WiFi MiTM Report

Available in the Network RPT, this report shows data about results of Man In The Middle (MiTM) attacks.

WebApps Executive Report

Available in the WebApps RPT, this report summarizes the most relevant information obtained during the penetration test. This report includes information about discovered hosts, compromised vulnerabilities and executed tasks.

Customization options:

- Select how to show the exploited assets: select from Do not include, Most Exploited Web pages, List All Exploited Assets.

Information Publicly Accessible Report

Available in the Client Side RPT, this report presents the results from the search of documents and any metadata within the discovered documents during Client Side Information Gathering. This report includes information about discovered hosts, compromised vulnerabilities and executed tasks.

Customization options:

- Show Sensitive Data: Check this option to include sensitive data in the report.

WebApps Remediation Validation Report

Available in the WebApps RPT, this report provides a comparison between the original data and the remediated results.

WebApps Vulnerability Report

Available in the WebApps RPT, this report provides detailed information about all vulnerabilities that were successfully exploited during the penetration test.

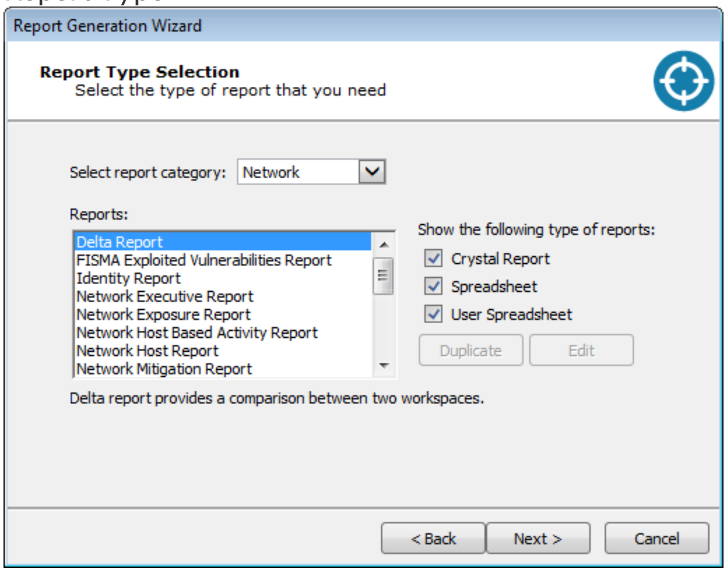
Running Crystal Reports

To run a Crystal report:

1. Click the Report Generation step for your RPT. The Report Generation wizard will open.
2. Click Next to begin.
3. Select the report category from the drop-down menu.

4. Check only the **Crystal Report** check-box to display only the Crystal Reports. Select the Report that you wish to run and click the Next button. The report selections in the below image are from the Network Report Generation wizard; options will vary for other RPTs.

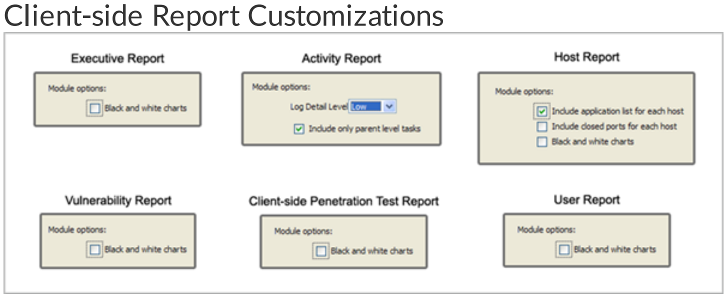
   Report Type

5. Make any Report customizations that are available. Customizations will vary for the different report types.

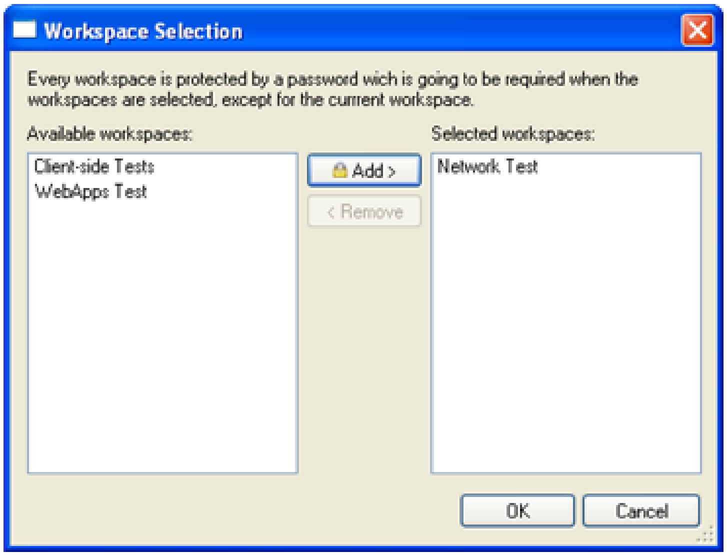
   Then click the Next button.

   Client-side Report Customizations

6. For WebApps RPT Reports only, click the ellipsis (...) button to choose the scenario(s) for which you would like a report. Then click the Next button.
7. For certain Network and Client-side RPT Reports, you must select the Workspace(s) for which you would like a report. On the Workspace Selection page, click the ellipsis (...) button to choose the workspace(s) for which the report should run.
8. For any workspace that you want to include in the report, select it on the left (Available Workspaces) and click the Add button to move it to the Selected Workspaces pane. If you add a workspace that isn't the currently-opened workspace, you will be prompted for the workspace's password.

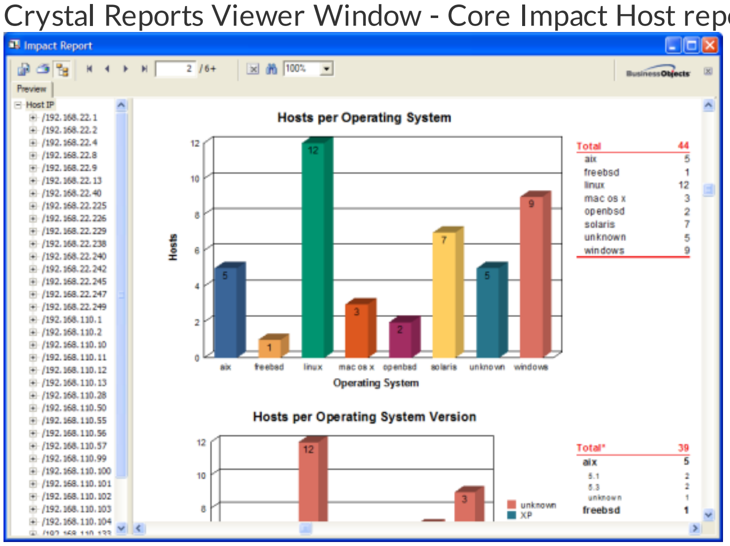
   Workspace Selection



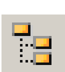
9. Click the OK button to return to the Report Wizard.
10. Click the Finish button to run the report.

The report will run and automatically display in the Crystal Reports Viewer Window. The following is an example of an Core Impact Host report displayed in the Crystal Reports Viewer Window:

Crystal Reports Viewer Window - Core Impact Host report Example



The main functionality for the Reports Viewer Window is provided by the Export Report, Print Report, and Toggle Group Tree buttons located on the top left corner of the window. Descriptions of each of these buttons are provided below.



Toggle Group Tree

Allows you to collapse the Preview Pane for better individual report viewing/processing or expand it to select from available options (in this case host IPs). This feature is not available on the Client-side Penetration Test, User, or PCI Vulnerability Validation reports.

Print Report

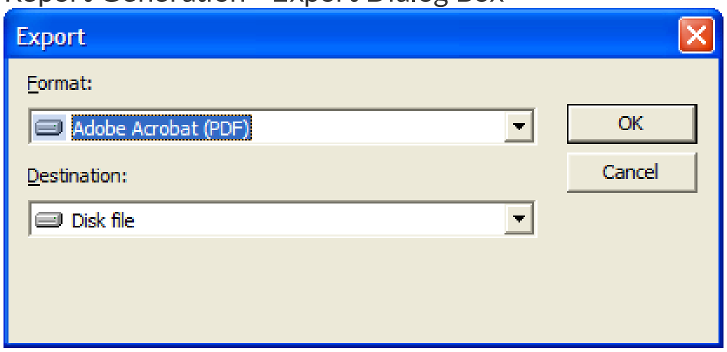
Allows you to print your report using the standard Windows Print Dialog Box.

Export Report

Allows you to export your report to your chosen destination in your chosen document format.

If you are exporting your report, the Export Dialog Box will appear and you will be prompted to provide information on report format and destination, and then the export file location.

Report Generation - Export Dialog Box



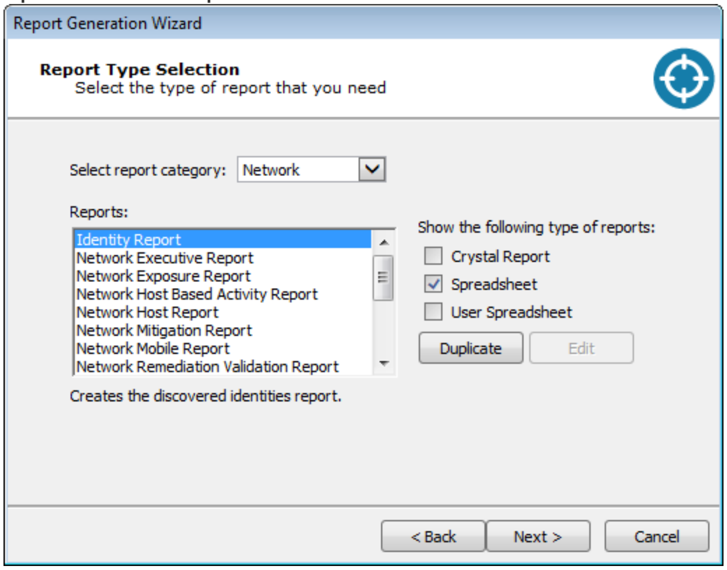
After you provide this information, the Export Records Dialog Box will appear and export your report.

Running Spreadsheet Reports

To run a Spreadsheet report:

1. Click the Report Generation step for your RPT. The Report Generation wizard will open.
2. Click Next to begin.
3. Check only the **Spreadsheet** check-box to display those reports that can be generated as Spreadsheet reports.

4. Select the desired Report and click the Next button.
   Spreadsheet Reports



5. Select the desired output format as either **XLSX** or **PDF**.
   Then click the Finish button.

The report will run and automatically display in either Adobe Reader or Microsoft Excel, depending on the output format you selected.

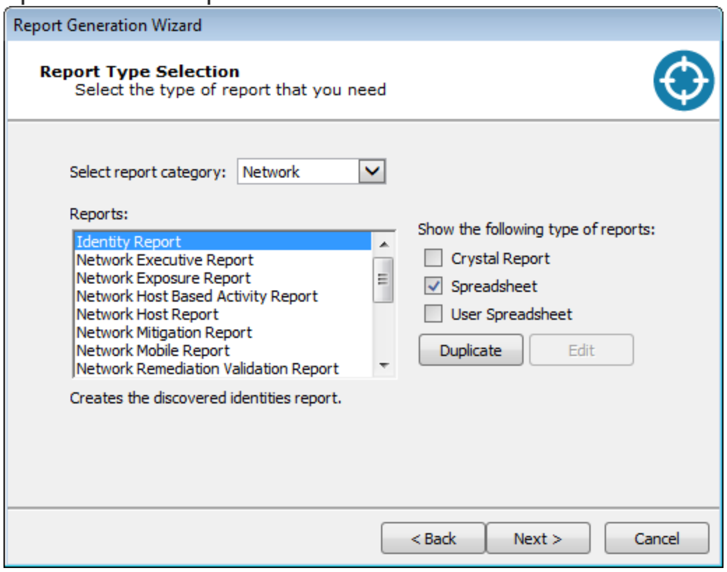
Creating User Spreadsheet Reports

Any Spreadsheet report can be copied, then modified and customized to meet your specific business requirements. To create a User Spreadsheet report:

1. Click the Report Generation step for your RPT. The Report Generation wizard will open.
2. Click Next to begin.
3. Check only the **Spreadsheet** checkbox to display only the Spreadsheet reports.

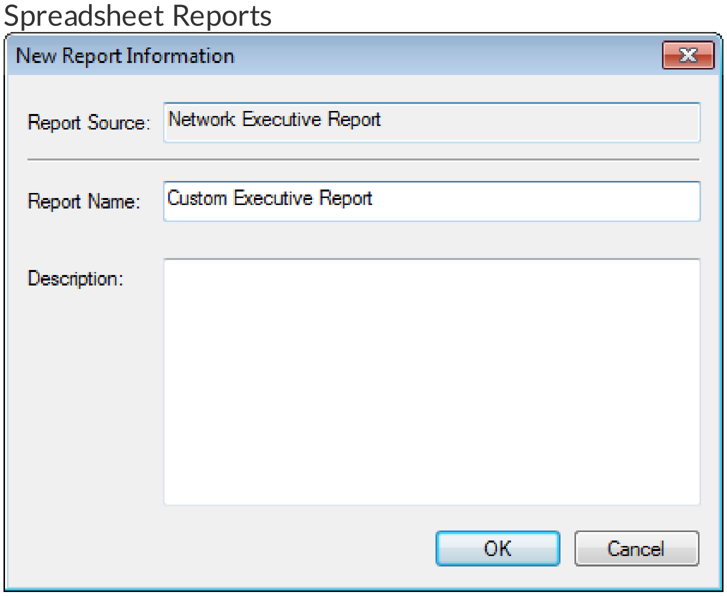
4. Select the Report that you want to modify and click the Duplicate button.

   Spreadsheet Reports

5. The **Report Source** field will display the name of the report that you are copying. In the **Report Name** field, enter a new, unique name for your User Spreadsheet report. Optionally, enter a **Description** of the new report.

   Spreadsheet Reports

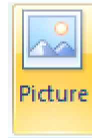
   

   Then click the OK button.

6. The report template will open in Microsoft Excel. Follow the below guidelines and examples for modifying the report template:

   Example: To Replace the Logo Image in the Template

   1. Click the Core Impact logo image in the Header area of the spreadsheet.

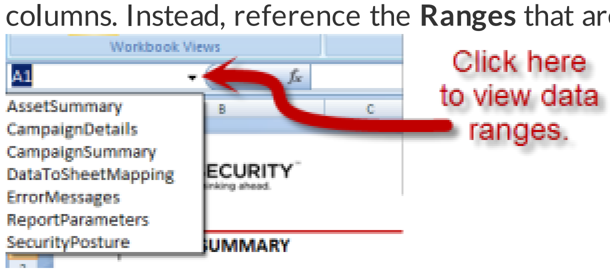
2. Click the **Picture** button on the Excel toolbar. 

3. Microsoft Excel will present a pop-up message, stating that "Only one picture can be inserted in each section of the header". Click **Replace**.
4. Browse to and select the image file that you want to use in the report template. Click **Open**.
5. Save and close the Excel file.

   When you subsequently run this custom report in Core Impact, it will contain your updated image in the header.

Example: To Add Columns from the Template Tables

1. Add a new worksheet to the Excel file and name the new worksheet (e.g. New Data). This worksheet will contain the data that you wish to display in the report.
2. Right-click on any worksheet tab and select **Unhide...**
3. The worksheets that are hidden by default are named with an underscore (e.g. _ exp_data) and contain the raw data that the reporting worksheets reference. Select which raw data worksheet(s) you wish to unhide and click **OK**.
4. On your new worksheet (New Data), create pivot tables or regular tables that references the data from the hidden worksheet(s). Do not reference explicit cells or columns. Instead, reference the **Ranges** that are included in the template.

5. Right-click on the tab of any worksheet that should be hidden and select **Hide**.
6. Save and close the Excel file.

   When you subsequently run this custom report in Core Impact, it will contain your new worksheet and the resulting data from the table(s) you added.

Guidelines for Modifying Report Templates

DO NOT

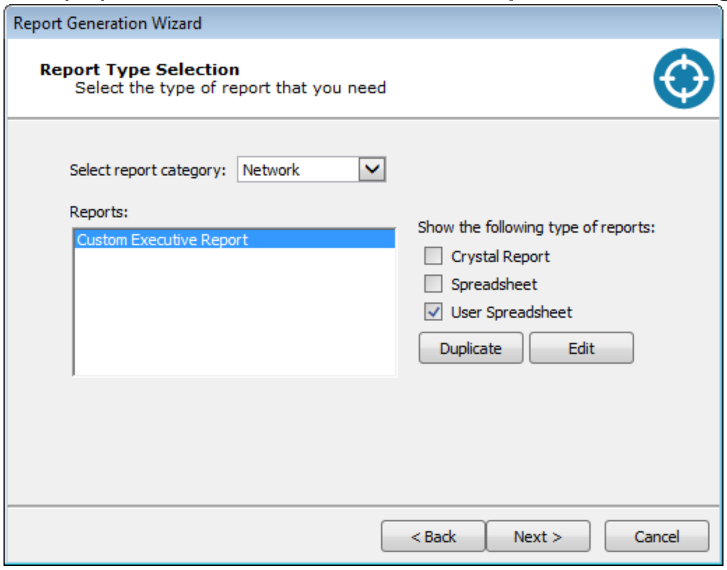
- Delete columns from the template. Use the **Hide** function in Excel to hide one or more columns from the template.
- Delete tabs from the template. Use the **Hide** function in Excel to hide one or more tabs from the template.

YOU MAY

- Change the logo image in the template.
- Rename columns
- Create new tabs that contain pivot tables, charts, etc. that reference the data in the report.

7. When you are finished modifying the template, save and close the template file.

Your new **User Spreadsheet** can now be executed in the same was as the [Spreadsheet Reports] except you will find them in the **User Spreadsheet** category.



Running Reports from the Dashboard

Reports can also be executed from the Core Impact Dashboard which can be more convenient if you want to report on data across multiple workspaces.

1. Click the Reports button 

.
   The Reports wizard will appear.
2. Click the Next button.
3. Select the **Report Category** from the drop-down menu as either General, Network, Client-side, or WebApps.
4. Select the report you want to run, then click the Next button.
5. If applicable, select the workspaces for which you want the report to run.
6. If applicable, set any other customization options that are available.
7. Click the Finish button.

One-Step RPTs

Core Impact provides One-Step tests that can be run in a single step, providing detailed reports of the test's findings.

- [Network One-Step Tests]
- [WebApps One-Step Tests]

Exporting Data from Core Impact

There are several ways that you can export data in order leverage Core Impact's test results.

Impact Workspace data

If you have an external system into which you want to import Core Impact workspace data (hosts, entities, agents, vulnerabilities, etc), you can customize and use the Export Impact Workspace to XML File module. To customize the module:

1. Make sure the Network Entity tab is active, then locate the Export Impact Workspace to XML File module in the Modules tab (use the search feature or navigate to the Import-Export folder).
2. Right-click on the module, then select Edit.
3. Modify the module .py file as desired, then use Save As to save the file with a new name.
4. Click the Modules menu, then select Reload. This will refresh the modules list and should reveal your new, custom export module.

SCAP

You can export vulnerability data from Core Impact that is compatible with a Security Content Automation Protocol (SCAP) system. To do this:

1. Make sure the Network Entity tab is active, then locate the Export results in SCAP xml format module in the Modules tab (use the search feature or navigate to the Import-Export folder).
2. In the module parameters window, select the destination of the xml file, then click OK.
3. Navigate in Windows to the location of the export file. You can then use the file with your SCAP system.

You can also view the publish and last updated dates for the exploits used within Core Impact. To extract this information, perform the below query from the Windows command line or using a SQL Client connected to Core Impact's SQL database.

Command Line Query

```
osql -E -S .\IMPACT -d corevuln -Q "SELECT 'CVE-' + CAST(vuln_ncve_year AS VARCHAR) + '-' + CAST(vuln_ncve_number AS VARCHAR) AS CVE, vuln_published AS Published, vuln_lastchange AS LastChange FROM corevuln.dbo.vulnerability"
```

SQL Client Query

```
SELECT 'CVE-' + CAST(vuln_ncve_year AS VARCHAR) + '-' + CAST(vuln_ncve_number AS VARCHAR) AS CVE, vuln_published AS Published, vuln_lastchange AS LastChange FROM corevuln.dbo.vulnerability
```

PCI Connect Format

You can export workspace data in XML format acceptable for importing to the QualysGuard PCI Connect format. To do this:

1. Make sure the Network Entity tab is active, then locate the Export results in PCI Connect format module in the Modules tab (use the search feature or navigate to the Import-Export folder).

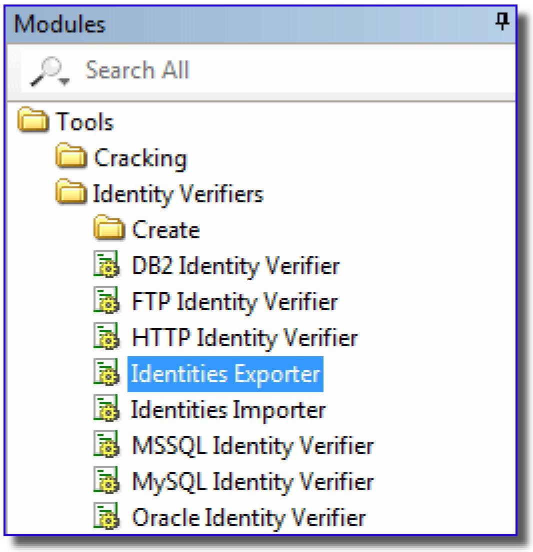
2. Double-click the module.
3. In the module parameters window, select the destination of the xml file, then click OK.
4. Navigate in Windows to the location of the export file. You can then use the file with QualysGuard.

Identities Export

Use the **Identities Exporter** module to export identities in JSON format from one Workspace for import into another. Use the **Identities Importer** module to import identities.

To export identities:

1. Navigate to the Modules tab, making that the Network tab of the Entity Database is active
2. Locate and execute the **Identities Export** module



3. In the module properties window, select the Identities you wish to export and enter the path for the **Output File**.
4. Click **OK**.

The identities you selected will be exported in JSON format and available at the location you specified in the module properties.

Workspaces and Teaming

Every penetration test in Core Impact is run and run within a Workspace. A workspace is a place where information regarding a specific test is stored. This chapter walks you through the workspace creation procedure in greater depth, and also teaches you how to close, remove, and import/export Workspaces as well as how to create collaborative Teaming Workspaces.

Workspaces

A Core Impact workspace includes the following:

- **Rapid Penetration Tests.** Within a workspace, you can run any of the available RPTs (see Rapid Penetration Test (RPT)) as well as interact with the individual modules for more advanced control (see Working With Modules).
- **The Entity Database.** Information about the target network, users or web pages acquired during the penetration test. This includes (but is not limited to) discovered targets, their properties and deployed agents.
- **The Executed Modules log.** Information related to the modules you have run such as time, duration, status, source agent, parameters, and generated output.

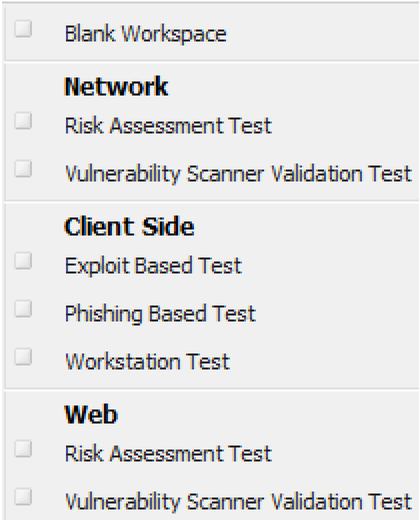
All workspace information is stored in the Console's database, which is found in an .mdf file in the SQL Server directory that corresponds with Core Impact .

Creating a New Workspace

To create a workspace, follow this procedure:

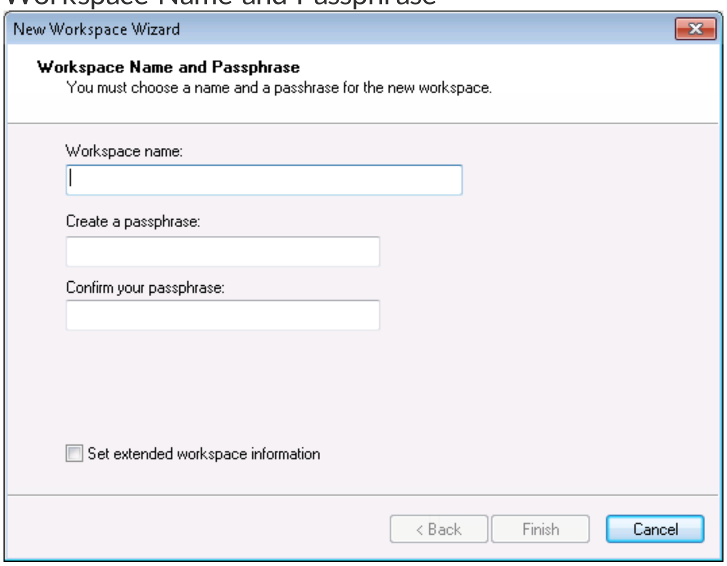
1. Choose File -> New workspace from Core Impact's main menu or click on the New Workspace icon ( ) on the toolbar.
2. Select the New Workspace button on the left side of the Welcome Window. This will open a drop-down menu with several Workspace types. Select a specific Workspace type, depending on your testing goals, or select Blank Workspace. The workspace types are designed as an Assisted Start and will automatically launch a web browser with documentation specific to the type you select. The resulting workspace, however, will be capable of executing any kind of penetration test. For example, if you create an Exploit Based Client Side workspace, you will still be able to run Network tests within it.

   New Workspace Types



3. Enter a Workspace name and passphrase for your new workspace and click Finish. Optionally, you can enter extended workspace details by checking the Set extended workspace information box, then clicking Next.

   Workspace Name and Passphrase

4. If you checked the Set extended workspace information box in the previous step, complete the form.

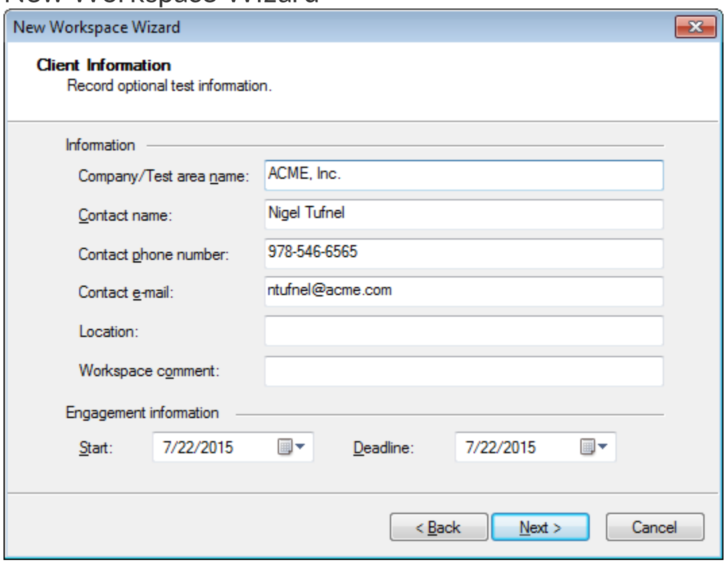
   The data you enter is for informational purposes only and can be viewed or updated at any time by selecting File -> Properties from Core Impact's main menu. Use these fields as needed:

   - Company/Test area name: The name of the company or test area where the penetration test is being conducted.
   - Contact name: The name of a contact inside the (client company) related to this particular engagement.
   - Contact phone number: The phone number of the client contact.

- Contact e-mail: The email address of the client contact.
- Location: The location of the client.
- Workspace comment: Any comments about the workspace and the tests to be performed within it.
- Engagement start date and deadline.

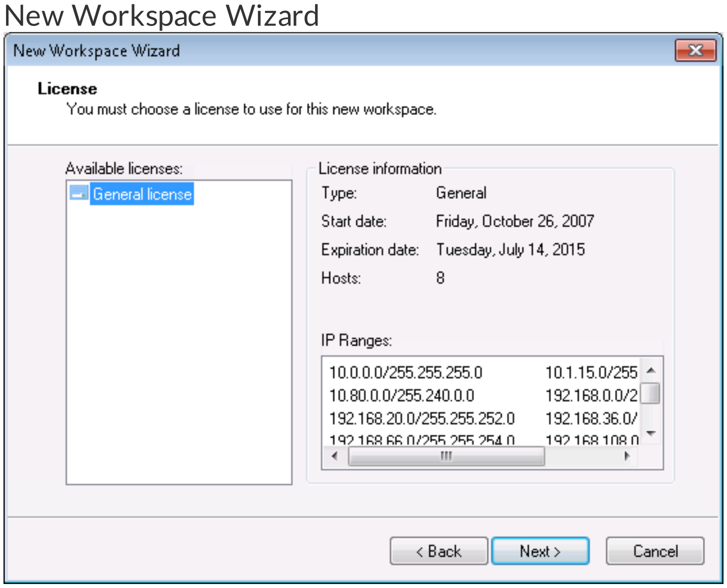
Click Next after entering a name for the new workspace.

New Workspace Wizard



5. If you are using a Consulting/Engagement license, when you create a new workspace, you must assign an appropriate license to it. For enterprise licenses, the General License is the default for all Workspaces. Currently-installed licenses will be displayed in the Available licenses panel of the New Workspace Wizard Dialog Box. Refer to Understanding Licenses for more information about using different Core Impact licenses. Click Next after you choose the desired license.

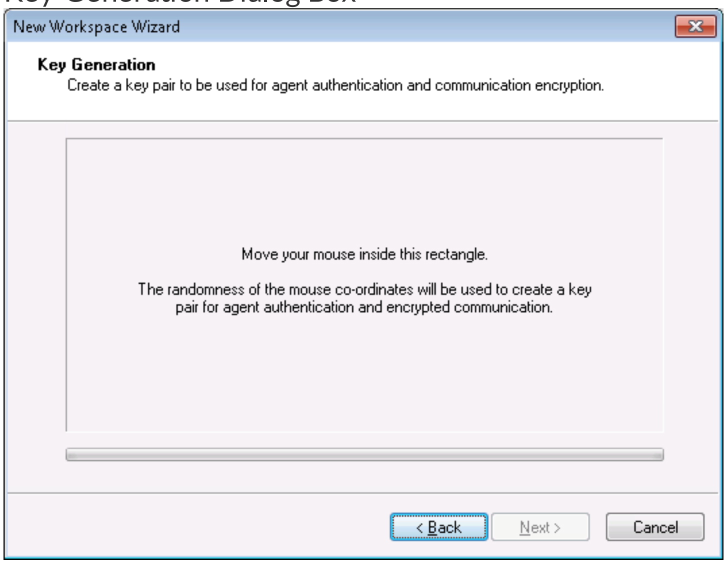
New Workspace Wizard



6. A Workspace key is generated every time a new workspace is created. This key is only used for communication with remote agents that perform client authentication. This means that different users of Core Impact use different workspace keys and will not be able to connect to the same agents. It is important to note that this key does not currently protect the information inside Core Impact's database, and that its sole purpose is to protect the workspace's deployed agents from being accessed by another Core Impact workspace.

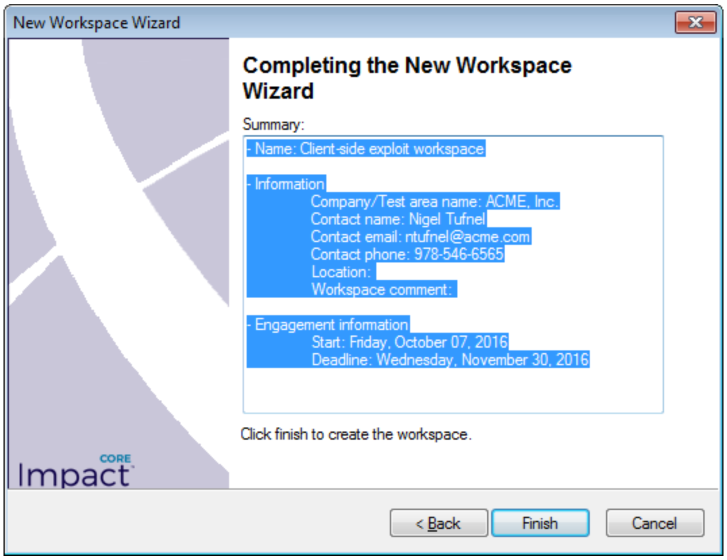
   Move your mouse inside the rectangle to generate a new key pair, and click Next. Refer to the section called “Crypto Channel” for more information on how Core Impact uses this key pair.

   Key Generation Dialog Box

7. After checking that all the information displayed in the Completing the New Workspace Wizard Dialog Box is correct, click Finish. The new workspace is created and will automatically open.

   Completing the New Workspace Wizard Dialog Box

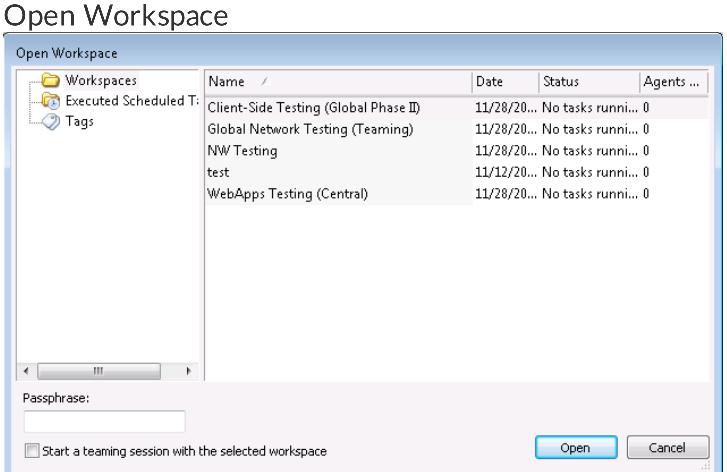


Opening an Existing Workspace

To open an existing Core Impact workspace, follow this procedure.

1. Click the Open Workspace button on the left, or select File -> Open workspace from Core Impact's main menu, or click on the Open Workspace icon ( ) on the toolbar. The Open Workspace Dialog Box appears.

   Open Workspace

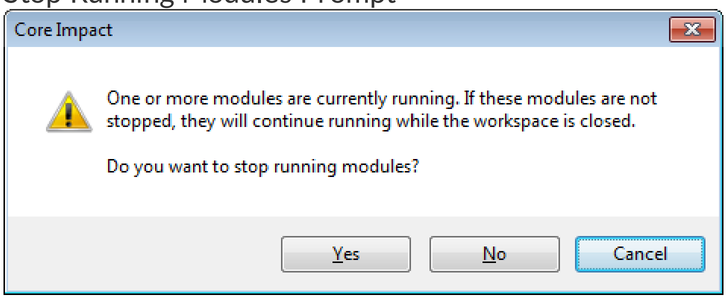
2. Click on the workspace you wish to open, then enter the corresponding Passphrase. Note that, if any Workspaces were created as Teaming Workspaces, they will be labeled as such.
3. Check the Start a teaming session with the selected workspace option if you want other users to be able to work in the Workspace using the Teaming capabilities (for Network testing only). You will then be asked to add users to the Workspace. See Teaming for more details.
4. Click the Open button to open the Workspace.

Closing a Workspace

To close the active workspace, choose File -> Close workspace from Core Impact's main menu. If there are modules running when you close a workspace (or shut down Core Impact), you will be asked if you want to stop running modules:

- Yes: The workspace (or Core Impact) will be closed and all running modules will be stopped.
- No: The workspace (or Core Impact) will be closed and all running modules will remain running. Any exploits launched after the workspace is closed will be able to register agents with Core Impact and will be visible in the Entity Database when you subsequently open the workspace.
- Cancel: The workspace will not be closed and all running modules will remain running.

Stop Running Modules Prompt



When you close a workspace, all in-memory (non-persistent) agents deployed from that workspace will be uninstalled automatically.

Deleting a Workspace

To permanently remove a workspace, choose File -> Delete workspace from Core Impact's main menu. The Delete Workspace Dialog Box will appear. Check the workspace(s) you wish to delete and click the Delete button. The workspace(s) will be removed from the Console's database.

Importing and Exporting Workspaces

Core Impact allows you to move Workspaces from one database file to another. This functionality is useful when you wish to share workspace information among several different users, or for purposes of data backup.

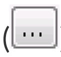
You can import Workspaces into and export Workspaces out of any Core Impact database file. A single database file can hold multiple Workspaces at the same time. Before importing or exporting Workspaces, close any active workspace to ensure that the database is not being updated. Import/Export features are disabled when there is an active workspace open in the console.

The Import/Export Wizard will guide you through the process of importing or exporting Workspaces from different database formats. To use the Wizard, first ensure that all Workspaces are closed, and then follow one of the below procedures:

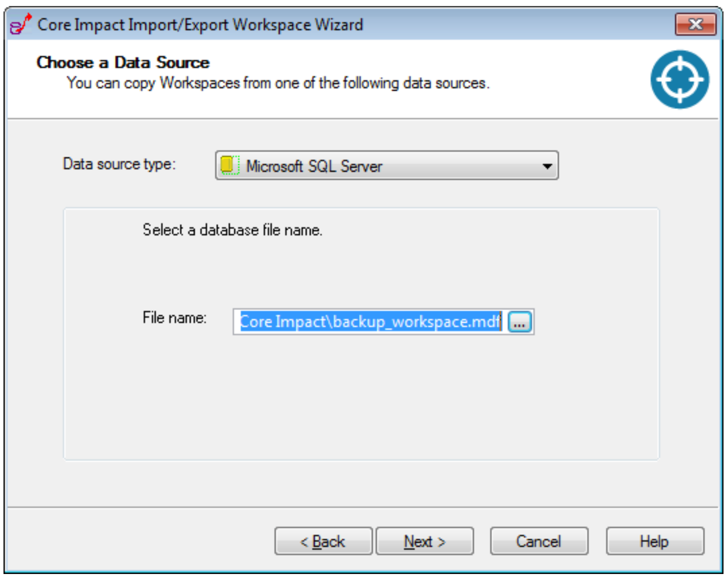
- [Import a Workspace](#)
- [Export a Workspace](#)

Import a Workspace

Follow the below procedure to import a workspace into Core Impact:

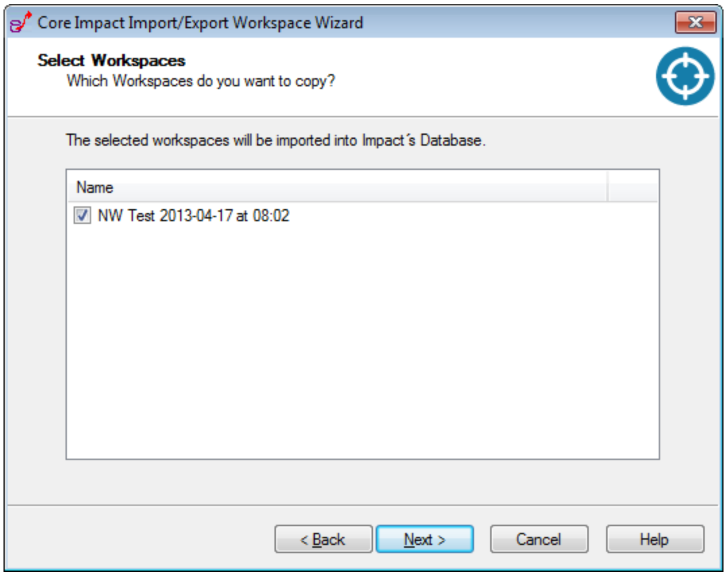
1. If you have a workspace opened, close it by navigating to File -> Close Workspace.
2. Navigate to Tools > Import/Export Workspaces from Core Impact main menu. When the Import/Export Workspace Wizard appears, click Next.
3. Using the drop-down menu, select the Data source type of the import file as either Microsoft Access or Microsoft SQL Server. Click the ellipsis button () then navigate to and select the source file. Click the Open button to return to the Import Wizard.

