Modified LNS Dead-Cache Handling

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The Modified LNS Dead-Cache Handling feature allows you to display and clear (restart) any Layer 2 Tunnel Protocol (L2TP) Network Server (LNS) entry in a dead-cache (DOWN) state. You can use this feature to generate a Simple Network Management Protocol (SNMP) or system message log (syslog) event when an LNS enters or exits a dead-cache state. Once an LNS exits the dead-cache state, the LNS is able to establish new sessions.

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 Modified LNS Dead-Cache Handling" section on page 19.

Use Cisco Feature Navigator to find information about platform support and Cisco IOS, Catalyst OS, and Cisco IOS XE 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 Modified LNS Dead-Cache Handling

Before you can provide for the Modified LNS Dead-Cache Handling feature, you must configure a VPDN deployment. For an overview of VPDN deployments, refer to the "VPDN Technology Overview" module.

Information About Modified LNS Dead-Cache Handling

Currently, networks cannot identify the status of a Load Sharing Group (LSG) on a L2TP Access Concentrator (LAC). As a result, it is not possible to know if an LNS is not responding (dead-cache state). An LNS in a dead-cache state causes an LSG to reject a call from an LAC.

Networks also have no method of logging, either though a syslog or SNMP event, when an LNS enters, or is cleared from a dead-cache state.

The Modified LNS Dead-Cache Handling feature allows you to view (identify) and clear (restart) one or more LNS entries in a dead-cache (DOWN) state, and generate either a syslog or SNMP event when an LNS exits or enters a dead-cache state. Once an LNS clears a dead-cache state, the LNS is active and available for new call-session establishments.

To configure the Modified LNS Dead-Cache Handling feature, you should understand the following concepts:

Identifying an LNS in a Dead-Cache State

The Modified LNS Dead-Cache Handling feature introduces the **show vpdn dead-cache** command you can use to display the status of an LNS in an LSG on a LAC and determine if an LNS is not responding (dead-cache state). The **show vpdn dead-cache** command displays the IP address of the nonresponding LNS and a time entry showing how long the LNS has been down.

Clearing an LNS in a Dead-Cache State

The Modified LNS Dead-Cache Handling feature introduces the **clear vpdn dead-cache** command you can use to clear an LNS entry in the dead-cache based on the IP address of the LNS, clear all LNS dead-cache states in a VPDN group, or clear all dead-cache LNS entries. If you clear an LNS based on its IP address, and the LNS is associated with more than one VPDN group, the LNS is cleared in all the associated VPDN groups.

Enabling an SNMP Trap for an LNS Dead-Cache Entry

To enable the generation of an SNMP trap when an LNS enters, clears, or exits a dead-cache state, you must configure the **snmp-server enable traps vpdn dead-cache** command.

If you are a manager responsible for a large number of devices, and each device has a large number of objects, it is impractical for you to poll or request information from every object on every device. SNMP trap-directed notification alerts you without solicitation, by sending a message known as a trap of the event. After you receive the event, you can display it and can choose to take an appropriate action based on the event.

Enabling a Syslog Event for an LNS Dead-Cache Entry

To view a syslog event when an LNS is added, deleted, or cleared from a dead-cache state, configure the **vpdn logging dead-cache** command. You can use syslog events to help troubleshoot networks.

Table 1 lists the syslog messages and their descriptions you can view by using the **vpdn logging dead-cache** command.

Table 1 VPDN Logging Dead-Cache Events

Syslog Message	Description
MM:DD:hh:mm:ss %VPDN-6-VPDN_DEADCACHE_EVENT: LSG dead cache entry <ip-address> added	Added—An entry in the LSG table enters DOWN status, which marks it a dead-cache entry.
MM:DD:hh:mm:ss %VPDN-6-VPDN_DEADCACHE_EVENT: LSG dead cache entry <ip-address> deleted	Deleted—An entry in the LSG table is removed from DOWN status, which deletes its dead-cache entry from the table.
MM:DD:hh:mm:ss %VPDN-6-VPDN_DEADCACHE_EVENT: LSG dead cache entry <ip-address> cleared	Cleared—An entry in the LSG table is manually cleared.

