CloudEngine 8800&7800&6800&5800 Series Switches Switches

SVF Technology White Paper

Issue   08

Date   2016-07-20

HUAWEI TECHNOLOGIES CO., LTD.

Huawei Technologies Co., Ltd.

Address:	Huawei Industrial Base
	Bantian, Longgang
	Shenzhen 518129
	People's Republic of China
Website:	http://e.huawei.com

Contents

1 SVF Overview

This section describes the purpose and functions of SVF.

In the traditional access layer networking used in data centers, servers connect to the network through a large number of fixed switches, as shown in Figure 1-1. As the network size expands, increasing network devices are deployed. Network management becomes an important issue in data center infrastructure management. Additionally, large-scale modern data centers require that access switches provide higher port densities for servers.

Figure 1-1 Traditional data center access layer networking
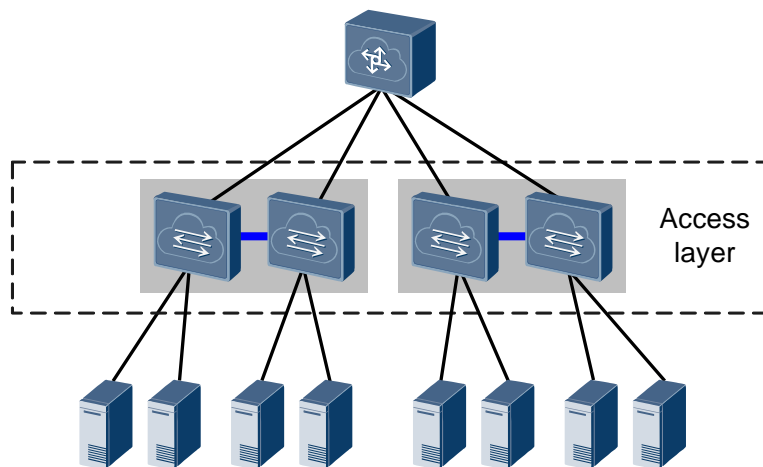
Super virtual fabric (SVF) is a vertical virtualization technology that allows low-cost fixed switches to act as remote interface cards for a parent switch. This technology increases the port density of the parent switch and facilitates centralized switch management, allowing for high-density access and simple management in data centers. Figure 1-2 shows SVF networking at the data center access layer.

Figure 1-2 SVF networking at the data center access layer
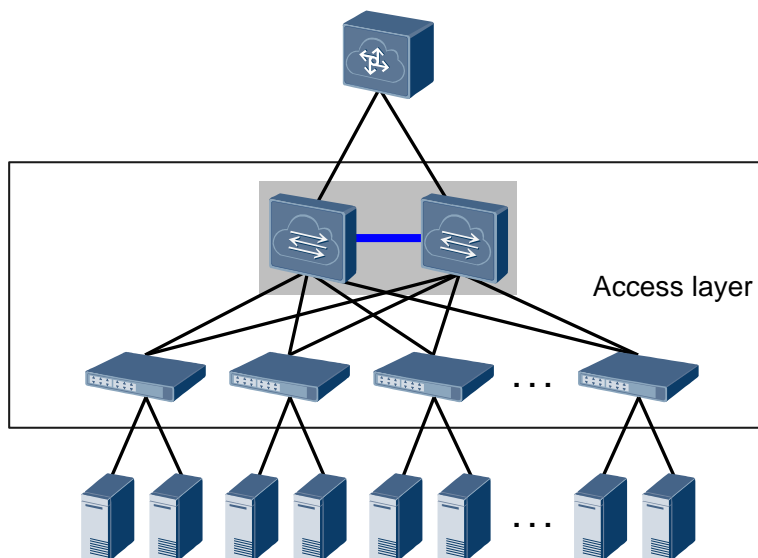
Compared with traditional access layer networking, SVF networking has the following advantages:

- Lower network construction costs: Low-cost switches are used as access switches, so network construction costs are reduced.

- Simpler configuration and management: SVF virtualizes multiple devices into one, reducing the number of nodes to manage. You do not need to deploy complex loop prevention protocols, simplifying network configuration and management.

- Higher scalability and more flexible deployment: When more access ports are required on the network, you only need to add low-cost fixed switches to the network. Moreover, these low-cost switches are deployed near servers, making network deployment more flexible.

2 Principles

2.1 Concepts

Figure 2-1 SVF-related concepts
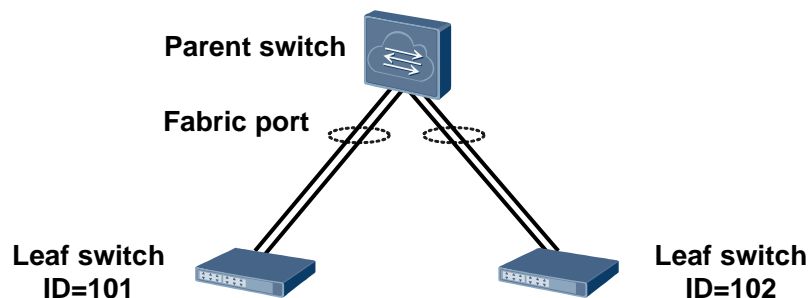
- **Parent/Leaf switch**

  Devices in an SVF system play either of the following roles:

  - Parent switch: acts as the main control unit that controls and manages the entire system.

  - Leaf switch: an extended device that acts as an interface card of the parent switch and connects to servers.

- **Leaf ID**

  A leaf ID is the identifier of a leaf switch. Leaf IDs are used to identify and manage leaf switches in an SVF system. Each leaf switch has a unique leaf ID.

- **Fabric port**

  A fabric port is a logical port that connects a parent switch and a leaf switch. One or more member ports can be added to a fabric port.

2.2 SVF Topology

The parent switch in an SVF system can be a single switch, as shown in Figure 2-2, or an iStack system consisting of two switches, as shown in Figure 2-3. Using a stack of two parent switches can implement redundancy on the control plane of the SVF system. If one parent switch fails, the other one can ensure normal operations of the SVF system.

For details about the iStack feature, see Stack Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Virtualization*.

Figure 2-2 SVF system with a single parent switch
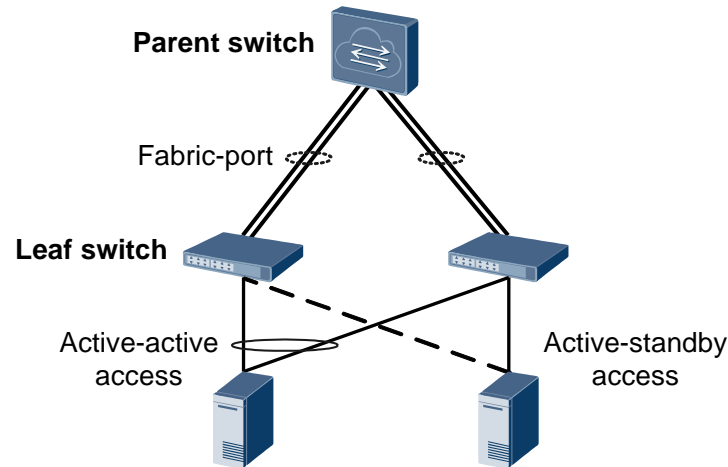
Figure 2-3 SVF system with a stack of two parent switches
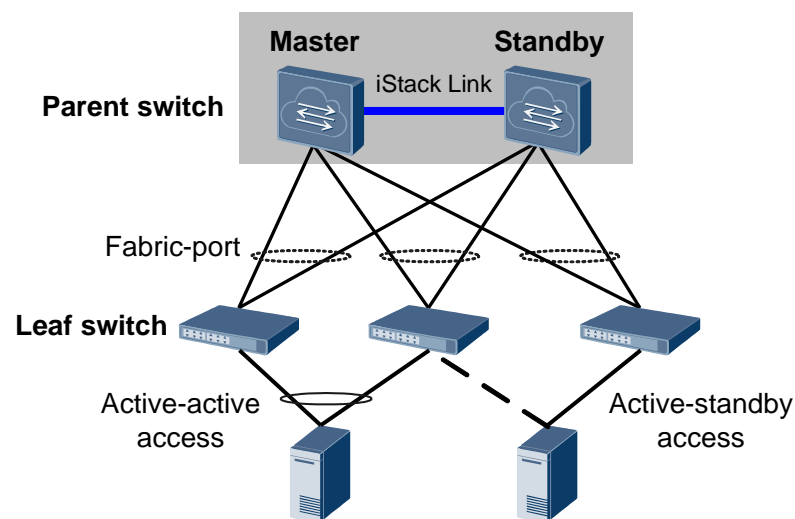
Leaf switches connect to the parent switch through member ports of fabric ports. When two parent switches set up a stack, a leaf switch can connect to one parent switch (in single-homing mode) or two parent switches (in dual-homing mode). Servers can connect to leaf switches in active-active or active/standby mode. The active-active mode is recommended because it can implement load balancing.

