

Ping Polling

Feature Overview and Configuration Guide

Introduction

Ping polling lets your device regularly check whether it can reach other hosts on a network.

It works by sending ICMP Echo Requests to a host and waiting for replies sent back. If ping polling indicates that a host's status has changed, then your device responds to the new status. When a host is unreachable, ping polling continues monitoring the host's reachability.

You can configure triggers to activate when ping polling determines that the state of connectivity to the host has changed. For example, you can configure a trigger to run a script that opens and configures an alternative link if the host at the other end of a preferred link becomes unavailable. You could then configure a second trigger to run a script that automatically returns traffic to the preferred link as soon as it is available again.

Products and software version that apply to this guide

This guide applies to all AlliedWare Plus™ products, running version **5.5.4-1.1** or later.

Screenshots in this guide were replicated with the versions below. Please use these Device GUI and software versions together if you wish to replicate this setup.

To access the latest Triggers features, we recommend the following versions:

- Device GUI version **2.18.0** or later
- AlliedWare Plus software version **5.5.4-1.1** or later

Feature support may change in later software versions. For the latest information, see the following documents:

- The product's [Datasheet](#)
- The product's [Command Reference](#)

These documents are available from the above links on our website at alliedtelesis.com.



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How Ping Polling Works

To determine a host's reachability, your device regularly sends ICMP Echo Request packets ('pings') to the host. As long as your device receives ping responses from the host, it considers the host to be reachable. If your device does not receive a reply to a set number of ICMP Echo Requests, it considers that the host is unreachable. It continues to try to ping the device, at an increased rate. After it receives a set number of responses, it considers the device to be reachable again.

- By default, a polling instance sends a ping every 30 seconds as long as it is receiving replies. The frequency of this polling is controlled by the **normal-interval** command.
- When a reply is not received, the polling instance increases the frequency at which it polls the device. This frequency is controlled by the **critical-interval** command, and by default, is set to send a packet every one second. It maintains this higher rate of polling until it has received sufficient consecutive replies.

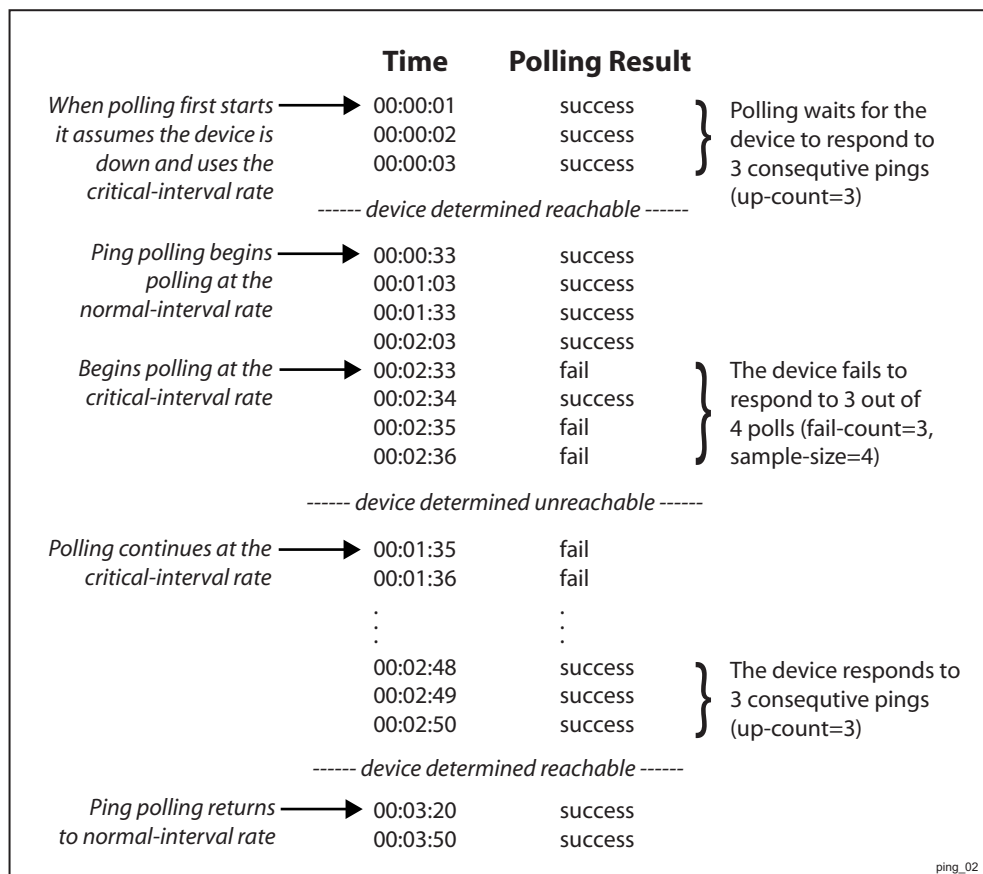
The polling instance determines whether a device is reachable or unreachable based on the settings of the **fail-count**, **sample-size**, and **up-count** commands.

