



PfRv3 Fallback Timer

PfRv3 can move a specific traffic class (TC) from a primary, preferred path to a backup path to optimize performance. Use `fallback-timer` to set the time interval (called timeout) for the next re-evaluation of the primary path. Increasing the time interval causes PfRv3 to wait longer before reassessing. This can help to prevent excessive switching between the primary and secondary paths.

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Feature Information for PfRv3 Fallback Timer

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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

Table 1: Feature Information for PfRv3 Fallback Timer

Feature Name	Releases	Feature Information
PfRv3 Fallback Timer	Cisco IOS XE Gibraltar 16.10.1	<p>The PfRv3 Fallback Timer sets the re-evaluation interval for re-evaluating the primary path after a traffic class has been changed to a backup path.</p> <p>The following commands were modified or added by this feature: fallback-time, show domain vrf master.</p>

Prerequisites for PfRv3 Fallback Timer

- Latest Cisco IOS XE image

Information About PfRv3 Fallback Timer

Overview of Fallback Timer

As part of its intelligent path selection, PfRv3 can move a specific traffic class (TC) from a primary, preferred path to a backup path to optimize performance. After changing the TC to a backup path, PfRv3 re-evaluates the primary path to determine when to return the TC to the primary path. The re-evaluation occurs in cycles of a specific period of time, and continues for as long as the traffic is not on the primary path.

In some situations, if the primary path alternates between meeting the performance requirements specified for the TC and not meeting the requirements, the TC may be switched excessively between the primary and backup paths. This “bouncing” between paths reduces the stability of the TC.

To prevent excessive switching between paths, you can increase the evaluation interval (called timeout) and apply a dampening algorithm.

Figure 1: Default Timeout

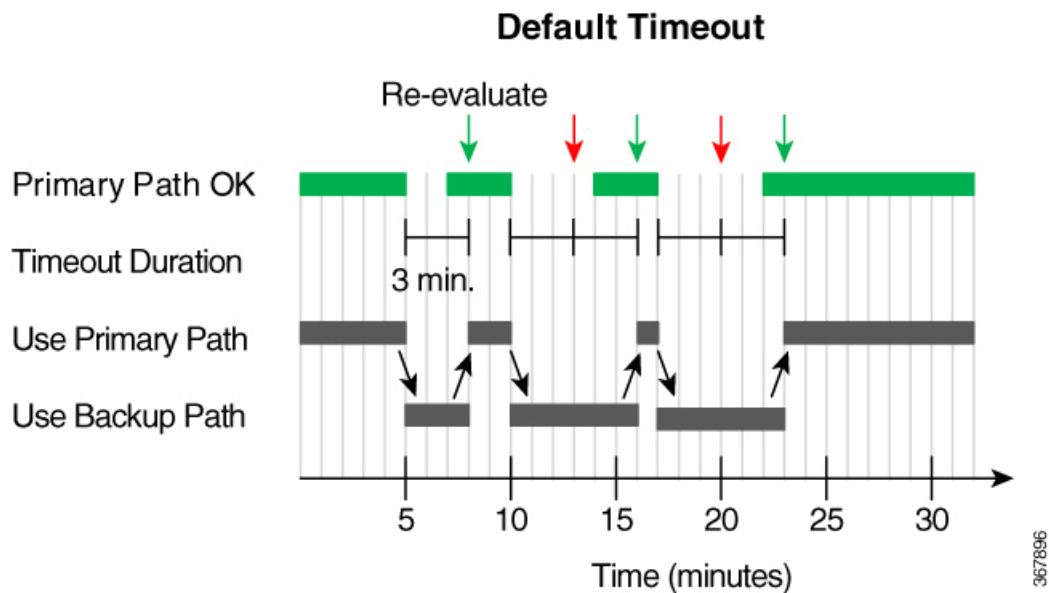
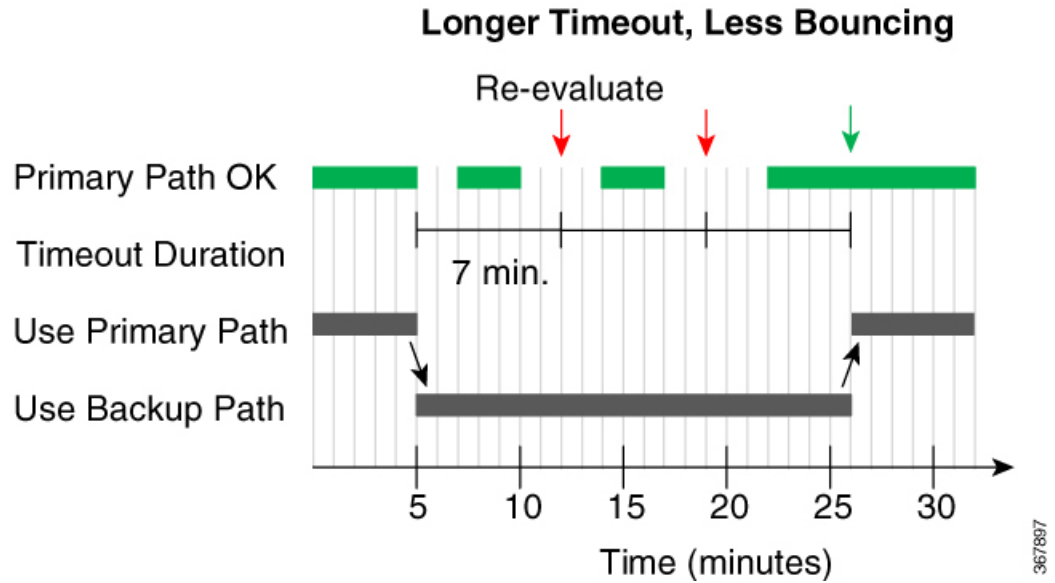


