

IBM Tivoli Endpoint Manager V8. 2

Client automatic relay selection and relay affiliation



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In this module, you learn about client automatic relay selection and relay affiliation.

Assumptions

- You are familiar with Tivoli® Endpoint Manager 8.2

Assumptions.

An assumption for this module is that you are familiar with Tivoli Endpoint Manager 8.2.

Objectives

When you complete this module, you can perform these tasks:

- Describe advantages for client automatic relay selection
- Describe client automatic relay selection
- Describe advantages for relay affiliation
- Describe relay affiliation

Objectives.

When you complete this module, you can describe and state advantages of client automatic relay selection and relay affiliation.

Client automatic relay selection advantage

- Managing thousands of client settings individually is tedious

Client automatic relay selection advantage.

You can find relays automatically by using a system that does not require manual management. Clients are initially set to manual relay selection and pointed at the main Tivoli Endpoint Manager server. This method does not scale well. Manual selection across the entire estate requires new clients that are mapped to the main server to be manually moved to a better server. Another method is to have a policy action in place to have all clients use automatic relay selection. Using the policy action, when a new client has an initial conversation with the Tivoli Endpoint Manager server, the new client discovers that the client is automatic and can find a better relay independently.

The way client automatic relay selection works (1 of 2)

- If there is a relay with matching subnet, try that relay first

The way client automatic relay selection works (1 of 2).

Client automatic relay selection works by setting the client automatic relay selection setting on the endpoint or setting directly on the console. When the automatic relay selection setting is set, the client develops a weighted list of relays from the server through the action site. The action site is the site that the master operators publish content in. The server publishes special items in the action site. A special item can be **relays.dat**. Every time the action guide site is propagated, a new relays.dat file is sent to all the clients. The clients can choose relays based on what is in the relays.dat file, which is a list of all the relays.

The way client automatic relay selection works (2 of 2)

- Rounds of ICMP echo requests (pings) at an incrementing Time to Live (TTL) to identify what relays are close
 - A list of all registered relays is sent from relays.dat
 - Three rounds of pings at TTLs of one, two, and three
 - Two rounds of pings at TTLs of 4 - 7 and one round at TTL >7
 - Some TTLs get skipped beyond TTL of 10

The way client automatic relay selection works (2 of 2).

When automatic relay selection is set, rounds of ping requests at an incrementing Time to Live (TTL) are sent to measure traffic hops on routers to reach relays to identify the nearby relays. Clients that have only one NIC and matching subnet try to pick the relay that is on that subnet without doing selection first. Otherwise, the selection routine is started. The selection routine takes all relays in relays.dat and sends three rounds of pings with TTLs of hop count one. Any responses are recorded. After all the TTLs of one have expired or come back, analysis is done to decide if there is a relay. If there is a relay and the client successfully registers the relay, the process is complete. If the client is unsuccessful at registering, the client tries to register relays at the same depth. If all relays are unsuccessful at registering, or if there are no relays at that depth, the client tries TTLs of hop count two. If still unsuccessful, the client tries TTLs of hop count three. More rounds of pings are sent at lower TTLs because you are expecting to find something near. Three rounds of pings are used at lower TTLs to increase the chance of finding a close relay and not missing a relay because of a dropped or missed echo request. Two rounds of pings are used for TTLs four through seven. A single ping is used for TTLs seven through ten. Some TTLs beyond ten are skipped, and only 49 total rounds of TTL checks are done, because it is unlikely that a client will find a relay at deeper levels.

Client automatic relay selection explanation (1 of 2)

- ICMP controls can be managed with a task
 - http://support.bigfix.com/bes/misc/besclient_icmp.html

Client automatic relay selection explanation (1 of 2).

ICMP packets can be a burden on the network. If you have more than 3000 endpoints or more than 20 relays, you can use the shown ICMP website to look at suggested settings for ICMP controls. This helps reduce the amount of total ICMP traffic that is generated during selection and the frequency with which selection happens. Every relay has a client installed. A client is required for the relay. You promote the client to be a relay when you install the relay service. The client on the relay does not perform automatic relay selection even if set to automatic relay selection.

Client automatic relay selection explanation (2 of 2)

- Clients on relays manually select 127.0.0.1
- Relays on clients that are set to automatic relay selection do not autoselect
 - Relay-to-relay relationships are best managed directly

Client automatic relay selection explanation (2 of 2).