- To determine whether a device is reachable, the polling instance counts the number of failed pings within a set sample size. The sample size is set by the **sample-size** command, and by default is 5 ping responses.
- Within the sample size, the number of failed pings that means that the device is down is set by the **fail-count** command. By default this is set to 5.
- Once a polling instance has determined that a device is unreachable, it must receive a set number of consecutive replies before it changes the device's status back to reachable. This number is configured with the **up-count** command.

The following figure illustrates a polling instance where the device becomes unreachable, then reachable. It uses this configuration:

```
awplus(config-ping-poll)#fail-count 3
awplus(config-ping-poll)#sample-size 4
awplus(config-ping-poll)#up-count 3
awplus(config-ping-poll)#critical-interval 1
awplus(config-ping-poll)#normal-interval 30
```

Figure 1: Interaction between states and parameters for ping polling



On some operating systems, some servers may respond to a ping even if no other functionality is available, and therefore remain in an Up state while malfunctioning.

Respond to status changes

To configure your device to determine and respond to changes in a device's reachability, you will need to:

- create a polling instance to periodically ping the device
- create scripts to run when the device becomes unreachable and when it becomes reachable again
- configure triggers to run these scripts

To set a trigger to activate when a device's status changes, its trigger type must be **ping-poll**. This is with the following command in the trigger's configuration mode:

```
awplus(config-trigger)#type ping-poll <1-100> {up|down}
```

where **up** activates the trigger when the device is reachable, and **down** activates the trigger when the device is unreachable.

If you use triggers to open a backup link to a remote device in the event of the primary link failing (rather than the remote device failing), the backup link and primary link must point to different IP addresses on the remote device. Otherwise, when the backup link points to the IP address that your device is polling, your device receives ping replies through the backup link, considers the device to be reachable again, and attempts to reopen the primary link instead of using the backup link.

Configuring Ping Polling

This section contains:

- "Creating a Ping Polling instance in the Device GUI" on page 5
- "Creating a Ping Polling instance in the CLI" on page 10

This explains how to quickly create a polling instance using the ping polling defaults.

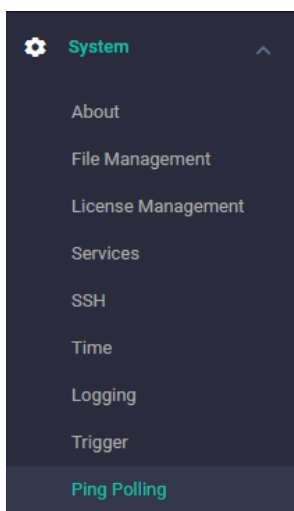
- "Customizing a polling instance" on page 10

This explains how to customize a ping poll and explains the other ping poll commands.

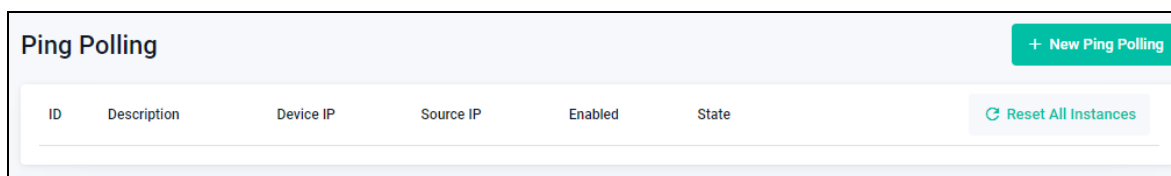
Creating a Ping Polling instance in the Device GUI

From Device GUI version **2.18.0** onwards, you can configure ping polling instances from the Device GUI. The next section describes how to configure a ping polling instance in the Device GUI.

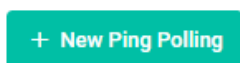
Navigate to **System > Ping Polling** using the side-menu.



The ping polling page will display. Currently, there are no ping polling instances configured on this device. This is the default state.