How to Modify an LNS in a Dead-Cache State

This section contains the following procedures:

- Identifying an LNS in a Dead-Cache State, page 2 (optional)
- Clearing an LNS in a Dead-Cache Handling State, page 4 (optional)
- Generating an SNMP Event for a Dead-Cache Handling Event, page 5 (optional)
- Generating a Syslog Event for a Dead-Cache Handling Event, page 6 (optional)

Identifying an LNS in a Dead-Cache Handling State

The following procedure shows how to use the **show vpdn dead-cache** command to display the status of an LNS to determine if it is in a dead-cache state. An LNS in a dead-cache state cannot establish new sessions or calls.

SUMMARY STEPS

1. **enable**
2. **show vpdn dead-cache** {**group** *vpdn-group-name* | **all**}

3. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**show vpdn dead-cache** {**group** *vpdn-group-name* | **all**} **Example:** `Router# show vpdn dead-cache all`	Displays the status of any LNS in a dead-cache state, including how long the entry has been in the dead-cache state.
Step 3	**exit** **Example:** `Router# exit`	Exits privileged EXEC mode.

Example

The following is the output from the **show vpdn dead-cache all** command:

```
Router> enable
Router# show vpdn dead-cache all

vpdn-group          ip address          down time
exampleA            192.168.2.2         00:01:23
exampleB            192.168.2.3         00:01:16
```

What to Do Next

Use the **clear vpdn dead-cache** command to clear an entry from a dead-cache state.

Clearing an LNS in a Dead-Cache Handling State

The following procedure shows how to clear an LNS in a dead-cache state. Once an entry clears from the dead-cache state, the entry is available for new session establishments and calls.

Prerequisites

This procedure should be performed on the LAC.

SUMMARY STEPS

1. **enable**
2. **clear vpdn dead-cache** {**group** *vpdn-group-name* | **ip-address** *ip-address* | **all**}
3. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**clear vpdn dead-cache** {**group** *vpdn-group-name* | **ip-address** *ip-address* | **all**} **Example:** `Router# clear vpdn dead-cache ip-address 10.10.10.1`	Clears the designated LNS from the dead-cache state.
Step 3	**exit** **Example:** `Router# exit`	Exits privileged EXEC mode.

Generating an SNMP Event for a Dead-Cache Handling Event

To generate an SNMP event when an LNS exits or enters the dead-cache state, follow this procedure.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server enable traps vpdn dead-cache**
4. **exit**

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	**snmp-server enable traps vpdn dead-cache** **Example:** `Router(config)# snmp-server enable traps vpdn dead-cache`	Enables the generation of an SNMP event whenever an LNS enters or exits the dead-cache state.
Step 4	**exit** **Example:** `Router(config)# exit`	Exits global configuration mode.

Generating a Syslog Event for a Dead-Cache Handling Event

To generate a syslog event when an LNS enters or exits the dead-cache state, follow this procedure.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **vpdn logging dead-cache**
4. **exit**

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	**vpdn logging dead-cache** **Example:** `Router(config)# vpdn logging dead-cache`	Enables the generation of a syslog event when an LNS enters or exits the dead-cache state.
Step 4	**exit** **Example:** `Router(config)# exit`	Exits global configuration mode.

Configuration Examples for Modified LNS Dead-Cache Handling

The following show an example configuration from the **show vpdn dead-cache all** command:

```
Router> enable
Router# show vpdn dead-cache all

vpdn-group          ip address          down time
exampleA            192.168.2.2         00:10:23
exampleB            192.168.4.2         00:10:16
exampleB            192.168.4.3         00:10:15
exampleB            192.168.4.4         00:10:12
```

The following shows an example configuration to clear an LNS, based on its IP address, from the dead-cache state.

```
Router# clear vpdn dead-cache ip-address 192.168.4.4
Router#
*Sept. 30 22:58:32 %VPDN-6-VPDN_DEADCACHE_CHANGE: LSG dead cache entry 192.168.4.4 cleared

Router# show vpdn dead-cache all

vpdn-group          ip address          down time
exampleA            192.168.2.2         00:10:28
exampleB            192.168.4.2         00:10:21
exampleB            192.168.4.3         00:10:20
```

The following shows an example configuration to clear an LNS group from the dead-cache state.

```
Router# clear vpdn dead-cache group exampleB
Router#
*Sept. 30 22:58:32 %VPDN-6-VPDN_DEADCACHE_CHANGE: LSG dead cache entry 192.168.4.2 cleared
*Sept. 30 22:58:32 %VPDN-6-VPDN_DEADCACHE_CHANGE: LSG dead cache entry 192.168.4.3 cleared
```

```
Router# show vpdn dead-cache all

vpdn-group          ip address          down time
exampleA            192.168.2.2         00:10:31
```

Additional References

The following sections provide references related to the Modified LNS Dead-Cache Handling feature.