   Choose a Data Source

   Click Next.
4. Select a workspace from the next dialogue box. This will be the workspace into which the external file will be imported.

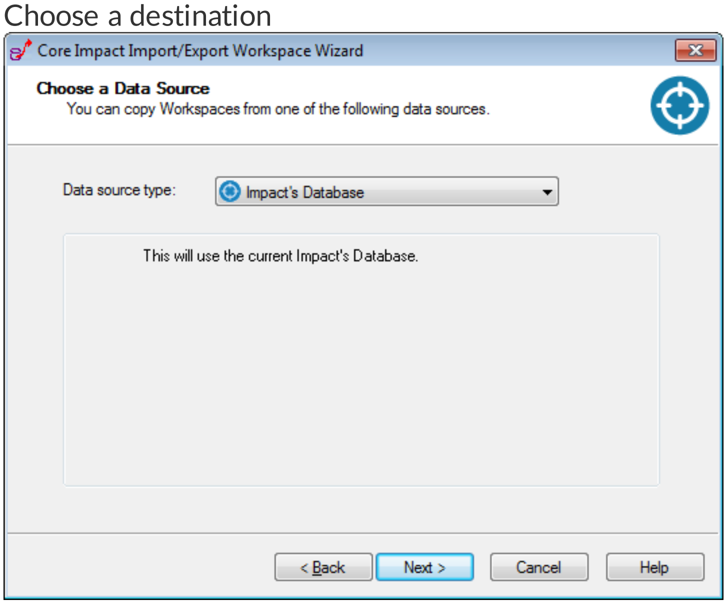
   Select a Workspace



Click the Next button.

5. From the drop-down menu, select the destination of the import. The default option will be Impact's Database.

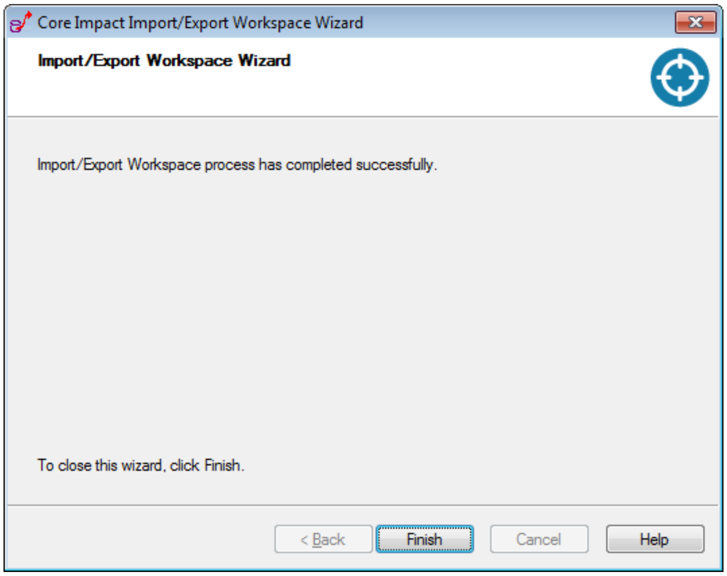
   Choose a destination



Click the Next button.

6. Click the Finish button once the Import operation is completed.

   Completing the Import Workspace Wizard

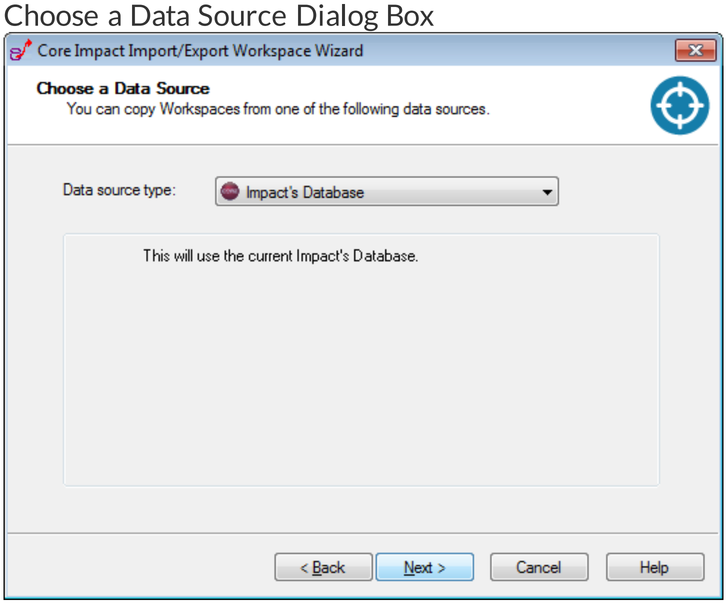


Export a Workspace

Follow the below procedure to export a workspace from Core Impact:

1. If you have a workspace opened, close it by navigating to File -> Close Workspace.
2. Navigate to Tools -> Import/Export Workspaces from Core Impact's main menu. When the Import/Export Workspace Wizard appears, click Next.
3. To export a workspace from your Core Impact installation, select Impact's Database as the Data source type.

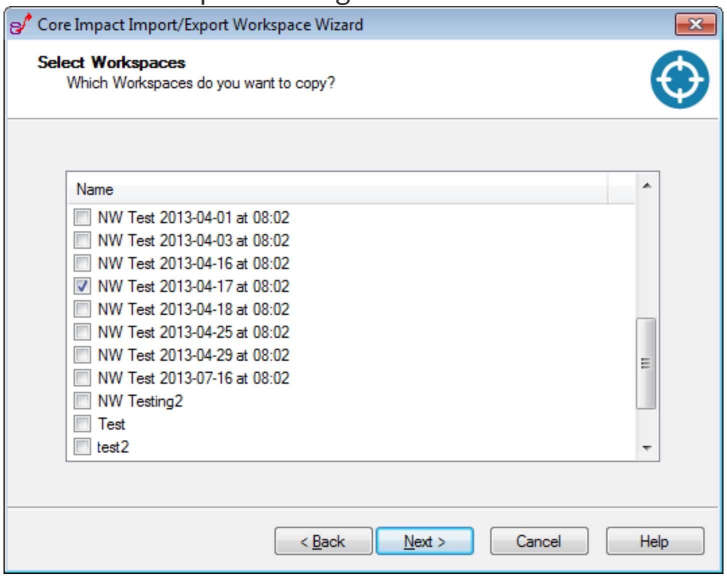
   Choose a Data Source Dialog Box

   Click the Next button.

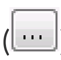
4. Select the workspace that you wish to export from the Select a Workspace list.

   Select a Workspace Dialog Box

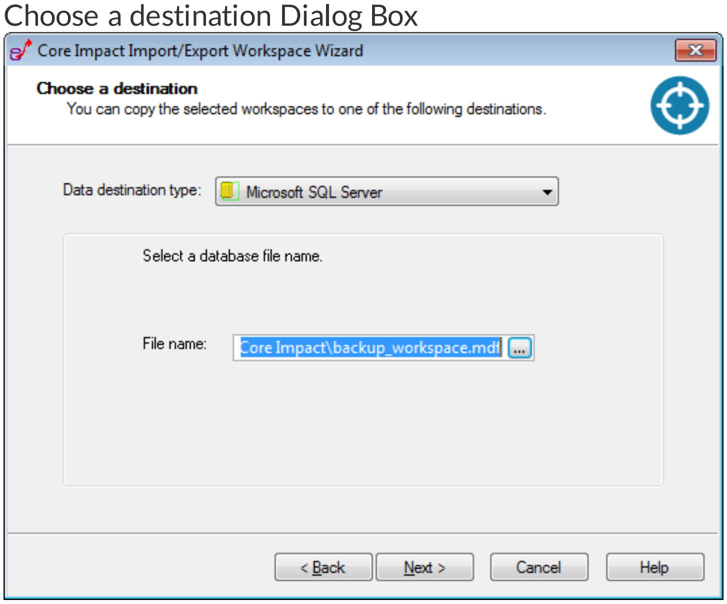
   

   Click the Next button.

5. Using the drop-down menu, select the Data destination type for the workspace as Microsoft SQL Server.

   Then click the ellipsis button () to define the destination source file for the export.

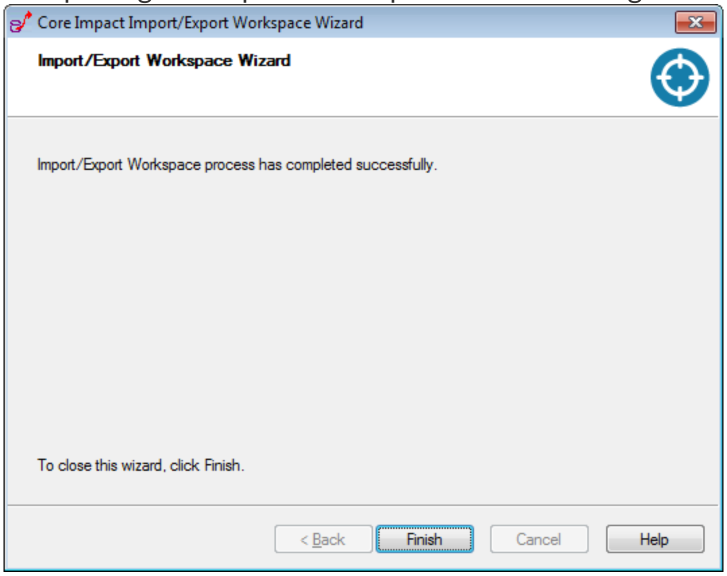
   Choose a destination Dialog Box

   Click the Next button.

6. Click the Finish button and the Export operation will begin.

   Completing the Export Workspace Wizard Dialog Box

Teaming

Core Impact allows more than one user to collaborate on a single workspace for testing, giving teams the ability to share data and delegate testing tasks. To use Core Impact's Teaming capabilities, at least one Teaming Session must be created. Then, users can join that session and share the workspace.

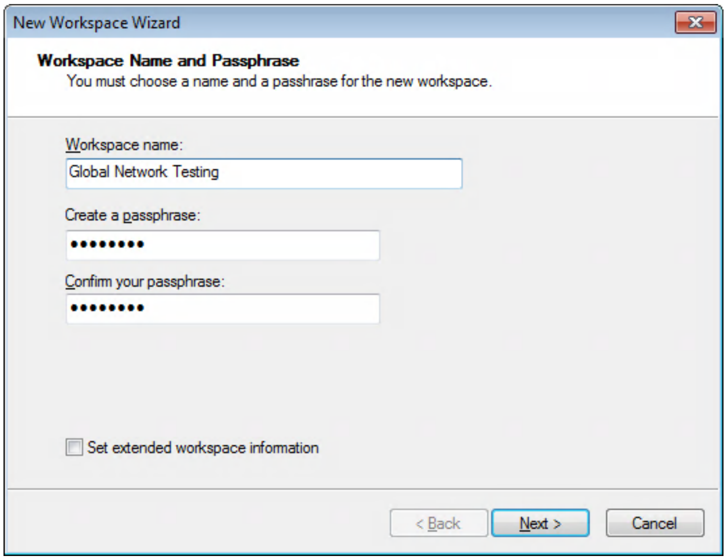
Teaming Workspaces are not supported on Windows XP and Windows 2003.

Create a Teaming Session

You can open an existing Workspace and enable it as a Teaming Session (see Opening an Existing Workspace). To create a new Teaming Workspace from scratch, start on the main Core Impact dashboard:

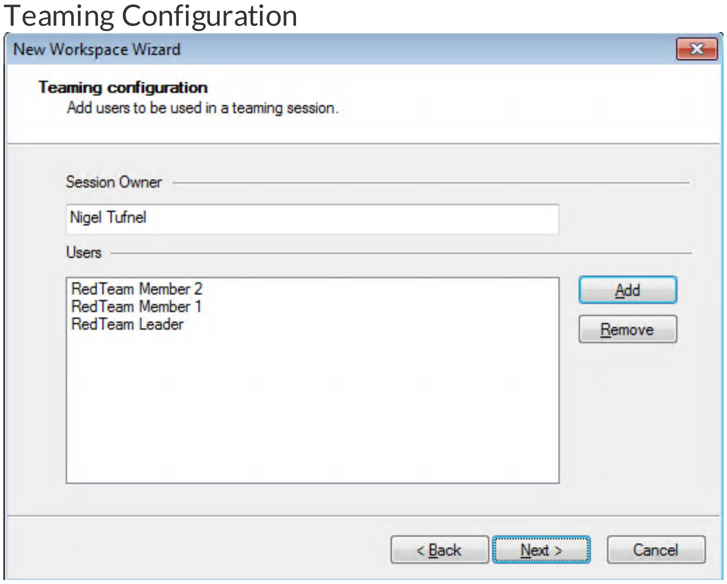
1. Click the Teaming button on the left, then select New Session. The New Workspace Wizard will open.
2. Begin by giving the new Workspace a name, then enter the Passphrase (twice). Then click Next to continue. You can opt to **Set extended workspace information**; this will require you enter additional details about the workspace.

   New Teaming Workspace



3. Enter the name of the **Session Owner**. Then click the Add button to add each user whom you want to be able to use the new Workspace. Once you've added all the necessary users, click Finish.

   Teaming Configuration



4. Core Impact will create the new workspace and start the Teaming session.

Once the Teaming workspace has been created, other users will be able to join the workspace using the name/passwords you defined. They will also need to know the address of the machine where the Teaming Workspace resides. See Join a Teaming Session for more details on this process.

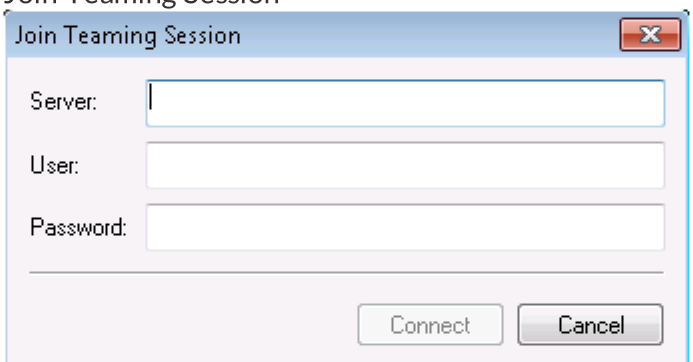
As the creator of the Teaming Workspace, you must leave the Workspace open in order for other users to join it. If you close a Teaming Workspace, the users you added will be removed. If you want to re-open the Workspace as a Teaming Workspace, use the Open Workspace steps as you normally would (see Opening an Existing Workspace), selecting the Workspace, then check the option Start a Teaming Session with the Selected Workspace. You can then add users to the Workspace and begin a new Teaming session.

Join a Teaming Session

To join an existing Teaming Session, start on the main Core Impact dashboard:

1. Click the Teaming button on the left, then select Join Session.
2. Enter the Server IP address where the existing Teaming Session is running. Then enter your User name and Password. These details should be provided to you by the user who created the Teaming Session. Click Connect to join the session.

   Join Teaming Session

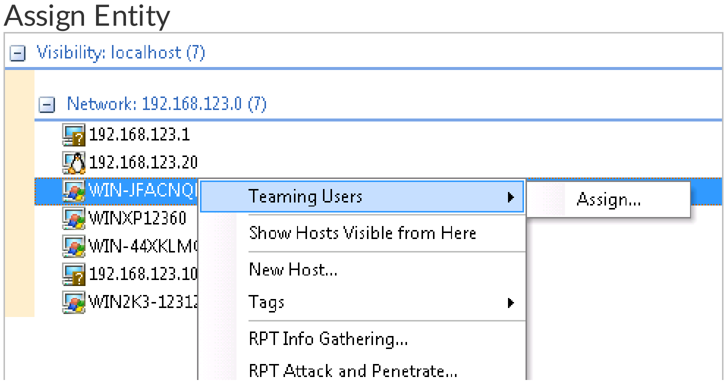
The Teaming Workspace should open and you can take advantage of the collaborative options in addition to all of Core Impact's testing capabilities. See [Using a Teaming Session](#).

Using a Teaming Session

When you are collaborating on a single Workspace - using Teaming - all joined users will see all entities, executed modules and their output. In addition, there are several features that will make the collaboration more successful for you and your team:

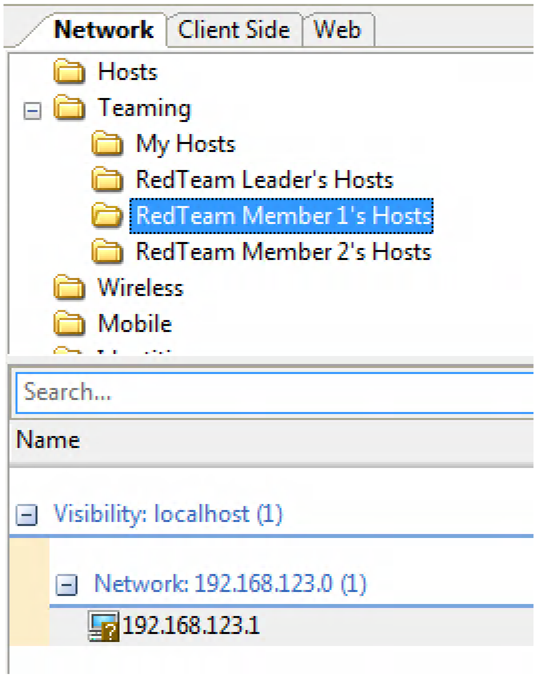
- **Entity Assignments.** To prevent users from working on the same entities (targets), you can assign entities to specific users who have joined the session. To assign an entity to a user, right-click on the host in the entity view, select Teaming Users, and then click Assign. You will then be able to assign the entity to specific user(s).

  Assign Entity

- **Entity Filtering.** Once you are in a teaming workspace, the entity database will automatically contain a folder called My Hosts of hosts that have been assigned to you. This will make it easier for you to locate and manage the entities for which you are responsible for testing. The below screenshot is from the view of the Teaming Workspace's leader where hosts have been assigned to the user RedTeam Member 1.

  Filter Entities

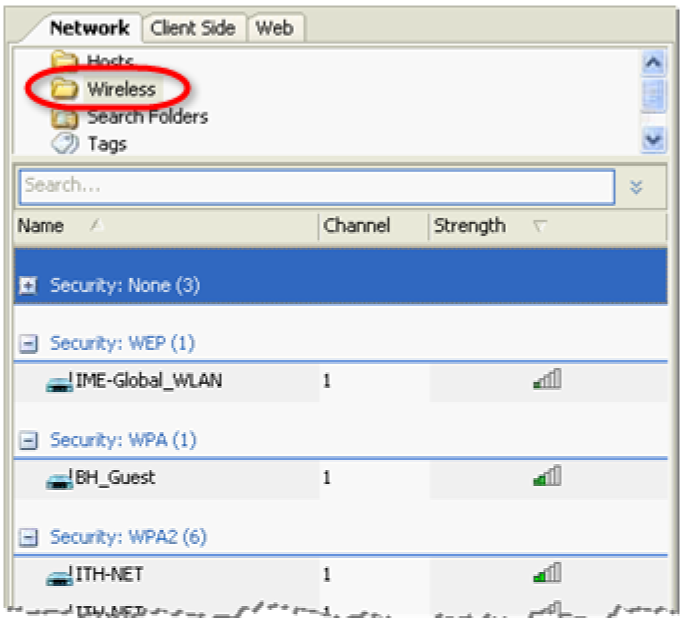
Testing a Wireless Environment

The use of 802.11 wireless networks (WiFi) is increasing throughout the enterprise. With WiFi, security professionals are presented with a new realm of challenges as attackers no longer need to be physically plugged in to access information systems. Core Impact provides several ways in which testers can evaluate the security of these wireless networks which serve as both keepers of and conduits to sensitive data.

Although the WiFi tests are not among Core Impact's Rapid Penetration Test (RPT), they are simple to launch and easy to integrate into one's penetration testing practice. The WiFi tests are executed from the Modules View so, if you are not already familiar with how to run modules directly, review the section Working With Modules. Additionally, see the section Wireless Vector Reporting for how to report on your wireless penetration test results.

When you discover wireless networks and devices, they will be represented in the Wireless folder of the Network tab of the Entity view as shown below.

Wireless Entities



As mentioned, the WiFi testing capabilities in Core Impact are accessed directly through modules, but we will use the RPT model (Information Gathering, Attack & Penetration, Privilege Escalation, Clean Up, Report Generation) to organize and describe the available modules as well as to highlight any noteworthy parameters.

The below tests are specifically designed for use on WiFi networks. The modules are available by navigating to the Modules View and expanding the WiFi folder (ensure that the Network entity tab is active):

In order to create a Fake Access Point using Core Impact, you must use a Pineapple Nano (https://www.wifipineapple.com/) wireless network auditing tool.

The following sections will cover each phase of a WiFi test in greater detail.

The module will run and you can view its progress in the Module Log pane. If the module succeeds, Core Impact will store the WPA details along with the access point in the entity view. At this point, you could run the Join WiFi Network module and attempt to connect to the access point.

WiFi Attack and Penetration

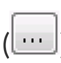
Once you have identified wireless devices, you can continue to take steps to illustrate the specific risks involved with a wireless breach:

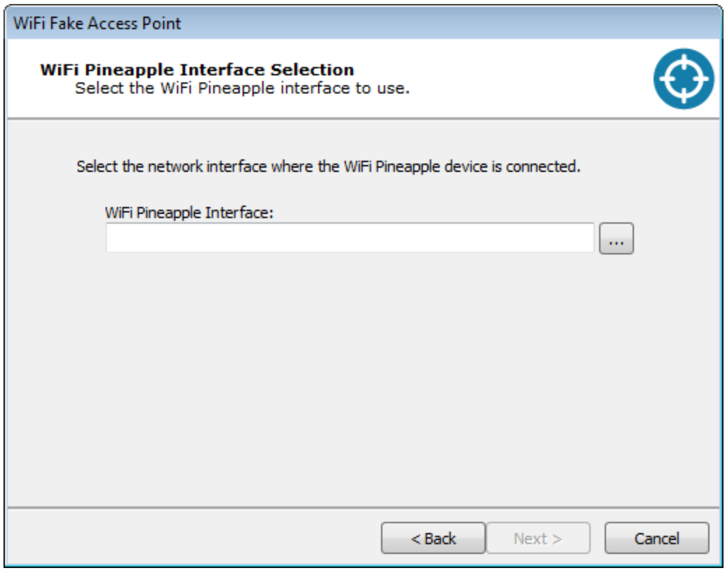
Fake Access Point

MiTM attacks are most effective when the attacker is connected to the same network as the victim. If you are unable to join a found access point, or if you prefer to target beaconing wireless devices, you can create a Fake Access Point and target any devices that connect to it. With this method, Core Impact is literally in the middle - between a victim and the network applications and site from which they are requesting data. This creates more reliable opportunities to manipulate the user's experience, discretely capture sensitive data from them, or to exploit a vulnerability on their machine and install an OS agent.

In order to use the Fake Access Point Wizard or Fake Access Point module, first install Core Impact's 3rd party package which includes the TAP-Win32 Adapter driver. Additionally, in order to create a Fake Access Point using Core Impact, you must use a Pineapple Nano (https://www.wifipineapple.com/) wireless network auditing tool.

To create a Fake Access Point, use the Fake AP Wizard module:

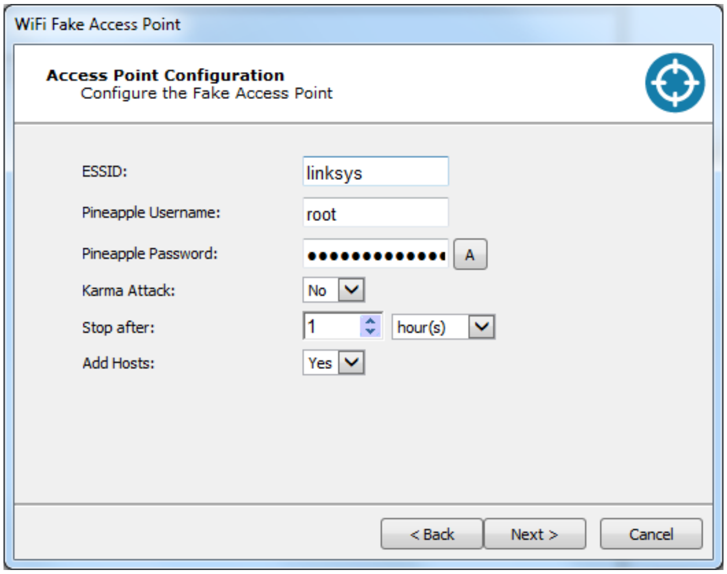
1. Ensure that the Network Entity tab is active, then click the Modules view.
2. Expand the WiFi folder and locate the Fake Access Point Wizard module.
3. Double-click the Fake Access Point Wizard module and, when the wizard opens, click the Next button.
4. Begin by clicking the ellipsis () button and selecting your Wifi Pineapple Interface.
   Airpcap Interface Setup



Then click the Next button.

5. On the Access Point Setup page, set the identifying details of your fake access point.
    - ESSID: The name of the Access Point. Leave this blank if you set Karma Attack to "true".
    - Pineapple Username: The username for the Pineapple device.
    - Pineapple Password: The password for the Pineapple device.
    - Karma Attack: If "false", the Access Point will use the name entered in the ESSID parameter. If "true", the Access Point will use whatever name the target device is beaconing for. For newer Pineapple devices, this setting correlates to the **Allow Associates** option of the **PineAP** module.
    - Add Hosts: Set this parameter to "true" if you want any connected devices to be added to the Hosts folder of the Network entity database for further testing possibilities.
    - Stop after: Set to Hours, Minutes, Packets, or Seconds to set a stop-after limit for the module.

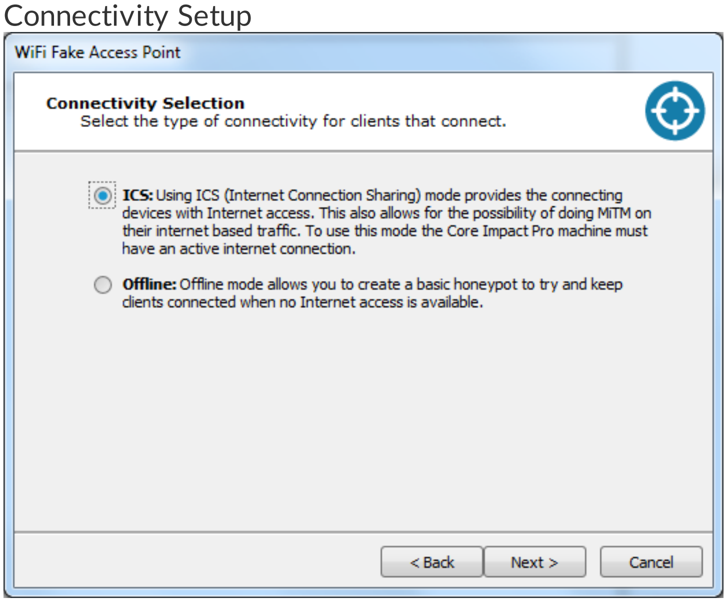
    Access Point Configuration



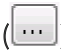
Then click the **Next** button.

6. On the Connectivity Setup page, you can select whether your fake access point will provide Internet connection sharing (ICS) or not:
   - ICS: Select this option if you want to share an Internet connection with any users who connect to your fake access point. You will have additional configurations that correspond to this selection.
   - Offline: Select this option if you don't want to share an Internet connection with users who connect to your fake access point.

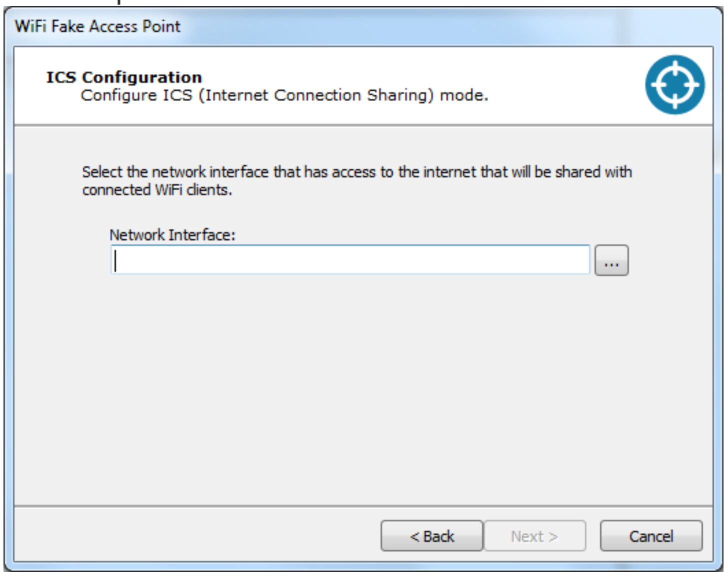
   Connectivity Setup



Then click the Next button.

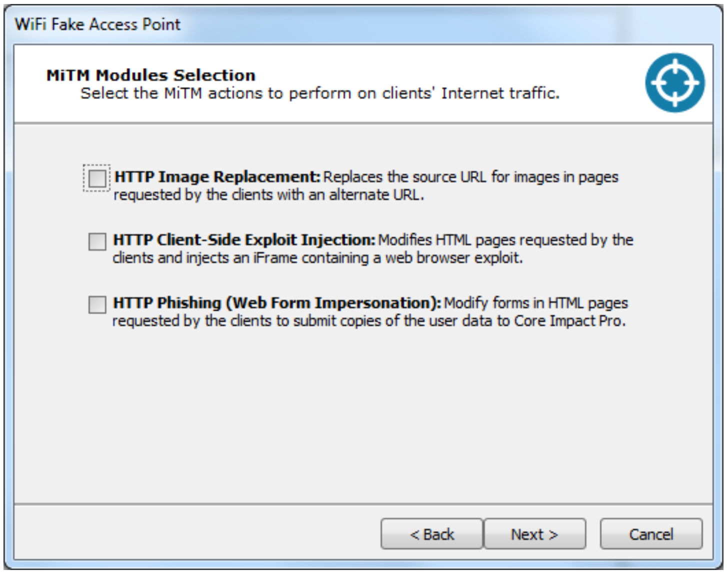
7. If you selected ICS in the previous step, click the ellipsis () button and select the Network Interface through which connected clients will gain Internet access.

   ICS Setup

   Then click the Next button.
8. If you selected ICS, you can further configure the fake access point to perform one or several MiTM actions:
   - HTTP Image Replacement: This option replaces all SRC URLs for images in an HTML file with a SRC URL that you specify in the next step of the wizard.
   - HTTP Client-side Exploit Injection: This option sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which will open a small iFrame on the page and launch the Client Side exploit of your choice within that iFrame.
   - HTTP Phishing (Web Form Impersonation): This option sniffs for HTTP traffic and, when it detects a web form, injects some JavaScript that will cause the form data, once submitted by the user, to be copied back to the Core Impact module in addition to the source web site.

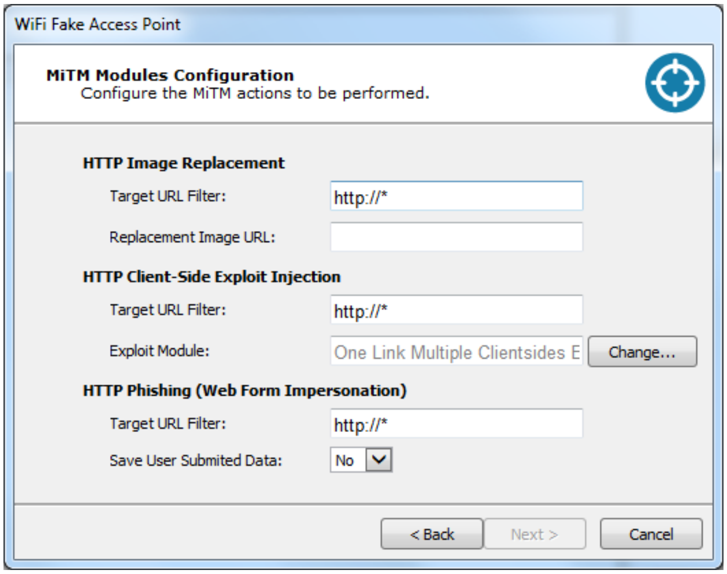
   ICS Setup



Then click the Next button.

9. For each of the MiTM actions you selected in the previous step, enter additional details:
   - HTTP Image Replacement
     - Image URL: Enter the URL for the image that you would like to replace images requested by a connected client.
     - Target URL Filter: Optionally add a filter so that the HTTP Image Replacement only occurs for requests that match the filter.
   - HTTP Client-side Exploit Injection
     - Exploit Module: Click the Change button and select the exploit module you would like to run on machines who request data through your fake access point.
     - Target URL Filter: Optionally add a filter so that the HTTP Client-side Exploit Injection only occurs for requests that match the filter.
   - HTTP Phishing (Web Form Impersonation)
     - Save Submitted Data:
     - Target URL Filter: Optionally add a filter so that the HTTP Phishing only occurs for requests that match the filter.

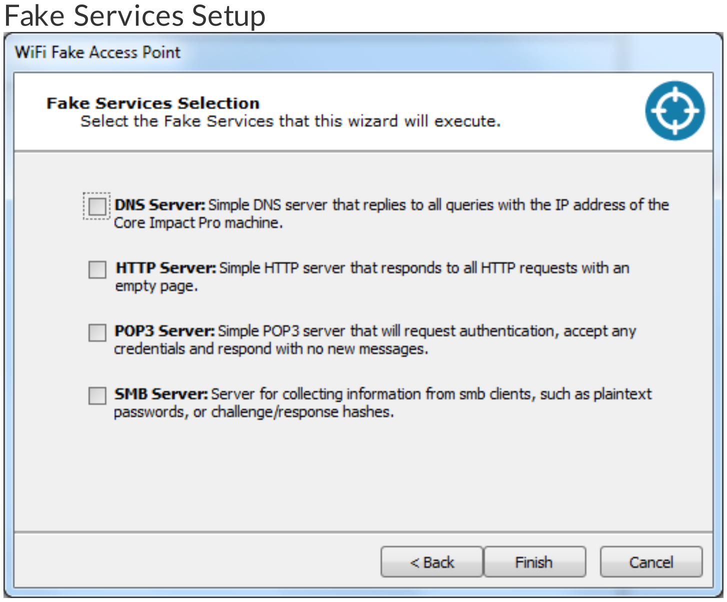
   MiTM Modules Configuration



Then click the **Next** button.

10. For both ICS and Offline Fake Access Points, you can create fake services that the Access Point will simulate. Check the services you want to enable and configure them in the next step of the Wizard.

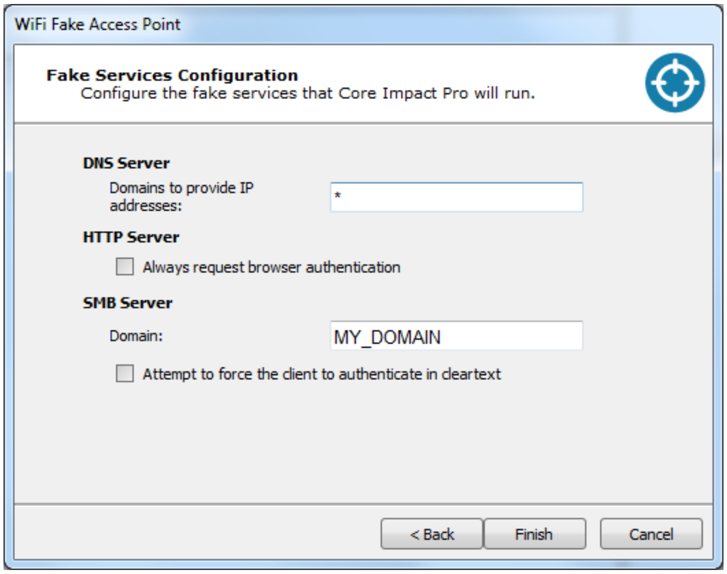
    Fake Services Setup



Then click the Next button.

11. For both ICS and Offline Fake Access Points, configure the fake services that you enabled in the previous step.

    Fake Services Configuration

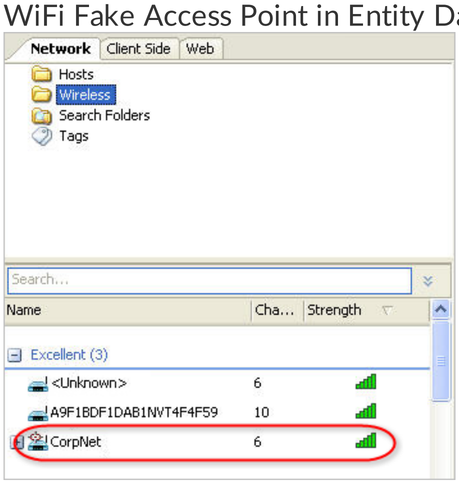


Then click the Finish button. The module will run and you can view its progress in the Module Log pane.

The Fake Access Point Wizard facilitates setting up a fake access point but you can also configure and run the Fake Access Point module manually to accomplish the same task.

When the module completes, you should see your Fake Access Point in the WiFi folder of the Network Entity tab. If any wireless devices connect to it, you will see them below your fake access point.

WiFi Fake Access Point in Entity Database



The following modules are specifically designed to perpetrate MiTM attacks when you have wireless devices connected to a Fake Access Point (see WiFi Modules for more details).

- Fake AP HTTP Client-side Exploit Redirection: This module sniffs for HTTP traffic and responds to the requester with client-side exploit of your choice.

- Fake AP HTTP One Link Multiple Client-side Exploits Redirection : This module sniffs for HTTP traffic and responds to the requester with a page that initiates the One-Click exploits.
- Fake AP HTTP Web Page Replacement: This module sniffs for HTTP traffic and responds by sending a single HTML file of your choice.
- Fake AP HTTP Replace Links with Client-side Exploit Redirection: This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which alters any hyperlinks within the page. Altered links will point to a page that contains a client-side exploit of your choice.
- Fake AP HTTP Client-side Exploit Injection: This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which will open a small iFrame on the page and launch the Client Side exploit of your choice within that iFrame.
- Fake AP HTTP One Link Multiple Client-side Exploits Injection: This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which will attempt to install an agent on the victim's machine by cycling through all available client-side exploits until one is successful.
- Fake AP HTTP Phishing (Web Form Impersonation): This module sniffs for HTTP traffic and, when it detects a web form, injects some JavaScript that will cause the form data, once submitted by the user, to be copied back to the Core Impact module in addition to the source web site.
- Fake AP HTTP Image Replacement: This module replaces all SRC URLs for images in an HTML file with a SRC URL specified by the Core Impact user.