In addition to setting up a stack of two parent switches, you can also set up a multichassis link aggregation group (M-LAG) between two SVF systems to ensure high reliability of server uplink traffic. As shown in Figure 2-4, after an M-LAG is set up between two SVF systems, servers can access leaf switches in the two SVF systems in active-active or active-standby mode.

For details about M-LAG, see M-LAG Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches Configuration Guide*.

☐ **NOTE**

The M-LAG function has been supported since V100R005C10.

Figure 2-4 SVF system with an M-LAG
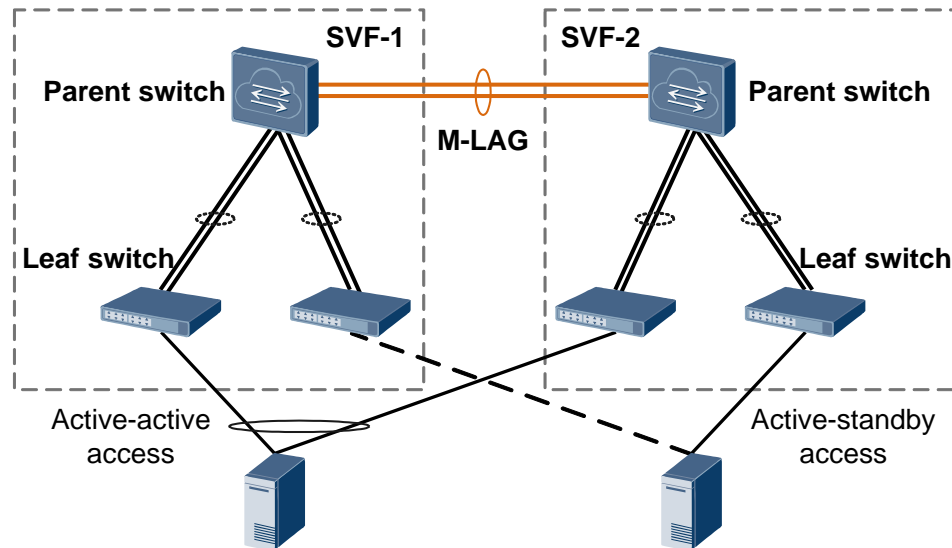
Note that a leaf switch can connect to only the parent switches in the same SVF system. Figure 2-5 shows an example of incorrect connection. If a leaf switch connects to more than one SVF system, only one of the links connected to an SVF system takes effect. (The link that becomes Up first takes effect.)

Figure 2-5 One leaf switch connecting to two SVF systems incorrectly
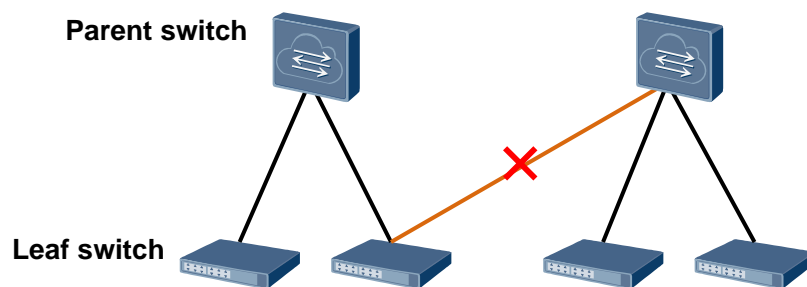
2.3 SVF Setup

Switch Working Modes

Switches that can be used as leaf switches in an SVF system support the following working modes:

- Stack mode: runs as an independent switch. A switch starting in this mode has complete system software and saves a configuration file.

- Leaf mode: runs as a leaf switch in an SVF system. A switch starting in this mode can only connect to a parent switch as an extended interface card. It has no configuration or management functions, and does not save any configuration.

- Auto-negotiation: determines whether to work in stack or leaf mode through auto-negotiation.

By default, a switch negotiates with the parent switch to determine its working mode, as shown in Figure 2-6. If a switch is powered on without any configuration (no startup configuration file), it initiates an SVF negotiation initiates an SVF negotiation by sending link probe packets and attempts to join an SVF system. If the switch has a configuration file, it starts in stack mode.

You can set the working mode of a switch. After you set the working mode of a switch to stack or leaf, the switch automatically starts in this mode and does not perform the negotiation.

Figure 2-6 Switch working mode determination

```
                    ┌──────────────────┐
                    │ The device is    │
                    │ powered on and   │
                    │ starts           │
                    └────────┬─────────┘
                             ▼
            Yes        ◇ Is the startup ◇
    ┌──────────────────  mode configured?
    ▼                         │ No
┌──────────────────┐         ▼
│ Start the device │    ◇ Is the device ◇
│ in configured    │  No  unconfigured?
│ mode             │ ┌────                │ Yes
└──────────────────┘ ▼                    ▼
            ┌──────────────────┐  ┌──────────────────┐
            │ Start the device │  │ Perform SVF      │
            │ in stack mode    │  │ negotiation      │
            └──────────────────┘  └────────┬─────────┘
                                           ▼
                    Yes          ◇ Is negotiation ◇
        ┌─────────────────────────  successful?
        ▼                               │ No
┌──────────────────┐                    ▼
│ Start the device │          ┌──────────────────┐
│ in leaf mode     │          │ Start the ZTP    │◄──┐
└──────────────────┘          │ process          │   │
                              └────────┬─────────┘   │
                                       ▼             │
                              ┌──────────────────┐   │
                              │ Perform SVF      │   │
                              │ negotiation      │   │
                              └────────┬─────────┘   │
                                       ▼             │
                    Yes      ◇ Is negotiation ◇      │
        ┌─────────────────────  successful?          │
        ▼                          │ No              │
┌──────────────────┐               ▼                 │
│ Start the device │     ◇ Is the ZTP process ◇      │
│ in leaf mode     │ Yes    successful?              │
└──────────────────┘ ┌───                │ No ───────┘
        ▼            ▼
┌──────────────────┐
│ Start the device │
│ in stack mode    │
└──────────────────┘
```

For details about ZTP, see ZTP Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Basic Configuration*.