1. Click **+ New Ping Polling** to create a new ping polling instance.



2. This opens the **New Ping Polling** dialogue box, where you can configure the instance.

New Ping Polling

ID
A unique identifier for a ping polling instance

Device IP
Enter target IPv4/IPv6 address

Source IP
Specify source IP address for ping packets

Description

Normal Interval
30

Critical Interval
1

Fail Count
5

Up Count
30

Sample Size
5

Poll Length
32

Timeout
1

Enable polling instance Enabled

Cancel Apply

3. Enter the following:

- an **ID** for the instance,
- Enter a **Device IP address** - for the device you wish to target or ping with the ping polling instance
- Enter a **Source IP address** for the ping packets to be sent to
- Add a short **description**

ID
A unique identifier for a ping polling instance

Device IP
Enter target IPv4/IPv6 address

Source IP
Specify source IP address for ping packets

Description

4. Continuing down the options, next enter the following:

- Select the **Normal Interval** or leave it as default at 30
- Select a **Critical Interval** or leave it as default at 1
- Select a **Fail Count** or leave it as default at 5
- Select an **Up Count** or leave it as default at 30

Normal Interval	<input type="text" value="30"/>
Critical Interval	<input type="text" value="1"/>
Fail Count	<input type="text" value="5"/>
Up Count	<input type="text" value="30"/>

Then configure the last three settings:

- **Sample Size** or leave it as default at 5
- **Poll Length** or leave it as default at 32
- **Timeout** or leave it as default at 1
- Finally, use the toggle on **Enable polling instance** to either Enable or Disable ping polling

Sample Size	<input type="text" value="5"/>
Poll Length	<input type="text" value="32"/>
Timeout	<input type="text" value="1"/>
Enable polling instance	Enabled <input checked="" type="checkbox"/>
<input type="button" value="Cancel"/> <input type="button" value="Apply"/>	

5. Click **Apply** to save your changes.



Your new ping polling instance will be added to the table.

Ping Polling						+ New Ping Polling
ID	Description	Device IP	Source IP	Enabled	State	Reset All Instances
45	ping polling example			Enabled	Up	↻ ✎ 🗑️

If the source IP can ping the device, then the State column will list as Up.

Adding a Trigger for Ping Polling

This section shows you how to create a trigger with an existing script.

For example, if you have multiple external network connections that communicate with a parent device and ping polling detects that one of the lines is down, you can create a trigger with an attached script to change the business traffic to another pathway using policy-based routing commands. For more information, see the [Policy-Based Routing Feature Overview and Configuration Guide](#).

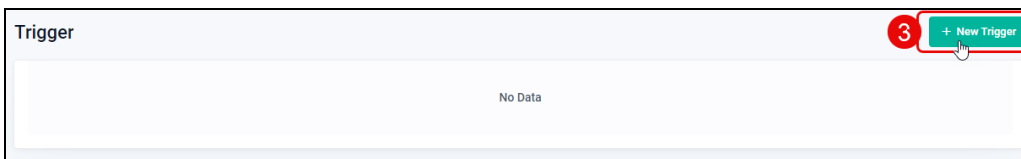
1. First, prepare both a ping polling instance and script.
 - Note the **Ping-polling ID**. You will need this when you create the trigger in order for it to identify the ping polling instance.
 - Create and add a script to your Device from the **System > File Management** page. The script should use commands which redirects traffic to a different path if the connection is down.

Ping Polling	
ID	Description
45	ping polling example

2. Navigate to **System > Trigger**

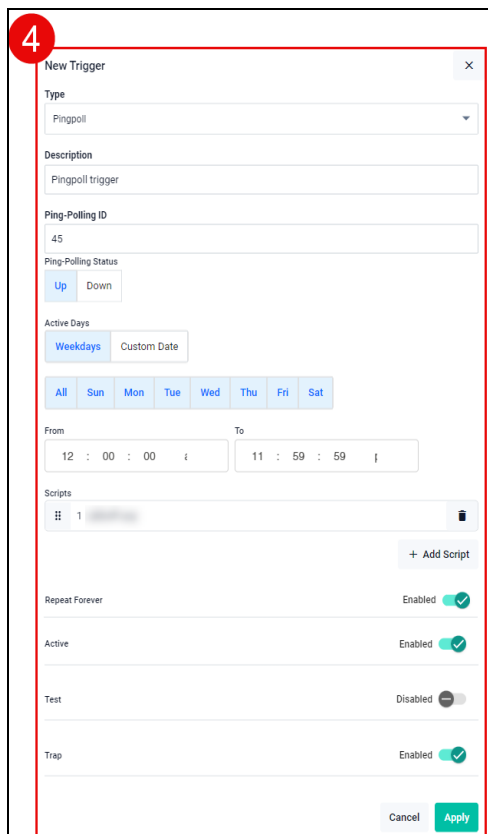
System
About
File Management
License Management
Services
SSH
Time
Logging
Trigger