Some of these modules employ a Web Browser Agent (WBA). The use of a WBA is a method whereby Core Impact intercepts a page being sent back to the victim, and then injects some JavaScript into the page before sending it along to the victim. Because the page is originating from the legitimate application or web site, the victim's browser will consider the script to be *trusted* and the Core Impact code that is injected can function without the victim being alerted.

WiFi Modules

In the Modules view, you will find a WiFi folder which contains all of the pertinent testing modules for your WiFi environment. For your convenience, the modules are listed here with brief descriptions and notable parameters.

WiFi Modules

Fake Access Point	This module creates a Fake Access Point to which beaconing wireless devices may connect. You must run this module to create an Access Point before executing any of the Fake AP modules. • ESSID: The name of the Access Point. Leave this blank if you set KARMA to "true". • BSSID: The MAC address for the Fake Access Point. Be sure to change this if creating multiple Access Points so that your tests are detailed individually in WiFi reporting. • CHANNEL: The channel that you want the Access Point to use. • STOP_AFTER_TYPE: Set to Hours, Minutes, Packets, or Seconds to set a stop-after limit. • STOP_AFTER_VALUE: Enter a value based on the STOP_AFTER_ TYPE setting. • KARMA: If set to false, the Access Point will use the name entered in the ESSID parameter. If set to true, the Access Point will use whatever name(s) the target devices are beaconing for. • MODE: If set to ICS, connected devices can obtain Internet access through your Internet Connection Sharing settings. You then use the ICS Settings to configure further. If set to Offline, you then use Offline Settings to configure further. • ICS Settings: If MODE is set to ICS, define the PUBLIC_ INTERFACE as the network interface through which connected devices will obtain Internet access. • Offline Settings:If MODE is set to Offline, define the IP_ADDRESS to be used as a fake IP address for the TAP interface. • Advanced - ADD HOSTS: Set this parameter to true if you want any connected devices to be added to the Hosts folder of the Network entity database for further testing possibilities.
Fake AP HTTP Client-side Exploit Redirection	This module sniffs for HTTP traffic and responds to the requester with client-side exploit of your choice. • MODULE: The client-side exploit to be sent to TARGET(S). • URL FILTER: The HTTP request that Core Impact should respond to.
Fake AP HTTP One Link Multiple Client Side One Exploits Redirection	This module sniffs for HTTP traffic and responds to the requester with multiple client-side exploits until one is successful.

Fake AP HTTP Web Page Replacement	This module sniffs for HTTP traffic and responds by sending a single HTML file of your choice. • IP_IGNORE_RANGE: Range of IP addresses whose wireless traffic is to be ignored by the module. • FILE: The HTML file that is to be sent back when a connected device makes an HTTP request that matches the URL FILTER parameter. This file cannot exceed 4Kb. • URL FILTER: The HTTP request that Core Impact should respond to.
Fake AP HTTP Replace Links with Client-side Exploit Redirection	This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which alters any hyperlinks within the page. Altered links will point to a page that contains a client-side exploit of your choice. • MODULE: The client-side exploit to be sent to TARGET(S). • URL FILTER: The HTTP request that Core Impact should respond to.
Fake AP HTTP Client-side Exploit Injection	This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which will attempt to run an exploit of your choice. • MODULE: The client-side exploit to be sent to TARGET(S). • URL FILTER: The HTTP request that Core Impact should respond to.
Fake AP HTTP One Link Multiple Client-side Exploits Injection	This module sniffs for HTTP traffic and returns the requested page after injecting a web browser agent (WBA) which will attempt to install an agent on the victim's machine by cycling through all available client-side exploits until one is successful.
Fake AP HTTP Phishing (Web Form Impersonation)	This module sniffs for HTTP traffic and, when it detects a web form, injects some JavaScript that will cause the form data, once submitted by the user, to be copied back to the Core Impact module in addition to the source web site. • Save Submitted Data: If "Yes", the data sent via the form will be saved by Core Impact. • URL FILTER: The HTTP request that Core Impact should sniff for.
Fake AP HTTP Image Replacement	This module replaces all images in an HTML file with one specified by the Core Impact user. • Image URL: The URL to the image you want to replace existing images with.

WiFi Reporting

As with all attack vectors in Core Impact, you can view the results of your WiFi testing in a clear and actionable report. Several Core Impact reports will include data about your WiFi tests. For details on selecting and running reports, see RPT Reports.

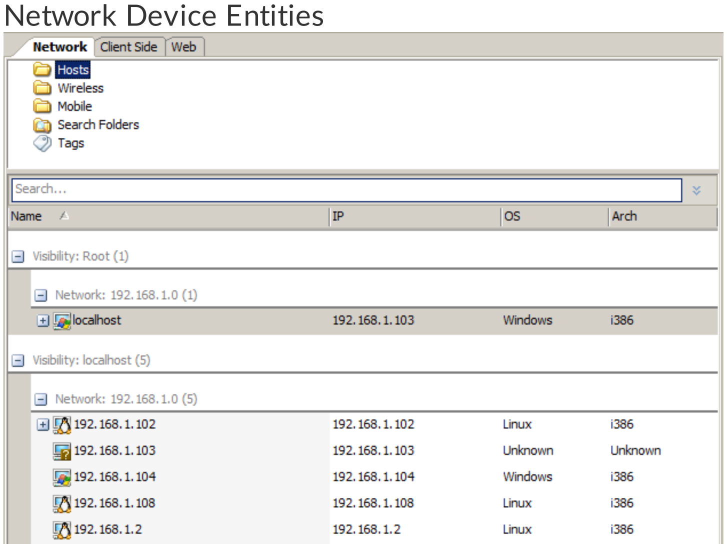
Testing Network Devices

Network Devices such as routers and switches are of critical importance to the operation and security of a business' technology environment. Not only do they relay all network traffic but they also allow networks to be connected to one another. If one of these devices is breached by an attacker, the disruption and data loss that might follow could be severe. With command of a switch, for example, an attacker could view and manipulate the data passing through it and even inject their own malicious data, creating potential for more infiltration. Likewise, with control of a router's configuration, one could gain access to other networks that otherwise would not be detectable. Network Devices are the gateways and dispatchers to the systems you aim to protect, so their security needs to be a top priority as well.

Network Devices tests are begun in Core Impact's Network RPT, which includes options for discovering and attempting to gain access to Network Devices. Post-exploitation steps for Network Devices are performed by launching various Core Impact modules from the Modules View so, if you are not already familiar with how to run modules directly, review the section Working With Modules. Additionally, see RPT Reports for how to report on your Network Device penetration test results.

When you discover Network Devices, they will be represented in the Hosts folder of the Network tab of the Entity view as shown below.

Network Device Entities



The below tests are specifically designed for use on Network Devices networks. The modules are available by navigating to the Modules View and searching for the module name (ensure that the Network entity tab is active).

Network Device Information Gathering

The Network Information Gathering step of Core Impact's Network Rapid Penetration Test (RPT) will record any systems it locates within your target network, including network devices. If the RPT is able to discern the operating system of a machine and confirm it to be a network device, it will be added to your list of Network Entities with a unique icon to distinguish it from the other systems in the list. Core Impact will attempt to:

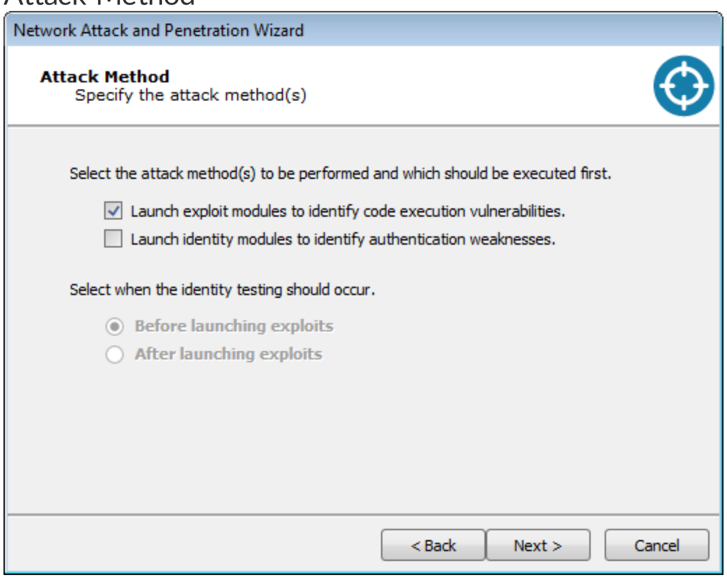
- Fingerprint found devices to determine Manufacturer, device model/type and operating system details.
- Determine the inputs on which the device accepts connections or instructions, including but not limited to SNMP, Telnet, HTTP.

You can also use the Network Discovery: Passive CDP module to listen for broadcasts from Cisco devices. This gives you another method to identify the visible devices on your network and take further steps to test their exposure to outside attack.

Network Device Attack and Penetration

The Network Attack and Penetration RPT can target Network Devices. Unfortunately, Network Devices often suffer from lack of attention. Administrators prioritize network up-time over device security, leaving account usernames and passwords at their default values and not keeping operating system and software sufficiently updated. Core Impact's attack modules leverage these weaknesses and use various dictionary attacks in order to gain access to the device.

Attack Method

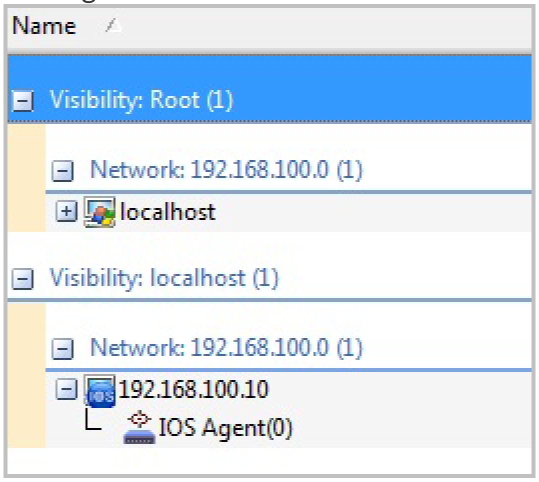


When configuring a Network Attack and Penetration using the RPT, there are 2 attack methods from which you can choose. These will result in different outcomes as they relate to testing Network Devices:

- **Launch exploit modules...**: Core Impact will launch exploits targeted against IOS devices (as if it was another operating system, e.g. Windows). On successful attacks, an IOS Agent is installed.
- **Launch identity modules...**: When selecting the HTTP/SNMP and Telnet on the Attack Selection form, if the target system is a router, Core Impact will install an IOS Agent.

If the Attack and Penetration step succeeds in gaining access to a network device, you will see an IOS Agent deployed under that device in the entity database. This IOS Agent represents the information of how to exploit a network device vulnerability.

IOS Agent



Once an IOS agent exists in your Network view under a Network Device, you have the ability to perform post-exploit activities on the device.

Post-exploitation Modules for Network Devices

If an IOS Agent has been associated with a Network Device, there are several modules that you can run to prove that the device is vulnerable to attack. These modules are non-aggressive because, were something to materially change on the device, the network and its users could be significantly disrupted.

Network Device Post Exploitation Modules

IOS Shell	This module will open a shell and allow you to interface with the network device.
Get Configuration	This module will attempt to get the configuration file of the device. Be sure to install the 3rd Party Tools provided with your Core Impact installer so that you can take advantage of encryption cracking capabilities.
Cisco IOS Agent - Privilege Escalation	This module attempts to create a Telnet connection whereby testers can make changes on the device. The change(s) made in order to achieve this connection are recorded and can then be reverted using the Cisco IOS Agent - Privilege Escalation Clean Up module.
Access List Piercing	This module compromises the filtering of network visibility that a router maintains allowing the Core Impact user to access networks that were previously off-limits. Changes can be reverted using the Access List Piercing - Clean Up module.

Interface Monitoring	This module takes advantage of a legitimate monitoring feature included in many switches and results in the Core Impact user receiving copies of data packets that were not originally intended for them. Changes can be reverted using the Interface Monitoring - Clean Up module.
Set Device Name	With this module, Core Impact can rename the network device. This won't disrupt the operation of the device but can be an eye-opening display of a router or switch's vulnerability to malicious attacks. Changes can be reverted using the Set Device Name - Clean Up module.

Network Device Reporting

As with all attack vectors in Core Impact, you can view the results of your Network Device testing in a clear and actionable report. Several Core Impact reports will include data about your Network Devices:

- Vulnerability Report: A list of all vulnerabilities found (see Vulnerability Report for more details).
- Activity Report: A list of all modules run and their output (see Activity Report for more details).
- Executive Report: A summary of vulnerabilities by type (see Executive Report for more details).

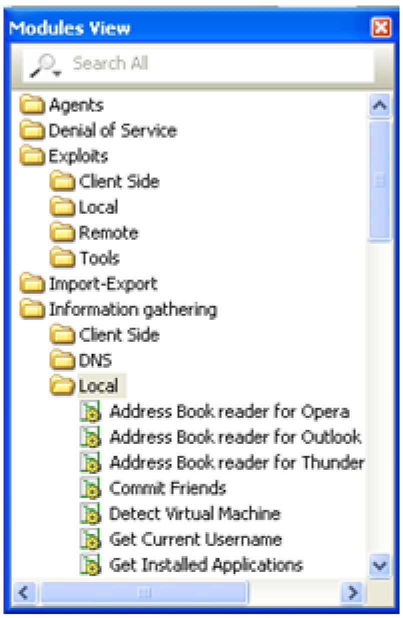
Working with Modules

Core Impact modules are the mechanisms that underlie the RPTs - they are your individual tools for penetration testing. Modules help you complete simple tasks such as resolving hostnames or very complex ones such as exploiting a buffer overflow vulnerability on a remote host. When you perform a Rapid Penetration Test (RPT), the system executes individual modules behind the scenes for you. Modules can be executed individually, or you can use modules to execute other modules. These macro modules execute other modules in the manner and order you desire.

Please navigate in Core Impact to Help -> Contents -> **Module Reference** to see a comprehensive list of available modules.

Individual modules can be accessed from the Modules View of the Console, shown below.

Modules View - Individual Modules Displayed



On the Modules View, modules are organized into folders (also known as 'categories') that refer to the module's general purpose or use. When you select a module, information such as version and a description of what the module does is displayed in the Quick Information Panel at the bottom of the Console.

The list of available modules is automatically created from Core Impact's module directory when you open the first workspace. This list can be recreated at any time by selecting Modules -> Reload from Core Impact's drop-down menu.

The Modules view will only show modules that are applicable for the currently-select entity view. For example, if the Client Side entity view is active, only modules that apply to client-side testing will be visible in the Modules View.

Additionally, the Modules view automatically highlights modules that are applicable to the object type that is selected (if any) in the entity view. For example, if a host with a known operating system is currently-selected in the Network entity view,Core Impact will highlight only those modules in the Modules view that work on or against that specific host's operating system. Note that you can run a non-highlighted module to try to validate an assumption on the target's operating system. The colors used for highlighting can be changed in the Modules category of the Options Dialog Box (Tools -> Options) - see Modules Options.

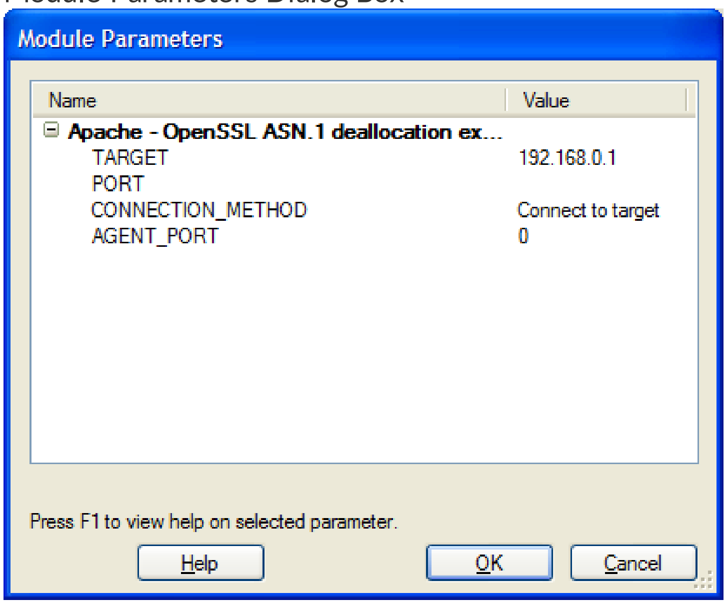
Refer to Core Impact's Module Reference documentation for an in-depth look at each of Core Impact's modules.

Running Modules

To run a module, you can either double-click on it or drag and drop it onto a target. Some modules will require additional parameters be set prior to execution. When you run a module, the Module Parameters Dialog Box appears. Each module specifies the parameters it needs. The first time a module is executed, default values are used for all parameters.

For information about a specific parameter and its possible values, select the parameter in the Module Parameters Dialog Box and press F1 to display contextual help describing the selected parameter.

Module Parameters Dialog Box



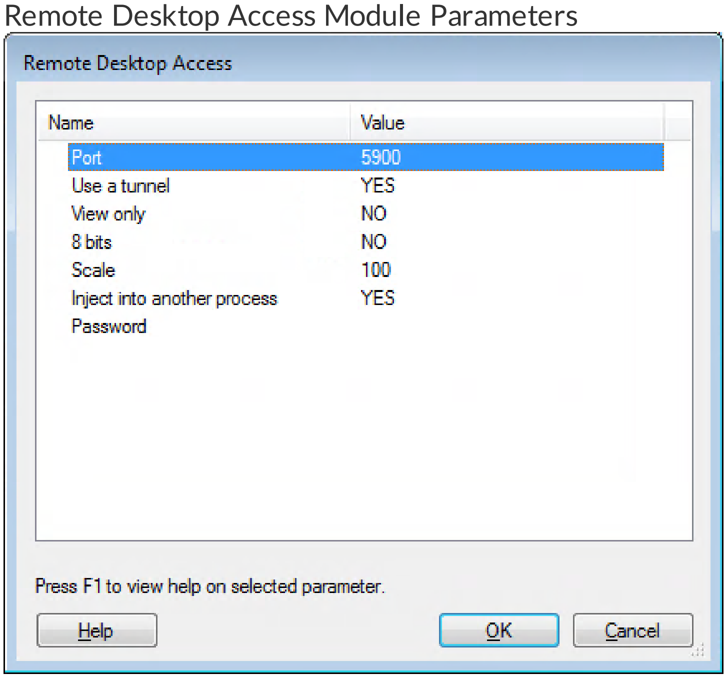
When you launch a module, the TARGET value in the Module Parameters Dialog Box is automatically set to the currently-selected object in the Entity View Panel. All the remaining parameters are set to their default values. You can change these values before clicking OK, which will execute the module. Some modules, such as modules in the Shells category, do not need any parameters.

Example: Running the Remote Desktop Access Module

Core Impact's Remote desktop access module - when run - will use a connected agent to try to leverage a remote desktop tool (e.g. VNC) on the host and open a remote desktop session. To run this module:

1. Navigate to the Modules view and make sure that the Network entity tab is active.
2. Type the string "remote desktop" into the module search field. This should reveal the Remote desktop access module.
3. Double-click the Remote desktop access module. The module's parameters will appear.
4. Set the module's parameters to reflect your preferences and environment:
    - Port: Set to port number to connect to.
    - Use a tunnel: Set to YES if the connection will use a tunnel.
    - View only: Set to YES to establish a view-only remote desktop session. You will have no user input.
    - 8 bits: Set to YES to create a low resolution remote desktop session. Set to NO to create a high resolution session.
    - Scale: Set the scale of the screen to be displayed as a percentage.
    - Inject into another process: Set to YES in order to inject the remote desktop process into another process that is already running on the target that has access to the desktop.
    - Password: Enter the password to be used in the server on the target host. Password should be 8 bytes - if it is more, only the first 8 bytes are used.

    Remote Desktop Access Module Parameters

5. Click the OK button.
    The Module will run - check the Module Log pane for output and/or error details.

Dragging and Dropping Modules

The most common way of executing a module is to drag and drop it onto a valid target in the Entity View Panel. This method is particularly convenient when the module needs a target with which to interact. Whenever a module is dropped onto an entity, the TARGET parameter in the

Module Parameters Dialog Box is automatically set to the name of that entity (modules can also be dropped over a group of entities, see the section called “Multiple Targets” for more information). If the module does not require a TARGET parameter, dragging and dropping has the same effect as double-clicking it.

Some modules that typically require a target for execution are the different port scanners, RPC endpoint mapper, and OS identification and attack modules, including client-side exploits.

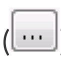
Some modules specify the class of TARGET they work with (agents, hosts, emails, etc.). When dragging and dropping these modules, the Console will only allow you to drop them onto targets of a valid class.

Specifying Host Ranges

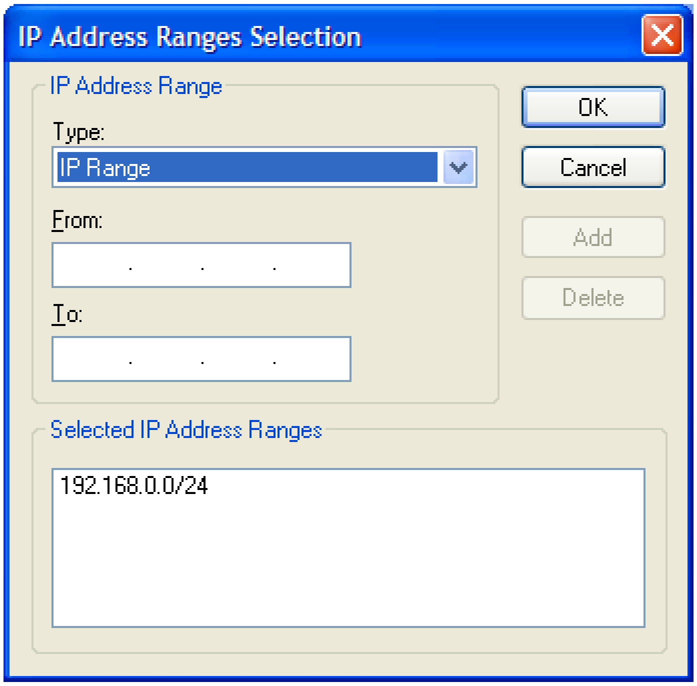
Modules that work with IP addresses accept address ranges instead of a host. These modules use the TARGETRANGE parameter instead of TARGET in the Module Parameters Dialog Box. These ranges follow the syntax specified in the table below.

Host Range Syntax

Specific ranges	192.168.1.0/24 192.168.1.* 192.168.1.0-255
Multiple ranges	192.168.1.*; 192.168.2.0/26 192.168.1.1-4,8,9; 192.168.2.100-120

You can also specify these ranges by clicking on the ellipsis button () next to the TARGETRANGE parameter's Value column.

Select Ranges Dialog Box



The Select Ranges Dialog Box lets you add ranges in four different ways:

- **Single IP.** A single IP address.
- **IP Range.** A continuous range of IP address starting on the From address to the To address.
- **CIDR Notation.** A network in the CIDR format, where the first four numbers specify the network name and the number on the right side of the slash represents the number of "1"s in the binary representation of the network's netmask.
- **Import From File.** A text file with a list of IP addresses and/or ranges. Click on the ellipsis button to browse for the file.

Click on the Add button as many times as necessary to build the desired target range. Click OK when you are done. The TARGETRANGE parameter will reflect your changes.

Multiple Targets

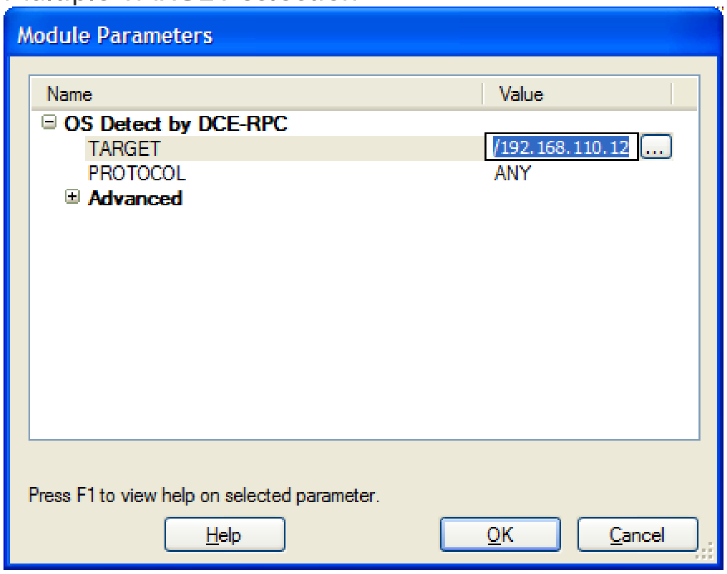
You can execute any module against a network folder using any of the methods described above. Core Impact's Console will behave differently during this operation according to whether the module accepts host ranges or not.

If the module accepts host ranges (receives a TARGETRANGE parameter), the Console will not update the TARGETRANGE parameter since it denotes an IP list and might not make sense when dropping over a folder. Typically, modules that need TARGETRANGE create new objects rather than work with existing ones.

If the module does not accept host ranges (receives a TARGET parameter), a ";" -separated list of hosts with the selected folder contents will be automatically created and set as the TARGET parameter for the module. Upon execution, the module will iterate over each one and process them.

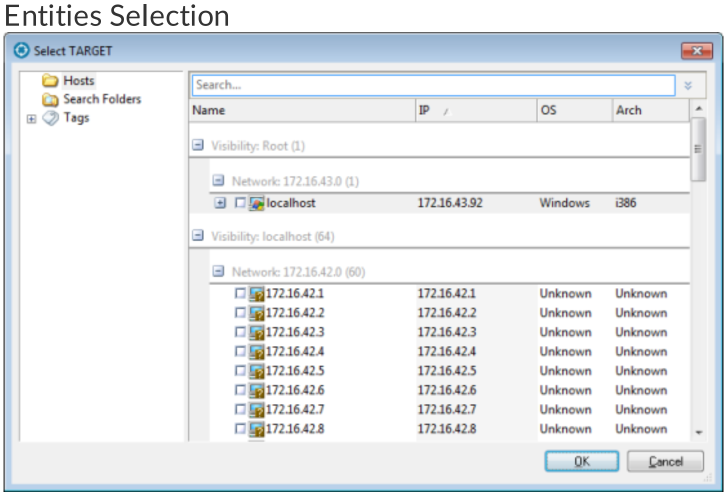
You can also specify multiple target hosts for a given module by clicking on the ellipsis button next to the TARGET parameter's Value column.

Multiple TARGET selection



Using the TARGET selection dialog, you can select the specific hosts you wish to target by checking/unchecking the check-box to the left of each host's name. When you are finished, click OK and you will be returned to the Module Parameters dialog. The TARGET parameter will be set to the selected hosts.

Entities Selection

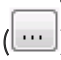


Specifying Port Ranges

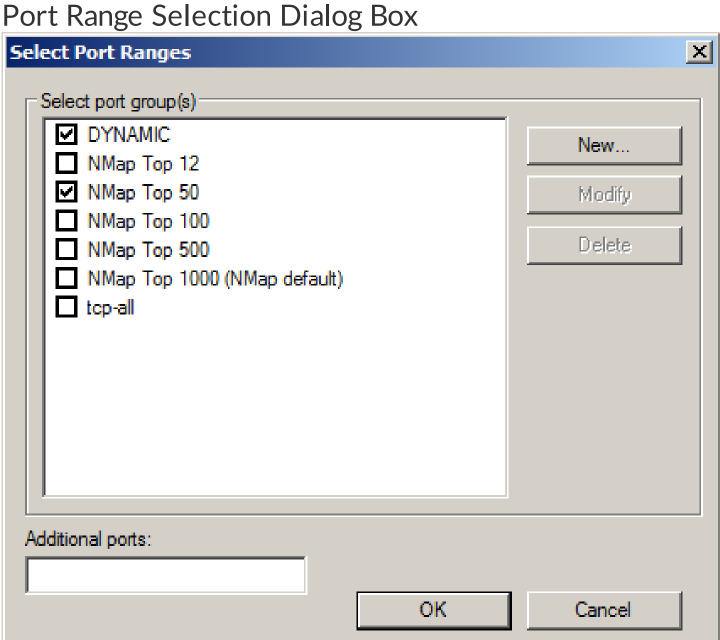
Modules that require a set of port numbers to do their work will ask you to provide a value for the PORT RANGE parameter. This parameter can be a list of comma-separated port numbers and ranges (as in "22,23,80,100-200"), a list of predefined port ranges, or a combination of both. Core Impact includes several predefined port ranges:

- **DYNAMIC.** Includes all the default TCP ports relevant to the currently-installed remote exploits. For instance, if Core Impact only had two exploits, one for SSH and the other for SMTP, then the DYNAMIC port range would be equivalent to "22,25".
- **NMap Top 12.** Includes the top 12 ports likely to be opened (as identified by NMap - see http://nmap.org/book/nmap-services.html)
- **NMap Top 50.** Includes the top 50 ports likely to be opened (as identified by NMap - see http://nmap.org/book/nmap-services.html)
- **NMap Top 100.** Includes the top 100 ports likely to be opened (as identified by NMap - see http://nmap.org/book/nmap-services.html)
- **NMap Top 500.** Includes the top 500 ports likely to be opened (as identified by NMap - see http://nmap.org/book/nmap-services.html)
- **NMap Top 1000 (NMap default).** Includes the top 1000 ports likely to be opened (as identified by NMap - see http://nmap.org/book/nmap-services.html)
- **tcp-all.** Includes all default TCP ports for known TCP services.

  Selecting tcp-all will cause the module to check all 65,535 ports, which will add a considerable amount of time to the module's runtime.

You can select any combination of these predefined port ranges by using the Port Range Selection Dialog box. To open this dialog box click on the Value column for the PORT RANGE parameter and click on the ellipsis () button.

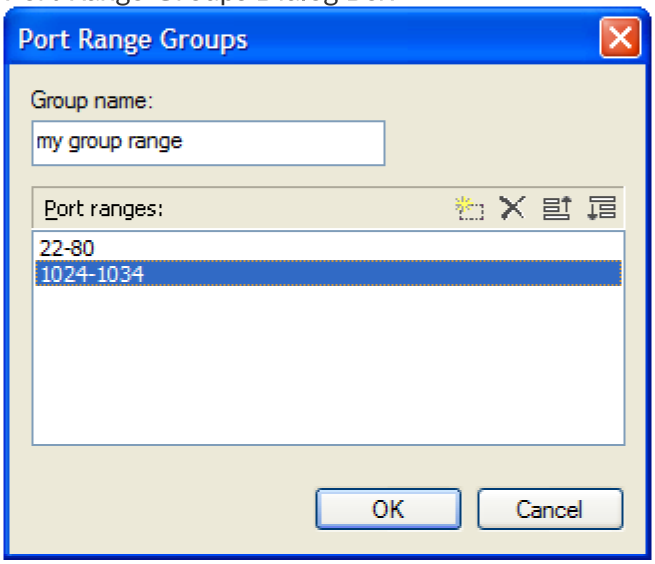
Port Range Selection Dialog Box

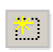


To select/unselect a given port range check/uncheck the check-box to the left of the range's name. You can add an additional range by typing it in the Additional ports field at the bottom of the dialog box.

You can also define additional port ranges and give them a name for future reference. To add a new range, click on the New button. The Port Range Groups dialog appears.

Port Range Groups Dialog Box



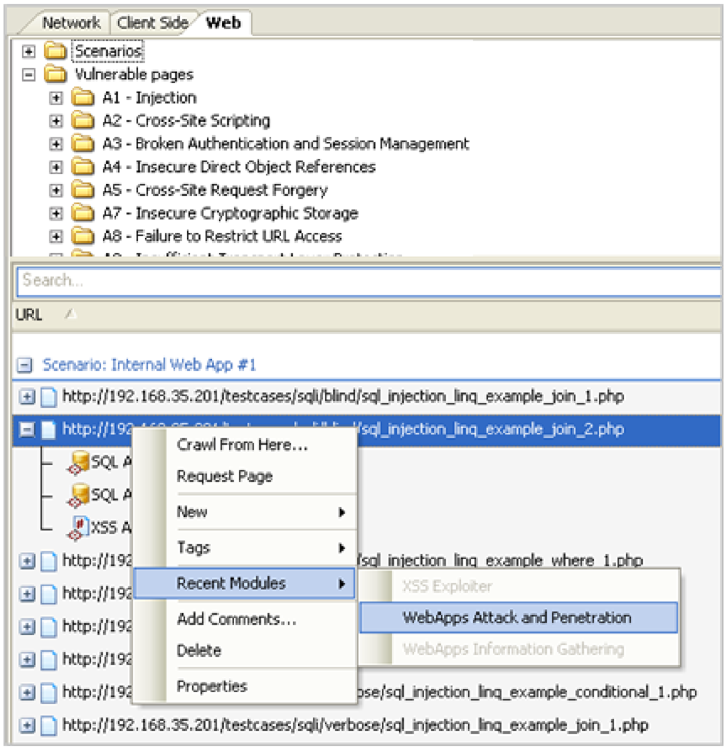
To add a new range, click on the  button. When finished click OK. Your new port range will be listed along with the predefined ranges, and you can now use it either by itself or in combination with other port ranges.

Launching Recently-executed Modules

The Console tracks modules you have recently executed and allows you to launch these modules from the Entity View Panel by right clicking on the desired target and selecting a module from the Recent Modules list.

You can also relaunch modules directly from the Executed Modules pane - see Resuming Modules.

Recent Modules Command

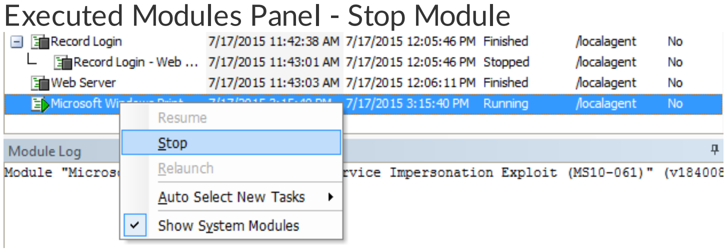


Stopping Modules

To stop a running module (thereby canceling its execution), right-click on the module in the Executed Modules Panel and select Stop from the context menu. You can also issue the Stop All command from the Modules drop-down menu in order to stop all running modules. The module's state changes from Running to Stopped.

When running a module, an agent might have to wait for a system call to finish. Stopping a module in this state will effectively uninstall the agent, since it is not possible to interrupt the remote blocking operation. When this condition arises, Core Impact will display a warning message and ask for confirmation. Note that the module may terminate while the Console is waiting for user confirmation. If this happens, uninstalling the agent is no longer necessary and closing the dialog is sufficient to stop the module. Modules can also be restarted from the Executed Modules pane - see [Relaunching Modules](#).

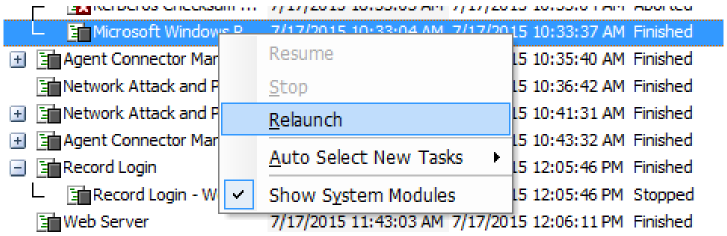
Executed Modules Panel - Stop Module



Relaunch Modules

Certain individual modules can be relaunched from the Executed Modules pane. To start an executed module again, right-click on the module in the Executed Modules Panel and select Relaunch from the context menu. The module will begin using the same parameters that were used on its most recent run.

Executed Modules Panel - Relaunch Module

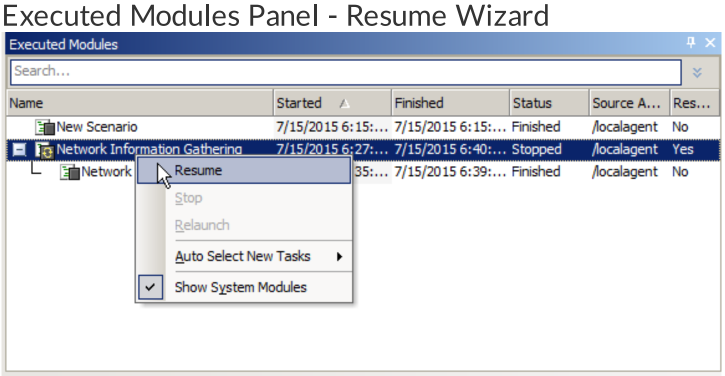


Resume Wizards

If a Rapid Penetration Test is manually stopped or otherwise terminated before it completes, the wizard can be resumed, and the whole process will begin where it left off. To resume an RPT test, right click on the RPT level in the Executed Modules Panel and select **Resume**.

If you know your RPT will take 2 hours to complete, but you only have a 1-hour window in which to perform the test each day, you can run the RPT for an hour, then stop it. The next day, you can Resume the RPT and it will begin where it left off.

Executed Modules Panel - Resume Wizard

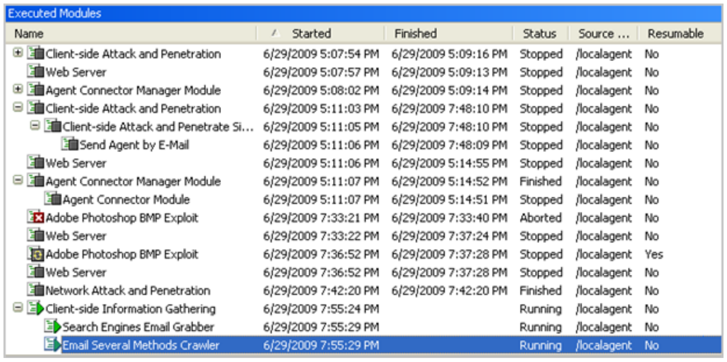


Using the Executed Modules View

Whenever a module changes execution status (starts executing, finishes, aborts with an error, or is canceled by the user), a log entry is filed within the workspace's database. This information is available to you in the Executed Modules Panel. By default, the Executed Modules panel will show the primary modules that are executed but, if you would like to view all modules that are run, right-click on any entry in the panel and select Show System Modules.

You can also relaunch modules directly from the Executed Modules pane - see Relaunching Modules. Wizards can be resumed if they were terminated before completing - see Resuming Wizards.