SVF Setup Process

After a switch starts in leaf mode, it obtains required information such as the leaf ID and software version from the parent switch. An SVF system is set up after the following steps:

1. Leaf ID allocation: After leaf switches are connected to the parent switch, they send protocol packets to the parent switch. The parent switch then allocates leaf IDs to the leaf switches.

2. Software version synchronization: The leaf switches obtain software version information from the parent switch. If the software version of a leaf switch is different from that of

the parent switch, the leaf switch automatically downloads the system software from the parent switch. After the software download is complete, the leaf switch restarts with the new version and registers with the parent switch.

Leaf switches only obtain a software package from the system software of the parent switch, not the complete system software. The system software of the parent switch contains two software packages with different functions. One is used for running the parent switch itself, and the other is synchronized to the leaf switches.

3. Configuration delivery: The parent switch delivers configuration information to the leaf switches.

2.4 SVF Management and Maintenance

Interface Numbering Rules

In an SVF system, parent switches are identified and managed using their stack member IDs, and leaf switches are identified and managed using their leaf IDs. Therefore, interfaces on a parent switch are numbered in the format *member stack ID/subcard ID/interface number*, and interfaces on a leaf switch are numbered in the format *leaf ID/subcard ID/interface number*.

Logging In to an SVF System

As a virtual device, an SVF system is configured and managed through the parent switch. You can use either of the following methods to log in to an SVF system:

- Through the console interface or management interface of any parent switch
- Through the console interface or management interface of any leaf switch When users connect to the management interfaces of the parent and leaf switches of an SVF system, only the user connecting to the parent switch can log in to the SVF system.

You must specify the IP address of the parent switch when logging in to the SVF system remotely.

Configuration and Management

In an SVF system, the leaf switches do not have configuration and management functions, and they are configured and managed on the parent switch. After you configure the leaf switches on the parent switch, the configuration information is saved on the parent switch. The leaf switches do not save any configuration. If a leaf switch is restarted or replaced by a new leaf switch, the parent switch delivers configuration to the leaf switch through the SVF link. Similar to interface cards of chassis switches, leaf switches are plug-and-play.

2.5 SVF System Merging and Splitting

SVF System Merging

Two SVF systems merge when their parent switches merge into one stack, as shown in Figure 2-7. Parent switches of SVF-1 and SVF-2 compete for the master role. If the parent switch of SVF-2 fails the competition, SVF-2 restarts and rejoins SVF-1. In this situation, the SVF configuration will be lost. If SVF-1 has the offline configuration of SVF-2, leaf switches of

SVF-2 can still join the merged SVF. Otherwise, these leaf switches cannot join the merged SVF.

Figure 2-7 Merging of two SVF systems

SVF-1   SVF-2   SVF
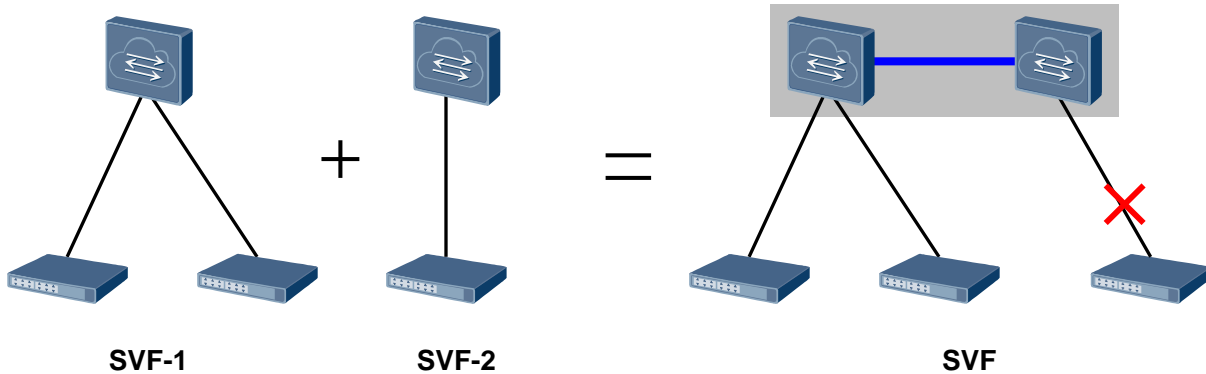
SVF System Splitting

Similarly, an SVF system splits when the stack of the parent switches splits, as shown in Figure 2-8. When the stack link between the parent switches fails, the stack of the parent switches splits. As a result, the SVF system also splits.

If a leaf switch connects to more than one parent switch, it may connect to two SVF systems after the original SVF system splits. The following situations occur:

- If batch backup between two parent switches is not finished, the leaf switch's port connected to the standby parent switch is blocked.
- If batch backup between two parent switches is finished, the leaf switch's port connected to the master parent switch is blocked.

Figure 2-8 Splitting of an SVF system
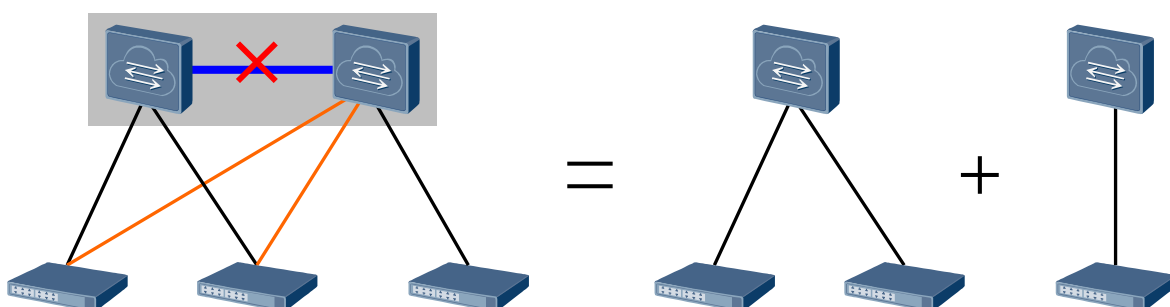
If the dual-active detection (DAD) function is configured, two SVF systems compete after the stack splits. The parent switch and leaf switches in the SVF system that fails the competition shut down all their service ports except the reserved ports. The two SVF systems compare the following in the listed order (the comparison ends when a winning SVF system is found):

1. Number of leaf switches: The SVF system with a larger number of leaf switches win.
2. Parent switch stack priority: The SVF system with a higher parent switch stack priority win.

3. Parent switch MAC address: The SVF system with a smaller parent switch MAC address wins.

For details about DAD, see Stack Split and Dual-Active Detection in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Virtualization - Stack Configuration.*

📖 **NOTE**

It is recommended to configure DAD on the ports of the parent switch. If DAD is configured on the ports of a leaf switch, the leaf switch may be still connects to the same parent switch when the leaf switch is dual-homed to two parent switches and the stack of the parent switches splits. In this situation, split detection cannot be performed.

When the system split recovers, the two parent switches merge into one stack and compete for the master role. The parent switch that fails the competition and the leaf switches attached to this parent switch restart and rejoin the SVF system. The SVF system then recovers.

2.6 SVF Upgrade

An SVF system can be upgraded using the traditional upgrade method, fast upgrade method, or in-service software upgrade (ISSU) function:

- Traditional upgrade method: Specify the files for next startup on the parent switches, and then restart the entire SVF system.
- Fast upgrade method: minimizes service interruptions and impact of SVF member switch upgrade on services.

   During a fast SVF upgrade, all member switches must be manually divided into two groups. The master parent switch and some leaf switches belong to one group, and the standby parent switch as well as other leaf switches belong to the other group. The group to which the standby parent switch belongs will be upgraded first, followed by the group to which the master parent switch belongs.