3. Create a Trigger by clicking **+ New Trigger**

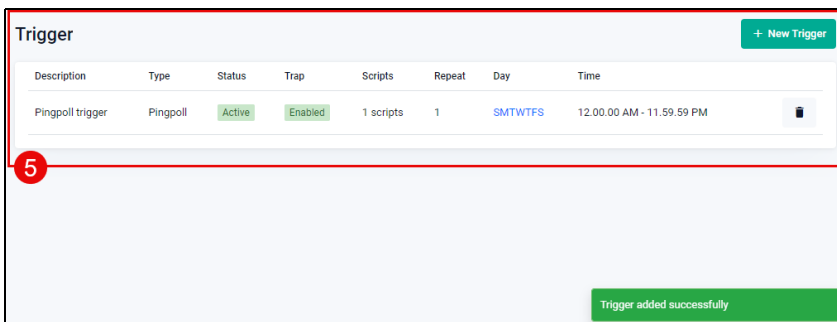


4. Fill out the Trigger information. Put the Ping-polling ID in from your previously created trigger here.

You can add the previously created script by clicking **+ Add Script** in this step.



5. Click **Apply** to save the Trigger.



The trigger is added to your Trigger page, and in this case, the trigger will be activated when the ping polling target can't be reached.

Creating a Ping Polling instance in the CLI

The Ping Polling feature in AlliedWare Plus allows you to easily configure polling instances with a minimum of commands. To configure a ping poll suitable for most network situations:

1. Create a polling instance by using the command:

```
awplus(config)#ping-poll <1-100>
```

The range **<1-100>** identifies the polling instance in the trigger commands and in other ping poll commands. Your device can poll up to 100 IP addresses at once.

2. Set the IP address of the device you are polling by using the command:

```
awplus(config-ping-poll)#ip {<ip-address>|<ipv6-address>}
```

3. Enable the polling instance by using the command:

```
awplus(config-ping-poll)#active
```

4. If desired, set an optional description to identify the polling instance, by using the command:

```
awplus(config-ping-poll)#description <description>
```

You do not need to configure any other commands for most networks, because convenient defaults exist for all other ping poll settings. The following table summarizes the default configuration created.

COMMAND	DEFAULT
Critical-interval	1 second
Fail-count	5
Length	32 bytes
Normal-interval	30 seconds
Sample-size	5
Source-ip	The IP address of the interface from which the ping packets are transmitted
Time-out	1 second
Up-count	30

Customizing a polling instance

Once you've created a polling instance using the **ping-poll** and **ip (ping-polling)** commands, you may wish to customize the polling instance for your network.

Packet size If you find that larger packet types in your network are not reaching the polled device while smaller ones such as ping do, you can increase the data bytes included in the ping packets sent by the polling instance. This encourages the polling instance to change the device's status to unreachable when packet of the size you are interested in are being dropped. To change the number of bytes sent in the data portion of the ping packets, use the command:

```
awplus(config-ping-poll)#length <4-1500>
```

Response timeout The polling instance determines that a device hasn't responded to a ping if one second elapses without a response to the ping. In networks where ping packets have a low priority, you may need to set the allowed response time to a longer time period. To change this, use the command:

```
awplus(config-ping-poll)#timeout <1-30>
```

Polling frequency By default, a polling instance polls a reachable device every 30 seconds. You can change this by using the command:

```
awplus(config-ping-poll)#normal-interval <1-65536>
```

Once the polling instance has determined that a ping has failed, it starts polling the device at the frequency set as the critical interval—by default, one second. To change the frequency set by the critical interval, use the command:

```
awplus(config-ping-poll)#critical-interval <1-65536>
```

The critical interval enables the polling instance to quickly observe changes in the state of the device, and should be set to a much lower value than the normal interval.

Configuring when the device's status changes The number of pings that the polling instance examines to consider a change in state is controlled by the interaction of the **sample-size**, **fail-count**, and **up-count** commands. See "[How Ping Polling Works](#)" on page 3 for an example showing this interaction.