Executed Modules Panel


Executed Modules

Name	Started	Finished	Status	Source ...	Resumable
Client-side Attack and Penetration	6/29/2009 5:07:54 PM	6/29/2009 5:09:16 PM	Stopped	/localagent	No
Web Server	6/29/2009 5:07:57 PM	6/29/2009 5:09:13 PM	Stopped	/localagent	No
Agent Connector Manager Module	6/29/2009 5:08:02 PM	6/29/2009 5:09:14 PM	Stopped	/localagent	No
Client-side Attack and Penetration	6/29/2009 5:11:03 PM	6/29/2009 7:48:10 PM	Stopped	/localagent	No
Client-side Attack and Penetrate Si...	6/29/2009 5:11:05 PM	6/29/2009 7:48:10 PM	Stopped	/localagent	No
Send Agent by E-Mail	6/29/2009 5:11:06 PM	6/29/2009 7:48:09 PM	Stopped	/localagent	No
Web Server	6/29/2009 5:11:06 PM	6/29/2009 5:14:55 PM	Stopped	/localagent	No
Agent Connector Manager Module	6/29/2009 5:11:07 PM	6/29/2009 5:14:52 PM	Finished	/localagent	No
Agent Connector Module	6/29/2009 5:11:07 PM	6/29/2009 5:14:51 PM	Stopped	/localagent	No
Adobe Photoshop BMP Exploit	6/29/2009 7:33:21 PM	6/29/2009 7:33:40 PM	Aborted	/localagent	No
Web Server	6/29/2009 7:33:22 PM	6/29/2009 7:37:24 PM	Stopped	/localagent	No
Adobe Photoshop BMP Exploit	6/29/2009 7:36:52 PM	6/29/2009 7:37:28 PM	Stopped	/localagent	Yes
Web Server	6/29/2009 7:36:52 PM	6/29/2009 7:37:28 PM	Stopped	/localagent	No
Network Attack and Penetration	6/29/2009 7:42:20 PM	6/29/2009 7:42:20 PM	Finished	/localagent	No
Client-side Information Gathering	6/29/2009 7:55:24 PM		Running	/localagent	No
Search Engines Email Grabber	6/29/2009 7:55:29 PM		Running	/localagent	No
Email Several Methods Crawler	6/29/2009 7:55:29 PM		Running	/localagent	No

This panel provides information related to specific executions of a module using the fields described in the table below.

Executed Modules Panel Field Descriptions

Field name	Description
Name	Name of the module that is executing/was executed and an icon describing the status of its execution
Started	Date and time the module was started
Finished	Date and time the module finished executing
Status	Current execution status
Source Agent	Name of the agent selected as source when the module was executed
Resumable	Displays whether the module can be restarted from the Executed Modules pane (Yes or No)

Executed Module Status Definitions

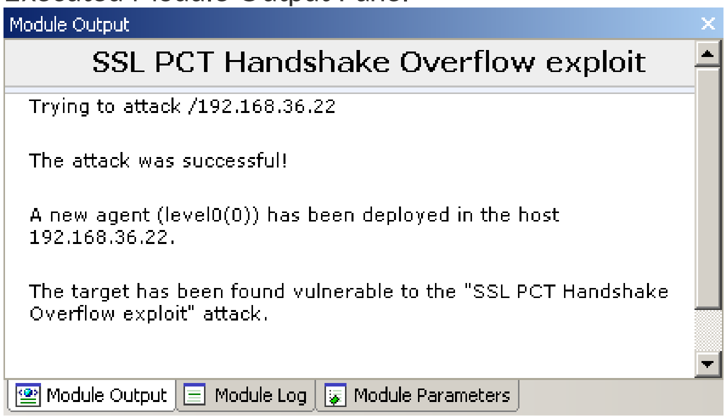
Icon	Status	Definition
	Initializing	The module is initializing but has yet to start executing
	Running	The module is running
	Stopped	The module has been canceled by the user
	Stopped and Resumable	The module has stopped but can be resumed in the Executed Modules pane
	Aborted	The module has aborted execution due to an error condition
	Finished	The module has finished executing

Analyzing Module Output

Executed modules produce two kinds of output: formatted output (referred to in this document simply as 'Output') and unformatted or debug output. You can view both types of output in the

Executed Module Info Panel located just below the Executed Modules Panel on the Console. The Executed Module Info Panel displays information related to the currently selected module in the Executed Modules list. To display information about another module, select that module in the Executed Modules Panel.

Executed Module Output Panel

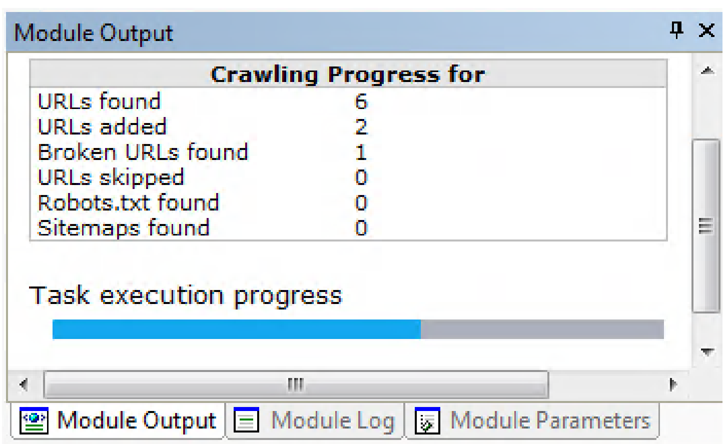


This panel can display three different types of information regarding the executed module: Output, Log, and Parameters. Select the type of information you wish to view using the tabs at the bottom of the window.

Module Output

The Module Output Tab shows the formatted output report of the module. Each module reports different information on this tab depending on its goal and the results obtained. The Module Output tab will also include a dynamic progress bar and pie chart for certain measures. The visibility of these graphs is dependent upon an active Internet connection.

Module Output

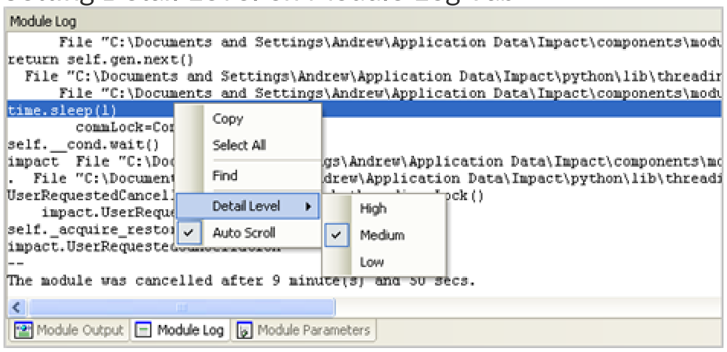


Module Log

The Module Log Tab shows all the logging/debugging information messages that a module produced while executing. The level of detail included in these messages is specific to each module.

There are three logging levels of detail for Log messages: HIGH, MEDIUM and LOW. A higher level will display more details. You can configure this tab to display messages at any of these logging levels. To change the current detail level, right-click in the Executed Module Info Panel when this tab is active and select your desired detail level from the context menu.

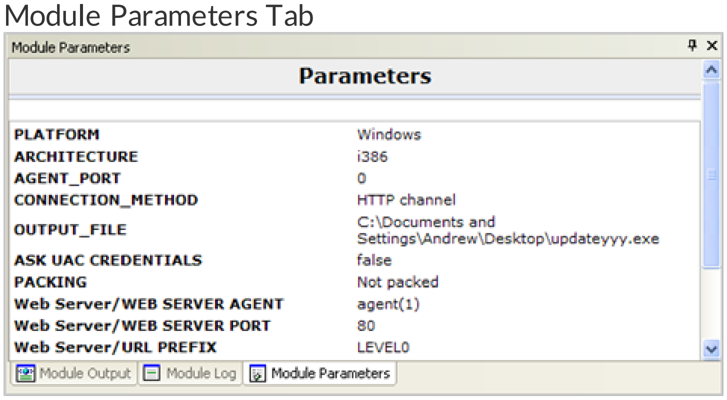
Setting Detail Level on Module Log Tab



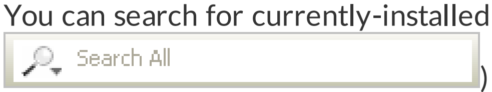
Module Parameters

The Module Parameters Tab displays the parameters that were used when the module was initially executed. This information is important because in order to correctly assess the results of a module execution, you must know which parameters were set when the module was run. The Parameters Tab holds all the parameters and values that were used for a particular module execution.

Module Parameters Tab



Searching for Modules

You can search for currently-installed modules using the Search box (


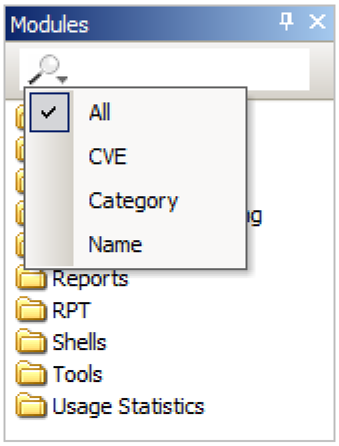
) located at the top of the Modules Panel of the Console.

You can (optionally) first select from the following search criteria using the button of the Search box:

- **All**: A combination of all of the different criteria.
- **Category**: Partial match of the module's category (Agents, Denial of Service, etc.).

- **CVE**: Partial match of the module's associated CVE name (mostly related to exploit modules). Examples: "2003", "2003-0719", "CVE-2003-0722". When searching for a specific vulnerability by CVE name, it is recommended that you omit the "CAN"/"CVE" at the beginning of the name.
- **Name**: Partial match of the module's name. Examples: "IIS", "apache", "discovery", "SSL".
- **Service**: Exact match of the module's target service (mostly related to exploits). Examples: "http", "https", "smtp", "netbios-ssn".
- **Supported System**: Partial match of the module's supported systems (generally related to exploit modules). Examples: "windows", "sp4", "windows 2000 server - sp2".
- **Application**: Partial match of the application that the modules can target (generally related to exploit modules).

Modules Tab - Search Box Search Criteria



Next, type your desired search text in the Search box. The Modules Panel automatically displays the search results. To clear your search and display all modules again, click on the Clear Search ( ) button located to the right of the Search box. Remember, the Modules view will only show modules that are applicable for the active Entity View. For example, if the Client Side entity tab is active, only modules that are applicable for client-side testing will appear in the Modules view.

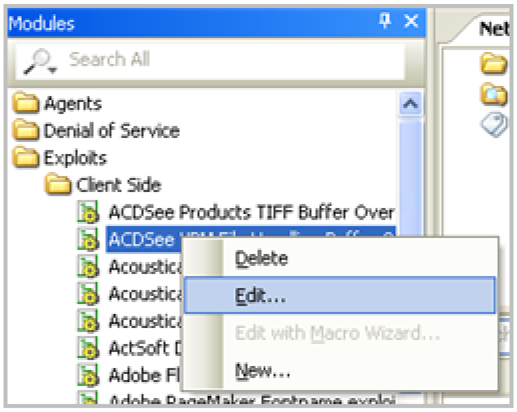
Below the Modules pane, you will have 2 options for filtering the list of available modules:

- Filter modules by target: Check this box if you want the list to only display modules that are relevant for the target (entity) that you currently have selected in the entity database.
- Show modules without target: Check this box if you want the list to display modules that don't have a TARGET parameter. This option is used in conjunction with the Filter modules by target option.

Editing/Deleting Modules from the Modules Panel

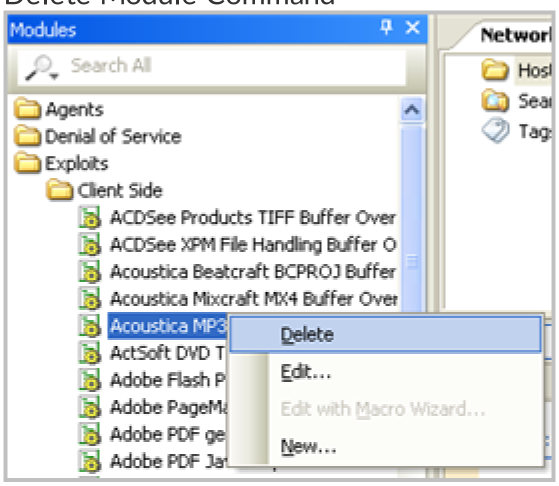
To edit a module, right click on it in the Modules Panel and select Edit from its context menu. The configured editor for .py files will be opened for the selected module. For this operation to succeed, a text editor must be defined in the Modules Options, accessible from the Tools drop-down menu..

Edit Module Command



To delete a module, right-click on it in the Modules Panel and select Delete from its context menu. Note that deleting a module from this panel deletes it from the Modules View and moves the python file to the Deleted Files folder.

Delete Module Command



You can refresh the currently available modules list at any time by selecting Modules -> Reload from Core Impact's main menu.

Custom Modules

The modules that perform Core Impact's security tests are constantly being updated with the latest threats. The power to create these modules is accessible to all users through Core Impact's open, standard Python language interface. The New Module Wizard makes this even easier by guiding the user through the process of creating module templates, which they then simply populate with Python script.

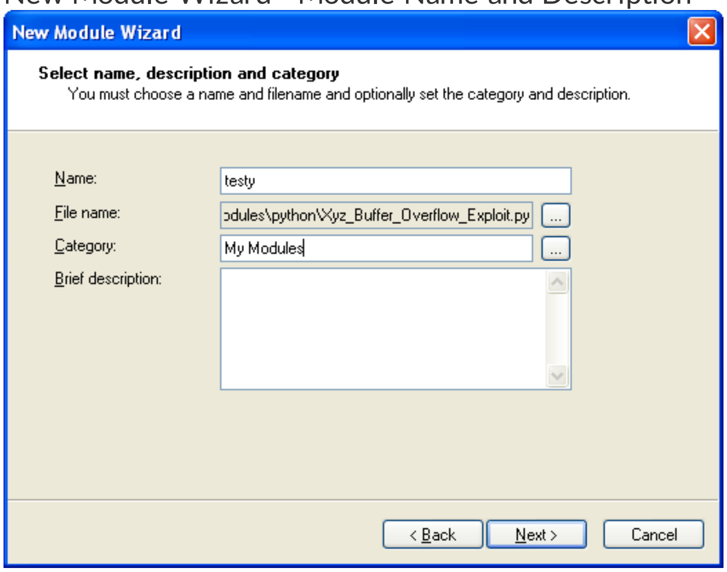
This process requires a working knowledge of the Python Programming Language. See http://www.python.org for more information.

Creating a Custom Module

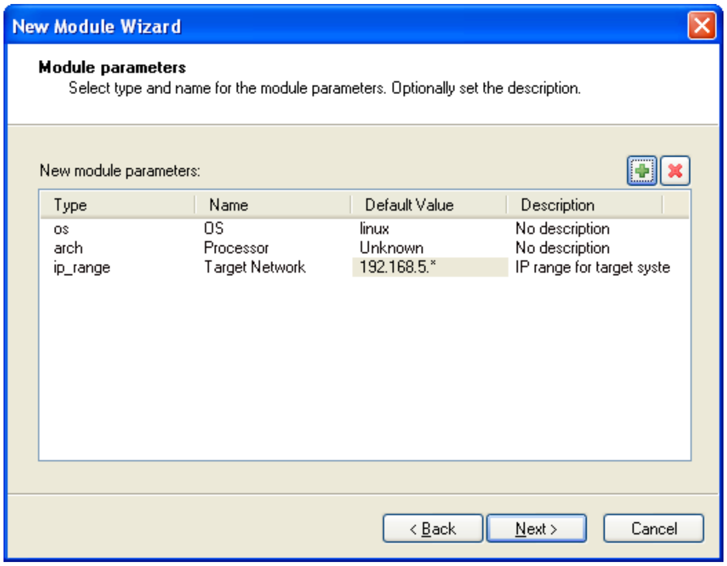
To create a new module:

1. Navigate in Core Impact's menu bar to Modules -> New Module...
2. The New Module Wizard will open. Click the Next button to proceed.
3. Complete the first form with the following details:
    - Name: The name of the module as it will appear in the modules list.
    - File name: The Python (.py) file where the module will be written and stored in the file system.
    - Category: The location in the Modules list where the new module will reside. By default, custom modules are saved in the My Modules folder, but you can change this by clicking on the ellipsis button (...) and selecting a new location.
    - Brief description: Optional description of the module. This description cannot contain special characters or carriage returns.

    New Module Wizard - Module Name and Description

    Click the Next button after the form is complete.
4. In the Module Parameters box, click the plus sign ( ) icon to add a new parameter to the module. To subsequently remove a parameter, select it and click the delete ( ) icon.
    New Module Wizard - Module Parameters



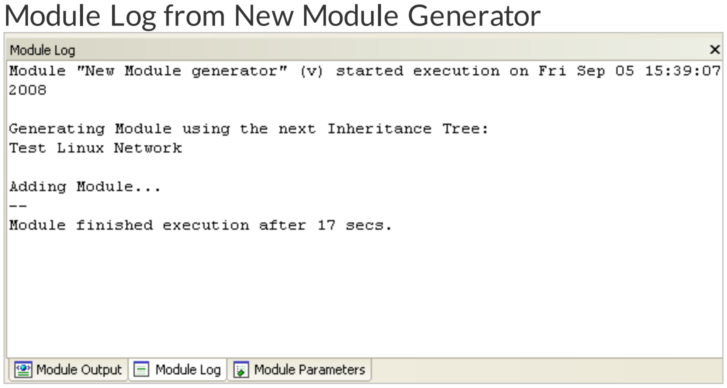
5. For each parameter, enter the following attributes:
   - Type: The category of parameter. For example, ip_range, string, ports, os, etc.
   - Name: The name of the parameter. For example, TARGET, Operating System, Port Numbers, etc.
   - Default Value: The default value of the parameter when the module is executed.
   - Description: A brief description of the parameter.

   When all parameters are established, click the Next button.
6. On the final page of the wizard, you will see confirmation that you have provided all the required information.

   Click the Finish button and the Module will be created.

   You can view the progress of the generation process by selecting the New Module Generator module in the Executed Modules panel, then clicking on the Module Log tab.

   Module Log from New Module Generator



7. Once it is created, the new .py file will open automatically in your default text editor.

   At this point, the module is not complete. It is only a template that still needs to be customized before it will be functional.

Inside of the .py file, you will find commented guidance on how to edit and complete your new module.

Modify your .py file as needed, then save and close the file. Your new module can then be managed just as any other module in Core Impact.

Macro Modules

Macro Modules allow you to combine multiple Core Impact modules into a single module package and then to execute it on your target systems or use it as an auto-runnable post-exploitation step. With Macro Modules, you can automate common tasks that are usually run in sequence with some preset parameters. For instance, the Information Gathering Example Macro in the My Macros module folder will do the following:

1. Run the Network Discovery - ICMP module against a specified netblock.
2. Run the Network Discovery - TCP Connect module against a specified netblock.
3. Run the OS Detection module against each of the scanned hosts.

Macro Modules are no different from other Core Impact modules except for the fact that they take advantage of automation features built into Core Impact's API.

Creating Macro Modules

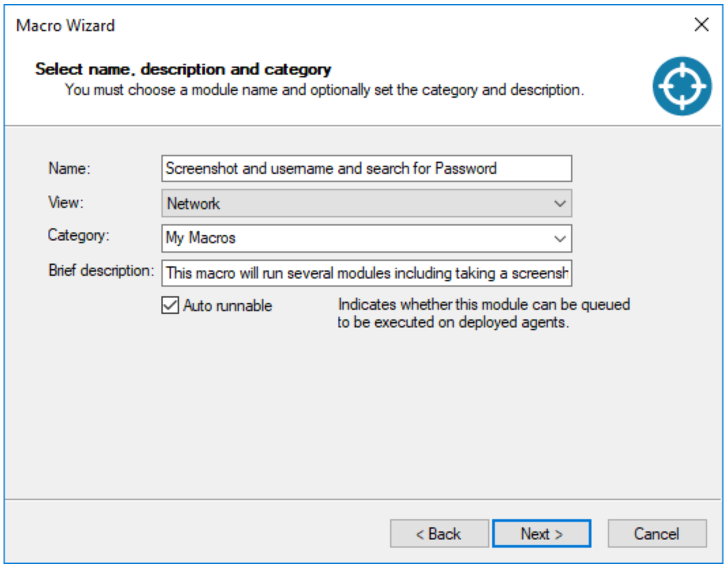
You can create powerful macros graphically using Core Impact's Macro Creation Wizard.

You must be in an opened Workspace to create a Macro Module but, after the Macro is created, it will be available across all Workspaces in your Core Impact instance.

To create a Macro Module:

1. In an opened Workspace, navigate in Core Impact's menu bar to Modules -> Create Macro...
2. The Macro Wizard will open. Click the Next button to proceed.
3. Complete the first form with the following details:
    - Name: The name of the macro as it will appear in the modules list.
    - View: The entity view for which the module will be visible. For example, if you select Network, then the Network entity tab must be active in order for the new module to appear in the Modules View.
    - Category: The folder in the Modules list where the new macro will reside. By default, new Macros are saved in the My Macros folder, but you can change this by clicking on the drop-down menu and selecting a new location.
    - Brief description: Optional description of the Macro.
    - Auto Runnable: If this option is checked, you can configure an exploit to automatically run this Macro Module if the exploit successfully launches an agent.

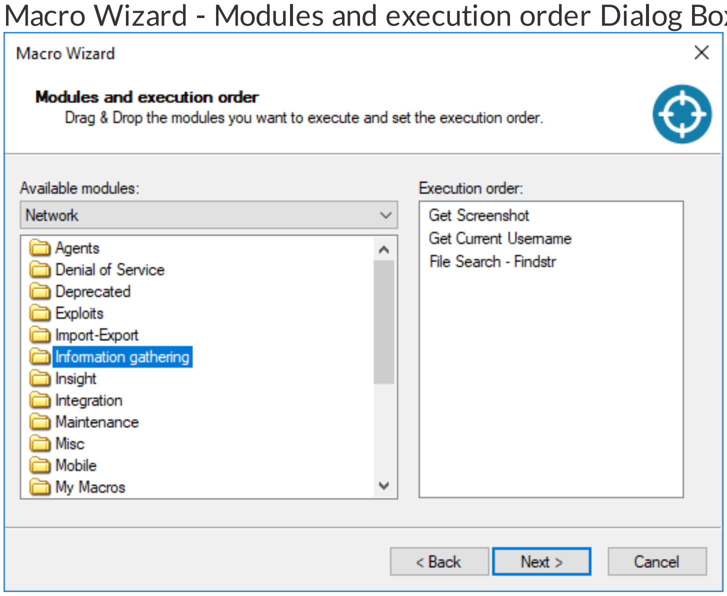
    Name, description and category



Click the Next button after the form is complete.

4. Drag and drop each module that you want to include in the macro from the Available modules pane (left) to the Execution order pane (right).

 Macro Wizard - Modules and execution order Dialog Box



You can change the execution order of the modules in the Execution order pane by dragging a module to a different position in the sequence. A dotted line is displayed to help you see where the module will be dropped.

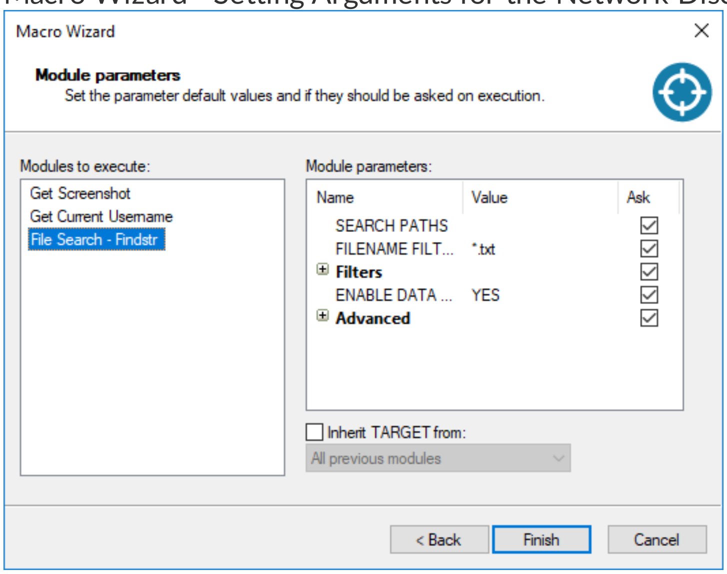
To remove a module from the sequence, select it and press the Delete key.

Click the Next button to proceed with the wizard.

5. For each module in the sequence, you can select which parameters will be manually set by the user when the macro is run and which will be set by default. To configure this:
    a. Select the module in the Modules to execute pane.
    b. In the Module parameters pane, for each parameter, place a check in the Ask column if you want the user to input the parameter value when the macro is executed. If the Ask box is not checked, the data in the Value column will be used when the macro is executed.
    c. Change any data in the Value column by clicking on the value. Some parameters will offer a simple text field or a drop-down menu, and others will show an ellipsis (

) button that, when clicked, will provide more options for setting the value.
    d. Some parameters can be inherited from the results of a module higher in the sequence by checking the Inherit TARGET from check-box. After checking this box, select the module from which the current module should obtain its TARGET value (s). If the module selected in the drop down box outputs more than one value, the module will be run on each one.

    Macro Wizard - Setting Arguments for the Network Discovery Module



    e. Click the Finish button and the Macro Module will be created.

You can view the progress of the generation process by selecting the Meta Module Generator module in the Executed Modules panel, then clicking on the Module Log tab.

Using Macro Modules

Macro Modules are used just as other modules in Core Impact. If you configured your macro to be auto runnable, you can use this macro as a post-exploitation step with several of the RPTs. To execute a macro module manually, follow these steps:

1. Locate the macro in the Modules Panel. When the macro was created, you specified a location for it.
2. Launch the macro by either double-clicking it or dragging and dropping it onto an item in the Entity Database.

3. The macro module's parameter dialog box will open.
   If you wish, set the parameters and then click OK to execute the macro module.

See Running Modules for more details.

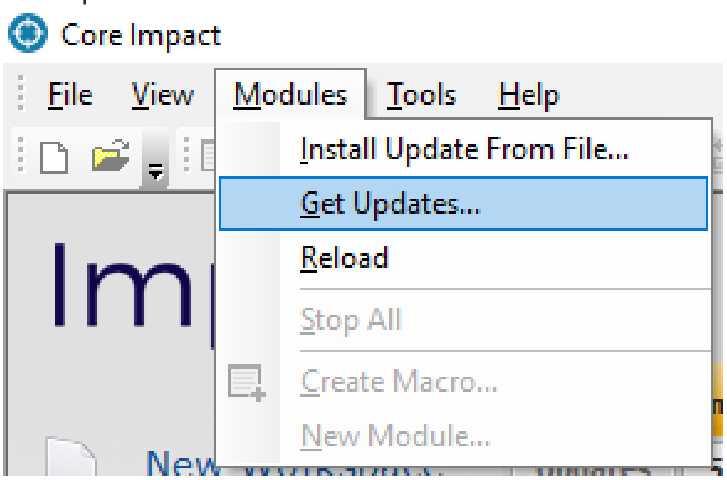
Getting Module Updates

Core Impact's Get Updates performs two important functions:

- Downloads and installs the latest set of Core Impact modules.
- Gathers and submits Usage Statistics to Core Labs if you have opted into the Usage Statistics program (see Usage Statistics).

To get the latest set of Core Impact modules, select Modules > Get Updates... from Core Impact's main menu, click on the Get Updates button on the Welcome Screen, or use the Update IMPACT modules module from the Maintenance module category.

Get Updates Command



Core Impact will create a new HTTP connection to the update server, download any available updates, and install them. If you use a proxy server to browse the Internet set the Update Settings options accordingly (see Network Options). In some cases (indicated by the update module) Core Impact will need to be restarted before you can continue.

When you are done downloading module updates, view the Executed Module Info Panel for the Update IMPACT modules module for a report of which updates were downloaded.

You need an active Internet connection to connect to the update server.

Controlling Agents

Core Impact agents are the results of penetration tests. They work with Core Impact to execute modules (your chosen tasks) on target systems. Every module needs an agent in order for it to operate.

Note that although a module is automatically assigned an agent (the source agent) for execution, it might interact with other agents to accomplish its goal. Refer to the specific module's documentation for more information.

About Agents and WebApps Agents

An Agent (sometimes referred to as an OS Agent) represents an entity on a target system that serves as your conduit to that system. When you create a new workspace there is one agent present, localagent, that comes with the Console. This agent is always the starting point of a new Network or Client-side test since modules that perform initial operations are first executed from the Console. As hosts are compromised, Core Impact deploys agents on those targets. When this occurs, you can instruct any module to run from an agent other than localagent. (see Set as Source in the Interacting with Agents section).

When an Agent is being prepared to be deployed on a target system, a *cookie* is generated so that the agent can be identified by and connect to Core Impact. This cookie will allow any agent to connect back to Core Impact, even after the Core Impact workspace has been restarted (see Closing a Workspace for details on closing a workspace and leaving modules running).

If Core Impact successfully exploits a host but antivirus or intrusion detection systems (IDS) prevent the agent from being installed, the host will be tagged as 'vulnerable but not exploitable'. This classification will be shown in the host's Quick Info, the Attack and Penetration Summary, as well as in the Vulnerability Report.

IOS Agents are the result of Network Device testing. They represent the information of how to exploit a network device vulnerability. If an IOS agent exists in your Network view under a Network Device, then you have the ability to perform certain post-exploit activities on the device such as opening a command shell. See Post Exploitation Modules for Network Devices.

Android Agents are specifically designed to operate on Android devices.

WebApps Agents are the result of WebApps testing. They represent the information of how to exploit a web application vulnerability. If a WebApps agent exists in your Web View, then you have the ability to perform certain activities on the web application's server. In this regard, a WebApps agent is similar to an OS agent.

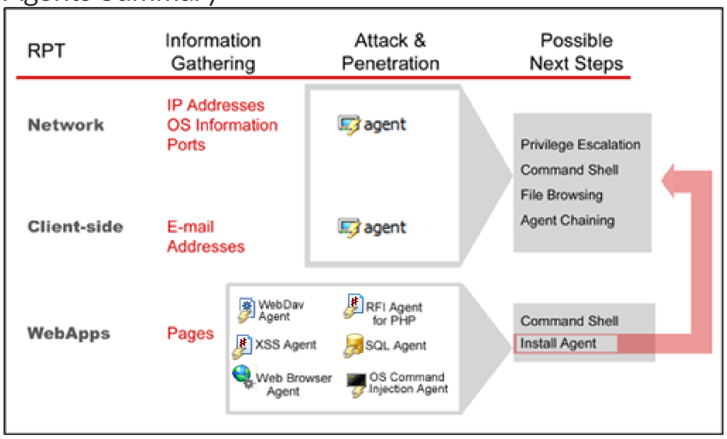
The different types of WebApps agents are described below:

- SQL Agent: Represents the knowledge of how to exploit a web application using SQL Injection.
- RFI Agent for PHP: Represents the knowledge of how to exploit a web application using PHP File Inclusion.
- XSS Agent: Represents the knowledge of how to exploit a web application using Cross Site Scripting.

- Web Browser Agent: Obtained when you gain control of a web browser through a XSS attack. Web Browser Agents are launched on XSS agents.
- OS Command Injection Agent: An OS command injection attack is possible when an attacker is able to execute system level commands through a vulnerable page in a web application. Applications are considered vulnerable to an OS command injection attack if they take user-supplied input and use it directly in a system level command.
- WebDav Agent: Represents the knowledge of how to exploit a poorly configured web server.

The below graphic illustrates how Agents and WebApps Agents are created and what steps can be taken from them. Note that from a WebApps Agent, one can optionally deploy an OS agent.

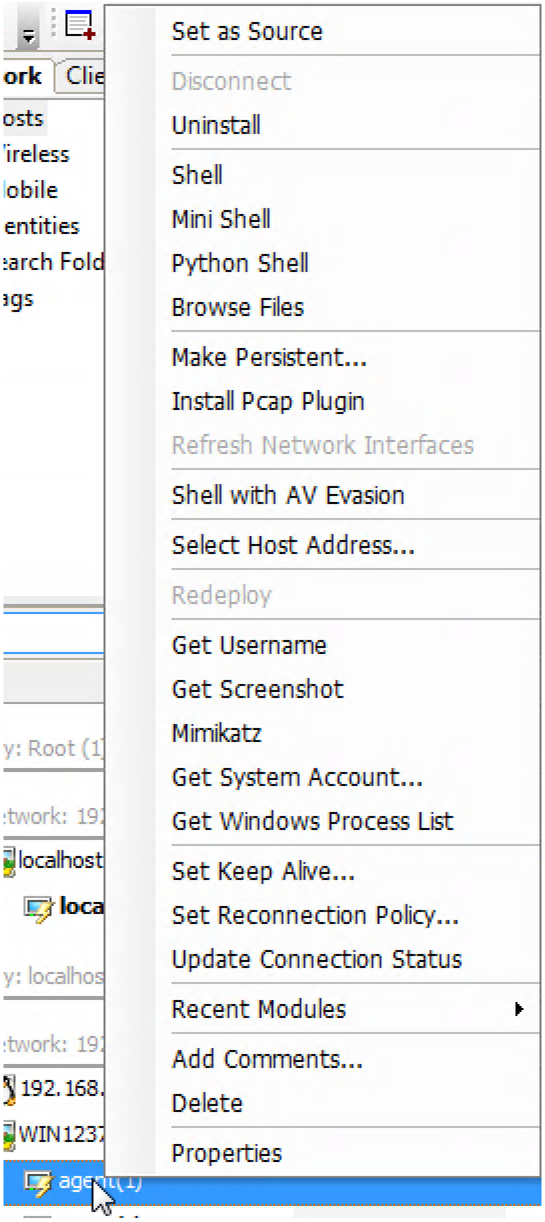
Agents Summary



See Interacting with WebApps Agents for information on how to use WebApps Agents.

Interacting with Agents

You can perform several functions by right-clicking on an agent and selecting from the context menu.



The menu may vary depending on the type of agent, its current status and other global settings:

- Set as Source: By default, the localagent is the source agent for all attacks. If a new agent is deployed on a host machine, you can set that agent as the source and all future attacks will be initiate from that agent. This process is referred to as *pivoting*. With a remote source agent, you can launch new Network and WebApps tests that might otherwise be less effective from the localagent. If, however, you want to simply run a module using a remote agent, click on that agent (focus on it) and then run the desired module. The module will automatically attempt to run using the focused agent.
- Uninstall Allows you to uninstall a currently-connected agent.
- Connect: Allows you to reconnect with a persistent agent.

- Create Remote Interface (requires PCAP plugin for Windows be installed): With this operation, you can create a VPN connection with the targeted host. With this tunnel in place, you can then run applications (besides Core Impact) that are on your local system and have them interface with the host. For example, if you were able to - through other testing steps - learn the user's email username and password, you could set up your own email client to use their credentials, demonstrating a severe breach potential.

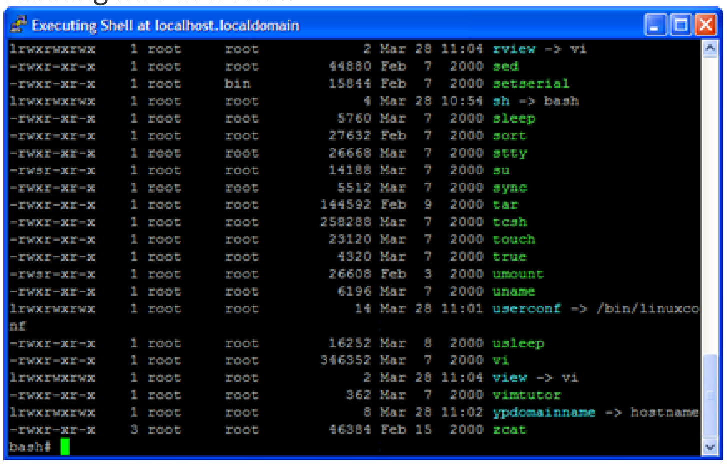
  With this remote interface, once the VPN connection is in place, your system is equally visible to the host and the host network, making your testing more prone to detection.
- Shell: Executes a fully functional terminal on the host.
- PowerShell Shell: Executes a fully functional PowerShell terminal on the host.
- Mini Shell: Implements a limited set of commands on the host.
- Python Shell: Executes a Python shell on the host.
- Browse Files: Allows file browsing on the host.
- Make Persistent: This option will install an agent in the filesystem of the compromised computer so that it can be used across system reboots for prolonged penetration tests.
- Install Pcap Plugin: Installs the Pcap plug-in on the selected agent to enable faster scanning and to add support for packet capture and packet injection to a remote pivoted agent.
- Shell with AV Evasion: Executes a shell via the agent. This shell contains antivirus evasion qualities that will reduce the chances that it will be detected by the host machine's AV processes.
- Recover: This option can recover the connection to a non-persistent agent that was disconnected unexpectedly.
- Set Reconnection Policy: Use this option to modify the Reconnection Policy for a specific agent - these settings override the global Reconnection Policy set in Agents Options.
- Update Connection Status: This option will gather performance statistics for a connected agent.
- Redeploy: Any agents that were previously active can be redeployed using this option. Core Impact will re-execute the exploits that were used to originally install the agent and, if successful, will re-active the agent.
- Get Username: If applicable, this action will execute the Get Current Username module and report back the current username in the Module Log tab of the Executed Modules pane.
- Get Screenshot: If applicable, this action will execute the Get Screenshot module and save a screen image of the host. The image will be visible in the Module Output tab of the Executed Modules pane.
- Mimikatz: If applicable, this action will execute the Mimikatz module and capture usernames and passwords on the host machine. Results will be shown in the Module Output tab of the Executed Modules pane.
- Recent Modules: This menu will show modules that you have recently executed so that you can easily repeat them for a selected agent.
- Add Comments...: Use the Add Comments... option to enter your own notes regarding the agent.
- Delete: Use this option to delete an agent from a host as well as from the entity view.

- Properties: This option will show properties of the agent in the Entity Properties pane.

The Shell

Agents can execute a fully functional terminal on the remote host. Select Shell from an agent's context menu to launch the Shell and you will have the ability to perform all functions that you could with `cmd.exe` on Windows or `/bin/sh` on a Unix system.

Running Info in a Shell



The Mini Shell

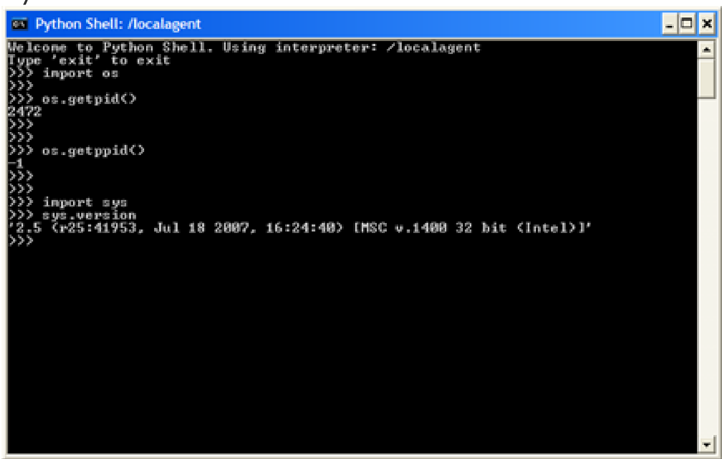
The Mini Shell uses a console-like interface to interact with an agent. Because the Mini Shell does not require the presence or availability of a shell in the remote host, it implements only a limited set of commands. One of the major benefits of using the mini shell is that it hides shell-like functionality from host intrusion detection systems that may trigger an alert when a shell command is executed. The mini-shell also allows you to transfer files between the agent and your local computer, something the Shell does not permit. Select Mini Shell from an agent's context menu to launch the Mini Shell. Type `help` to get a list of valid Mini Shell commands.

Running Commands in a Mini Shell

The Python Shell

In order to interface with the agent using a fully functional Python Shell, right-click on the agent and select Python Shell from the context menu. This shell will accept any valid python commands.