   In Figure 2-9, the standby parent switch, leaf switches 101 and 103 belong to group 1; the master parent switch and leaf switch 102 belong to group 2. The upgrade procedure is as follows:

   a. The standby parent switch in group 1 restarts with a new version to complete the upgrade. The standby parent switch starts as the master switch and shuts down common service ports other than stack ports and fabric ports.

   b. After the parent switch in group 1 has been upgraded, all the leaf switches in the group load the new software version from the parent switch and then restart to complete the upgrade.

      During the upgrade of group 1, switches in group 2 are forwarding service traffic.

      If group 1 is not upgraded within the specified timeout period, group 1 fails to be upgraded. Group 1 will restart with the previous version to roll back to the previous version.

   c. After group 1 has been upgraded, the parent switch in group 2 shuts down all service ports, while the parent switch in group 1 enables service ports. All the leaf switches in group 2 load the new software version from the parent switch in group 2 and restart together with the parent switch to complete the upgrade.

   d. After group 2 has been upgraded, it joins the SVF system again. The SVF upgrade is now completed.

Figure 2-9 Fast SVF upgrade
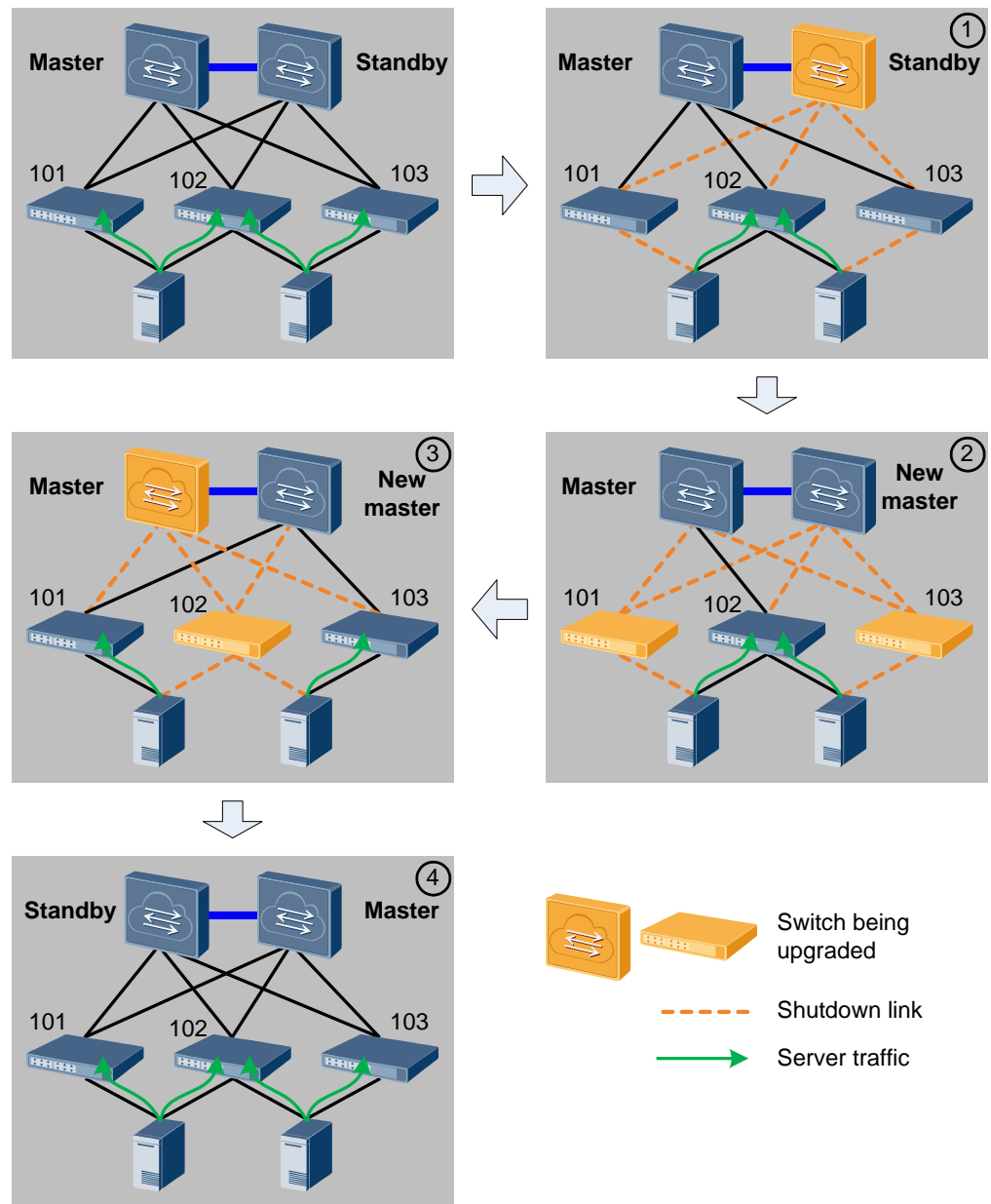
> **NOTE**
>
> - Only the SVF system in which two parent switches set up a stack can be upgraded fast.
>
> - The previous and target versions for fast upgrade must be V200R001C00 or later versions, and the target version must allow all current member switches to set up an SVF system.
>
> - If a leaf switch connects to only the standby parent switch, the SVF system cannot be upgraded fast.
>
> - The current SVF configuration must be the same as the next startup SVF configuration. Otherwise, the SVF system cannot be upgraded fast.
>
> - The master and standby parent switches must belong to different groups.
>
> - All the member switches in an SVF system must be divided into groups; otherwise, the SVF system cannot be fast upgraded.
>
> - If a leaf switch connects to only the master parent switch, this leaf switch must belong to the same group as the master parent switch.

- ISSU function: upgrades an SVF system through device switchover.

  For ISSU principles and software upgrade path, see ISSU Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Basic Configuration*.

  📖 **NOTE**

  - If an SVF system has only one parent switch, it does not support ISSU upgrade.
  - During the ISSU upgrade of an SVF system, all the leaf switches must be dual-homed to two parent switches.

3 Application

This section describes a typical SVF application scenario.

As shown in Figure 3-1, low-cost leaf switches are deployed in server racks to provide servers with network access. This deployment reduces network construction costs. The parent switches are deployed in a centralized manner, which simplifies device management and allows network cables to be routed more neatly.

