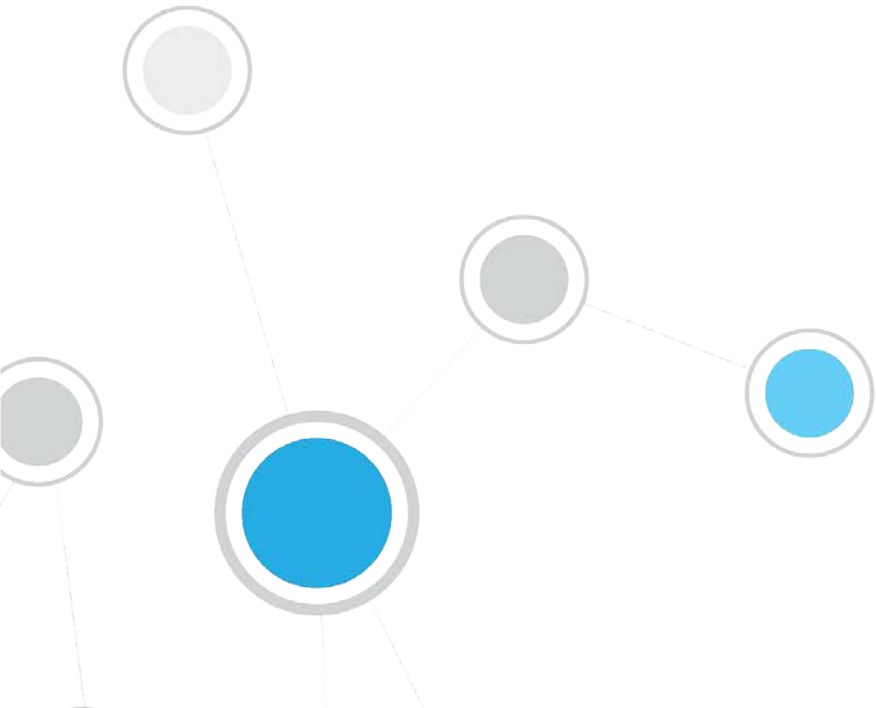
ForeScout CounterACT®

Core Extensions Module: DNS Enforce Plugin

Configuration Guide

Version 1.2



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About the DNS Enforce Plugin

The DNS Enforce Plugin is a component of the ForeScout CounterACT® Core Extensions Module. See Core Extensions Module Information for details about the module.

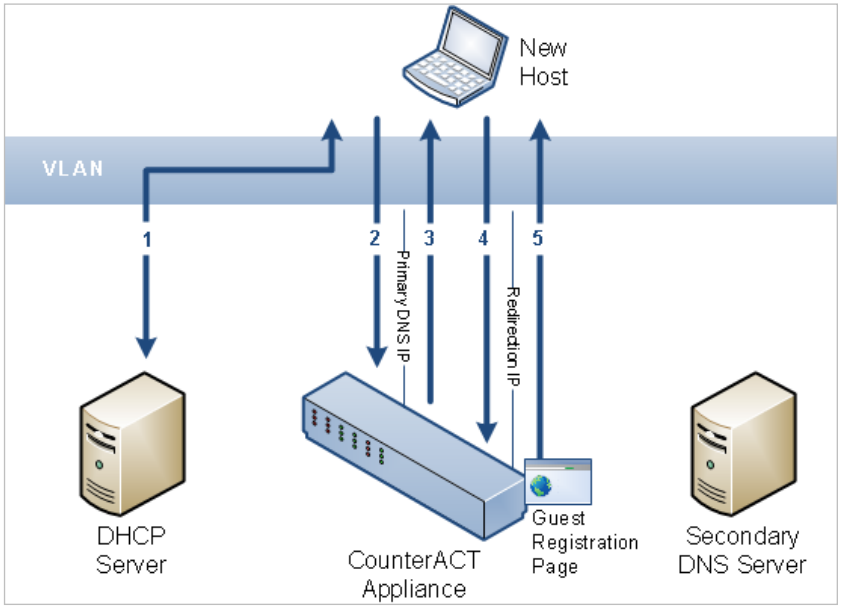
The DNS Enforce Plugin lets CounterACT implement HTTP-based policy actions such as *HTTP Notification* and *HTTP Redirection to URL* in cases where stateful traffic inspection is not possible. This is relevant, for example, with a remote site or an unmanaged network segment.