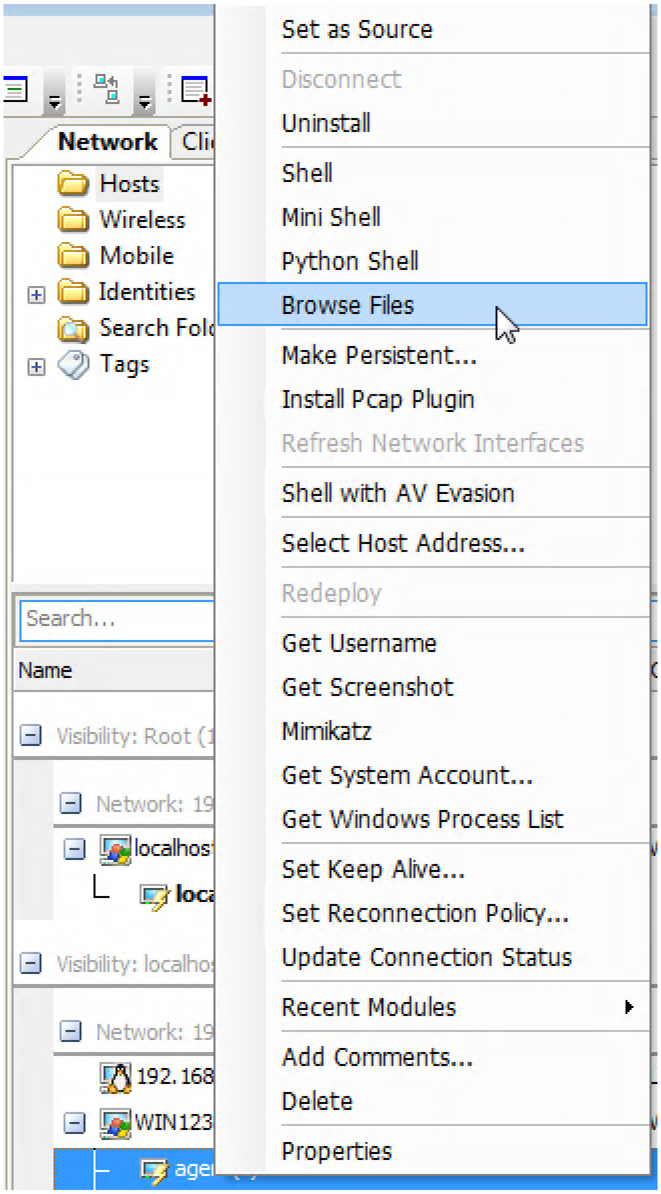
Python Shell



The File Browser

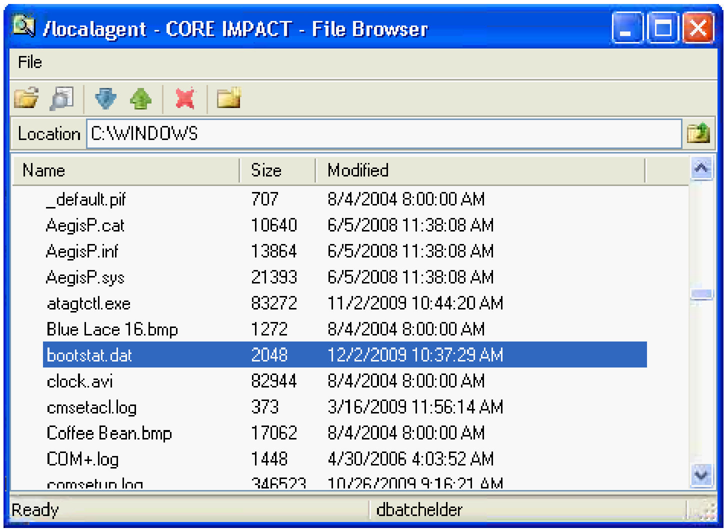
You can use the File Browser to browse files in the host where the agent is running. Files and complete folders can be uploaded to or downloaded from the target host's file system. To access the File Browser, right-click on the desired agent and select Browse Files from the context menu.

Browse Files



Using the File Browser toolbar , you can view/open a file, download or upload a file, or even delete a file in the remote system.

Browsing Files on an Agent



Setting Source Agents

When you run a module (see Running Modules) the Console automatically runs the module from the point of view of the agent that is currently set as the source agent. You can tell which agent is currently the source agent because it will be marked with boldface in the Entity View Panel of the Console.

You can make any agent the source agent at any time by right clicking on the agent in the Entity View and selecting the Set as source option from the context menu. Note that the agent needs to be in the "connected" state to be eligible for source agent status.

To return to the default setting of localagent as source agent, right click on localagent and select Set as Source or click on the Set localagent as source button () on the Entity View toolbar.

Remote Network Interface

Once an agent has been Set as Source, you can create a VPN connection with the targeted host. With this tunnel in place, you can then run applications (besides Core Impact) that are on your local system and have them interface with the host. For example, if you were able to - through other testing steps - learn the target user's email username and password, you could set up your own email client to use their credentials and access their mail servers, demonstrating a severe breach potential.

To set up this tunnel, set the agent as source as described in the previous section, then drag-and-drop the module Remote Network Interface onto the agent.

With this remote interface, once the VPN connection is in place, your system is equally visible to the host and the host network, making your testing more prone to detection.

Agent States

Agents exist in one of three states. The following table describes these agent states and shows the icon that represents each in the Entity View Panel of Core Impact's Console.

Agent States

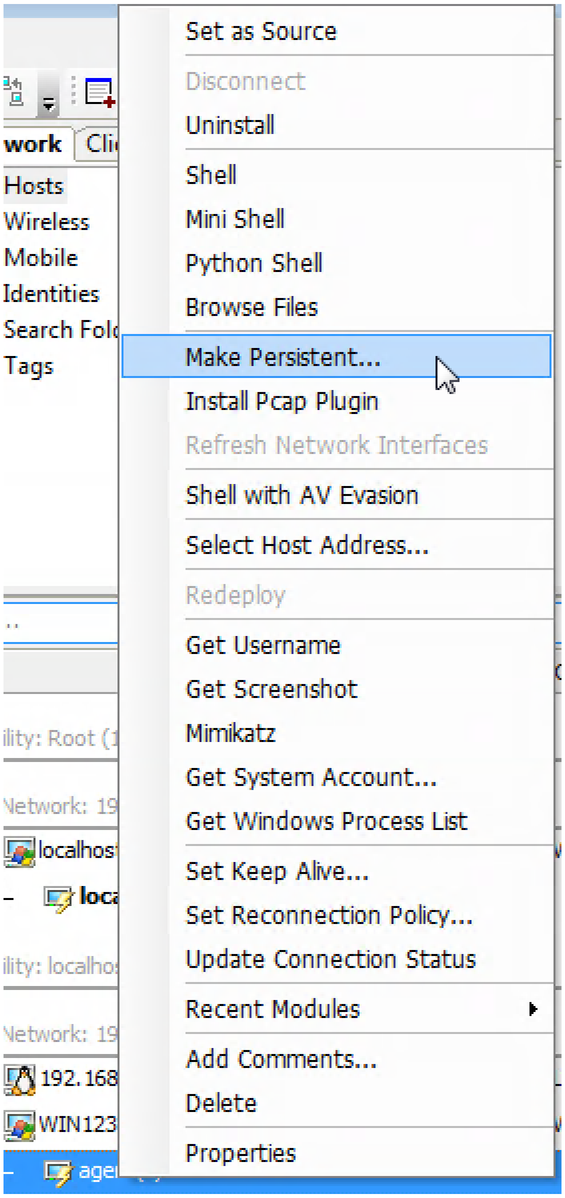
Icon	State	Description
	Deployed but unconnecuted	The agent has been successfully deployed in the remote system but it is not connected to the console.
	Deployed and connected	An active communication channel exists between the console and the remote agent.
	Uninstalled	The agent has been removed from the remote system and is no longer active.

Making Agents Persistent

By default, agents are deployed in memory only and will not survive if the host system is rebooted. To prevent this, you can make an agent Persistent which will cause the agent to increase its presence on its host machine by creating a service and establishing itself in the host's file system. If you wish to configure an agent to be Persistent:

1. Right-click on the agent in the Entity View and select Make Persistent (An alternate method is to run the "Make agent persistent" module in the Agents module folder against the desired agent in the Entity View).

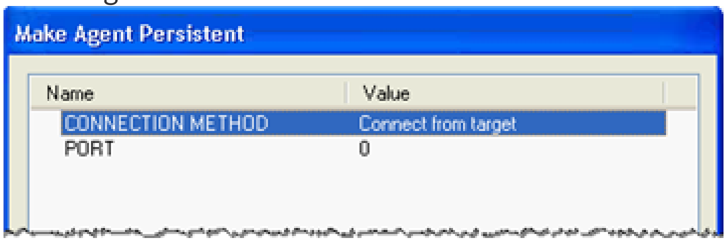
   Make Agent Persistent command



2. In the parameters window, select the connection method.
    - Connect from target: A new TCP connection will be created originating from the remote agent on the target host back to the host where the current source agent is located. The Reconnection Policy that is set in Agents Options will determine the frequency and duration of the attempted reconnection.
    - Connect to target: A new TCP connection will be created originating from the host where the source agent is located, terminating at the remote agent on the target host.
    - HTTP Channel
    - HTTPS Channel

Also select the PORT number. If you leave the port at 0, the connection will occur over the agent's original connection port.

Make Agent Persistent Parameters



3. Press the OK button.

   A new agent will be created, representing the Persistent Agent.

This process requires that the remote agent has administrator privileges.

After an agent is made persistent, you will be able to reconnect it to its rebooted target host. To do this, after the host is rebooted:

1. Right click on the agent.
2. Select Disconnect.
3. Right click on the agent again.
4. Select Connect.

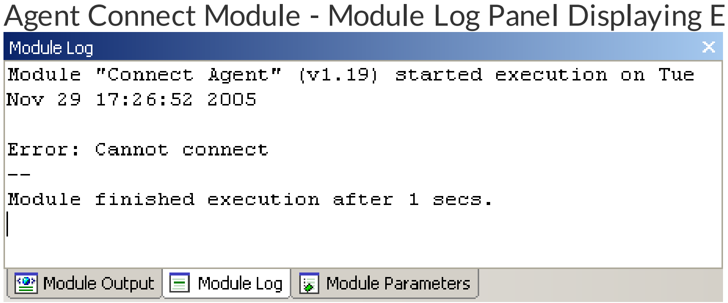
The agent will reconnect to the rebooted target host.

Connecting Agents

To connect a persistent agent that is in the unconnected state, right click on the agent in the Entity View Panel and select Connect. Because connecting an agent can be a complex technical task, the Console uses a built-in module called Agent Connect to connect to the agent.

You can view the status of the Agent Connect Module in the Executed Module Info Panel just as you can with any other executed module. Check the Module Log to see if an error occurred in the module's execution (refer to the section called “Analyzing Module Output” for information on how to consult module status and output).

Agent Connect Module - Module Log Panel Displaying Error Text



Uninstalling Agents

You can uninstall a connected agent from the remote system by right clicking the agent in the Entity View Panel and choosing the Uninstall command from the context menu.

Once you uninstall an agent, it is no longer available to you. However, the agent's entity remains in the database for logging and reporting purposes. You can remove it by right clicking over on the agent and selecting Delete. Note that if you choose to remove an agent in this manner, it will not be included in future reports.

Issuing a disconnect command to an in-memory agent (the default agent) effectively uninstalls that agent. Disconnecting from a persistent agent leaves the agent on the filesystem and allows you to reconnect to it at a later time. Deleting an agent removes it from the database, but it doesn't perform an uninstall on the target machine. Always uninstall before deleting an agent.

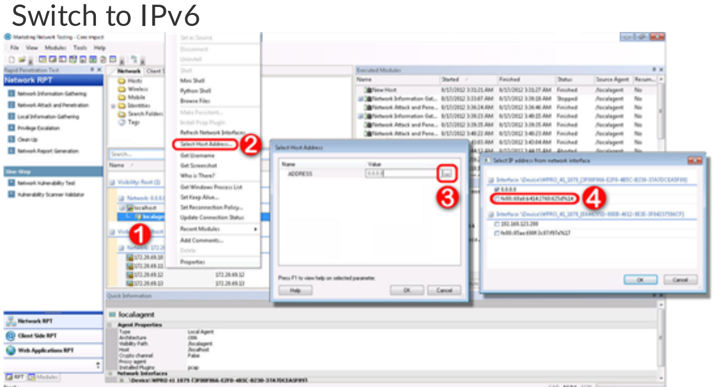
SQL, XSS and PHP Agents represent knowledge of how to exploit a vulnerability on a web page, they do not represent running code on the page/application. Therefore there is no need (or ability) to uninstall a WebApps Agent.

IPv4 and IPv6

Core Impact supports agent communication over both IPv4 and IPv6. In situations where you would like to launch modules that do not have a target specified, you might want to set your localagent to use a IPv6 address. For example, if you launch the Web Server module, and you want the server to listen on an IPv6 address, you would first want to follow the below steps to change your localagent from IPv4 (the default) to an IPv6 address. Follow these steps in the Network View of the entity database:

1. Right-click on the localagent. This is the item to which installed agents communicate back to in Core Impact.
2. From the right-click menu, click Select Host Address...
3. Click inside of the Value field where the current host IP address is listed (by default, this will be an IPv4 address) and click the ellipsis button (...) to the right of the host address.
4. Check the box next to the IPv6 (link-local) address for your network adapter.
5. Click the OK buttons until you've returned to the Core Impact workspace.

Switch to IPv6



Any agents deployed after making this change will communicate back to the localagent using the address you specified (either IPv4 or IPv6).

Deploying Agents

Agents are typically deployed when you launch an attack module to exploit a vulnerability or to exploit end-users' lack of security awareness (client-side social engineering attacks). Successful exploits deploy a new agent after compromising the target system. When an attack module creates a new agent and commits it to the Entity Database, the agent automatically appears in the module's output panel and inside the compromised host in the Entity View Panel.

You can also manually deploy agents by using a generic file-transfer-and-execute module or from outside of Core Impact's Console. If you choose to manually deploy an agent, you must register the agent's existence in the Entity Database or the Console will not recognize it. To register the agent, go to the Modules Tab and use the Register modules located in the Agents category.

There is no limit on the number of agents you can install on a single host.

Deploying an Agent Using Valid User Credentials

Core Impact can use a valid username and password to deploy an agent on a remote host. In contrast to agents deployed using the exploitation process, these agents are deployed not by exploiting a vulnerability but by logging into the target hosts with the specified username and password. This is especially useful when valid credentials are obtained from cracking password hashes gathered from a compromised host.

Agents can be deployed in this manner through a variety of different protocols. Utility modules for doing this can be found in the Agents folder of the Modules panel. Some examples of these modules are:

- **Install Agent using SMB**: Installs an agent by connecting to a network share.
- **Install Agent Using WMI**: Installs an agent using Windows Management Instrumentation.
- **Install an agent using ssh**: Installs an agent by connecting through SSH.
- **Install an agent using rlogin**: Installs an agent by connecting through rlogin. This module can take advantage of trust relationships created by `.rhosts` files.
- **Install an agent using telnet**: Installs an agent using the telnet service.
- **Install an agent using unix-portshell**: Installs an agent on a Unix target using a shell bound to a port.
- **Install an agent using VNC Protocol**: Installs an agent using the VNC protocol.
- **Install an agent using win-portshell**: Installs an agent on a Windows target using a shell bound to a port.

To deploy agents using a valid username and password, follow this procedure:

1. Select the desired target hosts for which you have a valid username and password.
2. Select the install module from the Agents folder that corresponds with the install protocol you wish to use.

3. Launch the module by dragging and dropping the module to the target host in the Entity View. This will evoke the Module Parameters .
4. Change the USER and PASSWORD parameters to the username and password for the target host and click OK.
5. A new agent with the privileges of the specified user will be installed on the target host. You can continue to work with this agent as usual.

Establishing Agent Communication Channels

Core Impact's Console must establish a communication channel with each agent in order to control it. Communication channels are established in a number of different ways depending on the agent deployment method and agent type.

When agents are deployed by an exploit module or a utility module, the exploit's Agent Connection/CONNECTION METHOD parameter will control the way the communication channel is established. Agents will use a TCP connection as a communication channel. The options available for the **Agent Connection/CONNECTION METHOD** parameter are:

- **Connect to target.** A new TCP connection will be created originating from the host where the current source agent is located, terminating at the remote agent on the target host. The **Agent Connection/PORT** parameter will control the specific TCP port where the remote agent will listen for incoming connections from the source agent.

  If Core Impact is running on a computer behind a NAT device (such as a home DSL router), a connection method different than "Connect to" will not be effective right away. To support "Connect from", "Reuse connection" and "HTTP channel " in this scenario, activate the NAT support using the Network section of the Options Dialog Box. Open the Options Dialog Box by selecting Tools > Options fromCore Impact's main menu. Refer to Network Options for a description of these settings.
- **Connect from target.** A new TCP connection will be created originating from the remote agent on the target host back to the host where the current source agent is located. The **Agent Connection/PORT** parameter will control the specific TCP port to which the remote agent will attempt to connect to on the source agent host. If the specified port is already in use by another exploit, the agent connector has the ability to reuse that same port. Some client-side exploits will attempt to use the HTTP Connect feature first when "Connect from" is selected. See HTTP Connect Channel for more information on HTTP Connect.
- **Reuse connection.** The agent will reuse the same TCP connection that was used to deliver the attack. For instance, if the agent is deployed using an attack against a web server listening on TCP port 80, the agent will use that initial connection to communicate back to the Console.
- **HTTP channel.** A new HTTP connection will be created from the remote agent on the target host to the host on which the HTTP Tunnel resides. In the cases where the remote host has a HTTP proxy defined, the remote agent will connect to the HTTP Tunnel end point through the configured proxy. Additional settings related to this connection method can be configured within the "HTTP Tunnel" section in the module's parameters. See HTTP Tunnel Channel for more information.

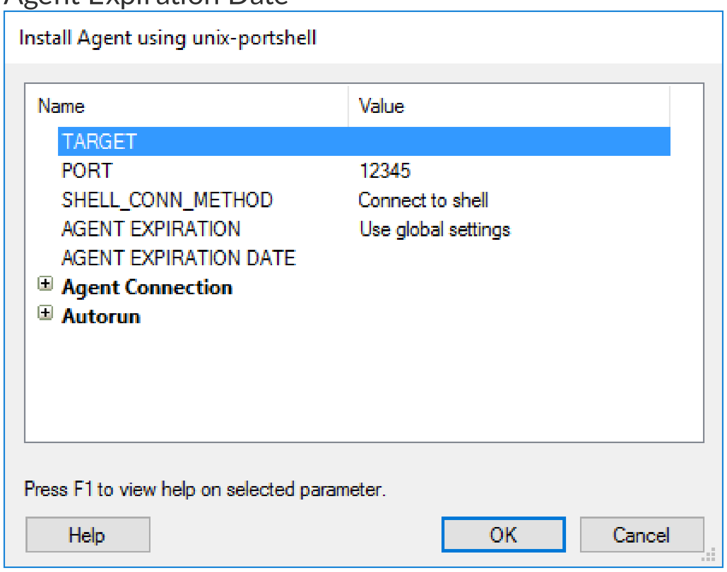
- **HTTPS channel.** A new HTTPS connection will be created from the remote agent on the target host to the source agent. Additional settings related to the HTTPS Channel can be configured in Agents Options.

  The HTTPS connection method will work on Windows target hosts if one of the following conditions is met:
  - The OS version is older than Windows Vista
  - If Windows Vista or newer, the Check for server certificate revocation is unchecked in the Security section of the Advanced tab of the Internet Control Panel. This setting is enabled by default.
  - If Windows Vista or newer with the Check for server certificate revocation enabled, the target host has Internet access directly or through a proxy server.

Agent Expiration Date

Several modules that deploy agents will offer a **Agent Expiration** and **Agent Expiration Date** configurations so that, at the defined date and time, the agent will automatically uninstall from its host. Setting the **Agent Expiration** to **Use global settings** will inherit the global Agent Expiration settings in Options - Agents. You can see this option in the below example module **Install Agent using unix-portshell**:

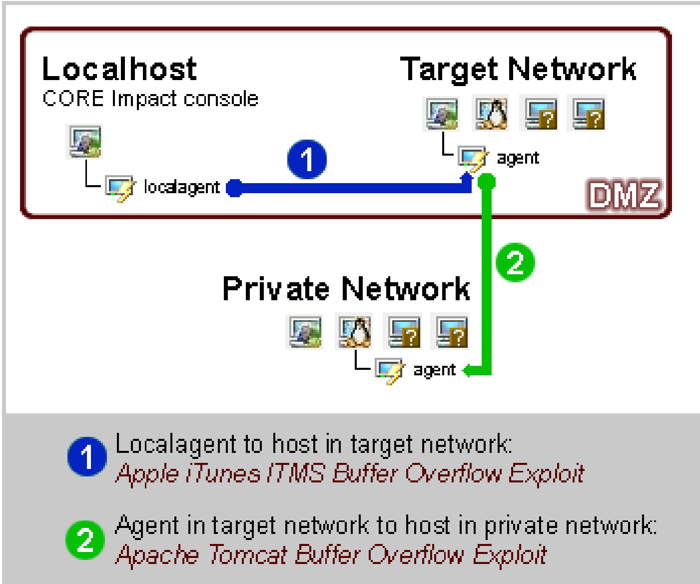
Agent Expiration Date



Agent Chaining

Agent chaining allows you to connect to a newly-installed agent behind a firewall using an existing, connected agent's communication channel. As you deploy successive agents, chaining allows the Console to maintain a single connection versus many.

Agent Chaining Example



The diagram above demonstrates the necessity of agent chaining. Chaining becomes even more critical if your network employs packet filtering. For example, the scenario illustrated above might include a packet filter in the DMZ network that filters connections from the Internet to the internal private network. In this case, once a host in the DMZ was compromised, the only way in which you could connect to agents inside the internal network would be to re-use the original agent's channel.

Agents are "chained" to the agent that was set as source when they were connected. Typically this means that agents are chained directly to the localagent (the Console), but the chaining relationship automatically changes as you change source agents. This behavior is referred to as implicit chaining.

Remember, if you want to simply run a module using a remote agent, click on that agent (focus on it) and then run the desired module. The module will automatically attempt to run using the focused agent.

Viewing Agent Chains

If you switch source agents often, it is easy to lose mental track of current agent chains. To view agent chains, use the Show agent chaining route module located in the Agents category on the Modules Tab of the Console to obtain agent chaining information. This module receives an agent as its target and displays the current route used to reach it. The following example includes typical information displayed on the Module Log Panel after running this module.

```
          Module "Show agent chaining route" started execution on
Wed Mar 20 20:37:18 2002

          Chaining route for agent: agent(5)
          /localagent -> agent(1) -> agent(2) -> agent(5).
          --
          Module finished execution after 1 secs.
```

Re-routing Agent Chains

Once you establish a chaining route to an agent, Core Impact will attempt to reconstruct that route each time the agent is reconnected. To reset the chaining route for an agent, follow this procedure.

1. Run the Delete agent chaining route module against the agent (Modules Tab/ Agents category).
2. Enter the new agent's name in the Value column, or use the ellipsis button to the right of the field to select it and click OK. If you leave the proxy agent value for the new agent blank, the next time that the agent is connected a new route will be set with the current source agent.
3. Click OK. The module will execute and information about the agent route is displayed in the Executed Module Info Panel of the Console.

Using Agent Plug-ins

Agents can use plug-ins to add functionality to a deployed agent. The following plug-ins are available and, once installed on an agent, extend that agents capabilities for as long as it exists. Plug-ins are automatically removed when the agent is uninstalled:

- **PCAP.** Provides packet-capture capabilities for the agent. An agent with the PCAP plug-in can execute modules that require packet capture (for example, Port Scanner - Fast SYN, Password Sniffer or Network Discovery - Passive). Only the localagent and agents with this plug-in installed can execute modules that require packet capture. For convenience, this plug-in can be installed by right-clicking on an agent and selecting Install Pcap Plugin.

  The PCAP plug-in requires the presence of a packet-capture driver (WinPcap) in Windows hosts. If there is no version of WinPcap installed on the machine, the driver is installed and removed when the PCAP plug-in is installed/uninstalled.
- **TCP Proxy.** Allows you to create TCP tunnels from Core Impact's Console to the agent. By taking advantage of this plug-in, you can redirect a local TCP port in the computer running Core Impact to a remote TCP port on the other side of the agent. Use the TCP Proxy Plugin module in the Agents/Plugins module folder to open new TCP tunnels. You will then be able to tunnel SSH traffic through that machine and pass it along to an SSH server.
- **HTTP Proxy over TCP Proxy.** If the TCP Proxy plugin is already installed on the agent, you can use the HTTP Proxy over TCP Proxy plugin to browse a web server that is visible from the agent's host machine.

You can install or remove plug-ins using the modules in the Agents/Plugins/Install module folder.

Recovering Agents

If you have a Reconnection Policy established for an agent (see Set Reconnection Policy or Agents Options), then you can use the Recover option to attempt to reconnect to an agent that has unexpectedly lost its connection to the Core Impact console.

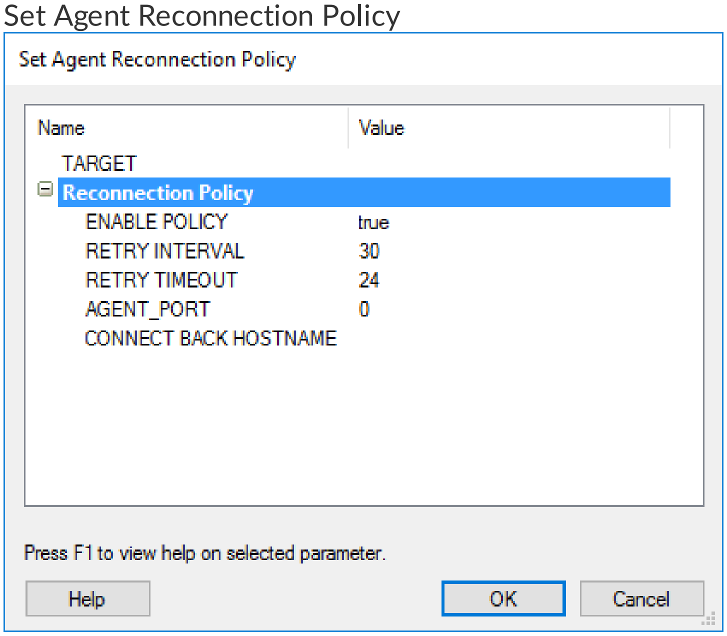
Set Reconnection Policy

By default, if an agent is not set to be persistent, and there is no reconnection policy, then the agent automatically self-destructs when it loses connectivity to Core Impact's source agent, even if the connection is disrupted for only an instant. To prevent this, you can set a Reconnection Policy for the agent and then determine how that agent attempts to reconnect to the Core Impact console following an unexpected disconnection. Using the Set Reconnection Policy option overrides any global reconnection settings in Agents Options.

To update an agent's reconnection policy:

1. Right-click on the agent.
2. Select Set Reconnection Policy. The module's parameters will appear.
3. Set the parameters of the policy and click the OK button.
   - ENABLE POLICY: This should be set to true if you want the agent to be able to reconnect to its source agent following an unexpected disconnection.
   - CONNECTION TYPE: This should be set to Connect From if the Connection Policy is enabled. This means that the agent will try to initiate a connection back to the source agent.
   - RETRY INTERVAL: This value determines how often an agent should attempt to connect back to the Core Impact console.
   - RETRY TIMEOUT: This value determines how long the agent should attempt to connect back to the Core Impact console.
   - AGENT PORT: The port on which you would like the reconnection to occur. Enter 0 to reuse the agent's original connection port.

Set Agent Reconnection Policy



The agent's Reconnection Policy has now been modified.

Update Connection Status

When you run the Update Connection Status command on a connected agent, Core Impact will test the agent for 2 types of performance:

- Connection (upload and download) speed between the Core Impact console and agent
- Performance of the agent on its host machine (measured in system calls per second)

The resulting performance data will appear in the Module Log pane and also stored in the agent's Quick Information.

Common Agent Error Messages

This section describes error messages you may encounter when working with Core Impact's agents.

`syscall not supported by target`

The module was not meant to run on the platform on which the source agent was deployed. For example, the `signal` syscall is not part of the Windows Operating System. If a module uses it, it will run on every agent except agents deployed on the Windows platform, where it will abort and generate the syscall not supported by target message.

The module's description will include information about the supported platforms. Additionally, module highlighting will not highlight a module which requires a syscall not supported by the source agent.

`the server is unreachable`

The remote agent is down. Communication has been disrupted due to a networking problem or a loss of control by the agent.

`pcap_plugin is not installed`

The PCAP plug-in (see Using Agent Plug-ins) is not installed in the agent. Right click the agent and select Install Pcap Plugin to install it.

Interacting with WebApps Agents

WebApps Agents will appear below individual pages in the Web View. The default name of the WebApps agent indicates 2 important characteristics:

- Vulnerability type: A WebApps agent will either be a SQL Agent, RFI Agent for PHP, XSS Agent, XXE Agent, or a Web Browser Agent that is attached to a XSS Agent.
- Vulnerability: When you click on the parent page of a WebApps agent , the Quick Information panel will display a numbered list of vulnerabilities that are confirmed and have associated WebApps agent. If a WebApps agent was deployed using the 2nd vulnerability, then its name will contain a 2 [e.g. SQL Agent (2)].

After a WebApps agent has been created in the Web View, you can perform a number of functions by right-clicking on the object:

Change Display Name

Allows you to change the WebApps agent's name from the default to a custom name.

Add Comments

Presents text entry area for your commentary.

Properties

Activates the Entity Properties panel of the Console, showing the WebApps agent's details.

New

Allows you to create a new Scenario in the Web View..

Recent Modules

Shows a list of recently-executed modules for ease of access.

Delete

Removes the WebApps agent.

In order to leverage XSS Agents, you must run the WebApps Browser Attack and Penetration step.

Running a Shell with a WebApps Agent

If a SQL Agent exists in your Web View, then you have the ability to use a command console (shell) to interface with the application's database:

- SQL Shell: This console uses the SQL vulnerability to provide a SQL-based command prompt to the web application's database.
- Command Shell using SQL Agent: This console uses the SQL vulnerability to provide an operating system command prompt to the machine where the web application's database resides.

Currently, Core Impact's SQL Agents can interface with the following databases:

- MS SQL Server 2008
- MS SQL Server 2005
- MySQL 4.1
- MySQL 5.0
- MySQL 5.1
- Oracle 9i
- Oracle 10g
- DB/2 9.5

If an RFI Agent for PHP exists in your Web View, then you have the ability to use a command console (shell) to interface with the PHP engine:

- Scripting Shell using RFI Agent (PHP): This console uses the PHP vulnerability to provide a command prompt to the PHP engine. This console accepts PHP commands.
- Command Shell using RFI Agent (PHP): This console uses the PHP vulnerability to provide a command prompt to the machine where the PHP engine is running. This console accepts common shell commands such as **ls, cat, dir, etc**.

If a Web Browser Agent exists is attached to a XSS Agent n your Web View, then you have the ability to use a shell to interface with the target web browser:

- Javascript Shell: This console allows you to execute Javascript code on the Web Browser Agent.

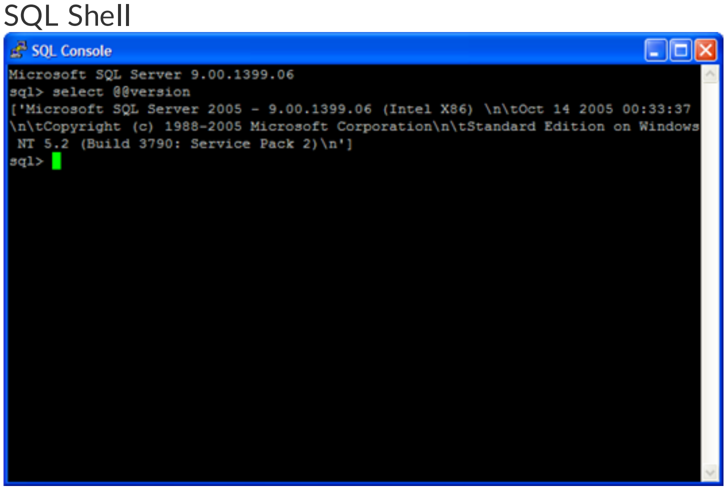
To initiate a command console via a WebApps agent:

We will use a SQL Agent in this example but the steps are essentially the same for the other applicable WebApps agents.

1. Activate the Web View of the Entity View to show your scenarios.
2. Expand a scenario to show a SQL Agent.
3. Click to select the WebApps agent upon which you want to run a module. By doing this, all compatible modules will automatically become highlighted in the Modules View.
4. Activate the Modules View tab on the console.
5. Expand (double-click) the Shells folder.
6. Click and drag the SQL Shell module from the Modules View and drop it onto the target WebApps agent.
7. Click the OK button.

A SQL Console will appear, giving you the ability to make direct queries of the web application's database.

SQL Shell



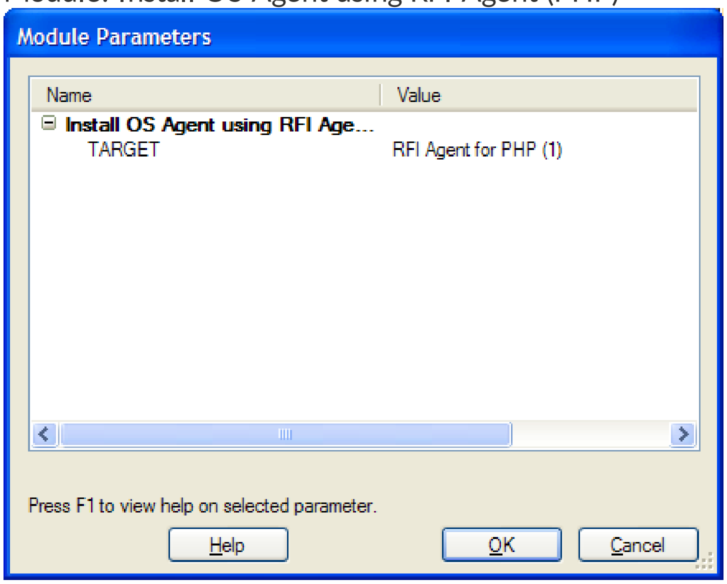
Deploying an Agent with a WebApps Agent

To deploy an OS agent through a SQL Agent or RFI Agent for PHP:

We will use an RFI Agent for PHP in this example but the steps are essentially the same for the other applicable WebApps agents..

1. Activate the Web View of the Entity View to show your scenarios.
2. Expand a scenario to show an RFI Agent for PHP.
3. Click to select the WebApps agent upon which you want to run a module. By doing this, all compatible modules will automatically become highlighted in the Modules View.
4. Activate the Modules View tab on the console.
5. Expand (double-click) the Agents folder.
6. Click and drag the Install OS Agent using RFI Agent (PHP) module from the Modules View and drop it onto the target WebApps agent .

   Module: Install OS Agent using RFI Agent (PHP)

7. Click the OK button.

   The module will run, showing its output in the Module Log panel.
8. When the module completes, navigate to the Visibility View and you should see the new agent under the web application host.

Once an agent has been deployed on the web application's server, you can then interact with that agent using a variety of options which are detailed in the remainder of this chapter.

Core Impact Entities

When you run a penetration test with Core Impact, information acquired from target systems, end-users or web applications is stored in the system as entities. Entities are then accessed in a single and centralized repository by users or by any Core Impact module.

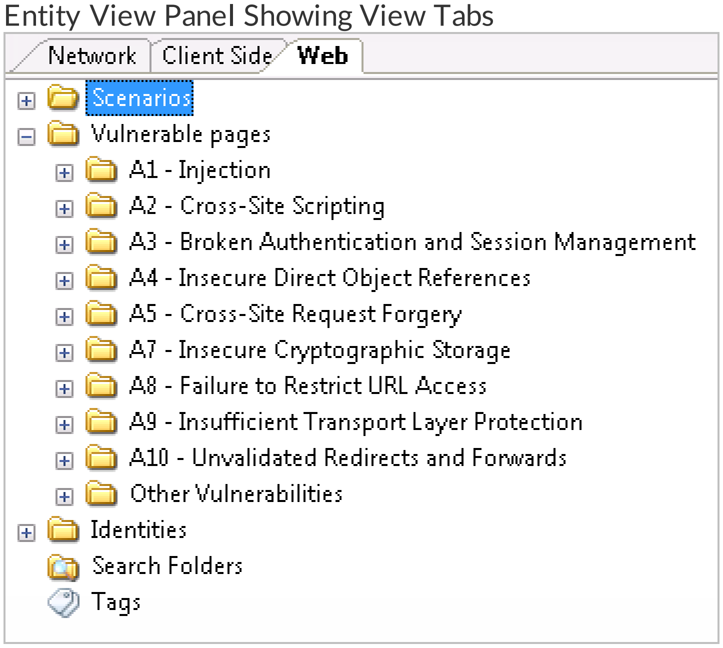
Any finding by a module that can be shared is represented in Core Impact as an entity and will be visible in the Entity View Panel. Modules use the target entities' properties to gather information needed by the module to execute properly. For example, a module requiring an open TCP port might query the target host's properties for information about target ports. In this example, the target host is an entity.

The Entity View Panel provides the functionality for you to access the various entities in the system. The panel includes three "views" that allow you to see and work with different target information resulting from your various tests:

- Network View
- Client Side View
- Web View

You access these views using the tabs at the top of the Entity View Panel.

Entity View Panel Showing View Tabs



The following types of items are stored in the Entity Database:

- **Hosts**: Host entities represent target systems. The entity contains information such as IP addresses, operating systems, architecture, ports, and vulnerabilities found.
- **Wireless Access Point**: Wireless Network entities represent individual wireless access points. The entity contains information such as SSID, security method, wireless channel

and signal strength. Additionally, you may create Fake Access Points using the Fake Access Point Module - these will also appear in the entity database.

- **Wireless End Station**: Wireless End Stations represent individual devices (PCs, hand-held devices) that are connected to a wireless access points.
- **Agents**: Agent entities represent agents running on remote systems. An agent entity holds information about an agent's state and its communication channel.
- **Tags**: Tags are user-defined labels that can be attached to an entity. This allows for custom grouping of entities for easy access and management. There are several pre-defined tags for each entity type. For example, the Network Tags include Camera, Network Device, Database, and Web Server.
- **Search Folder**: Search Folders are designed to be dynamic lists of entities. The search folder will automatically be populated with (and updated to include) entities that match your search criteria (such as "Windows hosts"). The search folders in the entity database allow for multiple search criteria, making them another way for users to organize and manage their targets.
- **Emails**: Email entities are email addresses used for client-side attacks. An email entity contains an email address and, optionally, a person's name.
- **Scenarios**: Scenarios are repositories for WebApps test objects.
- **Vulnerable Pages**: Vulnerable Pages are the outcome of a successful WebApps Information Gathering session. These are pages that are associated with a web application that may be susceptible to one of various vulnerabilities. The Web Entity view is organized according to the OWASP Top 10 vulnerabilities (see the OWASP web site for more info).
- **WebApps Agents**: WebApps Agents represent the knowledge of how to exploit a SQLi, PHP or XSS vulnerability in a web page.
- **Identities**: For Network and Web views, the Entity Database will list all existing Identities, which can include usernames, IDs or other identifying properties of a system.

