

Dying Gasp Support for Loss of Power Supply Through SNMP, Syslog and Ethernet OAM

Dying Gasp — One of the following unrecoverable condition has occurred:

- Power failure or removal of power supply cable

This type of condition is vendor specific. An Ethernet Operations, Administration, and Maintenance (OAM) notification about the condition may be sent immediately.

This document describes the Dying Gasp feature which is used to send dying gasp messsages through SNMP, syslog, or Ethernet Operation, Administration, and Maintenance (OAM) to report the abrupt loss of power to the host platform.

The SNMP server for the SNMP Dying-Gasp message is specified through the **snmp-server host** configuration command. The Ethernet-OAM Dying-Gasp packets are created for interfaces where Ethernet-OAM is enabled.

Table 1: Feature History

Feature Name	Release Information	Feature Description
SNMP Dying Gasp Enhancement	Cisco IOS XE Bengaluru 17.5.1	This feature enables FPGA based effective space utilization between Ethernet OAM and SNMP. Use the **`platform-oam-snmp-dg-enable`** command on Cisco router to configure this feature.
SNMP Dying Gasp support over IPv6 BGP Labeled Unicast Network	Cisco IOS XE 17.15.2	In addition to IPv4, SNMP dying gasp over FPGA is now extended to IPv6 BGP-Labeled Unicast (BGP-LU) network scenarios. This enhancement allows administrators to maintain and monitor their networks more effectively and robustly, ensuring reliable notification and management of critical network events across both IPv4 and IPv6 environments.

SNMP Dying Gasp Support for IPv6 BGP-Labeled Unicast Network

In addition to IPv4, SNMP dying gasp over FPGA now extends to IPv6 BGP-Labeled Unicast (BGP-LU) scenarios. This enhancement ensures reliable transmission of critical notifications during network failures, regardless of the network's protocol version. By supporting both IPv4 and IPv6, this feature provides a more robust solution for maintaining network stability, security, and performance, allowing administrators to effectively manage and troubleshoot both the IPv4 and IPv6 BGP-LU networks.

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Prerequisites for Dying Gasp Support

You must enable Ethernet OAM before configuring Simple Network Management Protocol (SNMP) for dying gasp feature. For more information, see Enabling Ethernet OAM on an Interface.

Restrictions for Dying Gasp Support

- The dying gasp feature is not supported if you remove the power supply unit (PSU) from the system.
- SNMP trap is sent only on power failure or removal of power supply cable.
- The dying gasp support feature cannot be configured using CLI. To configure hosts using SNMP, refer to the SNMP host configuration examples below.
- In the case of power loss on the Cisco ASR-920-24SZ-IM, ASR-920-24SZ-M, ASR-920-24TZ-M Aggregation Services Routers running Cisco IOS-XE Release 3.14.0S and the Cisco ASR-920-12SZ-IM running the Cisco IOS-XE Release 3.16.0S, dying gasp packets are sent to peer routers. However, the system state is not captured in the system logs (syslogs) or SNMP traps.
- The SNMP servers are configured in ascending order. The SNMP server host configured with the lowest IP address has precedence.
- Prior to Cisco IOS XE Bengaluru 17.5.1 the SNMP Dying Gasp trap via FPGA is not supported, when core MPLS interface is routed to the port on the Cisco ASR 920-10SZ-PD, ASR-920-8S4Z-PD, ASR-920-4SZ and ASR-920-12CZ routers in Cisco IOS-XE 16.9.x release.
- The SNMP Dying Gasp is supported on the following routers through FPGA:
  - Cisco ASR-920-24SZ-IM
  - Cisco ASR-920-24SZ-M
  - Cisco ASR-920-24TZ-M

  The maximum number of supported Link-OAM Dying Gasp servers is six. This is chosen dynamically and cannot be configured manually. This is applicable only to the Cisco IOS XE 16.9.4 and Cisco IOS XE 16.9.5 releases.
- Dying Gasp is not supported on default Mgmt-interface for the following routers:
  - Cisco ASR-920-24SZ-IM
  - Cisco ASR-920-24SZ-M

- Cisco ASR-920-24TZ-M
- Cisco ASR 920-10SZ-PD and ASR-920-8S4Z-PD
- Cisco ASR-920-4SZ
- Cisco ASR-920-12CZ-A
- Cisco ASR-920-12CZ-D

This is applicable to releases starting from Cisco IOS XE 16.9.x release.

- The SNMP Dying GASP for Cisco ASR-920-4SZ-A, Cisco ASR-920-4SZ-D, Cisco ASR-920-12CZ-A, Cisco ASR-920-12CZ-D, and Cisco ASR-920-10SZ-PD routers is not supported for Netflow video template in Cisco IOS-XE 16.9.x release. This is because the routers use different and lower FPGA versions than the supported version (0x00040036 and higher).
- Dying GASP is not supported on the following routers for HW-based SNMP:
  - Cisco ASR-920-12SZ-A
  - Cisco ASR-920-12SZ-D
  - Cisco ASR-920-12SZ-IM
- Effective Cisco IOS XE Bengaluru 17.5.1, you can configure 2 SNMP DG sessions and 6OAM sessions using the **`platform oam-snmp-dg enable`** command on the following variants:
  - Cisco ASR-920-24SZ-IM

    Cisco ASR-920-24SZ-M and

    Cisco ASR-920-24TZ-M .
- However, you can configure upto 20 OAM sessions by default, without configuring the **`platform oam-snmp-dg enable`** command.
- You can configure 5 SNMP DG sessions on the following variants:
  - Cisco ASR 920-10SZ-PD
  - Cisco ASR-920-12CZ-A/ASR-920-12CZ-D
  - Cisco ASR-920-4SZ-A/ASR-920-4SZ-D

Note The **`platform oam-snmp-dg enable`** command is not supported on the above variants.