The plugin will redirect a guest machine connecting to your corporate network to a predefined location if and only if there is an active HTTP-based policy action associated with the machine. If a guest machine is redirected, an application, such as a web browser, interacts with name servers through a domain name resolver. A resolver is an application program that resides on the user workstation and sends requests for DNS information when necessary.

As opposed to the Packet Engine (the engine that runs the CounterACT device), the DNS Enforce Plugin requires that you define a Target IP address (not the CounterACT management IP) and explicitly configure it as the primary DNS server in order to implement HTTP-based actions. The plugin will use the specified Target IP to intercept DNS requests and respond when necessary with the address specified in the HTTP-based action. If these conditions are not met, the response of CounterACT forces the guest machine to resolve the address using one of the secondary DNS servers.

When the plugin is running, HTTP redirection interactions proceed as follows:

1. A host connects to the network and submits a DHCP request. The DHCP server response points to the Target IP address as the primary DNS server.
2. The host submits a DNS resolution request (for example *www.example.com*) to its primary DNS server - the plugin-provided network interface using the custom-defined Target IP address.



3. CounterACT examines the DNS request. If a policy indicates HTTP redirection for this host, CounterACT responds with a redirection IP address (for example, guest registration using the *HTTP Login* action will redirect the resolving endpoint to CounterACT's captive portal address).

   The plugin will not always redirect endpoints browsing via an HTTP proxy. Specifically, if the proxy is specified as an IP address.

4. The host sends its HTTP/HTTPS request to the target IP it received – the redirection IP address. The plugin receives the request and redirects it according to the specific HTTP action.
5. As in standard HTTP redirection, the CounterACT Appliance examines the host information in the request, and serves the page required by the applicable policy.

What to Do

You must perform the following to work with this plugin:

- Verify that requirements are met. See Requirements for details.
- Configure a redirection target and other plugin behavior for the CounterACT Appliance. See Configure the Plugin for details.
- For every network segment requiring DNS redirection, ensure that the DHCP server configuration uses the Target IP as the primary DNS server.

Requirements

The plugin requires the following CounterACT releases and other CounterACT components:

- CounterACT version 8.0.
- Endpoint Module version 1.0 with the HPS Inspection Engine running.
- The plugin-specified Target IP address must be defined in the DHCP server as the primary DNS server.
- An active Maintenance Contract for CounterACT devices is required.

Configure the Plugin

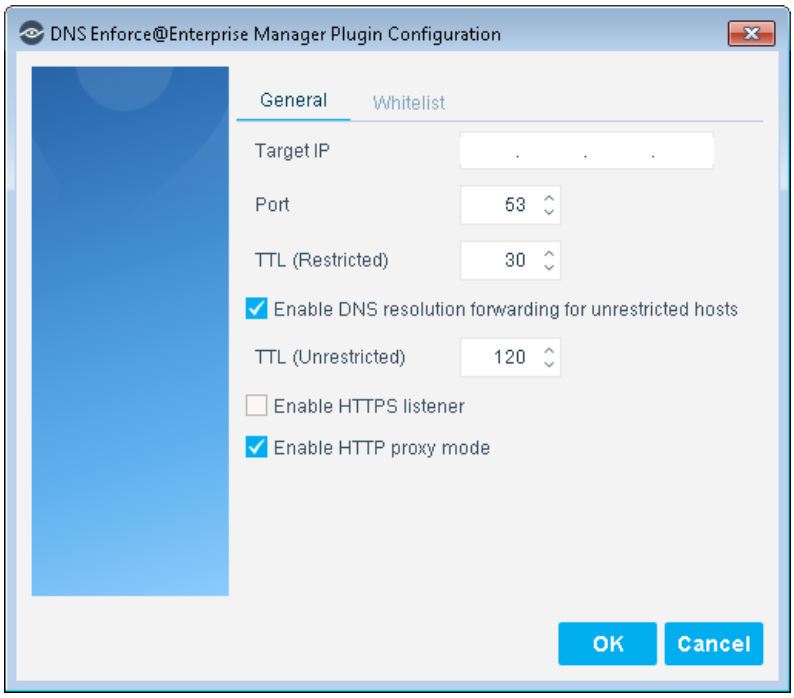
This section describes how to configure the plugin.