The 127. 0. 0. 1 loopback is used. The client on the relay uses the relay that is installed with the client. The relays on the clients that are set to automatic relay selection do not autoselect. The relay-to-relay relationships are not controlled by automatic relay selection and are best managed directly. There is a special setting that you can add to allow a relay to perform automatic relay selection, but this setting is not recommended. This setting is not typically published on sites. If this setting is needed, it is best to contact services for help. Relays can form rings of relays, and traffic will never get back to the server. This situation can be bad for the infrastructure.

Why relay affiliation

- For customers with large relay counts, ICMP traffic from unfettered relay selection can become noisy
- Relay affiliation reduces the number of relays for a client

Why relay affiliation.

Relay affiliation is for customers with large relay counts. If a customer has 2000 relays, when one client performs automatic relay selection and finds a hop count of two relays, you have 2000 relays times three rounds times two hops, which equals 12000 pings. You must have 12000 pings for the one client to find the relay, which causes a lot of traffic on your network. If you are in a situation where you have more than 100 relays, you can consider relay affiliation to reduce the total amount of ICMP traffic and to help guide clients to specific relays.

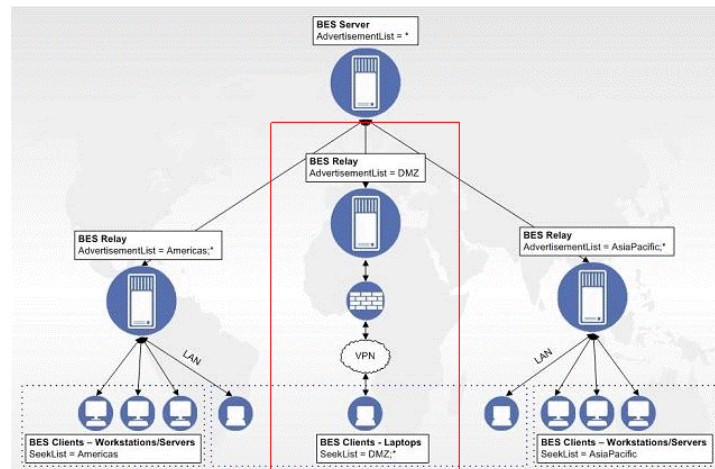
How to use relay affiliation

- Use two settings: one on relays and one on clients
_BESRelay_Register_Affiliation_AdvertisementList
_BESClient_Register_Affiliation_SeekList
- Use semi-colon (;) delimited list of relay affiliation groups
- Visit this website:
<http://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli%20Endpoint%20Manager/page/Relay%20Affiliation>

How to use relay affiliation.

Relay affiliations work by using two settings. One of the settings is on the relays, and one of the settings is on the clients. The relay setting is `_BESRelay_Register_Affiliation_AdvertisementList`. The relay setting is the affiliation groups that this relay will advertise. The advertisement happens through `relays.dat`. When a client looks at `relays.dat`, if the advertisement is set for a given relay, the client can see the groups in `relays.dat`. The client setting is the `_BESClient_Register_Affiliation_SeekList`. The seeklist is an ordered list of groups that the client tries when looking at `relays.dat`. If three of 10000 relays in `relays.dat` are listed as group A and the client seeklist is set to seek group A first, the three relays are pinged first by using a full round of automatic relay selection. If the three relays cannot be found at any TTL, then the next seeklist is used. You can guide endpoints to specific relays or sets of relays by using this method. The link shown describes relay affiliation in detail.

Affiliation in action: DMZ example



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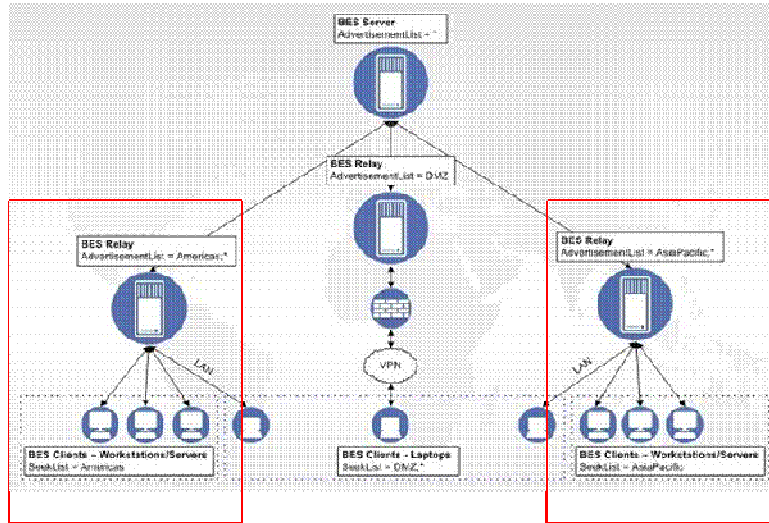
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Affiliation in action: DMZ example.