Related Documents

Related Topic	Document Title
L2TP	*Layer 2 Tunnel Protocol Technology Brief*

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
Cisco VPDN-MGMT-MIB **Note** In Cisco IOS Release 12.2(31)ZV, the v122_31_zv_trottle does not support the following objects: - cvpdnMultilinkInfo - cvpdnBundleEntry - cvpdnBundleChildEntry	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 2661	*Layer Two Tunneling Protocol (L2TP)*

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. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register on Cisco.com.	http://www.cisco.com/techsupport

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS VPDN Command Reference* at http://www.cisco.com/en/US/docs/ios/vpdn/command/reference/vpd_book.html. For information about all Cisco IOS commands, use the Command Lookup Tool at http://tools.cisco.com/Support/CLILookup or the *Cisco IOS Master Command List, All Releases*, at http://www.cisco.com/en/US/docs/ios/mcl/allreleasemcl/all_book.html.

- **clear vpdn dead-cache**
- **show vpdn dead-cache**
- **snmp-server enable traps vpdn dead-cache**
- **vpdn logging**

clear vpdn dead-cache

To clear and restart a nonresponding (dead-cache state) Local Network Server (LNS), use the **clear vpdn dead-cache** command in user or privileged EXEC mode.

clear vpdn dead-cache {**group** <*group-name*> | **ip-address** <*ip-address*> | **all**}

Syntax Description

group <*group-name*>	Clears all entries in the dead-cache for the specified VPDN group.
ip-address <*ip-address*>	Clears a specified entry in the dead-cache specified by its IP address.
all	Clears all entries in the dead-cache for all VPDN groups.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(31)ZV	This command was introduced.
12.2(34)SB	This command was integrated into Cisco IOS Release 12.2(34)SB.

Usage Guidelines

Use the **clear vpdn dead-cache** command to clear one or more LNS entries in the dead-cache. Once an LNS clears from the dead-cache, the LNS is active and available for new VPDN tunnels. Enter the **clear vpdn dead-cache** on the Local Access Client (LAC) gateway.

The **clear vpdn dead-cache group** command clears all dead-cache entries in the specified VPDN group To create a VPDN group and to enter VPDN group configuration mode, use the **vpdn-group** command in global configuration mode.

The **clear vpdn dead-cache ip address** command clears the specified IP address from all VPDN groups associated with that IP address.

Use the **show vpdn dead-cache** command in global configuration mode on the LNS gateway to display a list of LNS entries in a dead-cache state, including the IP address of the LNS and how long, in seconds, the entry has been in a dead-cache state.

To display an SNMP or system message log (syslog) event when an LNS enters or exits a dead-cache state, you must configure the **vpdn logging dead-cache** command.

Examples

The following example shows how to clear a specified entry in the dead-cache:

```
Router> enable
Router# clear vpdn dead-cache ip-address 10.10.10.1
```

The following example shows how to clear all entries in the dead-cache for a particular VPDN group:

```
Router> enable
Router# clear vpdn dead-cache group example
```

The following example shows how to clear all entries in the dead-cache for all VPDN groups:

```
Router> enable
Router# clear vpdn dead-cache all
```

Related Commands

Command	Description
show vpdn dead-cache	Displays a list of LNS entries in a dead-cache state, including the IP address of the LNS and how long, in seconds, the entry has been in a dead-cache state.
vpdn-group	Creates a VPDN group and enters VPDN group configuration mode.
vpdn logging dead-cache	Enables the logging of VPDN events.

show vpdn dead-cache

To display a list of dead-cache (DOWN) state L2TP Network Servers (LNSs), use the **show vpdn dead-cache** command in user or privileged EXEC mode.

show vpdn dead-cache {**group** <*group-name*> | **all**}

Syntax Description

group <*group-name*>	Displays all entries in the dead-cache for the specified VPDN group.
all	Displays all entries in the dead-cache for all VPDN groups.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(31)ZV	This command was introduced.
12.2(34)SB	This command was integrated into Cisco IOS Release 12.2(34)SB.