Figure 2: Longer Timeout Interval



Method	Description	Applicable to...
Increase evaluation interval	Use fallback-timer to set the time interval (called timeout) for the next re-evaluation of the primary path. Increasing the time interval causes PfRv3 to wait longer before reassessing. This prevents excessive switching between the primary and secondary paths. Possible values: 1 to 1440 minutes Default: 3 minutes	Global (per VRF) Traffic class
Dampening	Use fallback-timer to enable automatic adjustment of the re-evaluation time interval to prevent excessive switching between paths. When enabled, dampening temporarily increases the evaluation period if a traffic class has been switched more than once from the primary path to a backup path within a short time. It then gradually reduces the evaluation period over time if the primary path meets the performance requirements specified for the traffic class. Possible values: enable, disable Default: enable (if fallback-timer is configured)	Traffic class

How to Configure PfRv3 Fallback Timer

PfRv3 Fallback Timer Configuration

To configure the fallback timer, use:

```
fallback-timer time-in-minutes [dampening {enable/disable}]
```

See the examples below.

Fallback Timer Configuration Priority

Priority of fallback timer configuration:

per class (policy) > global > default

Example

Configuration:

- Traffic class A configuration: **fallback-timer 4 dampening enable**
- Global configuration: **fallback-timer 6**

Result:

Traffic class A will operate with a timeout of 4 minutes and dampening. Other traffic classes will have a fixed timeout (no dampening) of 6 minutes.

Viewing PfRv3 Fallback Timer Status

The **show** commands can be entered in any order.

Before you begin

Perform on hub master controller.

SUMMARY STEPS

1. **show domain** *domain-name* **vrf** *vrf-name* **master policy**
2. **show domain** *domain-name* **vrf** *vrf-name* **master traffic-classes detail**

DETAILED STEPS

Step 1 **show domain** *domain-name* **vrf** *vrf-name* **master policy**

Example

Sections of the output in bold are relevant to fallback timer.

```

Device# show domain default vrf green master policy
No Policy publish pending
Last publish Status : Peering Success
Total publish errors : 0
-----
Global-policy-list:

class SER_CS1 sequence 10
path-preference ISP1 fallback ISP2
fallback timer timeout 5 minutes, dampening Enabled
class type: Dscp Based
match dscp cs1 policy custom
  priority 1 packet-loss-rate threshold 10.0 percent
  priority 1 byte-loss-rate threshold 10.0 percent
  Number of Traffic classes using this policy: 1

class SER_EF sequence 20
path-preference ISP1 fallback ISP2
fallback timer timeout 6 minutes, dampening Disabled
class type: Dscp Based
match dscp ef policy custom
  priority 1 packet-loss-rate threshold 10.0 percent
  priority 1 byte-loss-rate threshold 10.0 percent

```

Step 2 `show domain domain-name vrf vrf-name master traffic-classes detail`

Example

Sections of the output in bold are relevant to fallback timer.

```

Device# show domain default vrf green master traffic-classes dscp cs1 detail

Dst-Site-Prefix: 100.20.0.0/16          DSCP: cs1 [8] Traffic class id:28
Clock Time:                             09:51:00 (CST) 08/24/2018
TC Learned:                             00:10:29 ago
Present State:                          CONTROLLED
Current Performance Status: in-policy
Current Service Provider:  ISP2 path-id:4 since 00:01:50
Previous Service Provider:  ISP1 pfr-label: 0:0 | 0:1 [0x1] for 488 sec
(A fallback provider. Primary provider will be re-evaluated 00:03:11 later)
...

```

Configuration Examples for PfRv3 Fallback Timer

Example: Configuring PfRv3 Fallback Timer Globally

Configure the global fallback timer settings on a hub master controller.

Configure global fallback timer to 4 minutes

```

domain iwan
vrf default
master hub
advanced
fallback-timer 4

```

Disable fallback timer globally

Use **fallback-timer off** to disable re-evaluation of the primary path after a traffic class switches to a backup path. In this mode, traffic does not switch back to the primary path.



Note Consider restoring the fallback timer to the default 3 minutes instead of disabling.

```
domain iwan
vrf default
master hub
advanced
fallback-timer off
```

Example: Configuring PfRv3 Fallback Timer for Traffic Class

Configure the global fallback timer settings on a hub master controller.

Fallback 5 minutes, dampening enabled by default

```
domain iwan
vrf default
master hub
class VOICE sequence 10
match app audio policy voice
path-preference MPLS1 fallback INET1
fallback-timer 5
```

Fallback 10 minutes, dampening disabled

```
class REAL_TIME_VIDEO sequence 20
match dscp cs4 policy real-time-video
match dscp af41 policy real-time-video
path-preference MPLS1 fallback INET1
fallback-timer 10 dampening disable
```

Fallback timer off

Use **fallback-timer off** to disable re-evaluation of the primary path after a traffic class switches to a backup path. In this mode, traffic does not switch back to the primary path.



Note Consider restoring the fallback timer to the default 3 minutes instead of disabling.

```
class LOW_LATENCY_DATA sequence 30
match dscp cs2 policy real-time-video
match dscp af21 policy real-time-video
path-preference INET1 fallback MPLS1
fallback-timer off
```