

HSRP Group Limitation on Catalyst 3550 FAQ

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Introduction

This document addresses the frequently asked questions about Hot Standby Router Protocol (HSRP) group support and limitations on the Catalyst 3550. For more information about HSRP and configuration examples, refer to [Understanding and Troubleshooting HSRP Problems in Catalyst Switch Networks](#).

Q. What is the maximum number of HSRP groups supported?

A. The Catalyst 3550 can only support a maximum of 16 unique group numbers.

Q. What is the maximum number of HSRP interfaces supported?

A. Each of the 16 unique group numbers can be used by 16 consecutive Layer 3 interfaces, which gives a total maximum of 256 HSRP interfaces. The total number that is recommended is 64, but this number depends on the routing protocols and features that are configured on the box. If you configure too many HSRP interfaces, you could cause the CPU load on the switch to become too high, which can have unexpected side effects.

Q. If I need more than 16 interfaces running HSRP, can I reuse a group number?

A. Yes, but due to the hardware design of the 3550, certain rules apply. You can use an HSRP

group number on any of these:

- A single Layer 3 interface
- A group of Layer 3 interfaces whose VLAN IDs are all the same multiple of 16
- A consecutive list of Layer 3 interfaces whose VLAN IDs are all the same multiple of 16

For example, you can use group number 1 on VLANs 16, 17, 18, ...31 and group number 2 on VLANs 32, 33, ...47 and so on. If you have 18 HSRP interfaces (VLANs 1 to 18), you could do this:

```
vlan 1-group 1
vlan 2-group 2
vlan 3-group 3
!--- Output suppressed. vlan 15-group 15 vlan 16-group 16
```

Because you have reached the maximum of 16 group numbers, the next interfaces must reuse group 16, as they are in the same multiple of 16 as VLAN 16:

```
vlan 17-group 16
vlan 18-group16
```

When you configure HSRP interfaces for a large number of VLANs, you should do some planning to determine the HSRP group interfaces to use for the range of VLANs. The next sample configuration table has a single HSRP group for every range of eight VLANs, with a total of 64 VLANs. There are two HSRP group interfaces for each multiple of 16, to allow for a wider VLAN range.

VLAN Range	HSRP Group Interface Number	Multiple of 16 Range in which the HSRP Group Interface Can Be Used
VLAN 1 - VLAN 8	1	1-16
VLAN 9 - VLAN 16	2	
VLAN 17 - VLAN 24	3	17-32
VLAN 25 - VLAN 32	4	
VLAN 33 - VLAN 40	5	33-48
VLAN 41 -	6	

VLAN 48		
VLAN 49 - VLAN 56	7	49-64
VLAN 57 - VLAN 64	8	

For more information on this limitation, refer to the [Understanding HSRP](#) section of [Configuring HSRP](#).

Q. How does this limit apply when I run HSRP on physical interfaces rather than on VLAN interfaces?

A. The same limitation for VLAN interfaces apply when you are using physical interfaces. For VLAN interfaces, the VLAN ID is equal to the VLAN number.

For routed interfaces, the switch automatically assigns a VLAN ID to the interface. This ID begins at the first available VLAN above 1024. To verify which VLAN ID is assigned to a routed interface, issue the **show vlan internal usage** command.

Q. Does this limit apply to all software images?

A. Yes. The limitation is due to the hardware design. However, releases prior to Cisco IOS® Software Release 12.1(12c)EA1 do allow you to configure more than 16 unique HSRP group numbers. When more than 16 HSRP groups are configured and are active at the same time, users might experience connectivity problems in some VLANs. In Cisco IOS Software Release 12.1(12c)EA1 and later, the parser does not allow you to enter such a configuration, and it displays this warning message:

```
%More than 16 standby group entries not supported in this platform.
```

Q. Is this limitation the same as with Catalyst 6500/6000 Supervisor 2-based systems? Does the same workaround apply?

A. No. On Catalyst 6500/6000 Supervisor 2-based systems, not only can you use up to 16 unique HSRP group numbers, but you can use them on as many interfaces as you like. Should you need more than 16 HSRP interfaces, you may use the same HSRP group numbers on multiple interfaces. The Catalyst 3550 can also have more than 16 HSRP interfaces, but the group numbers can not be reused on any interface. The same group number can only be used on an interface whose VLAN IDs are all the same multiple of 16.

Q. Do the HSRP group IDs have to be contiguous? Are there any other requirements?

A. The HSRP group IDs do not have to be contiguous. You can pick any 16 group IDs in the

allowed group ID range (0-255). Only 16 group IDs, however, can be used from that range.

Q. What is the implication of the use of the same HSRP group ID on multiple interfaces?

A. When you define the same HSRP group ID on multiple interfaces, they all share the same HSRP virtual MAC address. In most modern LAN switches, there are no issues because they maintain a per-VLAN MAC address table. However, if your network contains any third party switches which maintain a system-wide MAC address table regardless of VLAN, you may experience problems.

Q. What does the HSRP MAC address look like?

A. The HSRP MAC address is derived from the group number, and looks like this:

```
0000.0c07.acXX
```

XX is the HSRP group number.

Q. I used to be able to configure more than 16 HSRP groups on my Catalyst 3550. I upgraded the switch from Cisco IOS® Software Release 12.1(11)EA1 to 12.1(13)EA1, and now I can not. What has changed?

A. If you have more than 16 HSRP groups, you could trigger connectivity issues. Therefore, such a configuration is not possible as of Cisco IOS® Software Release 12.1(12c)EA1.

Related Information

- [Understanding and Troubleshooting HSRP Problems in Catalyst Switch Networks](#)
- [Configuring HSRP](#)
- [LAN Product Support Pages](#)
- [LAN Switching Support Page](#)
- [Technical Support & Documentation - Cisco Systems](#)