PPPoE Smart Server Selection

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The PPPoE Smart Server Selection feature allows service providers to determine which Broadband Remote Access Server (BRAS) a PPP call will terminate on.

The PPPoE Smart Server Selection feature allows the user to configure a specific PPPoE Active Discovery Offer (PADO) delay for a received PPPoE Active Discovery Initiation (PADI) packet. The PADO delay establishes the order in which the BRASs respond to PADIs by delaying their responses to particular PADIs by various times.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the "Feature Information for PPPoE Smart Server Selection" section on page 11.

Use Cisco Feature Navigator to find information about platform support and Cisco IOS and Catalyst OS software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

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Prerequisites for PPPoE Smart Server Selection

To enable the PPPoE Smart Server Selection feature, you must have Cisco IOS Release 12.2(33)SB or a later release installed on your system.

It is recommended that you be familiar with RFC 2516 before configuring this feature. For more information, see the "Additional References" section on page 9.

Information About PPPoE Smart Server Selection

To enable the PPPoE Smart Server Selection feature you must understand the following concept:

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Benefits of PPPoE Smart Server Selection

The PPPoE Smart Server Selection feature allows Internet service providers (ISPs) to perform the following tasks:

- Optimize their networks by predicting and isolating PPP calls to terminate on a particular BRAS.
- Establish a priority order among the BRASs by configuring varying degrees of delays in the broadband access (BBA) groups on different BRASs.
- Use circuit-ID and remote-ID tag matching with strings up to 64 characters in length.
- Use spaces in circuit-id, remote-id and PPPoE service name.
- Restrict the service advertisements from a BRAS in a PADO message.
- Apply a PADO transmission delay based on circuit-ID, remote-ID, and service name.
- Do partial matching on circuit-id, remote-id and service name.

How to Configure PPPoE Smart Server Selection

This section contains the following procedures:

- Configuring BBA Group PADO Delay (optional)
- Configuring PADO Delay Based on a Remote-ID or Circuit-Id (optional)
- Configuring PPPoE Service PADO Delay (optional)

Configuring BBA Group PADO Delay

Perform this task to allow all calls coming into a defined BBA group on a BRAS to be treated with the same priority. All incoming sessions for a particular group would have their PADO responses delayed by the configured number of milliseconds.

This task allows ISPs to establish a priority order among the BRASs by configuring varying degrees of delays in the BBA groups on different BRASs.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bba-group pppoe** {*group-name* | **global**}
4. **pado delay** *milliseconds*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**bba-group pppoe** {*group-name* | **global**} **Example:** `Router(config)# bba-group pppoe server-selection`	Defines a PPP over Ethernet (PPPoE) profile, and enters BBA group configuration mode. • The **global** keyword creates a profile that serves as the default profile for any PPPoE port that is not assigned a specific profile.
Step 4	**pado delay** *milliseconds* **Example:** `Router(config-bba-group)# pado delay 45`	Sets the time by which a PADO response is delayed for a BBA group. **Note** Setting a value of 0 means no transmission delay. Setting a value of 9999 means setting an infinite time (PADO is never sent).

Troubleshooting Tips

Use the **debug pppoe** command to troubleshoot the PPPoE session.

Configuring PADO Delay Based on a Remote-ID or Circuit-Id

This task uses the **pppoe server** command to define a list of circuit-id and remote-id tags on a BRAS for a particular BBA group. The **pppoe delay** command is extended to specify delays based on the PPPoE circuit-ID or remote-ID tag.

All incoming calls are scanned and if the circuit-ID or remote-ID tags in the PADI match the list on the BRAS, then the PADO response will be delayed by the configured delay time. If there is no delay defined based on the circuit-ID or remote-ID, the per-PPPoE service delay is sought. It it is not found, the delay for the BBA group PADO is used. If no PPPoE delay is found, the PADO is sent without delay.

If there is no match and a BBA group PADO delay is configured under the same BBA group, then the PADO response is delayed by the configured delay time for that BBA group. If a BBA group PADO delay is not configured, then the PADO response is sent immediately.