Usage Guidelines

Use the **show vpdn dead-cache** command in global configuration mode on the L2TP Access Concentrator (LAC) gateway to display a list of LNS entries in a dead-cache state, including the IP address of the LNS and how long, in seconds, the entry has been in a dead-cache state.

Use the **clear vpdn dead-cache** command in global configuration mode on the LAC gateway to clear the list of LNS entries in the dead-cache. Once the LNS is cleared, the LNS is active and can establish new sessions.

Use the **vpdn logging dead-cache** command in global configuration mode on the LAC gateway to trigger either a syslog or SNMP event when an LNS enters or exits a dead-cache state.

To display an SNMP or system message log (syslog) event when an LNS enters or exits a dead-cache state, you must configure the **vpdn logging dead-cache** command.

Examples

The following example shows how to display the status of the dead-cache for a particular VPDN group:

```
Router> enable
Router# show vdpn dead-cache group example

vpdn-group          ip address          down time
exampleA            192.168.2.2         00:01:23
exampleB            192.168.2.3         00:01:16
```

The following example shows how to display the status of the dead-cache for all VPDN groups:

```
Router> enable
Router# show vdpn dead-cache all

vpdn-group          ip address      down time
exampleA            192.168.2.2     00:01:23
exampleB            192.168.2.3     00:01:16
```

Table 2 describes the significant fields shown in the displays.

Table 2 show vpdn dead-cache Field Descriptions

Field	Description
vpdn-group	The assigned name of the VPDN group using the tunnel.
ip address	The IP address of the LNS.
down time	The amount of time (hh:mm:ss) the LNS has been in a dead-cache state.

Related Commands

Command	Description
clear vpdn dead-cache	Clears the entries in the dead-cache for VPDN groups.
vpdn logging dead-cache	Enables the logging of VPDN events.

snmp-server enable traps vpdn dead-cache

To enable the sending of a Simple Network Management Protocol (SNMP) message notification when an L2TP Network Server (LNS) enters or exits a dead-cache (DOWN) state, use the **snmp-server enable traps vpdn dead-cache** command in global configuration mode. To disable the SNMP notifications, use the **no** form of this command.

snmp-server enable traps vpdn dead-cache

no snmp-server enable traps vpdn dead-cache

Syntax Description

This command has no arguments or keywords.

Command Default

SNMP notification is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.2(31)ZV	This command was introduced.
12.2(34)SB	This command was integrated into Cisco IOS Release 12.2(34)SB.

Usage Guidelines

SNMP notifications can be sent as traps or inform requests. This command enables SNMP trap events.

This command controls (enables or disables) an SNMP message notification when an LNS exits or enters the dead-cache state. SNMP are status notification messages that are generated by the routing device during operation. These messages are typically logged to a destination (such as the terminal screen, to a system buffer, or to a remote host).

You can use the **show vpdn dead-cache** command to view an LNS entry in the dead-cache state.

You can use the **clear vpdn dead-cache** command to clear an LNS entry in the dead-cache state.

Examples

The following example enables the router to send an SNMP message when an LNS enters or exits a dead-cache state:

```
Router(config)# snmp-server enable traps vpdn dead-cache
```

Related Commands

Command	Description
clear vpdn dead-cache	Clears an LNS entry in a dead-cache state.
show vpdn dead-cache	Displays LNS entries in a dead-cache state.

vpdn logging

To enable the logging of virtual private dialup network (VPDN) events, use the **vpdn logging** command in global configuration mode. To disable the logging of VPDN events, use the **no** form of this command.

vpdn logging [**accounting** | **dead-cache** | **local** | **remote** | **tunnel-drop** | **user**]

no vpdn logging [**accounting** | **dead-cache** | **local** | **remote** | **tunnel-drop** | **user**]

Syntax Description

accounting	(Optional) Enables the transmission of VPDN event log messages within an authentication, authorization, and accounting (AAA) accounting record.
dead-cache	(Optional) Enables logging of a Simple Network Management Protocol (SNMP) or syslog event when a Local Network Server (LNS) enters or exits a dead-cache state.
local	(Optional) Enables logging of VPDN events to the system message log (syslog) locally.
remote	(Optional) Enables logging of VPDN events to the syslog of the remote tunnel endpoint.
tunnel-drop	(Optional) Enables logging of VPDN tunnel-drop events to the syslog.
user	(Optional) Enables logging of VPDN user events to the syslog.

