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

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

- Interface error-disable
- Reload
- 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.

Dying GASP Support on PSU

Table 1: Dying GASP Support on PSU

PSU PID	Dying GASP Support
A900-PWR550-D	Yes
A900-PWR550-D-E	Yes
A900-PWR550-A	Yes
A900-PWR900-D2	No
A900-PWR1200-D	No
A900-PWR1200-A	Yes

Prerequisites for Dying Gasp Support

Dying Gasp via ethernet OAM is not supported on Cisco RSP3 module.

You must enable Ethernet OAM on interface that requires Dying Gasp notification via Ethernet OAM. For more information, see *Enabling Ethernet OAM on an interface*.

You must enable SNMP global configurations to get notification via SNMP trap. For more information, see *Configuration Examples for Dying Gasp support via SNMP*.

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 that results in the device to shut down.

- The Dying Gasp support feature cannot be configured using CLI. To configure hosts using SNMP, refer to the SNMP host configuration examples below.

- Dying Gasp via SNMP Trap is *not* supported on Management Port Gig0/Management-interface vrf on Cisco RSP3 module and Cisco ASR 920 routers.

Configuration Examples for Dying Gasp Support

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.

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 mgmt-intf 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 Mgmt-intf version 2c public udp-port 6264
Configuration example for the second host:
Router(config)#
Router(config)# snmp-server host 7.0.0.152 vrf Mgmt-intf version 2c public udp-port 9988
Configuration example for the third host:
Router(config)# snmp-server host 7.0.0.166 vrf Mgmt-intf 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:

> **Note**   This is not supported on Cisco RSP1 and Cisco RSP2 modules.

```
Router#
System Bootstrap, Version 15.3(2r)S, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2012 by cisco Systems, Inc.
Compiled Wed 17-Oct-12 15:00
Current image running: Boot ROM1
Last reset cause: PowerOn
UEA platform with 2097152 Kbytes of main memory
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

```
001689: *May 30 14:16:47.746 IST: %ETHERNET_OAM-6-RFI: The client on interface Gi4/2 has
received a remote failure indication from its remote peer(failure reason = remote client
power failure action = )
```

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 Mgmt-intf version 2c public udp-port 6264
snmp-server host 7.0.0.152 vrf Mgmt-intf version 2c public udp-port 9988
snmp-server host 7.0.0.166 vrf Mgmt-intf version 2c public udp-port 9800
Router#
```

Dying GASP via SNMP Trap Support on Cisco RSP3 Module

Dying GASP via SNMP trap feature is supported on Cisco RSP3 module. The supported modules are A900-RSP3C-200-S, A900-RSP3C-400-S, and RSP3–690t for ASR 907 routers.

For Cisco RSP3 module, CPU holdup time is 6.5 ms for Cisco ASR 900 Series routers. Hence, no packets can be processed in this time by CPU. To avoid this, this feature pre-constructs and installs the event packet in FPGA. When FPGA receives the power failure notificaion, it transfers the pre-constructed packet and thus the packet is forwarded to the required egress interface.

The feature helps to quickly notify a network administrator whenever a node undergoes power shutdown. The node undergoing power shutdown sends a SNMP DG trap message to the configured SNMP server .

The feature is supported on global MPLS and L3VPN. It uses UDP port 49151 as source port and 162 as destination port.

Restrictions for Dying GASP via SNMP Trap Support on Cisco RSP3 Module

- The feature is enabled by default in Cisco RSP3C Port Expansion Mode when the channelized IMs (A900-IMA8(S/T) or A900-IMA8(S/T)1Z) are inserted in the device with the following conditions:

    - For ASR 903 routers, the above-mentioned IMs can be present in any slot.

    - For ASR 907 routers, the above-mentioned IMs need to be present on odd-numbered slots (1, 3, 5, 7, and so on)

    If the above-mentioned IMs are not inserted in the above-mentioned slots, you can still connect by enabling the following command in the global configurations:

    platform dying-gasp-port-enable

    Note The above command only supported in Cisco RSP3C Port Expansion Mode.

    But, some IMs in some slot can no longer be online. The enabled command checks if these slots are free of those IMs, if they are not, it rejects the implementation and error message is displayed. The same scenario is experienced when the command is enabled and incompatible IM is inserted. For information on incompatible IMs, refer the IM Compatibility Tool .

- Only SNMP Dying Gasp traps are received in an event of power failure.

    The SNMP Dying Gasp traps are *only* received for the first five configured SNMP hosts. Only five SNMP server hosts are notified about SNMP trap.

- Generation of SNMP trap for host via management VRF for a Dying GASP event is not supported in Cisco RSP3 Module.

- Reachability to the host must be present and Address Resolution Protocol (ARP) must be resolved before the event.

- Dying GASP support for loss of power supply via syslog and Ethernet OAM is not supported.

Enabling Dying GASP Support on Cisco RSP3 Module

To enable Dying GASP feature for Cisco RSP3 module in Cisco RSP3C Port Expansion Mode:

```
enable
configure terminal
platform dying-gasp-port-enable
end
```

To enable the feature in Cisco RSP3C XFI-Pass Through Mode:

```
enable
configure terminal
license feature service-offload enable
Reload the device. If present, IM A-900-IMA8S goes out of serive. If not, deactivate the
IM.
license feature service-offload bandwidth 10gbps npu-[0 | 1]
Reload the device.
end
```

Verifying SNMP Host Configuration

Use **show snmp host** command to verify all SNMP hosts configured.

```
#show snmp host
Notification host: 20.20.20.21  udp-port: 162   type: trap
user: public    security model: v2c

Notification host: 30.30.30.31  udp-port: 162   type: trap
user: public    security model: v2c

Notification host: 5000::2      udp-port: 162   VRFName: vrf1   type: trap
user: public    security model: v3 noauth

Notification host: 6000::2      udp-port: 162   VRFName: vrf1   type: trap
user: public    security model: v3 noauth

Notification host: 8000::2      udp-port: 162   type: trap
user: public    security model: v2c
```

Verifying SNMP Configurations

Use **show running | i snmp** command to verify all SNMP hosts configured.

```
#show running | i snmp
snmp-server group public v3 noauth
snmp-server community public RO
snmp-server community private RW
snmp-server trap-source Loopback0
snmp-server host 20.20.20.21 version 2c public
snmp-server host 30.30.30.31 version 2c public
snmp-server host 5000::2 vrf vrf1 version 3 noauth public
snmp-server host 6000::2 vrf vrf1 version 3 noauth public
snmp-server host 8000::2 version 2c public
```