Figure 3-1 SVF application at the data center access layer
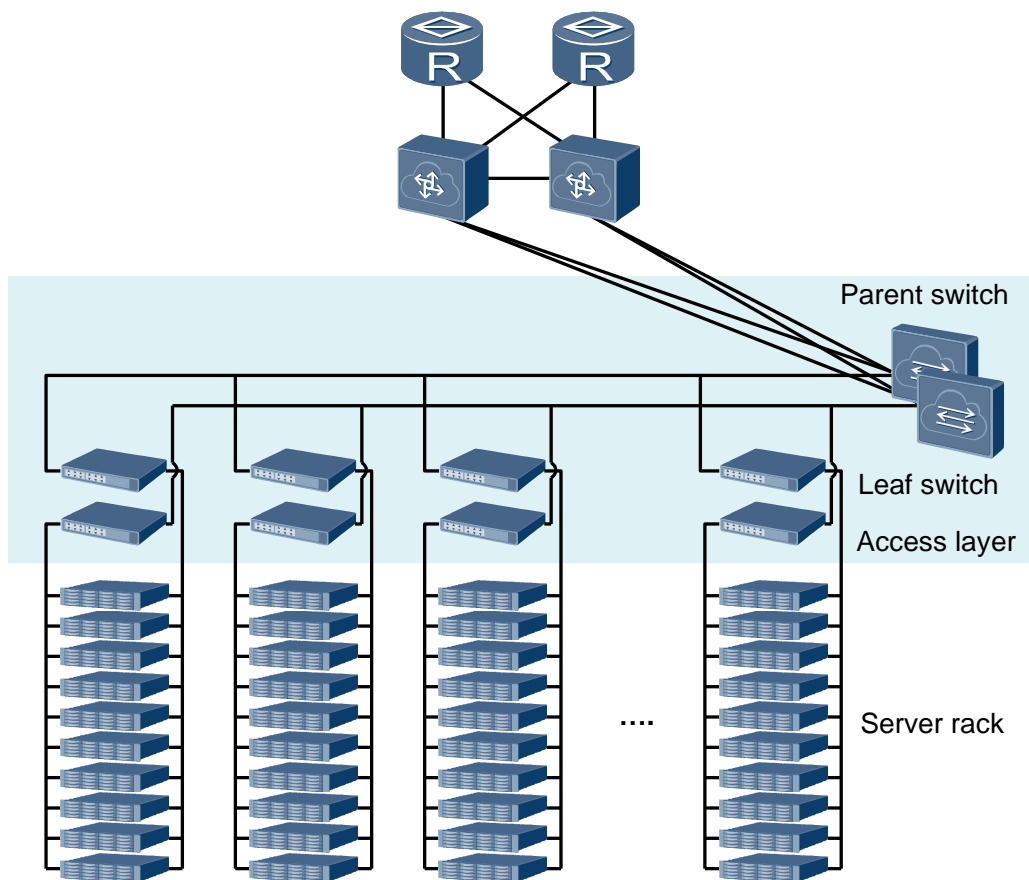
4 Configuration Notes

This section provides the points of attention when configuring SVF.

License Support

SVF is a basic feature of a switch and is not under license control.

Device and Version Requirements

Table 4-1 lists the device models and versions used to set up SVF systems.

Table 4-1 Device models and versions used to set up SVF systems

Version	Parent Switch Model	Leaf Switch Model	Remarks
V100R003C00 V100R003C10	CE6850-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	• In V100R005C00 and earlier versions, leaf switches in an SVF system must be the same series. For example, CE5810-48T4S-EI and CE5810-24T4S-EI can belong to the same SVF system, but CE6810-48S4Q-EI and CE5810-48T4S-EI cannot.
V100R005C00	CE6850-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	• Versions of leaf switches must be the initial version that supports this model of switches as leaf switches or higher versions.
	CE6810-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI	• In V100R005C00, when a CE6810-48S4Q-EI functions as a leaf switch, its last 40GE interface cannot be split.
	CE7850-32Q-EI	• CE6810-48S4Q-EI	
V100R00	CE6850-48S4Q-EI	• CE5810-48T4S	• In V100R005C10 and later

Version	Parent Switch Model	Leaf Switch Model	Remarks
5C10		• -EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	versions, leaf switches in an SVF system can be switches of different series and models. For example, CE6810-48S4Q-EI and CE5810-48T4S-EI can belong to the same SVF system.
	CE6810-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE5850-48T4S2Q-EI	• Versions of leaf switches must be the initial version that supports this model of switches as leaf switches or higher versions.
	CE7850-32Q-EI	• CE6810-48S4Q-EI • CE6810-48S-LI • CE6810-48S4Q-LI • CE6810-24S2Q-LI • CE6810-32T16S4Q-LI	• In V100R005C10, when a CE6810-48S4Q-EI, CE6810-48S4Q-LI, or CE6810-32T16S4Q-LI functions as a leaf switch, its last 40GE interface cannot be split. This limitation does not apply to a CE7850-32Q-EI that functions as a parent switch.
	• CE6850-48S6Q-HI • CE6850U-48S6Q-HI • CE6850U-24S2Q-HI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI • CE6810-48S-LI • CE6810-48S4Q-LI • CE6810-24S2Q-LI • CE6810-32T16S4Q-LI	In V100R006C00 and later versions, by default, when a CE6810-48S4Q-EI, CE6810-48S4Q-LI, or CE6810-32T16S4Q-LI functions as a leaf switch, its last 40GE interface cannot be split. This limitation does not apply to a CE7850-32Q-EI that functions as a parent switch. If you need to split the last 40GE interface, run the **device exclude leaf-type ce5810ei** command to prevent a CE5810EI from joining an SVF system as a leaf switch.
V100R006C00	CE6850-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	• When a CE6810LI functions as a leaf switch to establish an SVF system with a parent switch using 40GE high-speed cables, both leaf and parent switches need to be upgraded to V100R005C10SPC200 or a later version.
	CE6810-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI	

Version	Parent Switch Model	Leaf Switch Model	Remarks
		• CE5850-48T4S 2Q-EI	
	CE7850-32Q-EI	• CE5850-48T4S 2Q-EI	
		• CE5855-48T4S 2Q-EI	
		• CE5855-24T4S 2Q-EI	
		• CE6810-48S4Q -EI	
		• CE6810-48S-LI	
		• CE6810-48S4Q -LI	
		• CE6810-24S2Q -LI	
		• CE6810-32T16 S4Q-LI	
		• CE6850-48S6Q -HI	
		• CE6850-48T6Q -HI	
		• CE6851-48S6Q -HI	
	• CE6850-48S6Q -HI • CE6850U-48S6 Q-HI • CE6850U-24S2 Q-HI	• CE5810-48T4S -EI	
		• CE5810-24T4S -EI	
		• CE6810-48S4Q -EI	
		• CE6810-48S-LI	
		• CE6810-48S4Q -LI	
		• CE6810-24S2Q -LI	
		• CE6810-32T16 S4Q-LI	
	CE6851-48S6Q-HI	• CE5855-48T4S 2Q-EI	
		• CE5855-24T4S 2Q-EI	
		• CE6810-48S-LI	
		• CE6810-48S4Q -LI	

Version	Parent Switch Model	Leaf Switch Model	Remarks
		• CE6810-24S2Q-LI • CE6810-32T16S4Q-LI	
V200R001C00	CE6850-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	
	CE6810-48S4Q-EI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE5850-48T4S2Q-EI	
	• CE7850-32Q-EI • CE7855-32Q-EI	• CE5850-48T4S2Q-EI • CE5855-48T4S2Q-EI • CE5855-24T4S2Q-EI • CE6810-48S4Q-EI • CE6810-48S-LI • CE6810-48S4Q-LI • CE6810-24S2Q-LI • CE6810-32T16S4Q-LI • CE6850-48S6Q-HI • CE6850-48T6Q-HI • CE6851-48S6Q-HI	
	• CE6850-48S6Q-HI • CE6850U-48S6Q-HI • CE6850U-24S2Q-HI	• CE5810-48T4S-EI • CE5810-24T4S-EI • CE6810-48S4Q-EI	

Version	Parent Switch Model	Leaf Switch Model	Remarks
		- CE6810-48S-LI - CE6810-48S4Q-LI - CE6810-24S2Q-LI - CE6810-32T16S4Q-LI	
	- CE6851-48S6Q-HI - CE6855-48S6Q-HI	- CE5855-48T4S2Q-EI - CE5855-24T4S2Q-EI - CE6810-48S-LI - CE6810-48S4Q-LI - CE6810-24S2Q-LI - CE6810-32T16S4Q-LI	

Device Quantity and Port Requirements

Table 4-2 lists the requirements for member switch quantity and ports during SVF setup.