To determine whether a device is reachable, the polling instance counts the number of failed pings within a sample of a set size. The sample size is 5 pings by default.

To change the sample size, use the command:

```
awplus(config-ping-poll)#sample-size <1-100>
```

To change the number of failed pings that the sample must have, use the command:

```
awplus(config-ping-poll)#fail-count <1-100>
```

If the sample size and fail count are the same, the unanswered pings must be consecutive. If the sample size is greater than the fail count, a device that does not always reply to pings may be declared unreachable.

The upcount is the number of consecutive pings that must be answered for the polling instance to consider the device reachable again.

To change this from the default of 30, use the command:

```
awplus(config-ping-poll)#up-count <1-100>
```

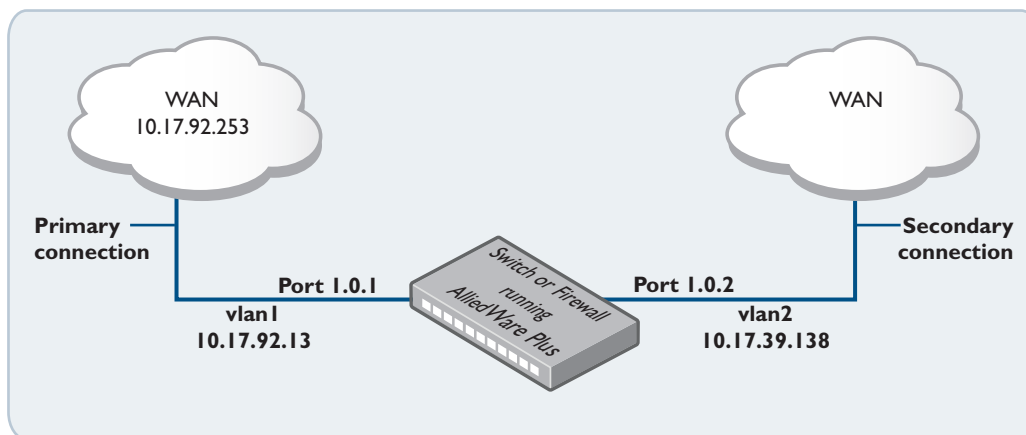
Checking the settings and status To check the settings and status of the polling instance, use the command:

```
awplus(config-ping-poll)#show ping-poll [<1-100>|state {up|down}] [brief]
```

Ping Polling Trigger and Script Example

The scenario In this example, we are using a normal ('primary') WAN connection, and a redundant 'secondary' connection, that we wish to keep disabled in normal operation.

The steps below describes how to use a ping-poll to monitor the state of the primary IP connection, and have the corresponding 'down' and 'up' ping-poll triggers to run scripts that enable and disable the secondary connection respectively.



Step 1. Create the down and up trigger scripts.

The scripts should be created in the built-in editor, or loaded onto the switch/router. Note the default routes and their respective administrative distances (shown in bold).

down.scp

```
enable
conf t
ip route 0.0.0.0/0 10.17.92.254 255
ip route 0.0.0.0/0 10.17.39.1 1
int port1.0.2
no shutdown
```

up.scp

```
enable
conf t
ip route 0.0.0.0/0 10.17.92.254 1
ip route 0.0.0.0/0 10.17.39.1 255
int port1.0.2
shutdown
```

Step 2. Configure the VLANs and assign IP addresses to them.

```
awplus(config)#vlan database
awplus(config-vlan)#vlan 2 state enable
```

VLAN1 is the primary IP connection.

```
awplus(config)#interface vlan1
awplus(config-if)#ip address 10.17.92.13/24
```

VLAN2 is the backup IP connection

```
awplus(config)#interface vlan2
awplus(config-if)#ip address 10.17.39.138/24
```

Step 3. Assign the VLANs to the ports (port 1.0.1 is already in VLAN1 by default) and disable the backup connection.

```
awplus(config)#interface port1.0.2
awplus(config-if)#switchport access vlan2
awplus(config-if)#shutdown
```

Step 4. Now create static default routes towards both connection gateways. Note the respective administrative distances that have been assigned.

```
awplus(config)#ip route 0.0.0.0/0 10.17.92.254 1
awplus(config)#ip route 0.0.0.0/0 10.17.39.1 255
```

Step 5. Next create and activate the ping-poll to monitor the primary connection.

```
awplus(config)#ping-poll 1
awplus(config-ping-poll)#ip 10.17.92.253
awplus(config-ping-poll)#active
```