With PPPoE smart server selection, users can do a partial match for a configured string by using a circuit-ID or remote-ID delay configured for the PPPoE server (Partial matching is searching for parts of strings. It is used to search for similar strings.) The preference for matching the string is described in the task table.

The following task defines a list of circuit-ID and remote-ID tags on a BRAS for a particular BBA group and configures the delay associated with the circuit-ID and remote-ID tags.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bba-group pppoe** {*group-name* | **global**}
4. **pppoe server circuit-id delay** *milliseconds* **string** [**contains**] *circuit-id-string*
5. **pppoe server remote-id delay** *milliseconds* **string** [**contains**] *circuit-id-string*
6. **pado delay circuit-id** *milliseconds*
7. **pado delay remote-id** *milliseconds*
8. **pado delay** *milliseconds*
9. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**bba-group pppoe** {*group-name* | **global**} **Example:** `Router(config)# bba-group pppoe server-selection`	Defines a PPPoE profile, and enters BBA group configuration mode. • The **global** keyword creates a profile that serves as the default profile for any PPPoE port.
Step 4	**pppoe server circuit-id delay** *milliseconds* **string** [**contains**] *circuit-id-string* **Example:** `Router(config-bba-group)# pppoe server circuit-id delay 45 string a b c@example.com`	(Optional) Specifies the delay to be applied based on the PPPoE tag circuit-ID from the client. • The value for the **contains** keyword can find a partial match for this delay statement. • The value for the *circuit-id-string* argument can contain spaces when enclosed with double quotation marks, for example, “a b c@example.com.”
Step 5	**pppoe server remote-id delay** *milliseconds* **string** [**contains**] *circuit-id-string* **Example:** `Router(config-bba-group)# pppoe server remote-id delay 30 string a b c@example.com`	(Optional) Specifies the delay to be applied based on the PPPoE tag remote-ID from the client. • The value for the **contains** keyword can find a partial match for this delay statement. • The value for the *circuit-id-string* argument can contain spaces when enclosed with double quotation marks, for example, “a b c@example.com.”
Step 6	**pado delay circuit-id** *milliseconds* **Example:** `Router(config-bba-group)# pado delay circuit-id 35`	(Optional) Finds a match based on the PPPoE group circuit-ID delay if configured. • If a circuit-ID cannot be matched partially, a delay is applied based on any circuit-ID that is present.
Step 7	**pado delay remote-id** *milliseconds* **Example:** `Router(config-bba-group)# pado delay remote-id 30`	(Optional) Finds a match based on the PPPoE group remote-ID delay if configured.
Step 8	**pado delay** *milliseconds* **Example:** `Router(config-bba-group)# pado delay 45`	(Optional) Uses the group PADO delay configuration. • The PADO delay value is sought if the PADO delay is not found after several attempts.
Step 9	**end** **Example:** `Router(config-bba-group)# end`	Ends the configuration session and returns to privileged EXEC mode.

Troubleshooting Tips

Use the **debug pppoe event** command to verify the smart server PADO delay selection.

Configuring PPPoE Service PADO Delay

Perform this task to specify a delay based on the PPPoE service. A delay is applied to the PADO offering based on the service name match.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map type service** *policymap-name*
4. **pppoe service** *policymap-name* **[delay]** *seconds*
5. **exit**
6. **bba-group** [**global** | *profile-name*]
7. **virtual template** *interface-number*
8. **service profile** *policymap-name seconds*
9. **service name match**
10. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**policy-map type service** *policymap-name* **Example:** `Router(config)# policy-map type service serv3`	Places the router in service policy map configuration mode, and defines the name of service policy map.
Step 4	**pppoe service** *policymap-name* [**delay**] *seconds* **Example:** `Router(config-service-policymap)# pppoe service x delay 100`	Defines the service name to be advertised to the PPPoE client, and sets the delay time for the PPPoE service name.
Step 5	**exit** **Example:** `Router(config-service-policymap)# exit`	Exits service policy map configuration mode.