Table 4-2 SVF member switch quantity and port requirements

Item	Description	Remarks
Number of parent switches	1-2	The parent switch can be a standalone switch or a stack of two devices.
Number of leaf switches	1-24	The leaf switch must be a standalone switch but not a stack of multiple devices.
Type of ports for SVF connection	10GE and 40GE optical ports	10GE ports split from 40GE ports of the parent switch can be used to connect to leaf switches. When a CE6850-48S4Q-EI functions as a parent switch, 40GE1/0/4 cannot be split, but 40GE1/0/1 to 40GE1/0/3 can be split into 10GE ports, which then can be used to connect to leaf switches. If 40GE1/0/4 on a CE6850-48S4Q-EI has been split into 10GE ports, SVF cannot be configured on the CE6850-48S4Q-EI. 40GE ports aggregated by 10GE ports cannot be used for SVF connection.

Item	Description	Remarks
Number of physical member ports in a fabric port	1-8	It is recommended that you add at least two member ports in each fabric port to ensure high reliability.

To learn about the default and configured leaf switch ports to be connected to a parent switch, see Table 4-3.

Table 4-3 List of leaf switch ports to be connected to a parent switch

Version	Leaf Switch Model	Default Port	Configured Port
V100R003C00	• CE5810-48T4S-EI • CE5810-24T4S-EI	Last four 10GE ports	Configured ports are not supported.
	CE6810-48S4Q-EI	Last eight 10GE ports	• 10GE: last eight 10GE ports • 40GE: last four 40GE ports
V100R003C10 V100R005C00	• CE5810-48T4S-EI • CE5810-24T4S-EI	Last four 10GE ports	Configured ports are not supported.
	CE6810-48S4Q-EI	Last four 40GE ports or last eight 10GE ports perform auto-negotiation: • If only 10GE ports are connected to a parent switch, 10GE ports are preferred. • If only 40GE ports are connected to a parent switch, 40GE ports are preferred. • If both 10GE and 40GE ports are connected to a parent switch, 40GE ports are preferred.	• auto-negotiation • 10GE: last eight 10GE ports • 40GE: last four 40GE ports
V100R005C10 V100R006C00 V200R001C00	• CE5810-48T4S-EI • CE5810-24T4S-EI	4*10GE	Configured ports are not supported.

Version	Leaf Switch Model	Default Port	Configured Port
	• CE5850-48T4S 2Q-EI • CE5855-48T4S 2Q-EI • CE5855-24T4S 2Q-EI	2*40GE	• 4*10GE • 2*40GE
	CE6810-48S4Q-EI	8*10GE and 4*40GE ports perform auto-negotiation: • If only 10GE ports are connected to a parent switch, 10GE ports are preferred. • If only 40GE ports are connected to a parent switch, 40GE ports are preferred. • If both 10GE and 40GE ports are connected to a parent switch, 40GE ports are preferred.	• auto-negotiation • 4*10GE • 8*10GE • 4*40GE
	• CE6810-48S4 Q-LI • CE6810-32T16 S4Q-LI	4*40GE	• 4*10GE • 8*10GE • 4*40GE
	CE6810-24S2Q-LI	2*40GE	• 4*10GE • 8*10GE • 2*40GE
	CE6810-48S-LI	8*10GE	• 4*10GE • 8*10GE
	• CE6850-48S6 Q-HI • CE6850-48T6 Q-HI • CE6851-48S6 Q-HI	6*40GE	• 4*10GE • 8*10GE • 4*40GE • 6*40GE

Notes

• N*10GE/N*40GE indicates the last N 10GE/40GE interfaces on the device.

• When auto-negotiated or configured N*10GE or N*40GE ports are connected to a parent switch, these ports cannot be used as common service ports again. For example, when any one of 40GE1/0/1 to 40GE1/0/4 on a CE6810-48S4Q-EI is connected to a parent switch, the other ports of 40GE1/0/1 to 40GE1/0/4 cannot be used as common

Version	Leaf Switch Model	Default Port	Configured Port

service ports.

- In V100R005C00 and later versions, the auto-negotiation function takes effect on a CE6810-48S4Q-EI switch only one time. Leaf switches can use only the ports negotiated for the first time to connect to a parent switch. To change the leaf switch ports, you must manually configure the type of leaf switch ports.

Cable Requirements

High-speed cables, AOC cables, optical modules and fibers, or network cables can be used to connect stack member switches. Table 4-4 describes the cables applicable to different ports.

Table 4-4 Requirements for stack cables

Port Type	High-Speed Cable	AOC Cable	Optical Module	Network Cable
10GE optical port	SFP+ high-speed cable	SFP+ AOC cable.	10GE SFP/SFP+ optical module The required optical fibers are determined by the optical modules you select.	-
40GE optical port	QSFP+ high-speed cable	QSFP+ AOC cable.	40GE QSFP optical module The required optical fibers are determined by the optical modules you select.	-

Notes

- 10GE optical ports can be used for connection only when they have 10GE optical modules installed. If the GE optical or copper modules are installed on 10GE optical ports, the ports cannot be used to set up an SVF system.
- In V100R006C00, 40GE optical modules of the QSFP-40G-SR-BD model cannot be used to set up an SVF system.

Feature Dependencies and Limitations

Precautions

Pay attention to the following points when configuring SVF:

- Huawei-certified optical or copper modules must be used. If high-speed cables or AOCs are used, you must purchase cables from Huawei.

  Non-Huawei-certified optical or copper modules or cables that are not purchased from Huawei cannot ensure transmission reliability and may affect service stability. Huawei is not liable for any problem caused by the use of non-Huawei-certified optical or copper modules, or cables not purchased from Huawei, and will not fix such problems.

- One leaf switch can connect to only one SVF system.

- When a single switch is used as the parent switch, you must configure a stack domain ID for the switch. Otherwise, an SVF system cannot be set up.

- When a single switch or a stack of two switches is used as the parent switch, the stack member ID of the parent switch must be less than or equal to 4.

  When a parent switch with stack member ID larger than 4 joins an SVF that has only one parent switch, the existing parent switch assigns a stack member ID that is less than or equal to 4 to the new parent switch.

- On a CE5810-48T4S-EI, the first 24 GE ports and first two 10GE ports belong to the same switching chip, and the last 24 GE ports and last two 10GE ports belong to the same switching chip. When a CE5810-48T4S-EI functions as a leaf switch, uplink traffic of its first 24 GE ports is balanced between the first two 10GE ports for transmission according to the hash algorithm, and uplink traffic of its last 24 GE ports is balanced between the last two 10GE ports for transmission according to the hash algorithm.

  If a CE5810-48T4S-EI uses four 10GE ports to connect to the parent switch, connection mode 1 shown in Figure 4-1 is recommended because it reduces the traffic load of the stack link between parent switches. If connection mode 2 is used, some upstream traffic is load balanced to the stack link, increasing the bandwidth pressure of the stack link.

  If a CE5810-48T4S-EI uses less than 24 GE ports to connect to servers and uses only two 10GE ports to connect to the parent switch, it is recommended to use the first 24 GE ports and first two 10GE ports to connect to servers and the parent switch respectively or use the last 24 GE ports and last two 10GE ports to connect to servers and the parent switch respectively.

Figure 4-1 Two leaf switches of CE5810-48T4S-EI model connecting to parent switches

- When you change the system software for an SVF system and reboot the system, do not close the terminal window before the software is synchronized to leaf switches. Otherwise, leaf switches will restart repeatedly.