To configure the plugin:

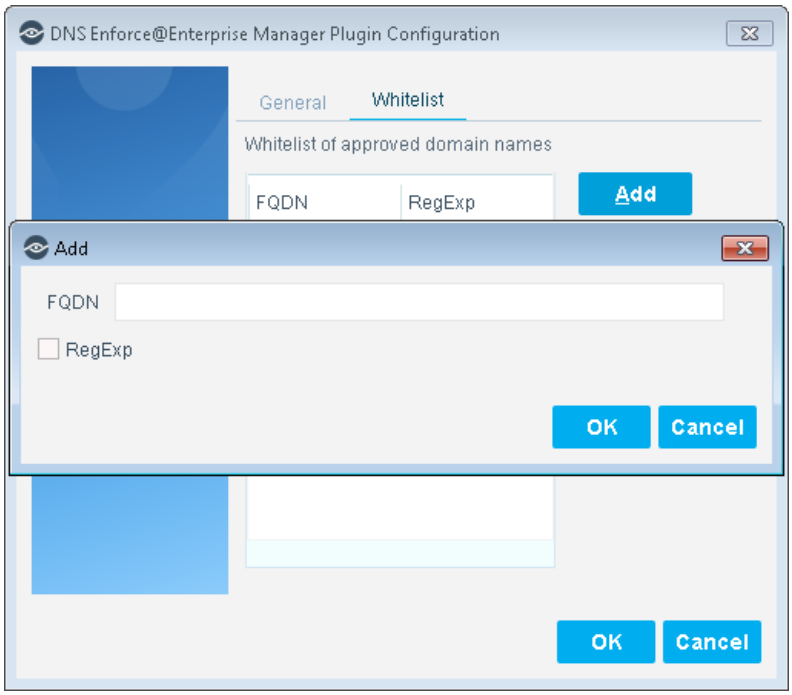
1. In the CounterACT Console, select **Options** from the **Tools** menu. The Options pane opens.
2. Open the **Modules** pane and select **Core Extensions > DNS Enforce**.

3. Select **Configure**. If this is an Enterprise Manager, select the CounterACT device on which you want to implement the redirect behavior and select **OK**.

   The Plugin Configuration dialog box opens.



4. In the **General** tab, specify values for the following parameters:
   - Target IP
   - Port Information
   - Time to Live Interval
   - Forwarding DNS Mode
   - HTTPS Listener
   - HTTP Proxy Mode
5. In the **Whitelist** tab, add any approved domain names. See Whitelist of Excluded Domain Names.



6. Select **OK**.

Target IP

The Target IP is used by the plugin to dynamically create a network interface on the appliance, to provide the following two services:

- DNS queries received on that interface will be examined to determine if redirection is needed (if an HTTP-based action is pending for the endpoint).
- The Target IP also serves as a landing page for the redirect to the CounterACT HTTP action page.

The specified Target IP address must be:

- Free/unassigned by any network connected device.
- Different from the management IP address.
- On the same VLAN as the CounterACT management interface and reachable from remote devices (routed).

Port Information

DNS generally uses port 53 (default value) to complete requests. In rare cases you may want to modify the port settings to align with the network configuration.

Time to Live Interval

You can configure the time to live (TTL) interval that is included in the DNS resolve response. This value, in seconds, typically helps the resolver know the validity period of the result.

When caching is enabled on the endpoint, endpoints tend to use the cached value rather than retrieve it from the name server again. Typically, TTL intervals are very long (1-3 days) and would prevent the DNS Enforce Plugin from effectively restricting endpoints. If, for example, the TTL is 3 days, the endpoint will repeatedly assume that the address resolved by CounterACT is the server address of *www.example.com* long after the user successfully completed the guest login or compliance remediation steps.

Since the length of this interval depends upon whether the endpoint is redirected or not, configure a separate TTL interval for each category of endpoint, as follows:

- ***Restricted endpoints:*** A restricted endpoint is an endpoint having an HTTP-based policy action applied to it. The TTL interval value should be short enough so that endpoints do not continue to use cached values after they are released by user actions (user confirms message, successfully logs in, etc.), but long enough to avoid unneeded repetition that can potentially cause DNS Server overload. The default value is 30 seconds.
- ***Unrestricted endpoints:*** The TTL interval value should be short enough so that endpoints that are not subject to an HTTP action at the time of DNS resolution can be redirected later, if needed. The default is 120 seconds.