	Command or Action	Purpose
Step 6	**bba-group** [**global** | *profile-name*] **Example:** `Router(config-bba-group)# bba-group global`	Defines a PPPoE profile, and enters BBA group configuration mode. • The **global** keyword creates a profile that serves as the default profile for any PPPoE port.
Step 7	**virtual template** *interface-number* **Example:** `Router(config-bba-group)# virtual template 20`	Specifies the virtual template interface number for the BBA group.
Step 8	**service profile** *policymap-name seconds* **Example:** `Router(config-bba-group)# service profile serv 3`	Specifies the subscriber profile to be associated with the BBA group and the seconds for the service profile.
Step 9	**service name match** **Example:** `Router(config-bba-group)# service name match`	Matches the requested tag for the PPPoE global group. **Note** The **service name match** command must be configured per the PPPoE service delay. The requested service by the client should also be configured on the BRAS to ensure PADO response from the BRAS.
Step 10	**end** **Example:** `(config-bba-group)# end`	Returns to privileged EXEC mode.

Troubleshooting Tips

Use the **debug pppoe event** command to verify the service name match and PADO delay for a PPPoE service.

Configuration Examples for PPPoE Smart Server Selection

This section contains the following examples:

Configuring BBA Group PADO Delay: Example

The following example shows how to configure a BBA group for PADO delay:

```
bba-group pppoe server-selection
pado delay 45
```

Configuring PADO Delay: Example

The following example shows how to match the a b c@example.com string by using a circuit-ID or remote-ID delay configured for a PPPoE server:

```
ppoe server circuit-id delay 45 string a b c@example.com
pado delay circuit-id 35
pppoe server remote-id string remote1
pado delay remote-id 30
pado delay 0
```

The following example shows how to configure PADO delay based on the remote-ID or circuit-ID:

```
pppoe server remote-id delay 20 string contains TEST
pppoe server remote-id delay 10 string XTH
pppoe server remote-id delay 30 string XTH-TEST
pppoe delay remote-id 40
pado delay 50
```

Generally, the first match found in the list is considered for the delay value. If the remote-ID in the client PPPoE tag contains “XTH-TEST”, then the delay value is 20. In this case, the first match succeeds and the configuration never reaches a delay of 30. If the remote-ID in the client PPPoE tag contains “TH-no”, then no match is found.

Configuring PPPoE Service PADO Delay: Example

The following example shows how to configure the PADO delay based on the PPPoE service:

```
policy-map type service XTH-services
pppoe service ILoBr delay 1000
pppoe service xth-service1 delay 500
pppoe service service-nodelay
!
bba-group pppoe SVC-group
virtual-template 1
service profile XTH-services 3
service name match
!
```

Verifying the PPPoE Service Match and PADODelay: Example

The following example shows the output of the service name match and PADO delay for a PPPoE service using the **show pppoe derived group** *group-name* command. This command displays all the PPPoE services for the supported groups and also shows the associated delay for this service.

```
Router# show pppoe derived group SVC-group

Derived configuration from subscriber profile 'XTH-services':
Service names: (<servicename>:<pado-delay>)
ILoBr:1000, xth-service1:500, service nodelay:0
```

Additional References

The following sections provide references related to the PPPoE Smart Server Selection feature.

Related Documents

Related Topic	Document Title
Configuring broadband and DSL	*Cisco IOS Broadband and DSL Configuration Guide*

Standards

Standard	Title
None	–

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 2516	*A Method for Transmitting PPP over Ethernet (PPPoE)*

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Feature Information for PPPoE Smart Server Selection

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for PPPoE Smart Server Selection

Feature Name	Releases	Feature Information
PPPoE Smart Server Selection	12.2(33)SB 15.0(1)M	The PPPoE Smart Server Selection feature allows service providers to determine which Broadband Remote Access Server (BRAS) a PPP call will terminate on. In Cisco IOS Release 12.2(33)SB, this feature was implemented on the Cisco 10000 router. In Cisco IOS Release 15.0(1)M, this feature was implemented on the Cisco 7200 router. The following commands were introduced or modified: **pado delay**, **pado delay (ID tags)**, **pppoe server**.