- When a CE5810EI functions as a leaf switch, and the traffic volume of high-priority (priority 7) user packets to be forwarded by a fabric port exceeds 90% of the fabric port bandwidth, these packets will preempt the bandwidth of management packets between the leaf switch and parent switch. This situation will result in the loss of management packets, or even worse, the restart of the leaf switch.

- A device that functions as a parent switch can reserve two ACLs in V100R005C10 and later versions. If the device is upgraded to V100R005C10 or later versions, and its ACLs have been used up before the upgrade, the two reserved ACLs cannot take effect after the upgrade.

- If an existing leaf switch is replaced by a new switch of a different model, the new switch's ports with the same port types and port numbers as the existing switch's ports will inherit the configurations of the existing switch's ports. If the inherited configurations contain the services that are not supported by the new switch, the configurations of these services cannot be deleted from the new switch. To delete these unsupported configurations, enable the new switch to go offline and then delete these configurations in offline mode.

Feature Support in SVF

Leaf switches in an SVF system support different features in different forwarding modes. The following table shows feature support in an SVF system. The configuration of features that are not listed in the table is the same as that on a standalone switch.

Table 4-5 Feature support in SVF

Feature	Distributed Forwarding	Centralized Forwarding	Hybrid Forwarding
Eth-Trunk	In V100R005C00 and later versions, the assign **assign forward eth-trunk mode** command cannot be configured in an SVF system. In an SVF of V100R005C10 and later versions, Eth-Trunk member interfaces must be located on the same parent or leaf switch, or leaf switches of the same series. Each Eth-Trunk supports a maximum of 8 member interfaces on the CE5810EI. When the CE5810EI functions as the leaf switch, the following situations occur: • When the maximum number of member interfaces in each LAG configured by the **assign forward eth-trunk mode** command is greater than or equal to 8, each LAG allows a maximum of 8 member interfaces on the CE5810EI. • When the maximum number of member interfaces in each LAG configured by the **assign forward eth-trunk mode** command is less than 8, the command is also valid for the CE5810EI.		
Layer 3 sub-interface	If a CE6810LI functions as a standalone switch or a leaf switch in an SVF system consisting of fixed and modular switches, the CE6810LI does not support sub-interfaces. If a CE6810LI functions as a leaf switch in an SVF system consisting of fixed switches, the CE6810LI supports sub-interfaces.		
Port Isolation	In V100R005C10 and later versions, if 256, 512, or 1024 link aggregation groups are configured in an SVF system consisting of fixed switches, port isolation cannot be configured on Eth-Trunks.		
VXLAN	SVF and VXLAN conflict and cannot be configured together.	• In V100R005C10 and earlier versions, SVF and VXLAN conflict and cannot be configured together. This constraint has been fixed in V100R006C00 and later versions. Only the CE6850HI, CE6851HI, CE6850U-HI, CE7850EI, or CE7855EI can function as a spine device, and	SVF and VXLAN conflict and cannot be configured together.

Feature	Distributed Forwarding	Centralized Forwarding	Hybrid Forwarding
		a leaf device can only serve as the access-side device of the VXLAN tunnel. • After SVF is configured in a VXLAN, the path between different VMs' subinterfaces cannot be detected, and only the path between VMs' VLANs can be detected.	
NetStream	• A CE6810LI functioning as a leaf switch does not support NetStream function. • A CE5855EI functioning as a leaf switch supports NetStream IPv6 function.	• A leaf switch does not support NetStream. • If NetStream has been configured on the leaf switch, the leaf switch cannot switch from distributed forwarding mode to hybrid or centralized forwarding mode. If you want to switch the forwarding mode, delete the NetStream configuration on the leaf switch first.	
sFlow	A CE5855EI functioning as a leaf switch supports NetStream IPv6 function.	In V100R006C00 and earlier versions: • A leaf switch does not support sFlow. • If sFlow has been configured on the leaf switch, the leaf switch cannot switch from distributed forwarding mode to hybrid or centralized forwarding mode. If you want to switch the forwarding mode, delete the sFlow configuration on the leaf switch first. In V200R001C00 and later versions: • A leaf switch supports sFlow only in the inbound direction. • If sFlow has been configured in the outbound direction on the leaf switch, the leaf switch cannot switch from distributed forwarding mode to hybrid or centralized forwarding mode. If you want to switch the forwarding mode, delete the outbound sFlow configuration	

Feature	Distributed Forwarding	Centralized Forwarding	Hybrid Forwarding
		on the leaf switch first.	
TRILL	The parent switch supports the TRILL function. Leaf switches do not support the TRILL function if their switch models (for example, CE5810EI) do not support the TRILL function before they join an SVF system.	Leaf switches can only function as access devices. Parent switches support TRILL.	
Traffic Suppression	In an SVF using distributed forwarding mode, traffic suppression cannot be configured for unknown unicast traffic on the Fabric interfaces.	In an SVF using centralized or hybrid forwarding mode, traffic suppression cannot be configured for unknown unicast traffic on the interfaces of leaf switches.	
Storm Control	Supported	In an SVF using centralized or hybrid forwarding mode, storm control cannot be configured for unknown unicast traffic on the interfaces of leaf switches.	
URPF	Supported	When an SVF system consisting of only fixed switches works in centralized or hybrid forwarding mode, URPF check is not performed for the Layer 3 traffic forwarded on the leaf switch.	
Mirroring	Parent switches and leaf switches support Layer 3 remote mirroring ERSPAN.	Parent switches support Layer 3 remote mirroring ERSPAN, but leaf switches do not support.	
MPLS LDP	If any switch in the SVF set up by fixed switches does not support MPLS LDP, the SVF in distributed mode does not support MPLS LDP.	If the parent switch in the SVF set up by fixed switches supports MPLS LDP, the SVF in centralized or hybrid supports MPLS LDP.	
MPLS QoS	If any switch in the SVF set up by fixed switches does not	If the parent switch in the SVF set up by fixed switches supports MPLS QoS, the SVF in centralized or hybrid supports	

Feature	Distributed Forwarding	Centralized Forwarding	Hybrid Forwarding
	support MPLS LDP, the SVF in distributed mode does not support MPLS QoS.	MPLS QoS.	
FCoE&DCB	In V100R005C00 version, parent switches support FCoE and DCB, but leaf switches do not. In V100R006C00 and later version, an SVF system supports FCoE and DCB. When a CE6810LI or a CE5800 functions as a leaf switch, an SVF system does not support FCoE and DCB.		
Open system	The SVF function and open system cannot be configured simultaneously.		
Note: • V100R005C00 and earlier versions support only the distributed forwarding mode.			

5 Configuring a Parent Switch

5.1 (Optional) Setting Up a Stack Between Parent Switches

Context

An SVF system can use a single switch or a stack of two switches as the parent switch. Using a stack of two parent switches can provide redundancy for the SVF system, improving system reliability.

> 📖 NOTE
>
> - To ensure high reliability, you are advised to use a stack of two parent switches in an SVF system.
> - Currently, an SVF system allows at most two parent switches in a stack.

Procedure

Step 1 Set up a stack between two parent switches by referring to Stack Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Virtualization*.

----End

5.2 Configuring a Stack Domain ID and a Stack Member ID

Context

When setting up an SVF system, a parent switch must have a stack domain ID configured and its stack member ID must be smaller than or equal to 4. Otherwise, an SVF system cannot be set up.

To check whether the stack domain ID and stack member ID of a parent switch meets the preceding requirements, run the **display stack configuration** [**member** *member-id* | **all**] command. If so, skip this section. If not, change the SVF configuration to meet the preceding requirements.