In addition, the following two entities are created and added to the database when you create a workspace:

- A host entity representing the local console host (localhost).
- An agent called the localagent that represents the Core Impact software running on the local console host.

Each icon displayed in the Entity View Panel represents a different entity type. These icons are described in the table below.

Entity Icon Descriptions

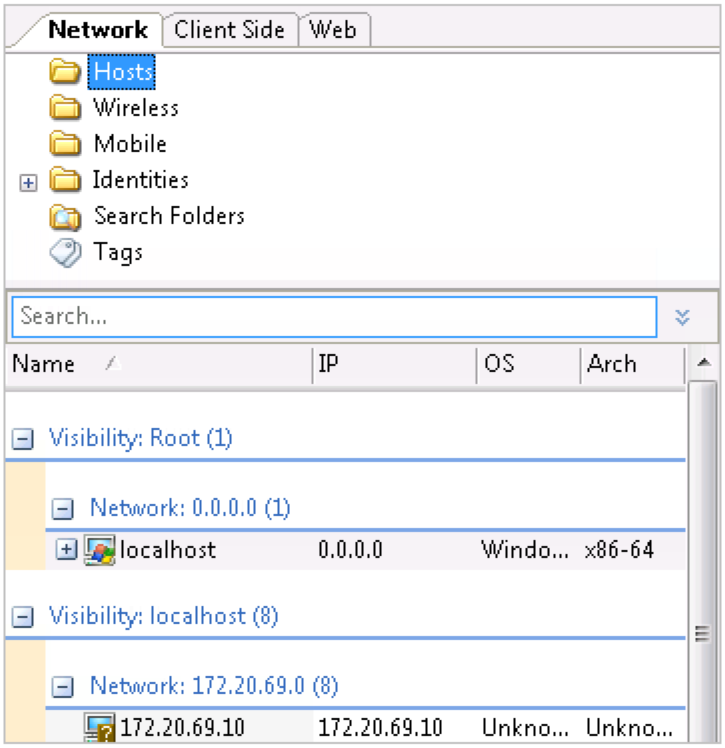
Icon	Description
	Windows Host
	Linux Host
	OpenBSD Host
	FreeBSD Host
	Mac OS X Host

Icon	Description
	Unknown Host
	Network Device
	IOS Host
	IOS Agent
	Agent (Refer to Controlling Agents for more info on agents)
	Network folder
	Folder
	Search Folder
	Tag
	Email
	Scenario (Web View only)
	Page (Web View only)
	SQL Agent (Web View only)
	RFI Agent for PHP (Web View only)
	XSS Agent (Web View only)
	Web Browser Agent (Web View only)
	WebDav Agent (Web View only)
	OS Command Injection Agent
	LFI Agent
	A wireless device (station) connected to a wireless access point
	A Fake Wireless Access Point, created from executing the Fake Access Point module.

Network View

The Network View Tab displays the entire entity hierarchy of the target network that results from a Network RPT. You can use it to view the current state of all the entities in the active workspace's database. By providing access to all entities in the target network, the Network View allows you to assess the state of the overall penetration test.

Entity View - Network View

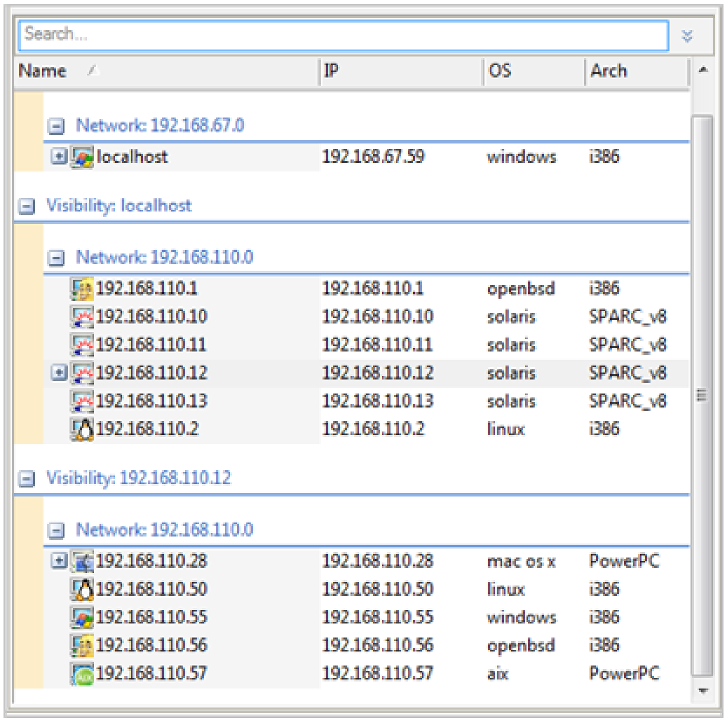


The Network view will contain all of the systems (host machines, network devices, or wireless devices) that have been identified by a test. Each type is shown in its respective folder.

Understanding Visibility Changes

As with all of the entity tabs, the views are simply lists of entities that are organized and grouped by certain attributes. By default, the Network view shows entities grouped by Visibility and Network, as illustrated in the below figure.

Network View

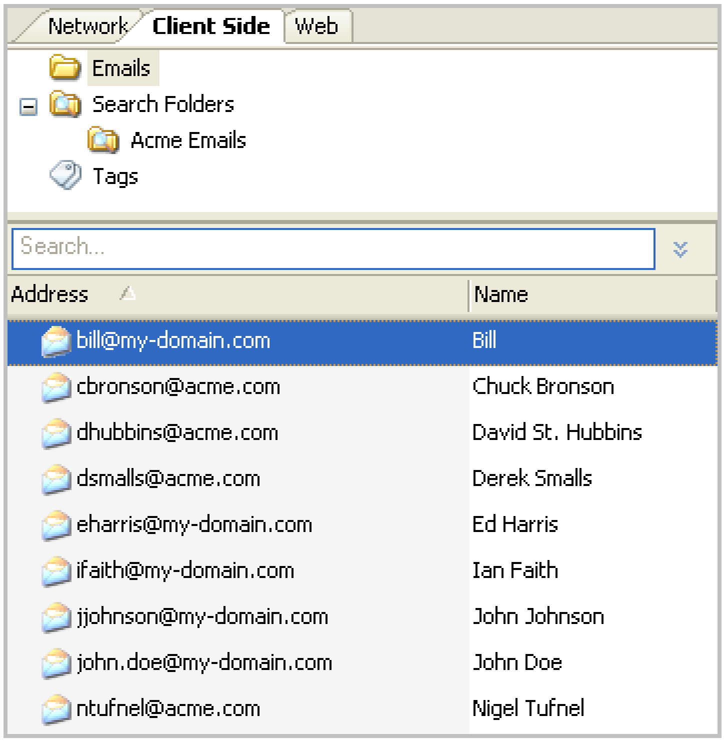


With the default view, hosts are organized primarily by what host they are visible from and, secondarily, by their network. The grouping can of course be changed by right-clicking on the column headers and selecting a new Arrange By value (see Grouping Entities). Users can also change the view and quickly focus in on a specific host as a visibility level by right-clicking on the host and selecting Show Hosts Visible from Here. This action is the same as using the search function to filter the view by visibility (see Entity Search).

Client Side View

Core Impact 's Client Side view allows you to customize and manage the client-side target information generated by your client-side penetration tests. Client-side entities take the form of Email addresses that may or may not contain an associated user's name.

Entity View - Client Side View

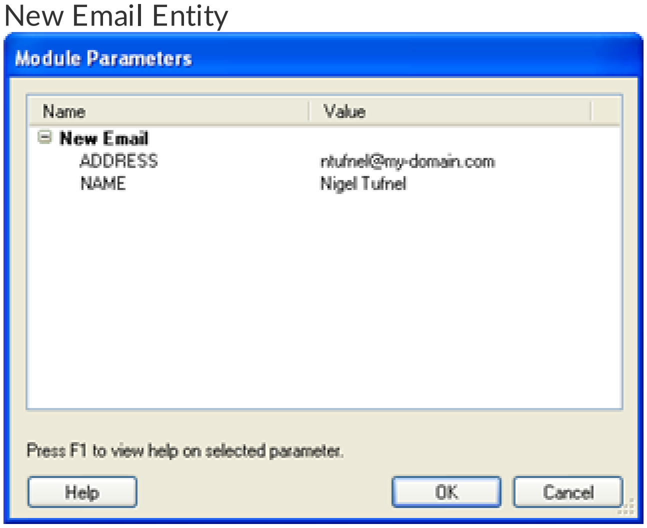


Core Impact's client-side entities allow you to manipulate and view target information for client-side exploits and modules, and execute attacks against targets in a convenient and customized manner. Entities are added to this view from the Client Side Information Gathering RPT, client-side modules such as HTTP Email Address Grabber, or by adding them manually.

To manually add an entity to the Client-side view:

1. Activate the Client Side tab of the Entity View.
2. Right-click on the Emails folder.
3. Select New, then select Email...
4. Enter the email Address and Name of the user.

   New Email Entity

   Click the OK button.

The New Email module will run and, after a brief moment, you will see the new email appear in the Entity View.

Entity Tags and Search Folders further enhance the usability of this view.

When you click on an email entity, its Quick Information will show the entity's details including where the email address was discovered (under Sources). This can be useful if the Client Side Information Gathering step found email addresses from the Internet - if you know where they were found, you can take steps to have them removed.

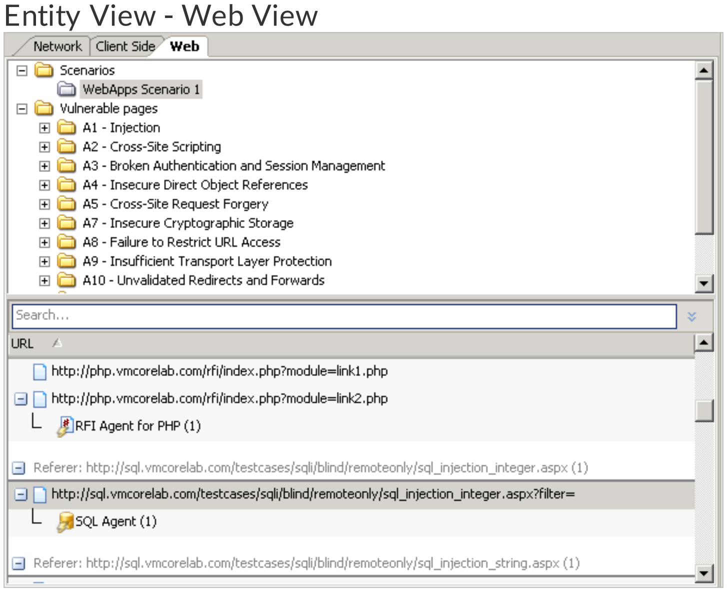
You can launch attacks against specific client-side entities in the Client-side View by using the Client-side RPT wizards or manually dragging modules from Core Impact Modules View and dropping them onto a specific search folder or entity. For example, if you wanted to launch an email exploit (such as "Firefox compareTo exploit") against a group of targets, dragging and dropping the exploit onto a search folder would result in the exploit running against all email addresses in that folder. Alternatively, for a more focused attack, you could drag the exploit onto a single person in the same folder, which would result in the exploit attacking only that entity. The above scenario can more easily be performed using the Client-side RPT Attack and Penetration wizard.

For information on using Core Impact modules, see Working With Modules.

Web View

Core Impact 's Web View shows the results of all web application testing.

Entity View - Web View



By default, when you first open your workspace, the Web View will be empty. To populate the view you can run WebApps Information Gathering, or you can follow these steps:

1. Right-click inside of the Web View.
2. Select New -> New Scenario.

   A Scenario serves as a context in which you can test a web application and it will provide organized structure to the results of the WebApps modules. You can use multiple scenarios to test the same web application with varying settings, or segment a web application and test each part independently in a different scenario.
3. In the resulting Module Parameters box, enter the details for your Scenario:

   Module Parameters for New Scenario

NAME	Provide a name that will help you identify this WebApps scenario
HTTPPROXY	If there is a proxy server, select from the drop-down menu the appropriate value: • Use Core Impact settings will follow the settings that are in the Tools -> Options -> Network form. • Use Custom HTTP Proxy will follow the proxy value in the next field (CUSTOM HTTPPROXY) • Use Internet Explorer settings will follow the settings as defined in your Internet Explorer preferences
CUSTOM HTTPPROXY	If HTTPPROXY is set to Use Custom HTTP Proxy, enter the name or address of the proxy server to be used.
USERAGENT	Select from the drop-down menu the browser type and version that the WebApps test will simulate.
CUSTOM USERAGENT	If the USERAGENT is set to Custom, enter the name of the browser to be simulated.

4. Click the OK button.

The new Scenario will appear in the Web View with the following subordinate folders:

- Pages: Any pages that are identified by WebApps Information Gathering will be visible under this folder.
- Vulnerabilities: Any potential or confirmed vulnerabilities will appear under this folder.
- Broken Links: As the web crawler searches for pages, it may find a link that generates a 404 Not Found error. In this case, the link will be added to the Broken Links folder.

Managing Entities

In addition to the automated functions of the Entity View panels, there are several operations that can be performed manually in order to better manage the data and organize your penetration targets.

The steps provided here will apply across all view panels.

Adding Entities Manually

In the entity view panels, you can manually add entities.

Follow these steps to manually add a new Email:

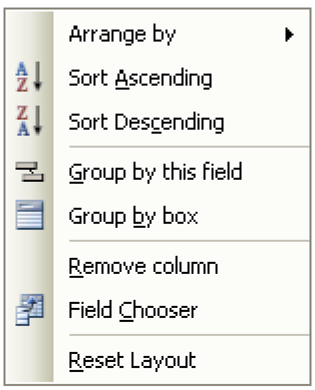
1. Activate the Client Side View.
2. Right-click on the Emails folder.
3. Select New, then select Email...
4. In the Module Parameters window, enter the new email address and user name.
5. Click the OK button.

The new Email entity will appear in the Client Side view. Follow these same steps to manually add entities to the Network and Web Views.

Grouping Entities

The display of entities allows management and organization through its columns. You can right-click on column headers to obtain options for adding or removing columns or to control entity grouping based on existing attributes. You can also click and drag the columns to re-sequence them to your preference.

To control the entity display, right-click on one of the columns and you will see the following menu.



The menu provides the following visual controls for the entity list:

- Use the Arrange by menu to quickly arrange the entities by one of their attributes. With this menu, you can use the Show in Groups option to have the entities grouped by a selected attribute.
- The Sort Ascending / Sort Descending options change the direction of the list's sort. You can also simply click on a column header to change the sort order.
- The Group by this field option will group the entities by the attribute on which you right-clicked.
- The Group by box option will open a box into which you can click and drag column headers. This feature allows you to achieve a multiple grouping layout.
- Select Remove Column to hide a column from the entity list.
- Use the Field Chooser to add columns to the view. When the field chooser appears, simply click and drag the new columns to the desired location among the existing column headers.
- Click Reset Layout to return the view to its default setup.

Entity Tags

In order to facilitate the management and organization of your target information, Core Impact allows you to add custom tags and apply them to entities. Once you assign a tag to your entities, you can quickly view all entities that contain that tag.

To create a new tag in the Network View:

1. Activate the Network View.
2. Right-click on Tags.
3. Select New, then select Tag...
4. In the Module Parameters window, enter the Tag value.
5. Click the OK button.

The new Tag will appear under the Tag heading. You now will need to assign that tag to one or more entities.

To assign a tag to one or more Network entities:

1. Activate the Network View.
2. Click the Hosts folder to view all available Network entities.
3. In the list of Network entities, select the entity(ies) that you wish to tag (use the Ctrl or Shift keys to select multiple entities).
4. Right-click on a selected entity.
5. Select Tags, then select the new tag value.

The selected entity(ies) will now be tagged with your custom tag. Subsequently, if you want to view only those entities with a specific tag, you simply select the tag and a filtered list of entities will appear below.

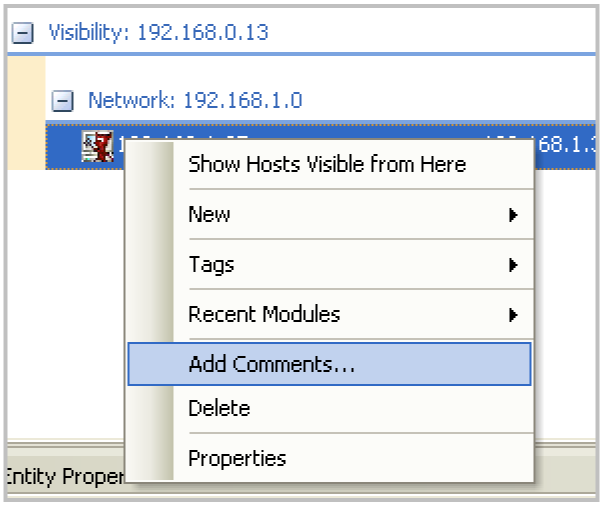
Each entity view panel contains its own distinct list of tags.

Entities can be tagged with more than one tag.

Adding Comments to an Entity

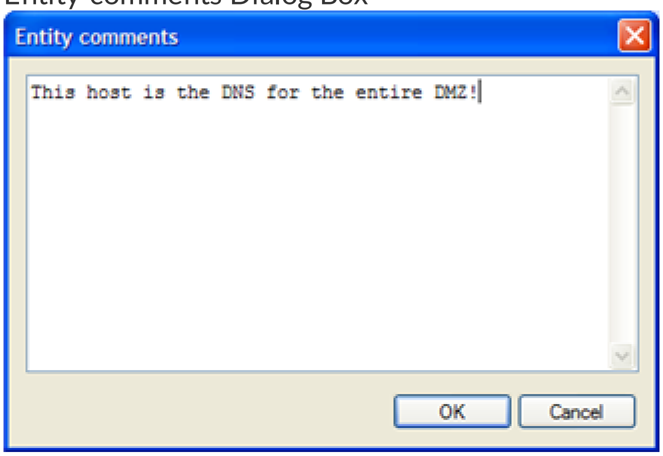
You can add custom text to an entity in any of the views using comments. Comments are automatically saved within the active workspace. To add or edit an entity's comment, right click on it in the Entity View Panel and select Add comments... from the context menu.

Adding a comment to an entity.



You edit comments in the Entity comments Dialog Box that appears. After you edit them, the comments are added to the entity database as a new entity property (see [the section called "Entity Properties"]).

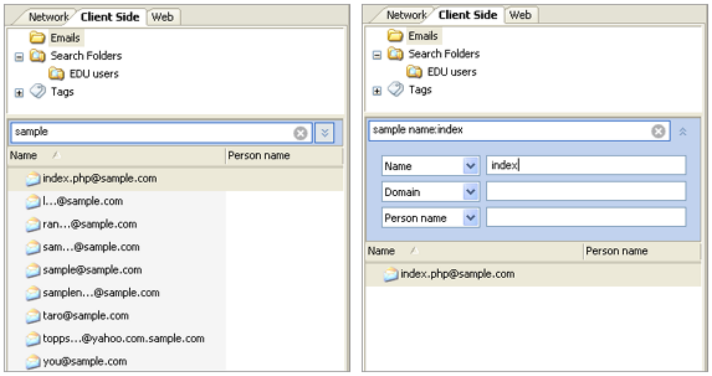
Entity comments Dialog Box



Entity Search

Each Entity View includes a Search Bar that you can use to filter entities by specific criteria. Filtering by condition allows you to quickly create a new "view" within the entity view. For example, in the below images, the string "sample" is entered into the search bar in the Client Side view. This action quickly filters all Emails, showing only those that contain the string "sample". The second image shows further search filtering made available by clicking the options arrows () to the right of the search bar. The example shows that the list was filtered further by searching for those emails that contained the string "index" in the Name field.

Entity Search Examples



To close the search results, click on a folder or tag in the view panel or click the reset button () at the right side of the search bar.

Search Folders

Search folders are a powerful feature that allow you to view a dynamic list of entities based on custom-specified characteristics.

To create a new Search Folder:

1. Activate the desired view.
2. Right-click on Search Folder.
3. Select New, then select Search Folder...
4. In the Module Parameters window, enter the Name of the search.
5. From the Add Criteria drop-down menu, select as many search criteria as needed.
6. Then enter the search data for all selected criteria (to remove a criterion, click the remove button (-) on the right).
7. Click the OK button.

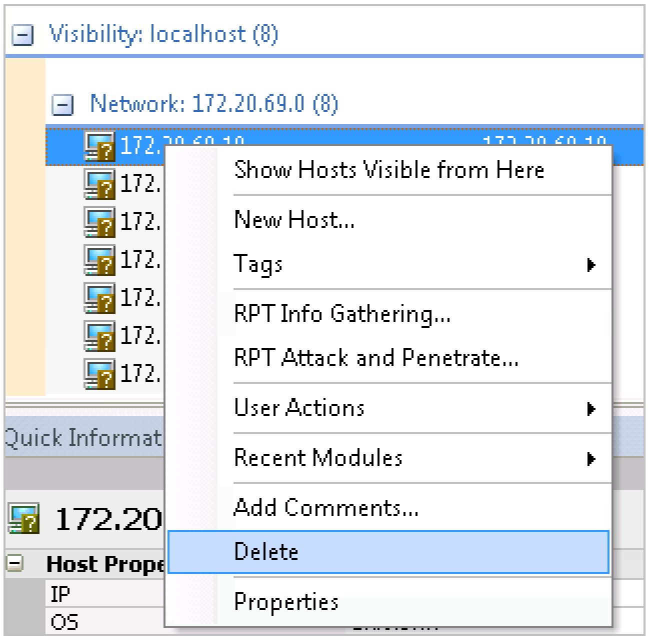
The new search folder will appear below the Search Folder heading. To activate your search folder, simply click on it and the dynamic results will appear in the entity list below.

Deleting Entities

To delete an entity from the entity database (in any view), right-click on it and select Delete from the context menu.

Deleting a host will effectively delete all the entities in and below its visibility level. Note that since these deleted entities will include agents, the tasks performed by these agents will no longer be included in future reports.

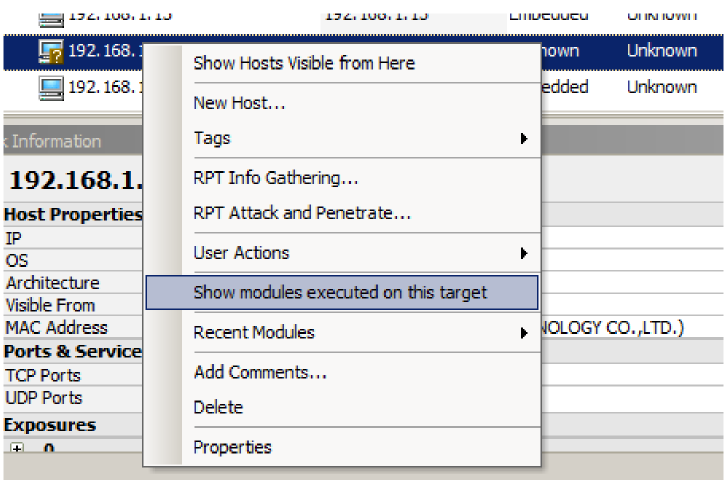
Deleting an Entity from the Database.



Viewing all Modules Run on an Entity

You can easily learn which module(s) have been executed on a specific Entity (Host, E-mail, etc.). To do this, right-click on the entity and select **Show Modules Executed on this Target**. The Executed Modules panel will update to show only those modules that have been executed on target you selected.

Show modules executed on this target



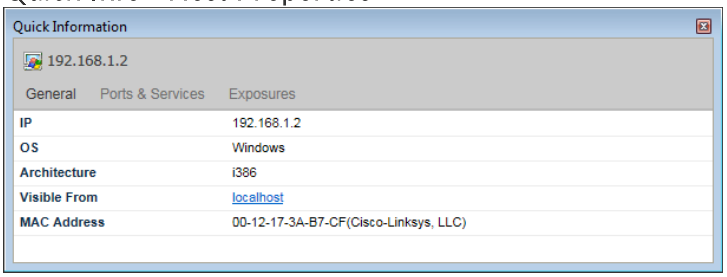
Entity Details

When you select an entity in a view panel, summary information about that entity will be displayed in the Quick Information Panel located at the bottom of the Console. Next to the

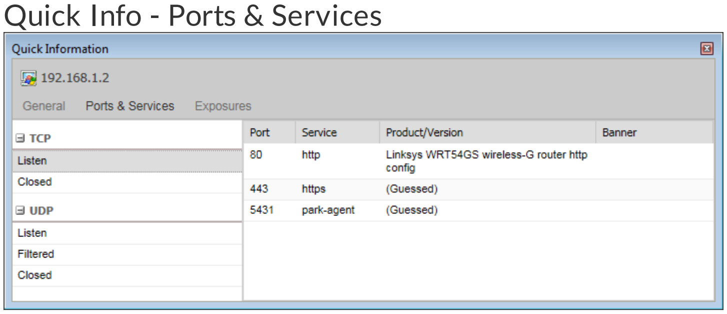
Quick Information panel is the Entity Properties tab which contains more details about the entity. Use the Entity Properties tab to edit the entity's properties.

Host Entities can contain a lot of data. The Quick Information Panel or a host displays three categories of information related to that host: General, Ports & Services, and Exposures. Each of the information categories is described below.

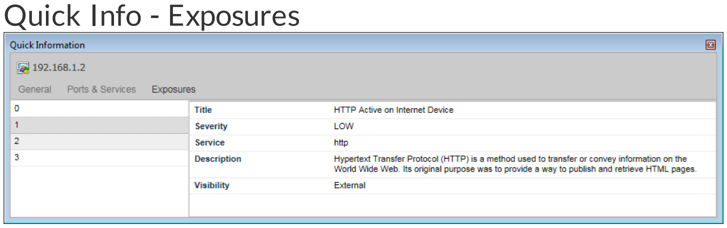
- **General**: Displays host Name, IP (IP address), OS (Operating System), Architecture, and other general info.
  Quick Info - Host Properties



- **Ports & Services**: Displays information about identified open ports and the network services identified as running on those ports. Fields include TCP Ports, UDP Ports, and DCERPC. Ports and Services information is typically provided by the Network Information Gathering step on the RPT Panel.
  Quick Info - Ports & Services



- **Exposures**: Displays available information about potential Exposures gathered from the selected host.
  Quick Info - Exposures

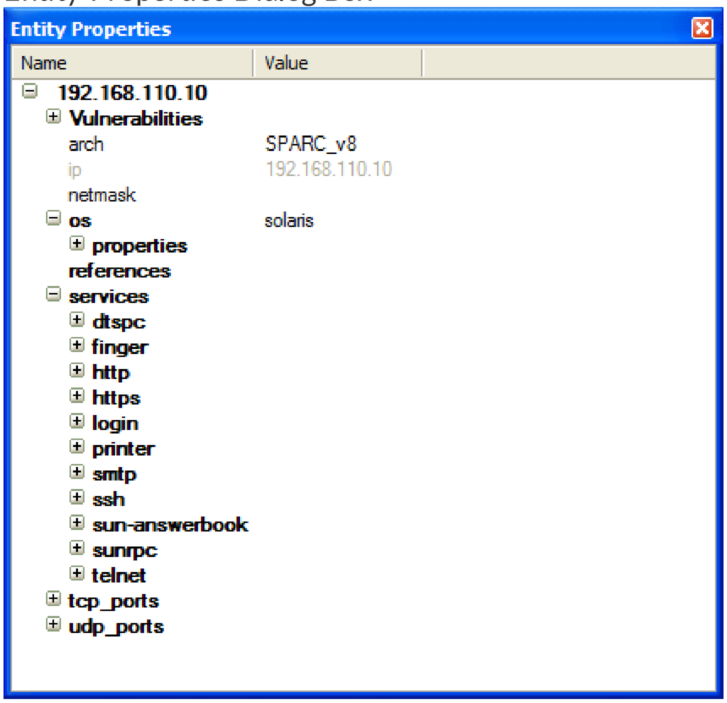


Entity Properties

Entities can hold structured information in the form of properties. The user or a module can query or modify existing entity properties and even create arbitrary ones with new information.

Properties can be viewed and modified through the Entity Properties Dialog Box. You can activate or deactivate this dialog box using the Views -> Entity Properties option of the main menu or by clicking the  icon on the Views Toolbar. Additionally, you can activate the Entity Properties dialog for a specific entity by right-clicking on that entity and selecting Properties from the context menu.

Entity Properties Dialog Box



The Entity Properties Dialog Box is a dockable window, which means that you can move it around to a different location, leave it floating, or hide it. To "dock" the window, drag it by its title bar to the desired position. Windows can only be docked against the Console's edges. To "un-dock" the window, double click in its title bar.

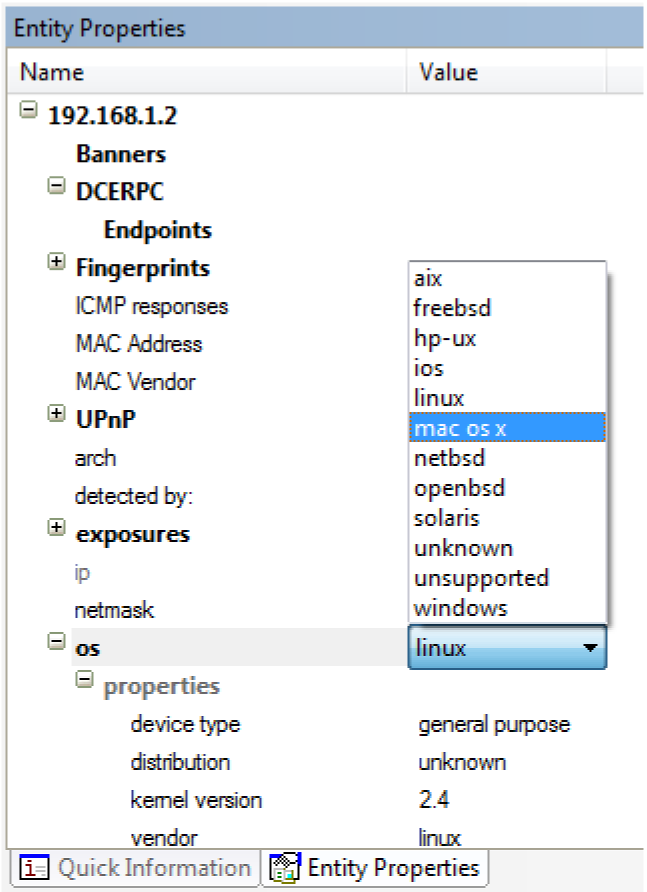
Individual properties are organized into containers (displayed in bold-face in the Properties Dialog Box). Each container can be expanded or collapsed using the arrow head in front of its name. Containers can also hold other containers.

Hidden properties. Some special system properties have a hidden attribute that keeps them from being displayed in the Entity Properties Dialog Box. If you wish, you can make these properties visible using the Show hidden properties option in the Entity Properties Tab of the Options Dialog Box (use Tools -> Options).

Editing the Value of a Property

To manually change the value of a specific property, click on the Value cell of the property's row. The value will be replaced by an edit box that allows you to enter new information or a drop down box that allows you to select from a list of valid values.

Entity Properties Dialog Box - Editing Values

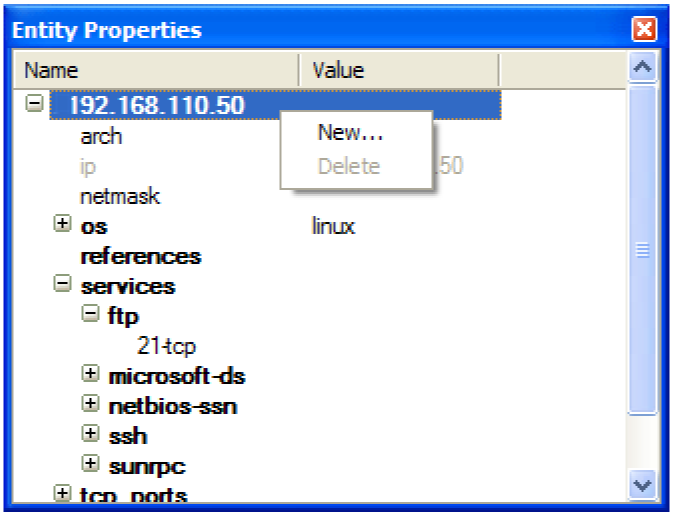


Adding a New Property to a Container

To add a new property to a container, follow this procedure.

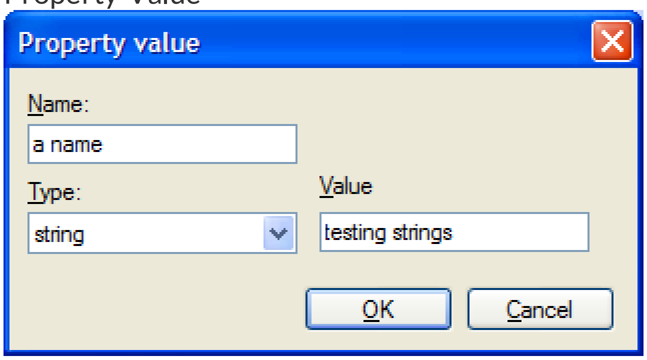
1. Right-click on the container's name in the Entity Properties Dialog Box (to add a property to an entity's root container, right-click on the entity's name). Select Add new from the context menu.

   Entity Properties Dialog Box - Add New Property to Container



2. The Property value Dialog Box will appear. Enter a Name, select a Type, and enter a Value for the new property. (See field definitions below.) Then click OK.

Property Value



Name

A name for the new property.

Type

There are many Types that the new property can be - a few examples are listed in the following table:

Type	Description
arch	Host architecture
bool	true or false
certificate	The host's certificate
container	A generic property container
entity_name	An Entity name
file	A file in the agent's filesystem
int	Any integer value
null	No value. Useful for sets

Type	Description
os	Host operating system
port	A TCP/UDP port
ports	A container of ports
set	A set of properties. Sets can only contain null properties
string	Any string value
uint16	An unsigned integer 16 bits long
uint32	An unsigned integer 32 bits long
xmldata	Unparsed XML data

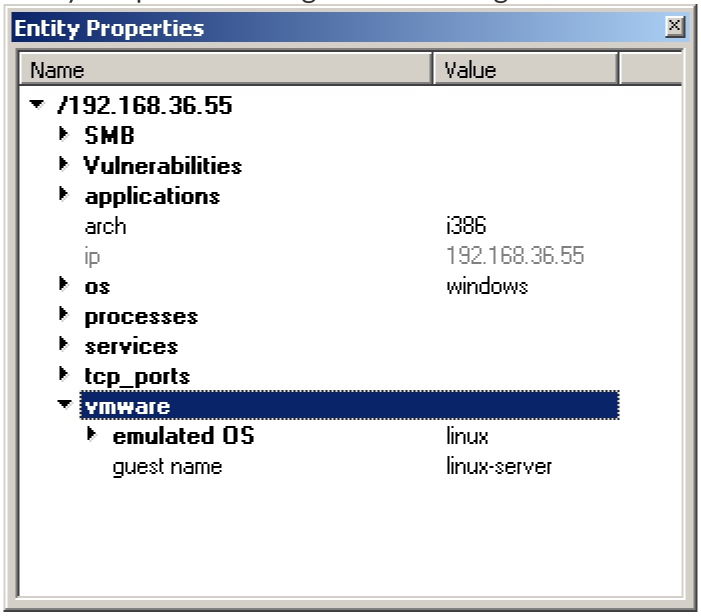
The types entity, entity listed, xmldata, and user are not currently configurable by the user.

Value

The initial value for the new property. This value can be edited using the Entity Properties Dialog Box.

See the screenshot below for an example of the use of custom properties. In this example, the user has created a custom container called vmware and added the emulated OS and emulated architecture properties. This allows the user to add custom information to this host's properties, effectively consolidating all known information about the target host.

Entity Properties Dialog Box - Creating a Custom Container with New Information

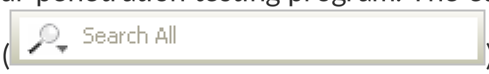


Leveraging PowerShell

Core Impact provides testers several ways to leverage the PowerShell interface when targeting Windows hosts. PowerShell commands are executed in the host machine's memory, preventing their detection from AntiVirus or other detection tools.

Continue reading below to learn about the available Modules that are designed specifically to use PowerShell or click to read about Integration with PowerShell Empire.

PowerShell Modules

There are several modules available in Core Impact that leverage the PowerShell interface to enhance your penetration testing program. The easiest way to locate these modules is to use the Search box (

) located at the top of the Modules Panel of the Console and type the text "powershell". This will automatically filter the module list and show only those modules that are related to PowerShell capabilities.

PowerShell Shell: Run this module on an existing agent to open a PowerShell command line shell and interact directly with the host machine. This module is also available as an option when you right-click on an existing host agent. See *Interacting with Agents* on page 257 for more.

When using the PowerShell Shell, type the command `#help` to see additional commands that are provided by Core Impact.

Run PowerShell Script: Run this module to execute a script that you've prepared locally on the host machine. A script can be used to create a function, retrieve system information, etc. The Module Output tab will show the script commands in green followed by the command output in red.

Get installed PowerShell Version: Run this module on an agent to learn what version of PowerShell is currently installed on the host machine.

Deploy PowerShell Empire agent: This module is used in conjunction with an active instance of PowerShell Empire. For more on this, see Integration with PowerShell Empire.

Install Agent using PowerShell Empire Agent: This module is used in conjunction with an active instance of PowerShell Empire. For more on this, see Integration with PowerShell Empire.

Integration

Core Impact can import network information (OS, services, and potential vulnerabilities) from other security products, including Vulnerability Scanners. You can use individual Core Impact modules or the Vulnerability Scanner Validator Test which will quickly step you through importing your scanner data. Core Impact can also integrate with the Metasploit Framework and PowerShell Empire, increasing the overall breadth of your penetration testing program.

Integration with Metasploit

If you use Metasploit as a component of your penetration testing program, you can integrate it with Core Impact. This will allow you to use Core Impact's advanced testing features on systems that are found to be vulnerable to Metasploit exploits.

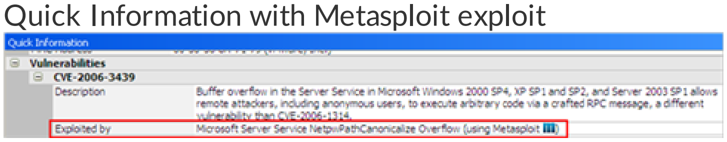
For details on how to set up Metasploit - Core Impact integration, see How to Integrate with Metasploit.

The Metasploit Framework is provided and maintained by a third party. Core Security does not support the Framework and cannot offer any guarantee as to the safety of the exploits run by the Metasploit Framework's db_autopwn functionality. Use the Metasploit Framework at your own risk.