A relay in DMZ with an AdvertisementList of DMZ is shown. When clients are performing automatic relay selection, the seeklists determine where the clients will try to ping. If the laptop clients have DMZ in their seeklist, the client tries to seek the DMZ relay. Because this is the only relay in the DMZ group, there is a one-to-one ping.

Affiliation in action: Americas and AsiaPacific example



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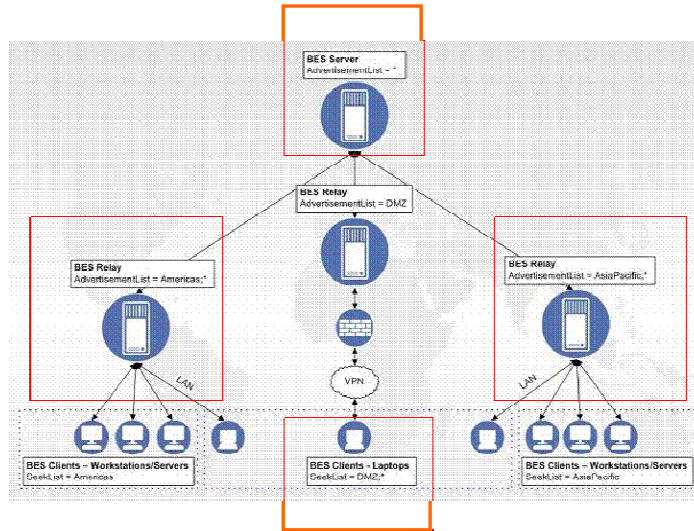
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Affiliation in action: Americas and AsiaPacific example.

The clients that have Americas in their seeklists never ping the DMZ relay, because DMZ is not in their seeklist. The Americas clients only ping the Americas relays. The AsiaPacific clients only ping the AsiaPacific relays.

Affiliation in action: Star relay affiliation



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Affiliation in action: Star relay affiliation.

In the concept of star in relay affiliation, star is the default group. It is also the group that a relay or client participates in if they do not have a setting. Because the laptops are set to star, if they cannot find their DMZ relay, they seek every relay that has a star. The two other relays and the server have the star advertisement. If a relay is not found in the first affiliation group of three, the client does not retry the DMZ relay in the second affiliation group.

Managing relay affiliation with computer settings example

- An example of using computer settings to manage relay affiliation is shown on the next slides

Managing relay affiliation with computer setting example.

On the next slides, you see an example of how you can manage relay affiliation.

Computer settings window

The screenshot illustrates the process of editing computer settings in the IBM Endpoint Manager console. It shows three overlapping windows:

- Computers Table:** A table listing computer details. The first row is highlighted:

Computer ID	Computer Name	OS	CPU	Last Report Time
0008181	TEPCLENT1	WinSP 5.1.2600	2400 MHz Xeon	6/3/2011 2:22:
14554119	TEPCLENT2	WinSP 5.1.2600	2400 MHz Xeon	6/3/2011 2:18:
15266007	TEPCLENTR1	Win2000 5.2.3...	2400 MHz Xeon	6/3/2011 2:25:
13026913	TEPCUPP1	Win2000R2 6.1...	1800 MHz AMD...	6/3/2011 2:27:
- Context Menu:** A right-click menu is open over the table, with 'Edit Computer Settings...' selected. Other options include 'Open', 'Copy Text', 'Copy Text with Headers', 'Select All', 'Add Comments...', 'Remove From Database...', 'View as Group', and 'Add To Manual Group...'.
- Edit Computer Settings Dialog:** A dialog box for editing the selected computer (TEPCLENT1). It shows various settings like 'Relay Selection Method' and 'Relay Selection Method'. The 'Custom Settings' checkbox is checked, and the 'More Options...' button is highlighted.
- More Options Dialog:** A dialog box for custom settings. The 'Custom Settings' checkbox is checked, and the 'Value' field is empty.

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Computer settings window.

Right-click the **Computers** area and select **Edit Computer Settings**. Alternatively, you can right-click a computer and click **Edit Computer Settings**. Click **More Options**. Select **Custom Setting**.

Set up groups of relays to advertise specific affiliation advertisement lists (1 of 2)

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Set up groups of relays to advertise specific affiliation advertisement lists (1 of 2).

Enter a custom setting name and the custom setting values that you need. In this example, you enter the custom setting name **_BESRelay_Register_Affiliation_AdvertisementList** and the custom setting values **NA;EMEA;***. Click the **Target** tab. Highlight the groups of computers for which you want to set the advertisement lists. Highlight the groups of computers for which you want to set the advertisement lists. Highlight **EMEA_Relays** and **NA_Relays**. Click the **Execution** tab. Select the settings to make this a recurring policy action as shown.