Command Default

All VPDN event logging is disabled.

Command Modes

Global configuration

Command History

Release	Modification
11.3T	This command was introduced.
12.1	The **user** keyword was added.
12.2(11)T	The **tunnel-drop** keyword was added.
12.2(15)T	The **accounting** keyword was added.
12.2(28)SB	This command was added.
12.2(31)ZV	The **dead-cache** keyword was added.
12.2(34)SB	This command was integrated into Cisco IOS Release 12.2(34)SB.

Usage Guidelines

This command controls the logging of VPDN events. By default, all VPDN event logging is disabled.

To enable the logging of VPDN events to the syslog of the local or remote tunnel endpoint router, configure the **vpdn logging** command with the **local** or **remote** keyword.

To log VPDN user events or VPDN tunnel-drop events to the syslog, you must configure the **vpdn logging** command with the **user** or **tunnel-drop** keyword.

Configuring the **vpdn logging** command with the **accounting** keyword causes VPDN event log messages to be sent to a remote AAA server in a AAA vendor-specific attribute (VSA). This allows the correlation of VPDN call success rates with accounting records.

Note VPDN event logging to the syslog need not be enabled to allow the reporting of VPDN event log messages to a AAA server.

Configuring the **vpdn logging dead-cache** command enables the VPDN event log to contain a syslog event, when an LNS enters or exits a dead-cache (DOWN) state.

The **snmp-server enable traps syslog** command is used in conjunction with the **snmp-server host** command. Use the **snmp-server host** command to specify which host or hosts receive SNMP notifications. To send SNMP notifications, you must configure at least one **snmp-server host** command. You may configure as many types of VPDN event logging as you want.

Examples

The following example enables VPDN logging locally:

```
vpdn logging local
```

The following example disables VPDN event logging locally, enables VPDN event logging at the remote tunnel endpoint, and enables the logging of both VPDN user and VPDN tunnel-drop events to the syslog of the remote router:

```
no vpdn logging local
vpdn logging remote
vpdn logging user
vpdn logging tunnel-drop
```

The following example disables the logging of VPDN events to the syslog both locally and at the remote tunnel endpoint, and enables the reporting of VPDN event log messages to the AAA server:

```
no vpdn logging local
no vpdn logging remote
vpdn logging accounting
```

The following example enables VPDN logging for LNS dead-cache SNMP event:

```
vpdn logging dead-cache
```

Related Commands

Command	Description
logging history	Limits syslog messages sent to the router's history table and to an SNMP NMS based on severity.
snmp-server enable traps vpdn dead-cache	Enables logging of an SNMP event when an LNS enters or exits a dead-cache state.
snmp-server host	Specifies the destination NMS and transfer parameters for SNMP notifications.
vpdn history failure	Enables logging of VPDN failures to the history failure table or sets the failure history table size.

Feature Information for Modified LNS Dead-Cache Handling

Table 3 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 3 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 3 Feature Information for Modified LNS Dead-Cache

Feature Name	Releases	Feature Information
Modified LNS Dead-Cache Handling	12.2(34)SB 12.2(31)ZV	Displays and restarts any LNS entry in a dead-cache (DOWN) state. The following commands were introduced by this feature: **clear vpdn dead-cache** and **show vpdn dead-cache**. The following commands were modified by this feature: **snmp-server enable traps** and **vpdn logging**.
VPDN Extended Failover	12.2(34)SB 12.2(31)ZV	Enables a failover with an LNS, if the LAC receives a valid L2TP CDN or STOPCNN message before the LAC establishes a session.
LNS Address Checking	12.2(34)SB 12.2(31)ZV	Allows a LAC, receiving data from an LNS to check the IP address of the LNS prior to establishing an L2TP tunnel. The following command was introduced by this feature: **vpdn security ip address-check**.