  *The **TTL (Unrestricted)** option is only applicable when Forwarding DNS Mode is selected.*

Forwarding DNS Mode

You can configure how to respond to requests coming from hosts that do not have an HTTP-based policy action applied to them (unrestricted hosts).

You can configure the plugin to respond in one of the following two ways:

- Forward requests to an upstream DNS server(s), and limit the TTL of responses.
- Respond to such hosts with a *DNS:Not Implemented* message.

If you select the *Enable forwarding DNS mode for unrestricted hosts* checkbox in the plugin configuration General tab, the plugin will forward requests to an upstream DNS server. If you clear the checkbox, you will need to include an additional IP address in the internal network list of DNS servers as a secondary server (in addition to the first DNS server address, which is the Target IP).

By selecting this option, the plugin loses the ability to affect the Time to Live Interval of resolution responses.

HTTPS Listener

You can enable or disable the HTTPS listener. Enabling the HTTPS listener effectively allows HTTPS access for hosts that have an HTTP-based policy action applied to them (restricted hosts). This option is disabled by default, meaning that HTTPS access is blocked by default.

When the plugin is used to implement HTTP actions, using a signed SSL certificate will not prevent endpoint users from receiving a browser security warning when they use HTTPS. Ensuring that the HTTPS listener is disabled will prevent the browser security warning from appearing by blocking HTTPS access.

HTTP Proxy Mode

You can proxy HTTP requests of unrestricted endpoints to ensure that endpoint users redirected by an HTTP action can access URLs containing the domain name that they browsed to.

After HTTP actions are successfully applied, endpoint users may be unable to access URLs containing the original domain name that they browsed to for an extended period of time because the DNS resolution is cached. For example, users who originally browsed to https://www.google.com were also unable to access https://www.google.com/preferences. Instead, an HTTP 404 error message appears.

This may occur as long as the original DNS resolution was cached on the endpoint. Many versions of Internet Explorer cache DNS resolutions indefinitely, ignoring the time-to-live (TTL) interval of the resolution. In such a case, the only way to circumvent this issue was for the end user to restart the browser.

Enabling this option may slightly increase the load on the plugin, potentially causing slower performance.

Whitelist of Excluded Domain Names

Even while the DNS Enforce Plugin is actively enforcing HTTP-based actions, you may want to allow access to certain corporate or other business essential internet sites. This can be performed by creating a whitelist of DNS redirect exceptions.

Exceptions must be defined as absolute, fully qualified domain names (FQDN), specifying all domain levels of the address.

You can use regular expressions to more easily manage the whitelist by implicitly including many sites or subdomains. To use a regular expression in the FQDN, select the **RegExp** checkbox. If selected, all characters entered will be evaluated according to regular expression syntax. Otherwise, only addresses that explicitly match the string will be excluded.

The DNS Enforce Plugin list of excluded domain names is independent from the general HTTP Redirect Exceptions list. Values defined in one list do not automatically appear in the other. These lists should be up-to-date and configured appropriately according to your network setup and requirements. See the section on HTTP Preferences in the CounterACT Administration Guide *for more information. See Additional CounterACT Documentation for information about how to access the guide.*

Verify That the Plugin Is Running

After configuring the plugin, verify that it is running.

To verify:

1. Select **Tools**>**Options** and then select **Modules**.
2. Navigate to the plugin and select **Start** if the plugin is not running.

Core Extensions Module Information

The DNS Enforce Plugin is installed with the CounterACT Core Extensions Module.

The Core Extensions Module provides an extensive range of capabilities that enhance the core CounterACT solution. These capabilities enhance detection, classification, reporting, troubleshooting and more, and include the following components:

- Advanced Tools Plugin
- CEF Plugin
- DHCP Classifier Plugin
- DNS Client Plugin
- DNS Enforce Plugin
- DNS Query Extension Plugin
- Device Classification Engine
- External Classifier Plugin
- Flow Analyzer Plugin
- IOC Scanner Plugin
- IoT Posture Assessment Engine
- NBT Scanner Plugin
- NetFlow Plugin
- Reports Plugin
- Syslog Plugin
- Technical Support Plugin
- Web GUI Plugin

The Core Extensions Module is a ForeScout Base Module. Base Modules are delivered with each CounterACT release.