Step 6. Then finally add and enable the up/down triggers to invoke the scripts.

```
awplus(config)#trigger 1
awplus(config-trigger)#type ping-poll 1 down
awplus(config-trigger)#script 1 down.scp
awplus(config-trigger)#active

awplus(config-trigger)#trigger 2
awplus(config-trigger)#type ping-poll 1 up
awplus(config-trigger)#script 1 up.scp
awplus(config-trigger)#active
```

Note that the triggers are logged along with their accompanying script actions when they are invoked:

```

2015 Dec 3 13:18:44 user.notice awplus TRIGGER[17187]: Trigger 1 activated
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]privilege 1
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]exec-timeout 10 0
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]no length
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]no hostname
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]fib-id 0
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]banner exec AlliedWare Plus (TM) 5.4.5...
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]enable
2015 Dec 3 13:18:44 user.notice awplus IMISH[17193]: [SCRIPT]conf t
2015 Dec 3 13:18:45 user.notice awplus IMISH[17193]: [SCRIPT]int port1.0.2
2015 Dec 3 13:18:45 user.notice awplus IMISH[17193]: [SCRIPT]no shutdown
2015 Dec 3 13:18:45 user.notice awplus IMISH[17193]: [SCRIPT]exit
2015 Dec 3 13:18:47 user.notice awplus NSM[638]: Port up notification received for port1.0.2
2015 Dec 3 13:18:47 user.notice awplus NSM[638]: Port up notification received for vlan2
...
...
2015 Dec 3 13:21:01 user.notice awplus TRIGGER[19034]: Trigger 2 activated
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]privilege 1
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]exec-timeout 10 0
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]no length
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]no hostname
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]fib-id 0
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]banner exec AlliedWare Plus (TM) 5.4.5...
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]enable
2015 Dec 3 13:21:01 user.notice awplus IMISH[19040]: [SCRIPT]conf t
2015 Dec 3 13:21:02 user.notice awplus IMISH[19040]: [SCRIPT]int port1.0.2
2015 Dec 3 13:21:02 user.notice awplus IMISH[19040]: [SCRIPT]shutdown
2015 Dec 3 13:21:02 user.notice awplus NSM[638]: Port down notification received for port1.0.2
2015 Dec 3 13:21:02 user.notice awplus IMISH[19040]: [SCRIPT]exit
2015 Dec 3 13:21:02 user.notice awplus NSM[638]: Port down notification received for vlan2

```

Other useful commands

show trigger counter

```

awplus#show trigger counter
Trigger Module Counters
-----
Trigger activations                               3
Last trigger activated                            2
Time triggers activated today                     0
Periodic triggers activated today                 0
Interface triggers activated today                0
Resource triggers activated today                 0
Reboot triggers activated today                   0
Ping-poll triggers activated today                3
Card event triggers activated today               0
Stack master fail triggers activated today        0
Stack member triggers activated today             0
Stack link triggers activated today               0
ATMF node triggers activated today               0
-----

```

show counter ping-poll

```
awplus#show counter ping-poll

Ping-polling counters
Ping-poll: 1
PingsSent           ..... 2481
PingsFailedUpState  ..... 10
PingsFailedDownState ..... 2251
ErrorSendingPing    ..... 0
CurrentUpCount      ..... 125
CurrentFailCount    ..... 0
UpStateEntered      ..... 3
DownStateEntered    ..... 2
```

For more information on triggers, see the [Triggers Feature Overview and Configuration Guide](#) and **Example 2** in the [Policy-based Routing Feature Overview Guide](#).

Troubleshooting Ping Polling

To disable a polling instance, use the command:

```
awplus(config-ping-poll)#no active
```

The polling instance no longer sends ICMP echo requests to the polled device and the counters for this polling instance are reset.

To clear the counters and change the status of a device to unreachable, enter the Privileged Exec mode and use the command:

```
awplus#clear ping-poll {<1-100>|all}
```

The polling instance changes to the polling frequency specified with the **critical-interval** command. The device status changes to reachable once the device responses have reached the **up-count**.

To start debugging for ping polling, use the command:

```
awplus#debug ping-poll <1-100>
```

Interaction with Other Protocols

Ping polling does not work if the polled host, your device, or any intermediate routers or switches are configured to drop ICMP Echo Requests and Replies.

Ping and Traceroute

Ping and Traceroute are not affected by ping polling. You can enter ping and trace commands at any time and independent of the polling.

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