Set up groups of relays to advertise specific affiliation advertisement lists (2 of 2)

The screenshot displays the 'Edit Computer Settings' dialog box in the IBM BES console. The 'Messages' tab is active, showing a list of actions. The action 'Change _BESRelay_Register_Affiliation_AdvertisementList_Setting' is highlighted. The 'Reported Computers' table shows two computers: TEMCLIENT1 and TEMCLIENTR1, both completed.

Time Issued	State	% Complete	Name	Site
4/1/2011 3:02:26 PM	Open	100.00% (2/2)	Change _BESRelay_Register_Affiliation_AdvertisementList_Setting	Master Operator Site
4/1/2011 10:01:49 AM	Open	0.00% (0/2)	WARNING: BES Server/Relays Have Too Many Download Folders	BES Support
5/31/2011 11:05:04 AM	Open	100.00% (3/3)	Core Protection Module - Endpoint Deploy (Version 10.5)	Trend Micro Core Protection

The 'Reported Computers' table shows the following data:

Status	Computer ID	Computer Name	OS	CPU
Completed	10088181	TEMCLIENT1	WinXP S.1.2600	2400 MHz Xeon
Completed	15266007	TEMCLIENTR1	Win2003 S.2.3...	2400 MHz Xeon

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Client automatic relay selection and relay affiliation

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Set up groups of relays to advertise specific affiliation advertisement lists (2 of 2).

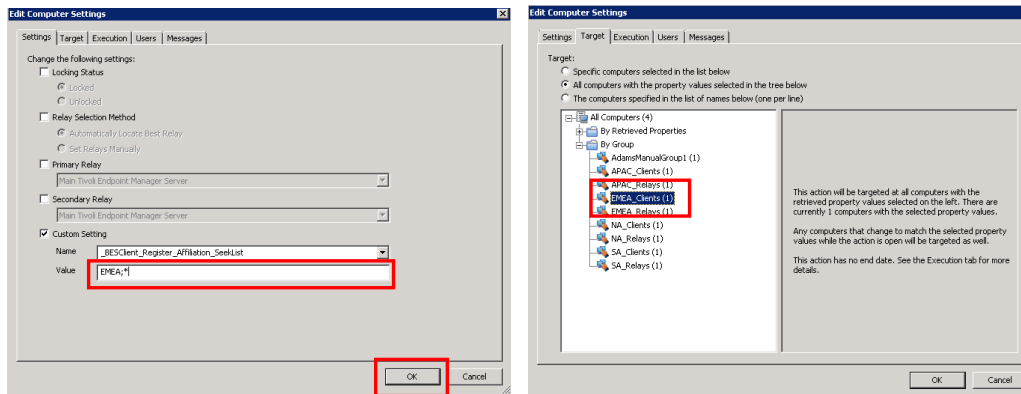
Click the **Users** tab. Use the default settings. Click the **Messages** tab. Use the default settings. Click **OK**. A policy action is created. The policy action is shown. Any relay computers that join the group will have the policy applied, and any relay computers that leave the group will have the policy action revoked.

Repeat these steps for all your groups of relays that must have their unique advertisement list. You will have a policy action open for each group of relays, and each group of relays will have their own unique advertisement list.

Note that when a computer leaves the group, the `_BESRelay_Register_Affiliation_AdvertisementList` setting and its value remains the same, unless you have another policy action to set it to something else or blank it.

Note also that you must verify that the relay computers are not members of more than one of the groups that the advertisement list actions set the advertisement lists on. Otherwise, you have competing policy actions. You must plan ahead of time to determine which relays go into which groups and which groups of relays get which advertisement lists.

Set up your groups of clients and their seek lists



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Set up your groups of clients and their seek lists.

The process for setting the SeekList for your groups of clients is similar to that of setting the AdvertisementLists on your groups of relays. Go through the same steps. However, now you are going to set the `_BESClient_Register_Affiliation_SeekList` setting on your clients, as shown. The rest of the execution criteria is the same as those made for the AdvertisementList action. Click **OK**. You see a policy action created for setting this SeekList for your targeted client group.

Summary

Now that you have completed this module, you can perform these tasks:

- Describe advantages for client automatic relay selection
- Describe client automatic relay selection
- Describe advantages for relay affiliation
- Describe relay affiliation

Summary.

Now that you have completed this module, you can describe and state advantages of client automatic relay selection and relay affiliation.

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