Once Metasploit is integrated with Core Impact, there are 2 ways in which you can incorporate the functionality of the Metasploit Framework into your testing with Core Impact:

- Run Metasploit with Network Attack and Penetration RPT: As a part of the Network Attack and Penetration, Core Impact will select which exploits from the Metasploit Framework to run. You will see the output in the Module Log pane of your Core Impact Workspace and any successful exploits in the Module Output pane. Any vulnerabilities found by Metasploit will be labeled accordingly in Core Impact's Quick Information pane as well as any reports.

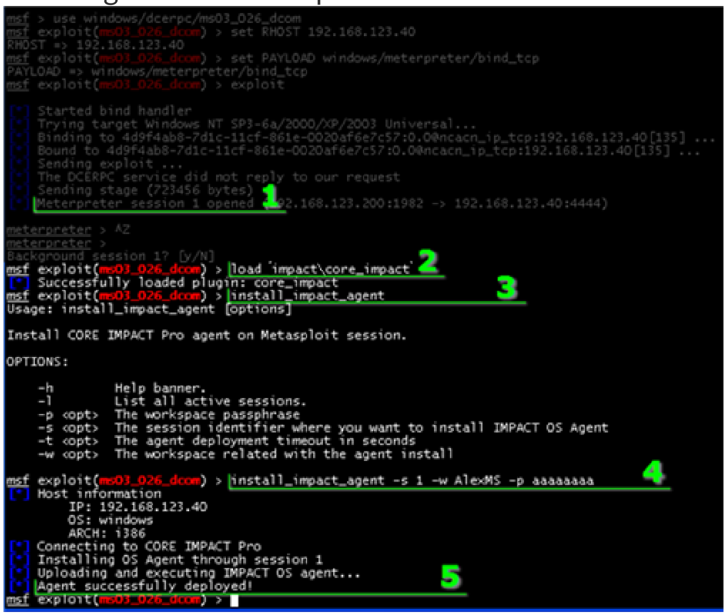
  Quick Information with Metasploit exploit

  This method does not require that you open a Metasploit console.
- Install CORE Impact agent from Metasploit console: With this method, Metasploit users can leverage exploit and discovered host information to add hosts and install agents in a Core Impact Workspace. Subsequently, Core Impact can be used to further explore the host or pivot from the agent to perform extensive penetration tests. To install a Core Impact agent from a Metasploit console, follow these steps referencing the below image of a sample Metasploit session:
  1. In Metasploit, you must first have a meterpreter payload connected to a host.
  2. Enter the command **load 'impact\core_impact'**. This will initialize the Core Impact plugin for the current Metasploit session.

3. Enter the command **install_impact_agent**. This is an optional step that simply displays the parameters that should be used with the **install_impact_agent** command.
4. Enter the command **install_impact_agent** with the associated parameters. In the example below, the meterpreter session (-s) is set to 1, the existing Workspace (-w) is set to AlexMS, and the Workspace's passphrase (-p) is set to aaaaaaaa.
5. The console will display a message when the agent has been deployed in Core Impact. At this point, you can open your Core Impact Workspace and use the fully functional agent. The Metasploit session is no longer needed and can be closed.

Install agent from Metasploit Console



Integration with PowerShell Empire

If you use PowerShell Empire as a component of your penetration testing program, you can integrate it with Core Impact. This will allow you to use Core Impact's advanced testing features in conjunction with PowerShell Empire's post-exploitation capabilities.

Using Core Impact with PowerShell Empire requires that both programs are running and can access one another across the network.

Before integrating your Core Impact instance with a host using PowerShell, you will need to launch the Empire REST API:

1. Initiate the Empire console using the `--rest` option so that the REST API will be reachable.
2. You can set a password on the Empire console using the `--password` option, but this password will then need to be entered in the Core Impact modules that are subsequently used in the integration.

3. Launch a listener in the Empire console using the below commands:
   listener
   set Name StartingListener
   Run

Core Impact and PowerShell Empire can work together in 2 scenarios:

Core Impact Agent

If you have exploited a host using Core Impact and an active agent is installed on the host machine, use the following steps to leverage PowerShell Empire:

1. In Core Impact, locate and run the module **Deploy PowerShell Empire Agent**.
2. Configure the Module so that it can locate and log into the instance of PowerShell Empire.
3. Once the module is running, you can use PowerShell Empire to interface with the target host, through the Core Impact agent.

PowerShell Empire Agent

If you have exploited a host manually and have an active agent installed on the host machine via PowerShell Empire, use the following steps to leverage Core Impact:

1. In Core Impact, locate and run the module **Install Agent using PowerShell Empire Agent**.
2. Configure the Module so that it can locate the instance of PowerShell Empire and the existing agent. The Agent Name will be a string of letters and numbers (e.g. VASDGF314524GWWR)
3. Once the module runs, a new host will be added in Core Impact showing visibility through the PowerShell Empire host. You can now use Core Impact to interact with the agent.

Importing Data from Vulnerability Scanners

Core Impact comes ready to accept data from the following products:

Different importing modules for each product are available within the Import-Export folder in the Modules view.

The following modules are included in Core Impact's **Network** modules:

- GFI LANguard
- IBM Enterprise Scanner
- IBM Internet Scanner
- McAfee Vulnerability Manager (formerly McAfee Foundstone)

- Microsoft Baseline Security Analyzer
- Nexpose
- Nessus
- Nmap
- PatchLink VMS
- Qualys Guard
- Retina
- SAINT
- STAT Guardian
- Tenable Security Center
- Tripwire IP360
- nCircle

The following modules are included in Core Impact's **Web** modules:

- Acunetix Web Vulnerability Scanner
- Burp Suite Professional
- Cenzic
- HP WebInspect
- IBM Rational AppScan
- NTOSpider
- Qualys Web Application Scanner

To manually use a module to import data from one of these scanners, use the modules found in the Import-Export folder. Double-clicking on any of these modules will open the parameters dialog where you can specify the location of the output file where the product data is stored. Refer to each module's documentation for additional information related to the specific product.

In addition, you can export all entities in Core Impact's database (everything found in the Entity Views) to a parsable format to facilitate the application's integration with other products.

Using Imported Information

Importing network information can replace the Network Information Gathering step if these activities have already been performed by the original scanner. After importing information you can advance immediately to step 2 of the Network RPT process, Network Attack and Penetration.

To use imported network information within the Network RPT process, follow this procedure:

1. Import data from a scanner. The originally-scanned hosts will appear on the Entity View.
2. Run the Network Attack and Penetration RPT step (see Network Attack and Penetration) or individual exploits from the Exploits/Remote module folder against the imported hosts. The Network Attack and Penetration step will use the imported OS, and service information to select and execute applicable exploits.
3. If any attack was successful, continue working with the deployed agents using RPT or individual modules as usual.

If the imported data includes vulnerability information (as is the case when importing from vulnerability scanners), this information can be used to drive exploit selection, providing an automated mechanism for validating potential vulnerabilities. In this case, instead of utilizing the Network Attack and Penetration step from RPT, you can launch the "Attack and Penetration using imported data" module from the Import-Export module folder.

To validate potential vulnerabilities follow this procedure:

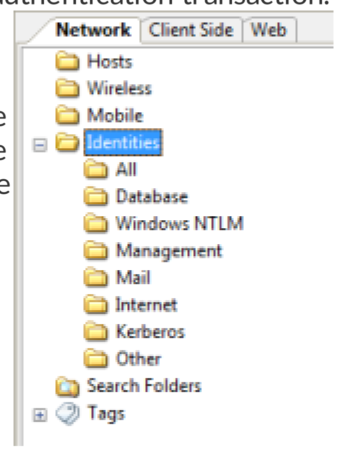
1. Import data from a scanner. The originally scanned hosts will appear in the Entity View.
2. Run the "Attack and Penetration using imported data" module from the Import-Export module folder against the imported targets (see Running Modules for more information). This module will only select exploits that match potential vulnerabilities identified by the vulnerability scanner.
3. If any of the attacks were successful, continue working with the deployed agents using RPT or individual modules as usual. A successfully-deployed agent validates the exploitability of a potential vulnerability.
4. To generate a report of the vulnerabilities imported from a vulnerability scanner that were exploited using Core Impact, you can use the PCI Vulnerability Validation report.

Obtaining and Utilizing User Credentials

Core Impact can collect user credentials from a compromised host through a deployed agent. These **Identities** can later be used for cracking password hashes, if necessary, and then installing additional agents as a valid user. It is fairly typical of most network setups that certain usernames and passwords are shared among multiple components. If some of the passwords for these accounts can be cracked, Core Impact provides functionality to deploy additional agents using this information.

About Identities in Core Impact

An **Identity** is a token that could be used by an Identity Verifier in an authentication transaction.



Any Identities that are found by Core Impact are stored in the Entity Database (Network and Web). Any Core Impact module that uses Identities, will have an IDENTITY parameter for faster selection. There will also be USER/PASSWORD and NTLM Hashes parameters available in situations where you want to use a custom identity not present in the database.

Below are examples of modules that use Identities (this is an abbreviated list):

- WMI Shell
- Windows Service Manager
- Windows Secrets Dump
- Install Agent Using SMB
- Install Agent Using WMI

Obtaining the Password Hashes from a Compromised Host

In the case of a UNIX-like system such as Linux, the agent can be used to download the `/etc/shadow` file from the target. This file can then be used to download password hashes to be fed to a password cracker. This can be done easily using the File Browser within the agent's context menu, or by using the "get" command from the mini-shell. Please note that in a normal setup, the agent will have to be running with root privileges on the system to be able to access the `/etc/shadow` file.

In the case of Windows systems, the password hashes are stored in the machine's SAM (Security Accounts Manager) and NTDS.DIT for Active Directory configurations. The files holding this data are locked while the OS is running and cannot be accessed directly by the user. However, it is possible to access this information with different approaches.

Exporting the SAM hives and Volume Shadow Copy restore NTDS.DIT

This approach is the least intrusive (since no injection takes place) and can be achieved with the **Windows Secrets Dump** module. This module can be run remotely (if you have Administrative Identities against the target host) or locally under an agent running as Administrator or SYSTEM.

Injecting code directly into the LSASS process

This procedure is more intrusive and must be used if the previous one didn't work.

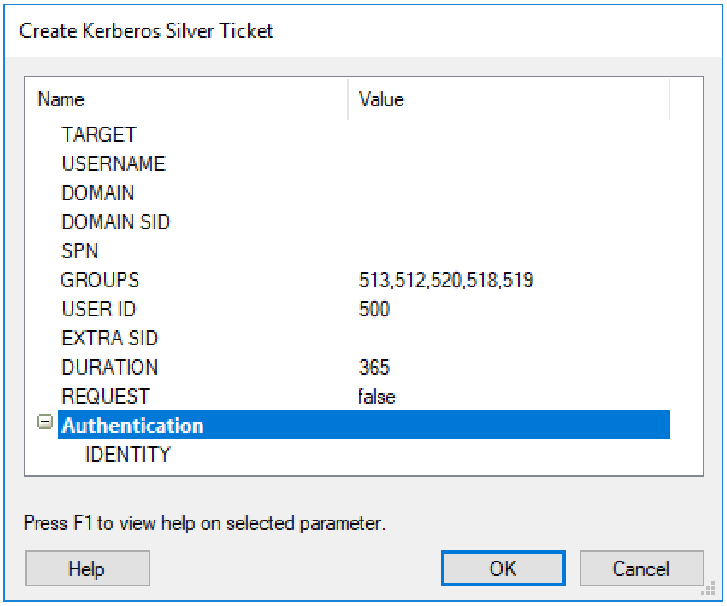
1. Start with an agent deployed on the Windows machine from which you want to recover the password hashes. The agent has to be running as SYSTEM for this procedure to be successful. If the agent is not currently running as SYSTEM, use the Privilege Escalation step on the RPT view (see Privilege Escalation).
2. Select this agent on the Entity View.
3. Run the **Password Dump from SAM** module from the Information Gathering/Local folder in the Modules Panel. If the agent is currently running as part of the LSASS process (i.e., it was deployed with an exploit for a vulnerability within LSASS), then simply running the module will collect all the user's password hashes. If this is not the case, then the **Agent process injector** module will automatically be executed, injecting a new agent into the LSASS process from which the **Password Dump from SAM** module will be able to collect password hashes.

In additional to the Password Hashes stored in the compromised host, there are usually Identities present in memory as well. Sometimes those identities are even in clear-text form. In order to access these identities use the **Mimikatz** local module.

Kerboros Golden & Silver Tickets

Core Impact allows users to create Kerberos tickets that can be used in a penetration testing campaign. You can use the following modules:

- **Create Kerberos Golden Ticket**: creates a Kerberos Golden Ticket for a designated user
- **Create Kerberos Silver Ticket**: creates a Kerberos Silver Ticket for a designated user
- **New Kerberos Identity**: creates a new identity to test against a Kerberos KDC



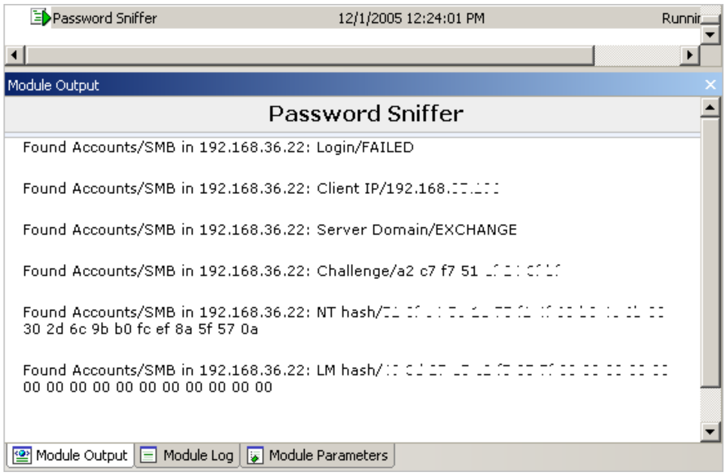
Sniffing Password Hashes from the Network

Usernames, passwords and password hashes can sometimes be obtained by sniffing network traffic. To sniff the network looking for passwords, use the "Password Sniffer" module from the root of the Information Gathering folder in the Modules Panel. This module requires the agent to have packet capture capabilities. Agents that have this capability are the localagent and agents with the Pcap plugin running with root/administrator privileges.

To start looking for passwords by capturing packets, do the following:

1. Start by selecting an appropriate agent for this activity. As mentioned before, the agent must be able to capture packets from the network. The host on which the agent is running must also be positioned in the network at a point where it makes sense to sniff network packets, as only packets going through the same network segment will be seen by that host. Also keep in mind that in switched environments, all network packets are not received by every host on the same network segment.
2. Launch the Password Sniffer module from the Information Gathering folder. The module will run and continually capture appropriate packets, extracting password or hash information when possible. This information will be stored in the Entity Database.

   Running the Password Sniffer module

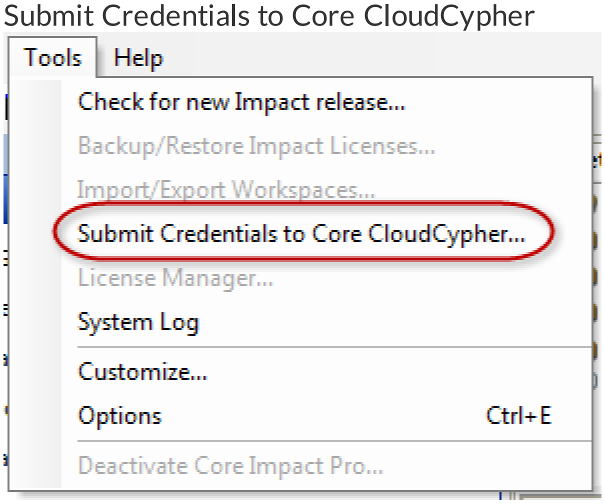


Captured usernames and passwords will be stored in the Entity Database. Captured NTLM hashes can be exported to a password cracker. This procedure is described in the following section.

Using the Core CloudCypher Service

If you have purchased access to the Core CloudCypher service, you can send hashes directly from Core Impact to the service to attempt to crack them. Core Impact can be configured in Core CloudCypher Options to send them automatically or, if you want to do so manually, by selecting Tools > Submit Credentials to Core CloudCypher.... You can then enter the hosts that contain hashes.

Submit Credentials to Core CloudCypher



Logging Keystrokes on a Compromised Host

Username and password information can sometimes be obtained by logging keystrokes on a compromised machine when an authorized user logs into the host or uses the compromised host to log into a different host. Core Impact has a built-in keylogger utility module for Windows systems that can be installed after an agent has been deployed.

To install the Windows keylogger follow this procedure:

1. Select an appropriate agent to deploy the keylogger. The agent must be running on the Windows host where the keylogger will be installed and must have Administrator or SYSTEM privileges.
2. Run the "Keylogger" module from the Information Gathering/Local folder. Default parameters will configure the keylogger to store the log in memory. Refer to the module's documentation for additional information.
3. The keylogger will now start logging keystrokes on the host.
4. The logged keystrokes will be downloaded and stored in the specified file.

Collecting Saved Login Credentials

Some applications can save login information as a convenience for the user. Examples of applications that have some form of password auto-completion are:

- Internet Explorer
- MSN Messenger
- Outlook Express
- Outlook 2003 & 2007
- Firefox
- Putty
- Thunderbird
- Trillian
- Yahoo Messenger

In some cases it is possible to recover these credentials. To attempt recovering saved credentials from a compromised host, follow this procedure:

1. Select an appropriate agent to collect credentials. The agent must be running on the host where you want to search for login credentials.
2. Run any of "Password Dump from ..." modules from the Information Gathering/Local folder.
3. The module will start to attempt to recover credentials on the compromised host. Obtained credentials will be added to the host entity as properties.

Using Obtained Passwords

Core Impact can use obtained username and password information to deploy agents. In contrast to the agents deployed by the exploitation process, these agents are deployed not by exploiting a vulnerability but by logging into the target hosts with the specified username and password.

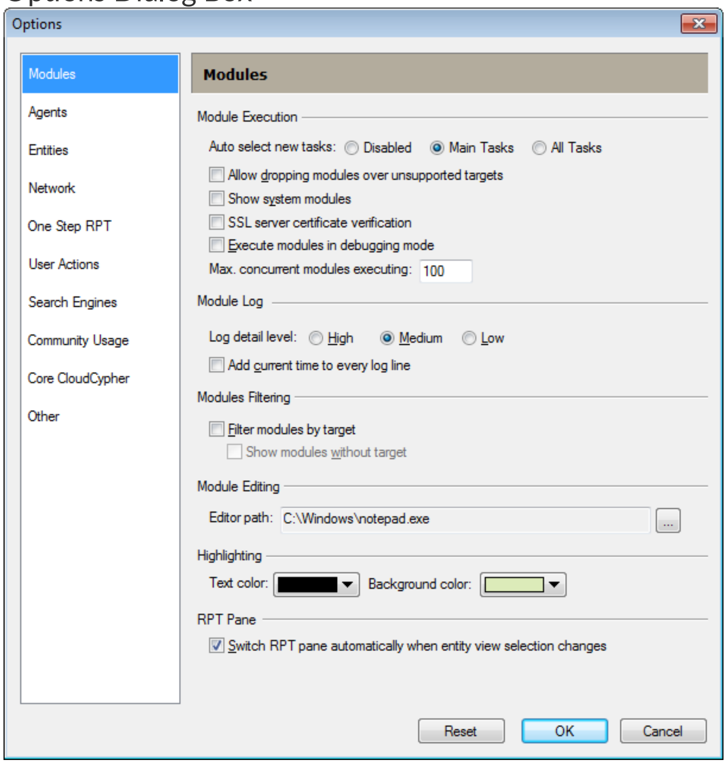
When using the SMB protocol to install an agent on a Windows host, it is possible to use password hashes to log in as opposed to using a fully recovered password. This technique, sometimes referred to as "Pass the hash" is implemented in the "Install Agent using SMB" module from the Agents module folder. When run against a host from which hashes have been obtained (the hashes are stored in the host properties, within the **Identities** container), the module will automatically cycle through the available hashes until one is successful.

To learn more about deploying agents with a valid username and password, see Deploying an Agent Using Valid User Credentials.

Setting Console Options

You can configure Core Impact's Console to meet your particular needs and preferences by setting global options. Options are accessible from the main menu using the Tools > Options command. Each of the configurable option categories visible on the left panel of the dialog box pictured below is described in the following sections.

Options Dialog Box

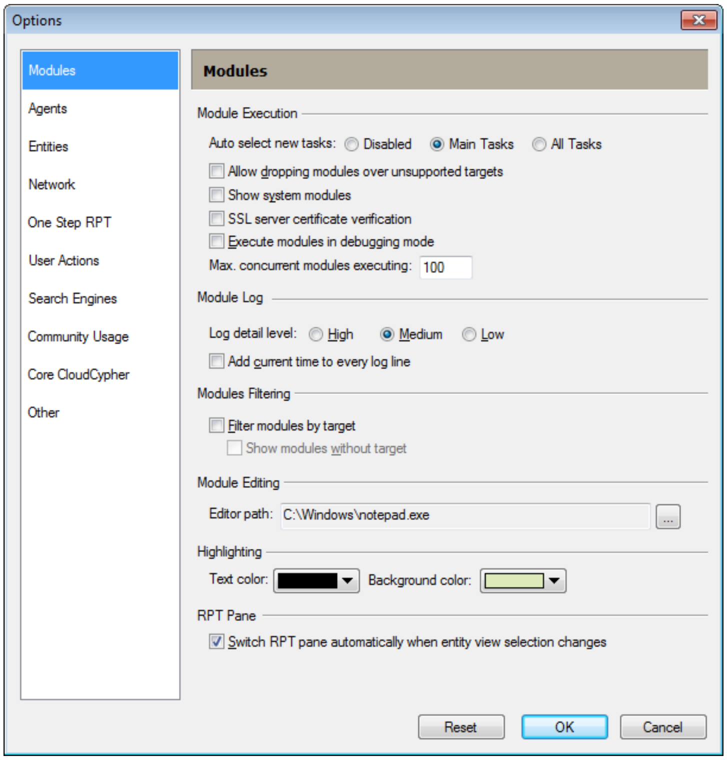


Modules

The Modules panel of the Options Dialog Box includes options related to module execution and module highlighting. Follow these steps to set the Modules options:

1. Select the Tools > Options command from the main menu.
2. Click the Module category and set your options using the fields described below. Then click OK.

Modules Settings



Auto select new tasks

Select whether you want new tasks to be automatically selected in the Executed Modules pane. If set to Disabled, new tasks will not automatically be selected. If set to Main Tasks, only new parent tasks will be selected. If set to All Tasks, each new task that is started will be automatically selected.

Allow dropping modules over unsupported targets

If you select this check-box, the console will not block the execution of a module against an unsupported target (for instance, running a Windows exploit against a Unix server).

Show system modules

If you select this check-box, the Executed Modules pane will show all executed modules. If you uncheck this option, System modules (such as the running of a web server) will not be shown. You can also show/hide system modules by right-clicking on a module in the Executed Modules pane and checking/unchecking Show System Modules.

SSL server certificate verification

By default, the Python interpreter that is embedded in Core Impact will not set up SSL connections when the server certificate verification fails. Check this option to require that Core Impact perform valid SSL connections.

Execute modules in debugging mode

If you select this option and the Log detail level option is set to High, modules are more verbose and generate more log lines in the Module Log view. You will then have the option to Attach Debugger to Running Modules which will, if selected, attach the debugger to any modules that are currently running.

Max. concurrent modules executing

The maximum amount of modules that can be run concurrently. When this maximum is reached, new modules will wait in the initialized state until others finish.

Log detail level

Select the verbosity level of the Modules log as either High, Medium (default), Low.

Add current time to every log line

If you select this option, each log line in the Module Log view will be time stamped.

Filter modules by target

If this option is selected, the Modules tab will only show modules that are applicable to whatever target is selected in the Entities database. You can then optionally specify - with the Show modules without target setting - whether modules that don't have a TARGET parameter should be visible. These options are both visible at the bottom of the Modules tab.

Module Editing

This field allows you to set the preferred application for editing modules. To change from the default (Notepad), click the browse icon (...) and navigate to your preferred text editing application.

Highlighting

This section is used to select the color that modules are highlighted in the Modules View of the panel. When you select an OS agent or WebApps agent in the entity view, the applicable modules will automatically be highlighted for ease of identification.

RPT Pane

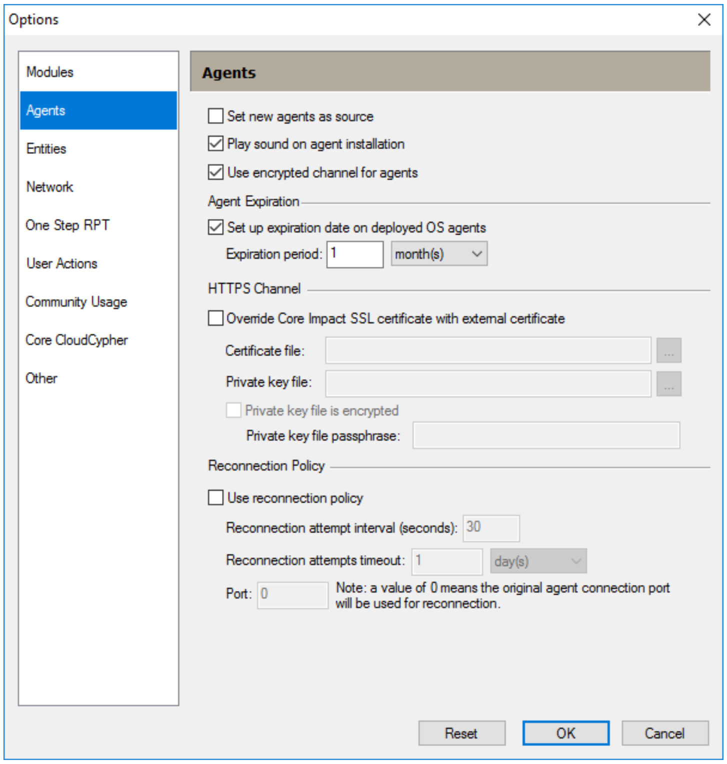
If you select this option, changing to a different entity pane will automatically change the RPT view to match it.

Agents

The Agents panel of the Options Dialog Box includes options related to agents. Follow these steps to set the Agents options:

1. Select the Tools-> Options command from the main menu.
2. Click the Agents category and set your options using the fields described below. Then click OK.

Agents Settings



Set new agents as source

If you select the Set new agents as source check-box, whenever a new agent is created it will be set as the current default source agent. If the check-box is not set, you will have to manually set the new agent as source.

Use encrypted channel for agents

This check-box controls whether to use a secure communication channel between the agents and the console.

Play sound on agent installation

This check-box controls whether to play a sound when a new agent is installed. The sound file to be played is defined in the following registry key:

```
HKCU\Software\Core Security\Impact\Sounds
```

Agent Expiration

Set up expiration date on deployed OS agents

Check this global option if you want deployed OS agents to automatically expire after a defined amount of time.

Expiration Period

Set the expiration period in Days, Weeks or Months.

HTTPS Channel

Override CORE Impact SSL certificate with external certificate

Check this option if you want to use your own SSL certificate to facilitate agents' use of the HTTPS Channel.

Certificate path

The path to the SSL certificate.

Private Key path

The path to the SSL certificate's private key. If applicable, check the Private Key file is encrypted checkbox.

Private Key file passphrase

The passphrase to the certificate's private key.

Reconnection Policy

Use Reconnection Policy

Check this option if you want agents that lose connectivity to the Core Impact console to attempt to reconnect. Without a Reconnection Policy, agents that lose connectivity will self-destruct. This is a global setting but it can be overridden for an individual agent - see Set Reconnection Policy for details.

Reconnection Attempt Interval

This value determines how often an agent should attempt to connect back to the Core Impact console.

Reconnection Attempt Timeout

This value determines how long the agent should attempt to connect back to the Core Impact console.

Port

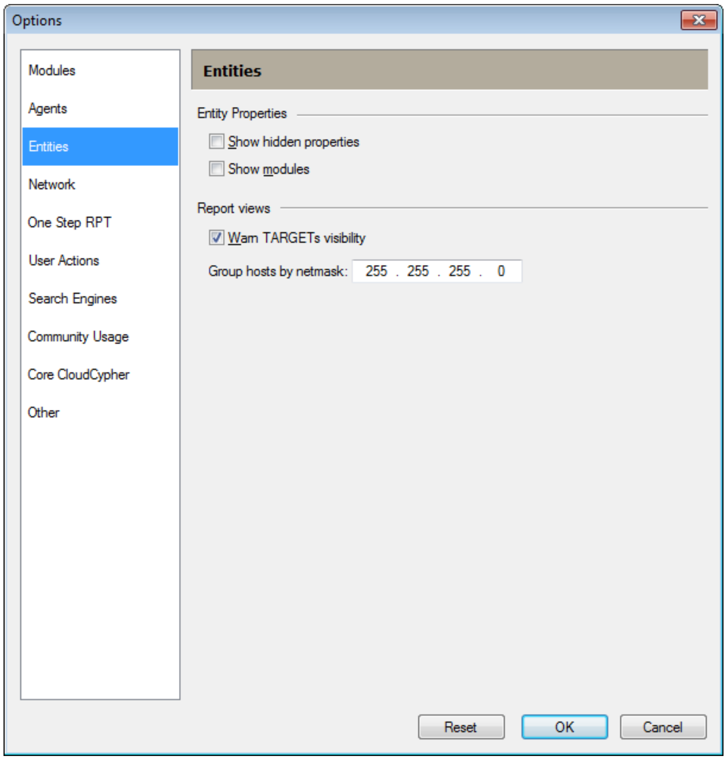
Specify a port on which you would like the reconnection to occur. Enter 0 to reuse the agent's original connection port.

Entities

The Entities Panel of the Options Dialog Box includes options related to the management of the Entity Database. Follow these steps to set Entities options:

1. Select the Tools -> Options command from the main menu.
2. Click the Entities category and select or deselect the check-boxes described below. Then click OK.

Entities Settings



Show hidden properties

If you select this check-box, hidden properties will be displayed in the Entity Properties Editor.

Show modules

If you select this check-box the Entity Properties Window will display properties for the currently-selected module in the Modules Panel.

Warn TARGET's visibility

If you select the Warn TARGET's visibility check-box, Core Impact will warn the user when executing a module against a TARGET that is outside the current source agent's visibility level.

Group hosts by netmask

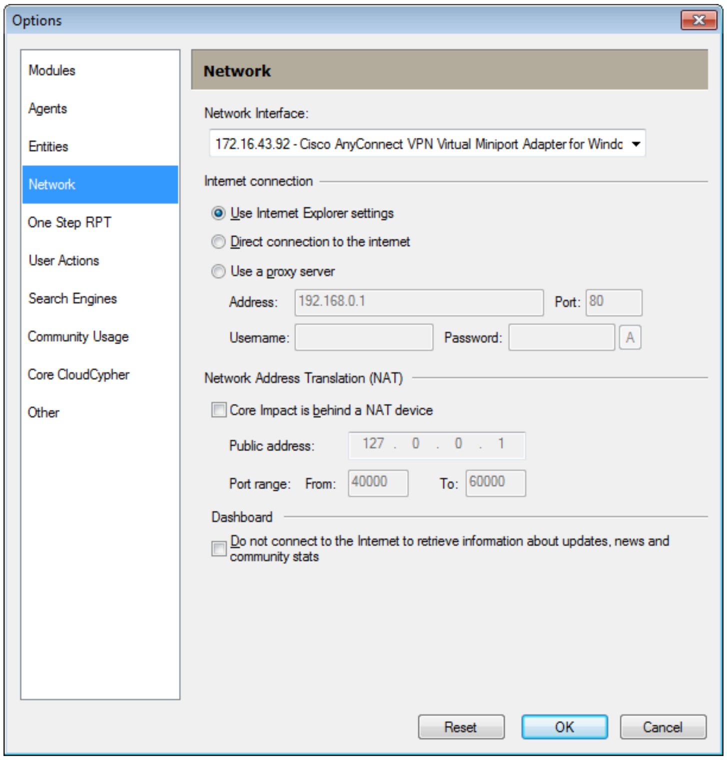
Networks are identified and grouped in the entity view if they match this netmask address.

Network

The Network Panel of the Options Dialog Box includes options related to the management of network interfaces. Follow these steps to set network interface options:

1. Select the Tools -> Options command from the main menu.

Network Settings



Network Interface for packet capture

Use the Network Interface for packet capture drop-down box to select the network interface that will be used for modules that use PCAP when they are executed in the local agent. The selected interface's IP address is also used as the URL of the malicious web server for client-side attacks.

Internet connection

This section is used to set connection preferences. Click the radio button that corresponds with how your Core Impact console can connect to the Internet:

- Use Internet Explorer Settings: This will use the same connectivity configurations that exist in your Internet Explorer settings.
- Direct connection to the Internet: Use this if your Core Impact console has a direct connection to the Internet.
- Use a proxy server: Also enter the Address, Port, Username and Password for the proxy server.

These settings are used in two places: when downloading Modules updates, and when connecting to the Internet to get News. These settings are captured and stored from the parameters entered during the Core Impact installation and product activation.

Network Address Translation (NAT)

Core Impact is behind a NAT

Check this box if Core Impact is deployed behind a NAT device.

Public Address

Enter the external IP address of the NAT device.

Port Range

Enter the range of ports that are being redirected (forwarded) from the NAT device to the Console.

The settings in the NAT Panel control the way Core Impact exploits will behave when using different agent connection methods. Note that changing these settings does not change your NAT device configuration. You must do that manually.

To support the Connect from connection method, all the ports within the specified Port Range have to be redirected to the internal address for the host running Core Impact . An agent deployed with the Connect from connection method will try to connect to the Public Address IP on a port within the defined Port Range. The Console will wait for that incoming connection on the same port.

When NAT is activated, the Reuse connection method utilizes the specified Public Address to find the correct TCP session in the target host's memory. In some cases, it will not be possible to exploit the same target service twice in a row using Reuse connection unless the first agent is disconnected before you launch the second attack.

Dashboard

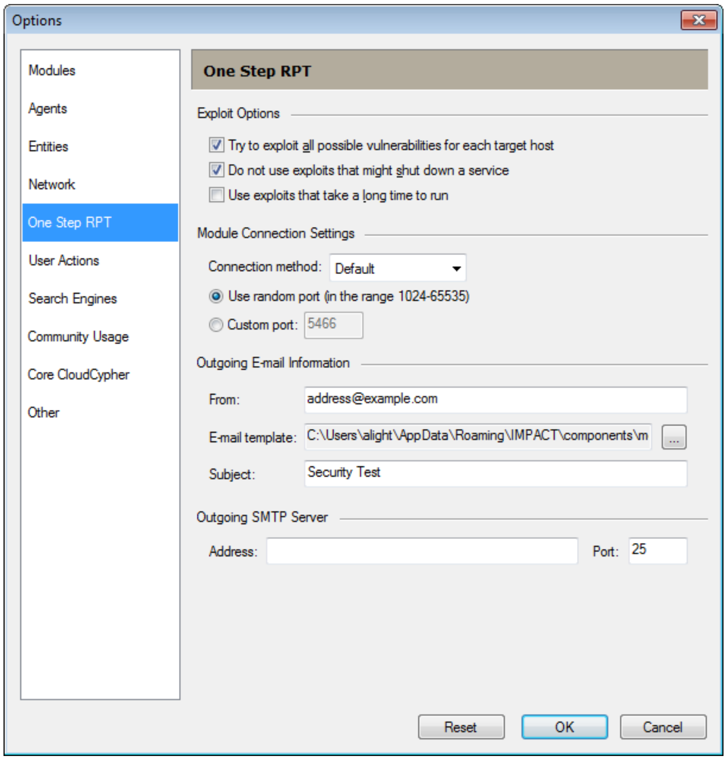
If you do not wish to receive news about module or software updates, select the Do not connect to the Internet ... check-box. Core Impact will oftentimes display messages on the top of the Dashboard about new exploits or related information. Checking this option will prevent these messages from appearing.

One-step RPT

The One-step RPT Panel of the Options Dialog Box configures the One-step RPTs. Follow these steps to set One-step RPT options:

1. Select the Tools -> Options command from the main menu.
2. Click the One-step RPT category and set the options according to the below descriptions. Then click OK.

One-step RPT Settings



Exploit Options

- Try to exploit all possible vulnerabilities for each target host: If this option is not checked, the One-Step RPT will stop testing a designated target as soon as an exploit is successful.
- Do not use exploits that might shut down a service: Check this option to prevent the One-Step RPT from running any exploits that could potentially either stop or restart the service or application being targeted.
- Use exploits that take a long time to run: If this option is not checked, the One-Step RPT will only run exploits that will take less than 10 minutes to complete.

Module Connection Settings

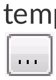
- Connection method: When the One-step RPT successfully exploits a target computer, an agent is deployed on that target. An agent is a temporary piece of code that runs in the target computers RAM and communicates back to Core Impact. The Connection Method setting determines how the deployed agent and Core Impact connect to one another:
  - Default: Core Impact will try to use each exploit's default connection method.
  - Connect To: Core Impact will initiate a connection to the agent on the target system. The target system will listen on the port specified below. You might select this method if there are network or firewall restrictions on traffic sent to the Core Impact machine.
  - Connect From: Core Impact will wait for a connection from the target system's agent. The Core Impact host will listen on the port specified below. You might select this method if there are network or firewall restrictions on traffic sent to the machines to be tested.

- HTTP Channel: Core Impact will act as a web server and accept incoming connections from the target system to TCP port 80. This method only applies for Client-side Vulnerabilities tests. If this method is selected and a you run a Network Vulnerabilities test, the Default Connection Method will be used.
- HTTPs Channel: Core Impact will act as a web server and accept incoming connections using SSL from the target system to TCP port 443. This method only applies for Client-side Vulnerabilities tests. If this method is selected and a you run a Network Vulnerabilities test, the Default Connection Method will be used.

- Use random port (in the range 1024 - 65535): Check this option to allow Core Impact to randomly select a port for it or target systems to listen on (depends on the Connection Method selected).
- Custom port: Check this option (and enter a port number) to manually define the port on which Core Impact or target systems will listen on (depends on the Connection Method selected).

> **NOTE:**
>
> Regardless of the connection method you choose, it will be important for you to ensure that your Core Impact machine and the target machine(s) can communicate to one another using the designated ports. If you elect to use a random port, then make sure all ports in the high range are open. If the high range of ports are limited or restricted, then set a custom port number and ensure that Core Impact machine and the target system(s) can communicate on that port.

Outgoing E-mail Information (for Client-side Vulnerability Test)

- From: The address you enter here will appear as the From: address in the email Client-side Vulnerability test.
- E-mail template: Use a template that contains the body of your email. Click the ellipsis button  to browse for and select a template file. You will see several sample template files included in your Core Impact installation. These are located in the `\data\templates` directory of your Core Impact installation.
- Subject: The text entered here will appear as the Subject of the e-mail.