- You can configure SNMP Dying Gasp Sessions on all SNMP Versions.

Configuring SNMP Dying Gasp

Perform this task to create or modify a SNMP Dying Gasp session.

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**platform oam-snmp-dg-enable** **Example:** `Router(config)# platform oam-snmp-dg enable`	Creates an SNMP DG session.
Step 4	**end** **Example:** `Device(config)# end`	Exits global configuration mode.

Example: Configuring SNMP Dying Gasp on a Router

Example to create or modify a SNMP Dying Gasp session.

```
Router> enable
Router# configure terminal
Router(config)# platform oam-snmp-dg enable
Router(config)# end
```

Example: Configuring SNMP Community Strings on a Router

Setting up the community access string to permit access to the SNMP:

```
Router> enable
Router# configure terminal
Router(config)# snmp-server community public RW
Router(config)# exit
```

For more information on command syntax and examples, refer to the Cisco IOS Network Management Command Reference.

Example: Configuring SNMP-Server Host Details on the Router Console

Specifying the recipient of a SNMP notification operation:

```
Router> enable
Router# configure terminal
Router(config)# snmp-server host X.X.X.XXX vrf vrf1 version 2c public udp-port 9800
Router(config)# exit
```

For more information on command syntax and examples, refer to the Cisco IOS Network Management Command Reference.

Dying Gasp Trap Support for Different SNMP Server Host/Port Configurations



Note You can configure up to five different SNMP server host/port configurations.

Environmental Settings on the Network Management Server

```
setenv SR_TRAP_TEST_PORT=UDP port
setenv SR_UTIL_COMMUNITY=public
setenv SR_UTIL_SNMP_VERSION=v2c
setenv SR_MGR_CONF_DIR=Path to the executable snmpinfo.DAT file
```

The following example shows SNMP trap configuration on three hosts:

Configuration example for the first host:

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config)# snmp-server host 7.0.0.149 vrf vrf1 version 2c public udp-port 6264
```

Configuration example for the second host:

```
Router(config)#
Router(config)# snmp-server host 7.0.0.152 vrf vrf1 version 2c public udp-port 9988
```

Configuration example for the third host:

```
Router(config)# snmp-server host 7.0.0.166 vrf vrf1 version 2c public udp-port 9800
Router(config)#
Router(config)# ^Z
Router#
```

After performing a power cycle, the following output is displayed on the router console:

```
Router#
Press ESCAPE for boot options
NVRAM: OK

FPGA SPI Flash: OK
FPGA: OK
Rom image verified correctly

System Bootstrap, Version 1.6(20191125:124452) [ncs520-dev], RELEASE SOFTWARE
Compiled at 2019-11-25 12:44 by regvr

Current image running: Boot ROM1
Last reset cause: RSP-Board
rommon 1 >
=======================================
Dying Gasp Trap Received for the Power failure event:
-------------------------------------------------------
  Trap on Host1
+++++++++++++++
snmp-server host = 7.0.0.149 (nms1-lnx)  and SR_TRAP_TEST_PORT=6264
/auto/sw/packages/snmpr/15.4.1.9/bin> /auto/sw/packages/snmpr/15.4.1.9/bin/traprcv
Waiting for traps.
Received SNMPv2c Trap:
Community: public
From: 7.29.25.101
snmpTrapOID.0 = ciscoMgmt.305.1.3.5.0.2
ciscoMgmt.305.1.3.6 = Dying Gasp - Shutdown due to power loss
-----------------------------------------------------------------------
  Trap on Host2
+++++++++++++++
snmp-server host = 7.0.0.152  (nms2-lnx)  and SR_TRAP_TEST_PORT=9988
/auto/sw/packages/snmpr/15.4.1.9/bin> /auto/sw/packages/snmpr/15.4.1.9/bin/traprcv
Waiting for traps.
Received SNMPv2c Trap:
Community: public
From: 7.29.25.101
snmpTrapOID.0 = ciscoMgmt.305.1.3.5.0.2
ciscoMgmt.305.1.3.6 = Dying Gasp - Shutdown due to power loss
-----------------------------------------------------------------
   Trap on Host3
+++++++++++++++
snmp-server host = 7.0.0.166  (erbusnmp-dc-lnx)  and SR_TRAP_TEST_PORT=9800
/auto/sw/packages/snmpr/15.4.1.9/bin> /auto/sw/packages/snmpr/15.4.1.9/bin/traprcv
Waiting for traps.
Received SNMPv2c Trap:
Community: public
From: 7.29.25.101
snmpTrapOID.0 = ciscoMgmt.305.1.3.5.0.2
ciscoMgmt.305.1.3.6 = Dying Gasp - Shutdown due to power loss
```

Message Displayed on the Peer Router on Receiving Dying Gasp Notification

```
*May 19 21:43:47.904: %ETHERNET_OAM-6-DYING_GASP: The client on interface Gi0/0/0 has
received a Dying Gasp indication from its remote peer (failure reason = remote client power
 failure, action = none)
```

Displaying SNMP Configuration for Receiving Dying Gasp Notification

Use the show running-config command to display the SNMP configuration for receiving dying gasp notification:

```
Router# show running-config | i snmp
snmp-server community public RW
snmp-server host 7.0.0.149 vrf vrf1 version 2c public udp-port 6264
snmp-server host 7.0.0.152 vrf vrf1 version 2c public udp-port 9988
snmp-server host 7.0.0.166 vrf vrf1 version 2c public udp-port 9800
Router#
```