Components listed above are released and rolled back with the Core Extensions Module.

Refer to the *CounterACT Core Extensions Module Guide* for more module information, for example module requirements, upgrade and rollback instructions. See Additional CounterACT Documentation for information about how to access the module guide.

Additional CounterACT Documentation

For information about other CounterACT features and modules, refer to the following resources:

- Documentation Downloads
- Documentation Portal
- CounterACT Help Tools

Documentation Downloads

Documentation downloads can be accessed from one of two ForeScout portals, depending on which licensing mode your deployment is using.

- ***Per-Appliance Licensing Mode*** - Product Updates Portal
- ***Centralized Licensing Mode*** - Customer Portal

Software downloads are also available from these portals.

To learn which licensing mode your deployment is using, see Identifying Your Licensing Mode in the Console.

Product Updates Portal

The Product Updates Portal provides links to CounterACT version releases, Base and Content Modules, and Extended Modules, as well as related documentation. The portal also provides a variety of additional documentation.

To access the Product Updates Portal:

1. Go to https://updates.forescout.com/support/index.php?url=counteract.
2. Select the CounterACT version you want to discover.

Customer Portal

The Downloads page on the ForeScout Customer Portal provides links to purchased CounterACT version releases, Base and Content Modules, and Extended Modules, as well as related documentation. Software and related documentation will only appear on the Downloads page if you have a license entitlement for the software. The Documentation page on the portal provides a variety of additional documentation.

To access documentation on the ForeScout Customer Portal:

1. Go to https://forescout.force.com/support/.
2. Select **Downloads** or **Documentation**.

Documentation Portal

The ForeScout Documentation Portal is a searchable, web-based library containing information about CounterACT tools, features, functionality and integrations.

If your deployment is using Centralized Licensing Mode, you may not have credentials to access this portal.

To access the Documentation Portal:

1. Go to www.forescout.com/docportal.
2. Use your customer support credentials to log in.
3. Select the CounterACT version you want to discover.

CounterACT Help Tools

Access information directly from the CounterACT Console.

Console Help Buttons

Use context sensitive *Help* buttons to quickly access information about the tasks and topics you are working with.

CounterACT Administration Guide

Select **CounterACT Help** from the **Help** menu.

Plugin Help Files

1. After the plugin is installed, select **Options** from the **Tools** menu and then select **Modules**.
2. Select the plugin and then select **Help**.

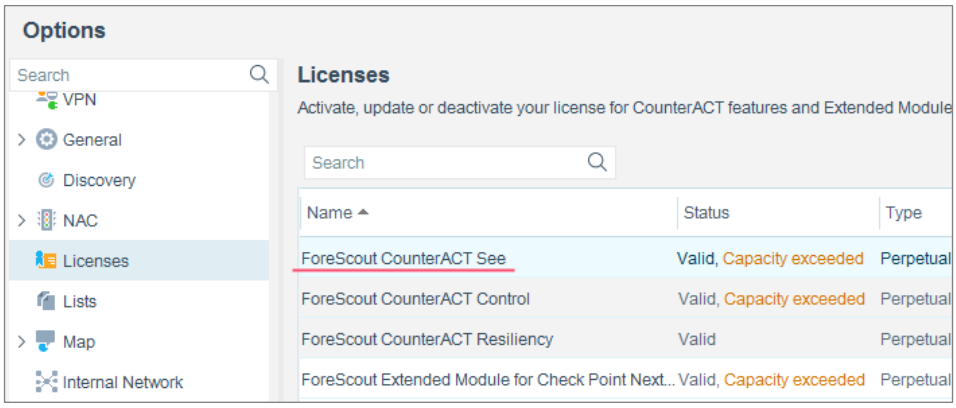
Documentation Portal

Select **Documentation Portal** from the **Help** menu.

Identifying Your Licensing Mode in the Console

If your Enterprise Manager has a *ForeScout CounterACT See* license listed in the Console, your deployment is operating in Centralized Licensing Mode. If not, your deployment is operating in Per-Appliance Licensing Mode.

Select **Options > Licenses** to see whether you have a *ForeScout CounterACT See* license listed in the table.



Contact your ForeScout representative if you have any questions about identifying your licensing mode.

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