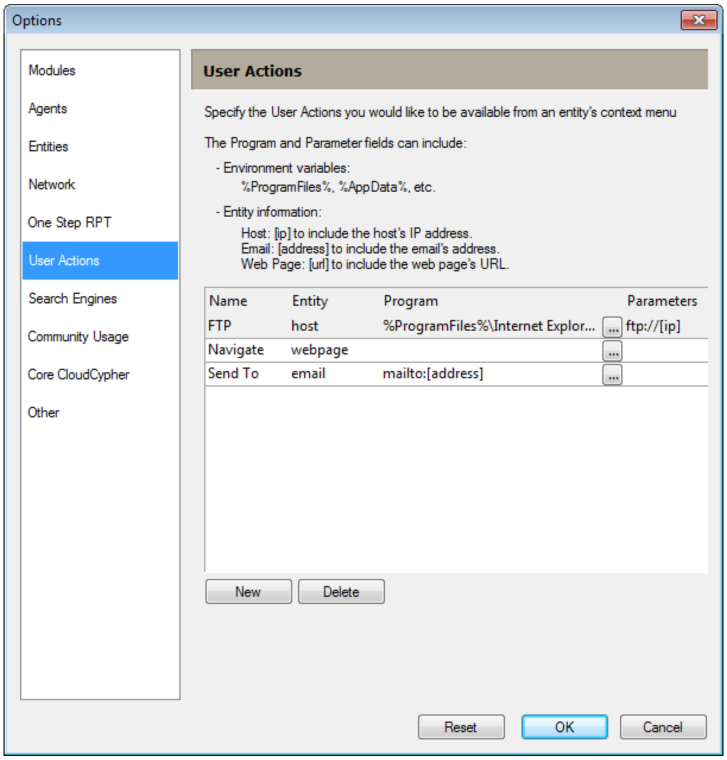
Outgoing SMTP Server (for Client-side Vulnerability Test)

- Address and Port: In order for Core Impact to send email (in either a Client-side test or to send post-test reports), you must provide the address and port of an active SMTP server.

User Actions

User Actions are custom commands that can apply to entities (hosts, email addresses, web pages). When you right-click on an entity, the User Actions appear in the list of available commands.

User Actions Settings

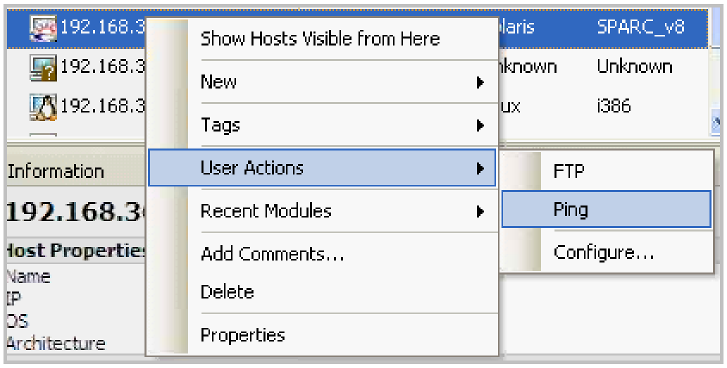


To create a User Action, perform these steps:

1. Access the User Actions Options (Tools -> Options).
2. Click the New button.
3. Enter a Name for the new user action (e.g. Ping). This is the name that will appear in the right-click menu.
4. Select the Entity type to which the action should apply (e.g. host). Your new action will only appear when you right-click on an entity of the type selected here.
5. Enter a Program that will be used to execute your action. For the Ping example, one would enter the path to the ping executable (ping.exe). The Program field can include environment variables such as %ProgramFiles%, %ProgramData%, etc and Entity characteristics such as host [ip], email [address] and web page [url].
6. Optionally, enter any Parameters to pass along to the Program. The Parameters field can include environment variables such as %ProgramFiles%, %ProgramData%, etc and Entity characteristics such as host [ip], email [address] and web page [url].
7. Click the OK button.

Your new User Action will appear when you right-click on an entity that matches the type you selected in step 4. For example, if you created a User Action for Hosts, navigate to the Network entity view, click on the Hosts folder, then right-click on a host. Navigate to the User Actions option - this should reveal the available User Actions that can apply to Hosts, including your new action.

User Action Example

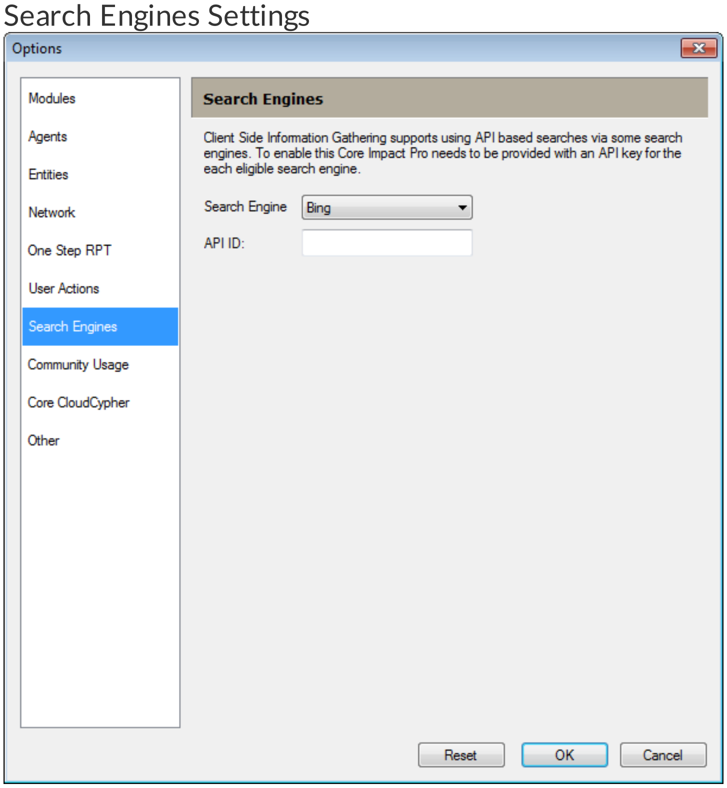


Search Engines

Client-side Information Gathering supports the use of API-based searches for some search engines (Bing and Yahoo!). If your company has an API ID for a search engine, you can enter it in the Options form. When Core Impact's Client-side Information Gathering uses that search engine, the engine will know that the searches are not from a robot and will not put forth any captcha challenges or otherwise restrict the search.

On the Search Engines Options form, select the Search Engine from the drop-down menu, then enter the API ID for that search engine. Then click the OK button.

Search Engines Settings

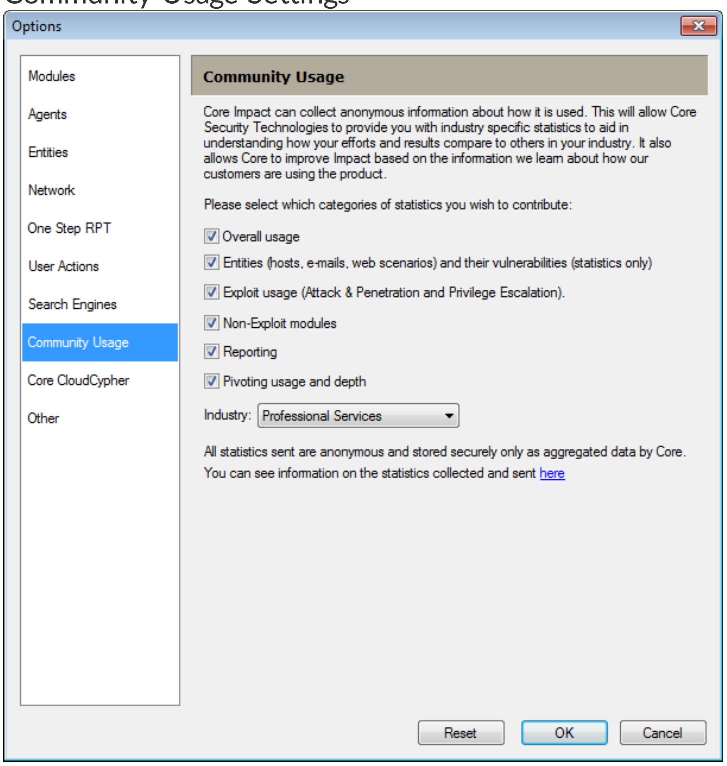


Community Usage

The Community Usage Panel of the Options Dialog Box determines what information Core Impact will gather and provide anonymously to Core Labs for statistical analysis of the applications use. Follow these steps to set Community Usage options:

1. Select the Tools > Options command from the main menu.
2. Click the Community Usage category and select which types (if any) of data you are willing to provide. Then click OK. All data will be gathered and transmitted automatically and all information will be kept anonymous.

Community Usage Settings



To gather and send your usage statistics, see Usage Statistics.

Core CloudCypher

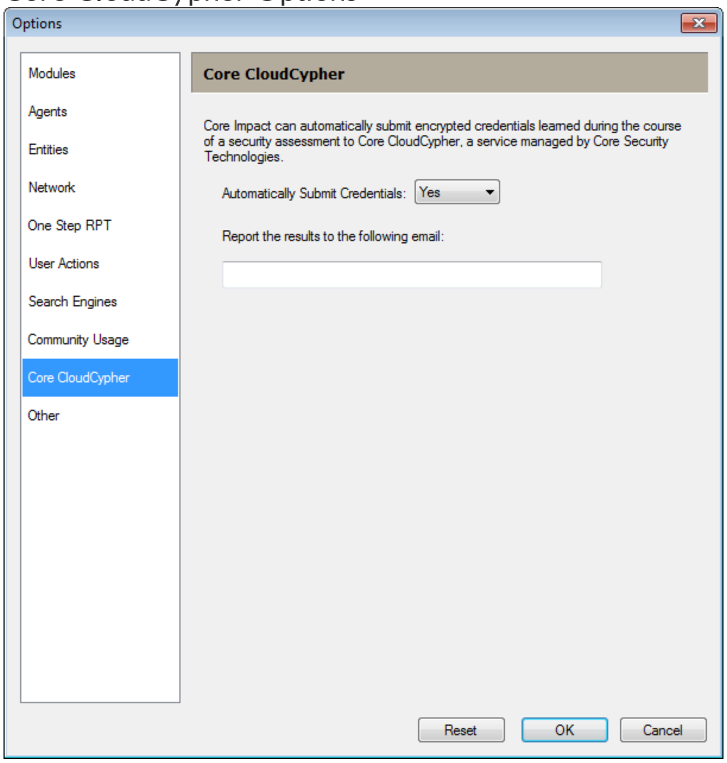
The Core CloudCypher Panel of the Options Dialog Box determines whether Core Impact will automatically submit encrypted credentials (hashes) to its on-line password cracking service.

If while Installing Core Impact you opted to Never Automatically Send Credentials, the Core CloudCypher options panel will not be visible.

Follow these steps to set Core CloudCypher options:

1. Select the Tools > Options command from the main menu.
2. Click the Core CloudCypher category and set the Automatically Submit Credentials option to Yes or No, depending on your preference. You can also enter an email address to be notified when credentials have finished being processed.
3. Then click OK.

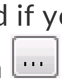
Core CloudCypher Options



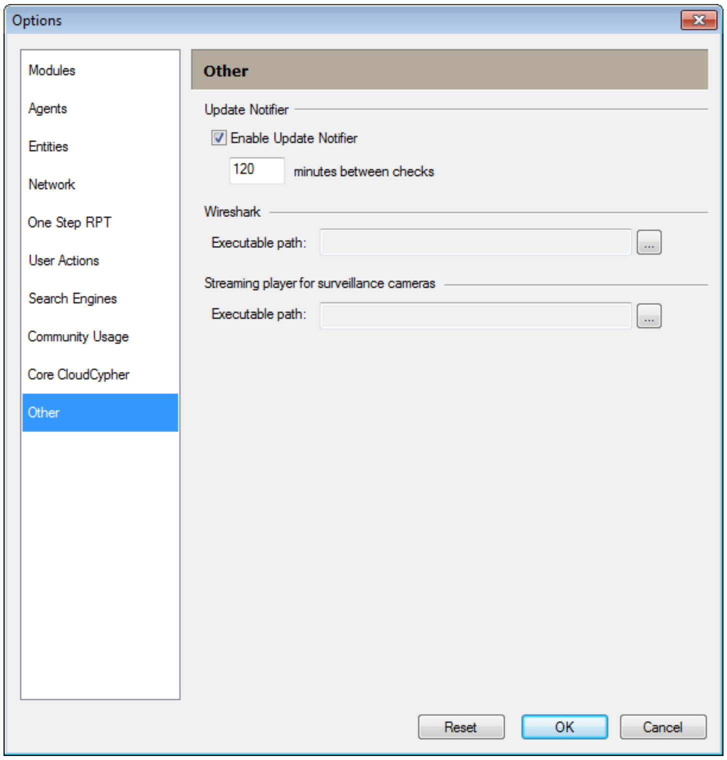
Other

The Other category of options includes configurations for additional Core Impact features:

- The Update Notifier is a utility that will run in the background to check for available module updates even when Core Impact is not running. If updates are identified, the Notifier will appear in the system tray. If the Enable Update Notifiersetting is checked, then the Update Notifier will check for updates as frequently as is specified in the Minutes between checks field.

  If the Enable Update Notifier setting is unchecked, then it will not run at all.
- Wireshark is a software utility that is required if you plan to use the Wireless AirPcap Traffic Sniffer. Simply click the ellipsis button  and navigate to the path of your Wireshark executable.

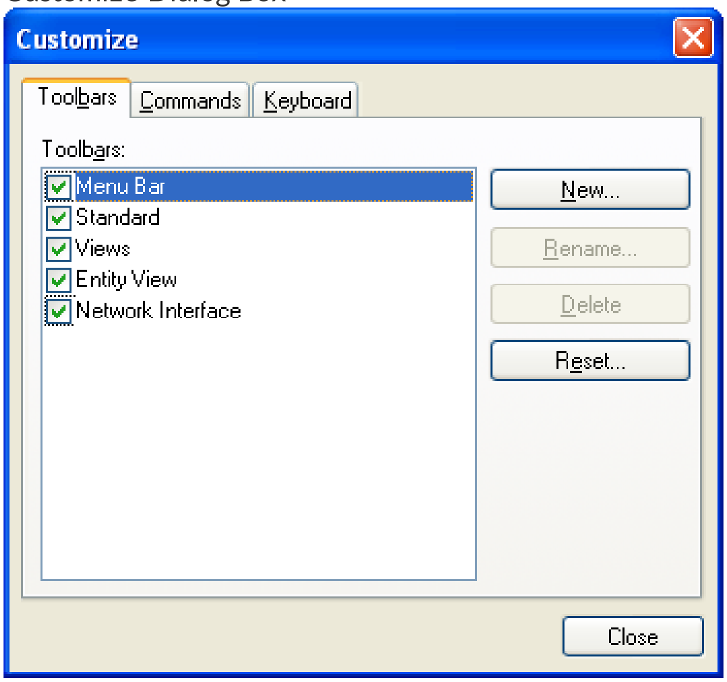
Other Settings


Options
Modules
Agents
Entities
Network
One Step RPT
User Actions
Search Engines
Community Usage
Core CloudCypher
Other
Other
Update Notifier
Enable Update Notifier
120
minutes between checks
Wireshark
Executable path:
Streaming player for surveillance cameras
Executable path:
Reset
OK
Cancel

Customizing Toolbars and Keyboard Shortcuts

Keyboard shortcuts and Console toolbars can be customized using the Customize dialog box. To open this dialog box, select the Tools -> Customize command from the main menu.

Customize Dialog Box

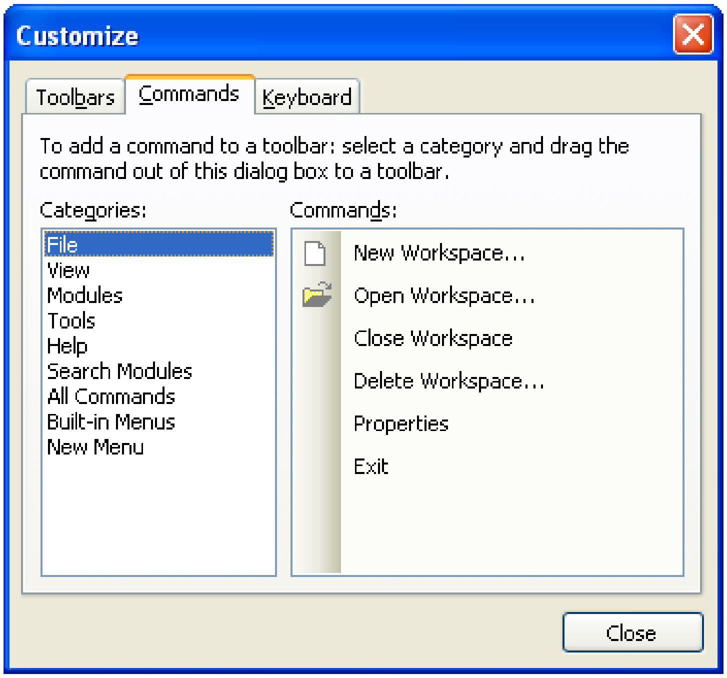


Customizing Toolbars

You can activate or deactivate toolbars, create new toolbars or remove existing toolbars using the Toolbars Panel of the Customize dialog box. Active toolbars will automatically appear at the top of the Console.

To add or remove commands from a toolbar, click on the Commands tab of the Customize dialog box. Use drag-and-drop to add or remove specific commands from an existing toolbar.

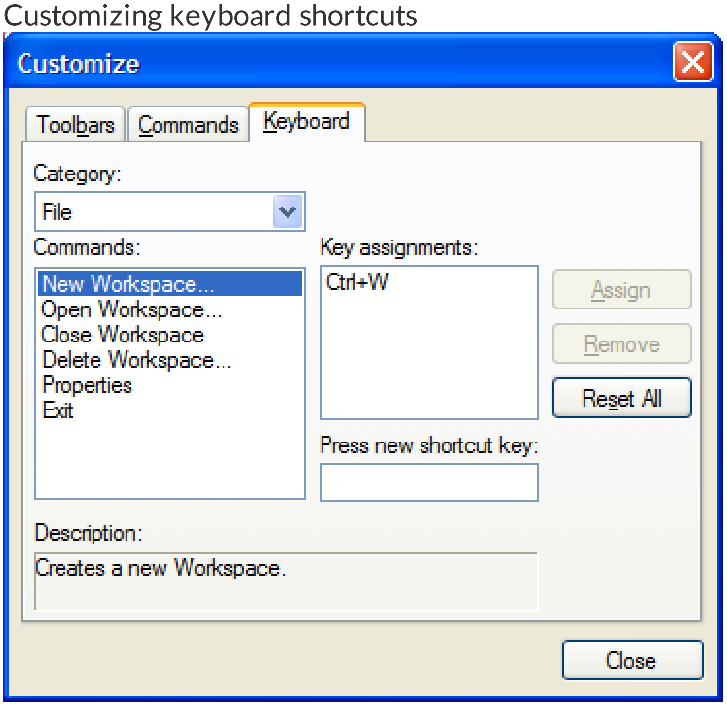
Adding commands to a toolbar



Customizing Keyboard Shortcuts

You can navigate through Core Impact using your keyboard and you can assign custom keystrokes to many of Core Impact's basic navigational features using the Keyboard tab of the Customize dialog box.

Customizing keyboard shortcuts



There are several default keystrokes already set up when you install Core Impact:

- Create new workspace = Ctrl + W
- Open workspace = Ctrl + K
- View entity properties = Ctrl + Shift + P
- View executed modules = Ctrl + Shift + X
- View modules = Ctrl + Shift + M
- View quick information = Ctrl + Shift + Q
- View module log = Ctrl + Shift + L
- View module parameters = Ctrl + Shift + A
- View module output = Ctrl + Shift + O
- Open options = Ctrl + E
- Search modules = F5

To use the Keyboard tab and customize your keystrokes, use the following sections of the properties box:

Category

Commands are grouped into categories (such as Edit or View) which correspond with the Main Menu and the Toolbar.

Commands

The actions you can perform using the keyboard command.

Key assignments

Used to assign new keyboard shortcuts or remove existing ones. Commands can have multiple keyboard shortcuts.

Press new shortcut key

Changes the keyboard shortcut for any command.

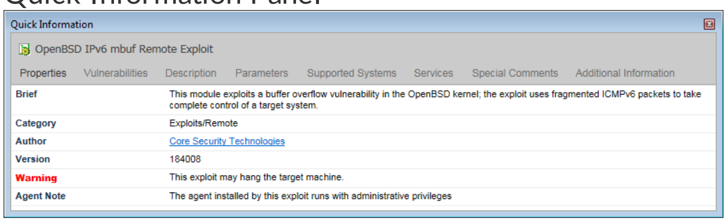
CVE and Core Impact

The Common Vulnerabilities and Exposures (CVE) is a reference of standardized names for vulnerabilities and other Information Security exposures. The goal of CVE is to standardize the names for all publicly-known vulnerabilities and security exposures.

About CVE Compatibility. A "CVE-compatible" tool (Web site, database, or service) is one that uses CVE names in such a way that it can cross-link with other repositories that also use CVE names.

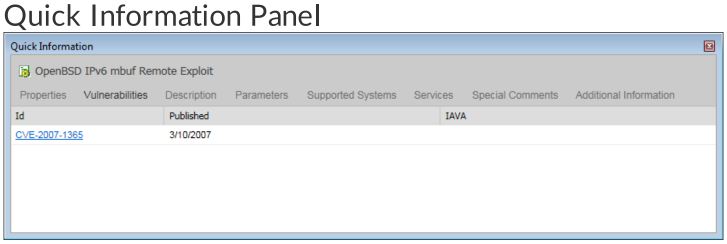
Within Core Impact , CVE names are used to uniquely identify the vulnerabilities exploited by each attack module. When the Quick Information Panel displays information about the currently selected attack, it includes an overview of the Properties and several sections including Vulnerabilities, Description, Supported Systems, etc.

Quick Information Panel



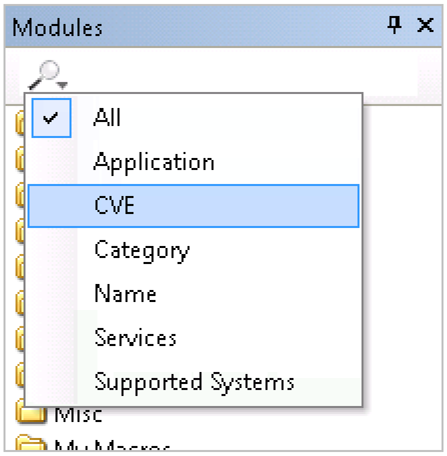
The CVE name on the Vulnerabilities tab is also a link which takes you to the CVE web site for industry-derived information on the vulnerability.

Quick Information Panel



You can also search for attack modules by CVE name. To find all attacks related to a specific CVE name, select the CVE search criteria in the Search box in the Modules Panel and enter the desired name in the text box.

Modules Panel - Searching by CVE Name



See Searching for Modules for more information on how to search for modules using the Search box on the Modules Panel.

For more information regarding CVE, refer to the official CVE web site at http://cve.mitre.org.

Core Impact Underlying Technology

Agent Technology

Agents are a critical component of Core Impact's architecture because they provide the functionality to execute code in the form of modules, either locally or on other agents. The following sections describe the key underlying technology employed by Core Impact agents.

The ProxyCall Interface

Every module execution in Core Impact is associated with a source agent, the default agent that the module uses to interact with the operating system (OS). The interaction between the agent and the OS is achieved using the ProxyCall Interface, a common interface for all platforms. The ProxyCall Interface abstracts the operating system's user-mode services using syscalls for UNIX and Win32 API functions for Windows. This common interface makes Core Impact's modules available in all platforms where a ProxyCall implementation exists. A ProxyCall implementation provides the module with one function call for each available syscall in the underlying OS and a mechanism to call arbitrary syscalls if needed.

For example, the `gethostname()` syscall is part of this common interface. In a UNIX ProxyCall implementation the `gethostname()` call is translated in its corresponding syscall into the OS's kernel. In a Windows implementation it is translated into a call to the `gethostname()` function within the wsock32.dll dynamic library.

There are two main branches in the ProxyCall hierarchy:

- `UnixProxyCall` and `ProxyCallv2` for Unix, provide services for marshalling calls to any system call supported by the underlying UNIX-like OS. These calls are sent directly into the system kernel.
- `WindowsProxyCall` and `ProxyCallv2` for Windows, provide services for marshalling calls to any DLL entry-point function by first dynamically loading the library into the process space of the agent using the `LoadLibrary` call, then obtaining the offset of the desired function in the loaded library using the `GetProcAddress` call, and lastly jumping into it.

Python

Core Impact 's Console uses a Python Virtual Machine (see http://www.python.org/) to run modules. The only significant difference between the typical Python VM distribution and the one distributed with Core Impact is that Core Impact 's VM uses the `ProxyCall` Interface to implement all of Python's system services.

This means that:

- Python's file object uses the `ProxyCall` Interface for all its functions.
- Python's socket object uses the `ProxyCall` Interface for all its services.
- Basic OS services implemented in the sys and os modules use the `ProxyCall` Interface.

A Python script that is typically used to open a socket will open a `ProxyCall` socket when run inside Core Impact . (This is why Core Impact modules do not look significantly different from typical Python code.)

SysCall Proxying

If a `ProxyCall` implementation forwards the call to a remote server instead of directly calling the underlying OS syscall, remote execution will be simulated. Whenever a module is run by a remote source agent, all the module's calls into the `ProxyCall` interface are forwarded to a remote `ProxyCall` server. This is known as SysCall Proxying.

The following example describes how SysCall Proxying works:

1. A module is executed using a remote agent deployed in host victim.
2. The module calls the `gethostname()` from the agent's `ProxyCall` interface.
3. The function marshals its arguments into a structure that is specific to the remote system's OS and generates a remote call into the `ProxyCall` server running in the victim host.
4. The server in victim calls the real `gethostname()` function in victim's operating system, marshals the result, and sends it back to the client.
5. The client `ProxyCall` implementation returns the results to the module.
6. The module prints the `gethostname()` results to the console as if it was running in victim.

Inside Core Impact's architecture `ProxyCall` servers are implemented as target-dependent assembly code. Optimized for size, these tiny SysCall servers are the basic component of agents.

Using a SysCall server as payload for an exploit also makes the task of customizing a shellcode unnecessary. Once the remote agent is up and running, further syscalls can be executed in the remote system.

The following example describes how this works:

1. An attack module that exploits a vulnerability in a ftp daemon succeeds and installs an agent.
2. You connect to the newly deployed agent and realize that you are inside a chroot jail.
3. You select the new agent as source and run a setuid module and a chroot breaker module.
4. The agent is freed from the chroot jail.

The successful completion of the process described above would typically require the exploit developer to change the exploit's shellcode to accommodate the change made in step 3. It would also depend on the user successfully exploiting the vulnerability again, which might not be possible.

For a comprehensive explanation of Syscall Proxying, refer to "Syscall Proxying - Simulating Remote Execution" by Maximiliano Caceres.

About Agents

Core Impact agents can multi-task (run multiple modules) and have a Secure Communication Channel. Once deployed, they can provide all system calls and arbitrary code execution on platforms with built-in stack protection. Local agents use Python Virtual Machine and local Syscall implementation embedded in the console connected to the database.

The following table lists the platforms that agents support.

Agent-supported Platforms

Platform
Ubuntu Linux 5-14 (x86 / x86-64)
RedHat Linux 6, 7, 8, 9 (x86)
Red Hat Enterprise Linux AS 3, ES 3, WS 3, AS 4, ES 4, WS 4, AS 5, ES 5, WS 5, AS 5.1, ES 5.1, WS 5.1 (x86)
Mandrake Linux 7.1, 7.2, 8, 8.1, 8.2, 9, 9.2, 10 (x86)
Mandriva Linux 2006, 2007, 2008.1 (x86)
Linux Fedora Core 2 - 10 (x86)
Linux Fedora 7 - 8 (x86)
SuSE Linux 7-9.3 (x86)
OpenSUSE 10.1-2 (x86)
SUSE Linux Enterprise 10 - 11 (x86)
OpenBSD 3.5 - 3.9, 4.0 - 4.9 (x86)
Windows 10 (x86 / x86-64)
Windows 8.1 (x86 / x86-64)
Windows 8 (x86 / x86-64)
Windows 7 (x86 / x86-64)
Windows 2012 R2 (x86-64)
Windows 2012 (x86 / x86-64)
Windows 2008 (x86 / x86-64)
Windows 2000 (x86)
Windows XP (x86 / x86-64)
Windows 2003 (x86)
Windows Vista (x86 / x86-64)
Mac OS X 10.9.x (Mavericks) (x86-64)
Mac OS X 10.10.x (Yosemite) (x86-64)
Mac OS X 10.11.x (El Capitan) (x86-64)
Mac OS X 10.6.x – 10.8.x (x86-64)
Mac OS X 10.4.6 - 10.4.11 (x86)
Mac OS X 10.5.0 - 10.5.2 (x86)
FreeBSD 5.5 - 7(i386)
Cisco 2611XM
Cisco 2811
Cisco 2911
Cisco 3640
Cisco 3725

The following table compares the functionality and attributes of the different deployment types of Core Impact agents. Because the communication channels available to agents are dependent on privilege level, the table includes both agents and agents running "as root". Note that some agent functionality listed below (such as sniffing and IP spoofing) is dependent on the presence of optional product plug-ins.

Agent Functionality and Attribute Comparison

Category	Multi-task?	Crypto?	Send ICMP?	Sniff?	Spoof IP?	Persistent	Real Shell
Agent	yes	yes	no	no	no	no	yes
Agent as root / Administrator	yes	yes	yes	no	no	yes	yes
Agent + PCAP as root / Administrator	yes	yes	yes	yes	yes	yes	yes
Local Agent	yes	N/A	yes	yes	yes	N/A (yes)	no

Agent Auto Injection

In certain situations, the process in which the agent is currently executing has a limited lifetime. For instance, when exploiting client side vulnerabilities in Internet Explorer (IE), it is fairly common for IE to stop responding. This situation typically causes the user to re-start IE, thereby killing the deployed agent. Similarly, if the user finishes using the application that was exploited he or she might close it, once again killing the deployed agent.

To accommodate these cases, Core Impact includes functionality to allow the agent to escape to an alternate process in the exploited host after successful exploitation. This functionality is known as agent auto injection.

Technical Details

Agent auto injection is implemented within the `exploitlib` library in the agentEscape() method. This method runs right after a client-side exploit has added the agent to the database. The agentEscape() method:

1. Enumerates running processes on the compromised host.
2. Searches for the PIDs of `explorer.exe` by default.
3. Injects a new agent into the process found in the previous step. This new agent connects directly to the source agent (i.e., it doesn't chain with the existing agent) using the same connection method used by the original agent ("HTTP Tunnel" in client-side exploits).
4. Disconnects and terminates the original agent once a connection with the second agent is established.

As mentioned in step 2, the agent will search for `explorer.exe` by default. This is specified within the `exploit.py` file located in `%ProgramData%\IMPACT\components\modules\exploits\site-packages\impact\exploitlib`, and can be edited to include any other preferred destination processes.

The list is defined within the escapeToProcess attribute in the Exploit.__init__() method as follows:

```
self.escapeToProcesses = [ 'explorer.exe', 'svchost.exe',
iexplore.exe' ]
```

If you escape to a system process, the agent will not be able to determine the local user's proxy settings (if needed).

Communication Channels

Core Impact's agents communicate using communication channels. Channels provide reliable communication between two agents and, in some cases, data transformations such as encryption.

Different channel implementations are available depending on the network scenario. You must decide which channel to use for communication with an agent before you deploy the agent. This decision is typically made when you set parameters for an attack module (a module that will eventually deploy an agent) or when you set parameters for the deployment of an agent. In addition to selecting the channel, you must also set channel-specific parameters.

A special channel called Crypto is available that provides data encryption and session authentication (see Crypto Channel). This channel is usually layered on top of another transport channel that provides the actual communication.

Allowing for broad testing capabilities, Core Impact will function across IPv6 backbone networks. In the case of dual-stack systems, Core Impact will automatically use only the IPv4 stack for security testing. All Internet services from Core Security to Core Impact, such as product activation and updates, will remain IPv4 based.

TCP Channel

The TCP Channel provides communication using the underlying OS TCP sockets. You can set up a TCP Channel from the source agent to the target, or from the target to the source agent. The latter option is useful for scenarios where packet filtering disallows inbound connections and only allows outbound connections. Depending on the vulnerable application, it is sometimes possible to reuse an existing TCP connection as an agent communication channel. In attack modules, this behavior is typically configured with the Agent Connection/CONNECTION METHOD parameter.

HTTP/s Connect Channel

This feature is now used by default by every client-side exploit when using the "Connect from" agent connection method. It can be overridden on a per-exploit basis if an alternate method is preferred. The HTTP/s Connect Channel enhances the regular TCP channel (using "Connect From") by allowing agents in Windows hosts to use the CONNECT method from the HTTP 1.1 protocol to connect back to the current source agent (usually the console) through a proxy.

A typical use scenario for this feature would be an external penetration test where the tested workstations can only browse the Internet through a proxy.

Technical Details

Proxies that support the CONNECT command allow for tunneling any arbitrary TCP connection through the original HTTP connection.

To start communication, the agent sends the following command to the proxy:

```
CONNECT host:port HTTP/1.0
```

The proxy then connects to the indicated host and port and, if the connection is established, responds with the following:

```
HTTP/1.0 200 Connection established
```

After receiving this response, the agent can use the same open socket as if it were directly connected with the host. The proxy will then transparently forward all data in both directions.

Configuration

The agent code auto-detects proxy settings by reading Internet Explorer's (IE's) configuration for the active user. Settings include the proxy's address, listening port, and if necessary authentication information (username and password).

If the connection fails, the agent defaults to the Connect From connection method and attempts to connect back directly to the current source agent.

Known Issues and Limitations

- Agents connecting back using a proxy will appear in the Entity View within a host with the proxy's IP address (instead of the actual host's address).
- Most proxies only allow tunneling port 443 (HTTPS). If `Agent Connection/PORT` is not 443, the proxy will probably deny the connection. Because of the single connection limitation mentioned above, client-side exploits have a default `Agent Connection/PORT` of 0, which indicates a random port within the valid range (usually 40001 to 60000, but depends on NAT preferences).
- The current payload for this connection method only supports reading IE's configuration from the registry. If the user is not using IE or if IE is not configured correctly, the connection method will fail and default to Connect From.
- Proxies usually keep activity logs which include activity related to the CONNECT command. It is reasonable to assume that the source agent's address will be recorded in this log.

Notes for Exploit Developers

To force the activation of this connection method, set the egg's "WebProxyTunnel" parameter to "yes." Set the same parameter to "no" to force deactivation. Additionally, it is possible to hard-code the proxy configuration within the exploit, reducing the payload's final size by excluding the auto detection code. To hard-code the proxy's address and port set the "proxy_ip" and "proxy_port" parameters to the desired values.

For example, to force this connection method in an exploit hard coding the proxy address to 192.168.1.1 port 80 you can use the following code:

```
self.egg['WebProxyTunnel'] = 'yes'
self.egg['proxy_ip'] = '192.168.1.1'
self.egg['proxy_port'] = 80
```

The implementation for this connection method can be found in the WebProxyTunnelEgg.py file located in the `%ProgramData%\IMPACT\components\modules\classic\site-packages\impact\LibEgg` folder.

HTTP Tunnel Channel

The HTTP Tunnel Channel provides communication using the HTTP protocol. Core Impact agents can use this communication channel to connect through an HTTP proxy verifying the presence of a valid HTTP communication.

A typical use scenario for this channel would be an external penetration test where the tested workstations can only browse the Internet through a protocol validating proxy.

Technical Details

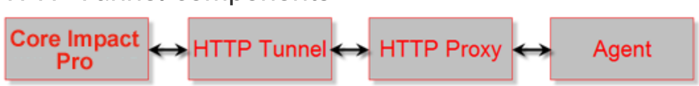
Similar to agents using the HTTP Connect channel (see HTTP Connect Channel), these agents will automatically get connection settings from Internet Explorer.

Agents use GET requests to read data from the console and send data back using POST requests. These requests use "application/x-www-form-urlencoded" as their MIME Content-Type. In order for communication through a proxy to succeed, the proxy has to allow GET, POST, and the "application/x-www-form-urlencoded" Content-Type.

If the proxy is filtering "application/x-www-form-urlencoded" content, the agent will not be able to communicate back to the console. This situation should be rare, as this content type is used by regular web forms.

Exploits implementing this method use a helper module called "HTTP Tunnel". This module translates between HTTP and the agent protocol in a manner that's transparent to the user.

HTTP Tunnel components



Agents using this method will first connect with their configured HTTP proxy (using IE's proxy settings) and then request an HTTP URL from the HTTP Tunnel. Upon receiving the request, the HTTP Tunnel will translate the HTTP request to the ProxyCall interface and send it to the Core Impact Console.

Crypto Channel

The Crypto Channel provides data encryption and session authentication. Key agreement for communication is performed using RSA and encryption is performed using 256-bit AES.

Each Core Impact workspace has a public-secret-key pair which is used for key agreement in Crypto Channels. Each agent packaged with Crypto will have a copy of the workspace's public-key which will be used to authenticate the Console. This means that only the Console containing the workspace that created the agent will be able to connect to it.

DNS Channel

The addition of the new DNS Channel payload into Core Impact increases the success rate of client-side exploit attempts by using the DNS protocol. DNS provides a number of advantages over other protocols as a communications channel. Most remote exploitation attempts via client-side vulnerabilities aim to attack workstations. Workstations are almost always pre-configured to use an internal DNS server, and this internal DNS server is almost always configured to relay DNS requests for external domains out to the Internet. This means that most internal networks are vulnerable to DNS channeling attacks. Core Impact now leverages this common security design flaw to tunnel the Core Impact agent communications out of the target network and back to the Core Impact host.

DNS also does not require authentication and typically does not need to bypass security controls such as web content filters, whereas HTTP channels often do. Reverse TCP payloads also rely on outbound firewall rules to be mis-configured, and combined with the probability of guessing the open outbound port, the likelihood of the success rate for this payload is reduced dramatically. The new DNS Channel payload is able to bypass all of these security controls in order to escape the internal network. This is an important advance within Core Impact since it means that the chance of successful exploitation is much higher when using the DNS Channel payload, leading to more reliable exploitation. The DNS Channel payload is also smaller than other payloads within Core Impact, allowing it to fit within more exploits without necessarily having to rely on slower more complex techniques such as egg hunters.

Once the agent is installed on the target system, all of the communications back to Core Impact are performed over DNS. All of the features available within the Core Impact agent are made available via the DNS protocol, including an interactive shell, taking screenshots of the victim machine, and installing the pcap plugin to sniff and download network traffic.

There are ways to protect against this type of attack, such as implementing a Split DNS Architecture that will allow organizations to prevent DNS requests from exiting their internal network. This would prevent the DNS probes from leaving the organization and reaching the Core Impact host. Most organizations do not currently use Split DNS (except for larger, more security-aware organizations) and, therefore, this attack has an extremely high success rate. Network IDS systems could also potentially be configured to detect trends of multiple large DNS requests to a single domain.

Contact Core Security

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