Procedure

- Configure a stack domain ID.

  a. Run the **system-view** command to enter the system view.

  b. Run the **stack** command to enter the stack management view.

  c. Run the **stack member** { *member-id* | **all** } **domain** *domain-id* command to set the stack domain ID.

  By default, a switch has no stack domain ID.

  d. Run the **commit** command to commit the configuration.

  e. Run the **return** to return to the user view.

  f. Run the **save** command to save the device configuration to make the configured stack domain ID take effect.

  If the switch has no stack domain ID, the configured stack domain ID takes effect after the device configuration is saved. If you change the existing stack domain ID, the new ID takes effect after the switch restarts.

- Configure a stack member ID.

  a. Run the **system-view** command to enter the system view.

  b. Run the **stack** command to enter the stack management view.

  c. Run the **stack member** *member-id* **renumber** *new-member-id* [**inherit-config**] command to set the stack member ID to 4 or less.

  By default, the stack member ID of a switch is 1.

  d. Run the **commit** command to commit the configuration.

  e. Run the **return** to return to the user view.

  f. Run the **reboot** command to restart the device to make the configured stack member ID take effect.

  After changing the stack member ID, restart the switch for the configuration to take effect.

  ----End

5.3 Configuring a Fabric Port

Context

A parent switch connects to leaf switches using fabric ports. One or more member ports can be added to a fabric port to improve SVF link bandwidth and reliability.

> 📖 **NOTE**
> - A fabric port can have a maximum of eight member ports.
> - After a 10GE port on the CE6850EI, CE6810EI is directly added to a fabric port, the four 10GE ports in the same range of 4N+1 to 4N+4 (N = 0, 1, 2, 3...) are automatically configured as physical stack member ports, but the other three 10GE ports are not added to the fabric port. For example, after you add 10GE1/0/1 to a fabric port, ports 10GE1/0/1 to 10GE1/0/4 are all configured as physical stack member ports, but only 10GE1/0/1 is added to the fabric port.

Procedure

Step 1 Create a fabric port and bind a leaf ID to it.

1. Run the **system-view** command to enter the system view.

2. Run the **interface fabric-port** *port-id* command to create a fabric port.

   By default, no fabric port exists in the system. The value of *port-id* ranges from 1 to 24.

3. Run the **port bind member** *member-id* command to bind a leaf ID to the fabric port.

   By default, no leaf ID is bound to a fabric port. The value of *member-id* ranges from 101 to 254.

   Leaf IDs are used to identify and manage leaf switches in an SVF system. Each leaf switch has a unique leaf ID. Leaf IDs are bound to fabric ports. When a leaf switch connects to the parent switch, it obtains its leaf ID from the parent switch.

   ☐ NOTE
   - Each fabric port can have only one leaf ID bound to it, and each leaf ID can be bound to only one fabric port.
   - If you change or delete the leaf ID bound to a fabric port, the leaf switch connected to the fabric port will restart.

4. (Optional) Run the **description** *description* command to configure the description of the fabric port.

   By default, a fabric port does not have a description.

   To facilitate fabric port management and identification, you can configure descriptions for fabric ports. For example, you can describe the ID of a leaf switch that connects to a fabric port.

5. Run the **commit** command to commit the configuration.

Step 2 Add the service ports to the fabric port.

☐ NOTE
The configuration can be performed in the fabric port view or interface view. The two configuration methods obtain the same result.

Service ports are automatically configured as physical member ports after being added to a fabric port. Alternatively, run the **port mode stack interface** *interface-type* { *interface-number1* [**to** *interface-number2*] } &<1-32> command in the stack management view or run the **port mode stack** command in the interface view to configure service ports as physical member ports and then add the physical member ports to a fabric port.

- Configuration in the fabric port view:

  a. Run the **system-view** command to enter the system view.

  b. Run the **interface fabric-port** *port-id* command to enter the fabric port view.

  c. Run the **port member-group interface** *interface-type* { *interface-number1* [**to** *interface-number2*] } &<1-8> command to add member ports to the fabric port.

  d. Run the **commit** command to commit the configuration.

- Configuration in the interface view:

  a. Run the **system-view** command to enter the system view.

  b. Run the **interface** *interface-type interface-number* command to enter the interface view.

  c. Run the **fabric-port** *port-id* command to add the port to the fabric port.

     To add multiple ports to the fabric port, repeat steps b and c.

  d. Run the **commit** command to commit the configuration.

Step 3 (Optional) Configure the working mode for a 40GE port that has a high-speed cable installed.

1. Run the **system-view** command to enter the system view.

2. Run the **interface** *interface-type interface-number* command to enter the interface view.

3. Run the **port copper mode** { **sr4** | **cr4** }command to configure the working mode for a 40GE port that has a high-speed cable installed.

   By default,

   – On CE6810-32T16S4Q-LI, CE6850-48T6Q-HI, CE6851-48S6Q-HI, CE6855HI, CE5855-24T4S2Q-EI, and CE5855-48T4S2Q-EI, the working mode of 40GE ports that have high-speed cables installed is SR4.

   – On CE6810-48S4Q-LI and CE6810-24S2Q-LI, 40GE ports that have high-speed cables installed can auto-negotiate to work in CR4 or SR4 mode.

   – On other switch models, 40GE ports that have high-speed cables installed can auto-negotiate to work in CR4 or SR4 mode. After being added to stack ports, these 40GE ports work in CR4 mode.

   By default, if a CE6810-32T16S4Q-LI, CE6850-48T6Q-HI, CE6851-48S6Q-HI, CE6855HI, CE5855-24T4S2Q-EI, or CE5855-48T4S2Q-EI sets up a stack or an SVF system with other device model using 40GE ports that have high-speed cables installed, the connected device can enable the 40GE ports on both ends to work in the same mode through auto-negotiation. If the two ports work in different modes, they will become Down. However, auto-negotiation lasts a certain period. To ensure that the two ports can rapidly become Up, you are advised to run this command on the connected device to configure the 40GE port to work in SR4 mode. This configuration ensures that 40GE ports on both ends work in SR4 mode.

4. Run the **commit** command to commit the configuration.

Step 4 (Optional) Disable auto-negotiation on the fabric port.

1. Run the **system-view** command to enter the system view.

2. Run the **interface fabric-port** *port-id* command to enter the fabric port view.

3. Run the **leaf negotiation disable** command to disable auto-negotiation on the fabric port.

   By default, auto-negotiation is enabled on a fabric port.

   To prevent the switch connected to a fabric port from connecting to the SVF system mistakenly, you can disable auto-negotiation on the fabric port. After auto-negotiation is disabled, the unconfigured switch connected to the fabric port cannot join the SVF system through auto-negotiation. However, the switch configured to work in **Leaf** mode can still join the SVF system.

4. Run the **commit** command to commit the configuration.

Step 5 (Optional) Configure a load balancing mode for the fabric port.

1. Run the **system-view** command to enter the system view.

2. Run the **interface fabric-port** *port-id* command to enter the fabric port view.

3. Run the **load-balance** { **dst-ip** | **dst-mac** | **src-dst-ip** | **src-dst-mac** | **src-ip** | **src-mac** } command to configure a load balancing mode for the fabric port.

   By default, the load balancing mode for a fabric port is **src-dst-ip** (load balancing based on the source and destination IP addresses).

4. Run the **commit** command to commit the configuration.

----End

5.4 (Optional) Setting a Forwarding Model for the SVF System

Context

Leaf switches in an SVF system support the following forwarding models:

- Centralized forwarding: Leaf switches send all traffic to the parent switch for forwarding.

- Distributed forwarding: Leaf switches first look up local forwarding entries for traffic forwarding. If they fail to find the matching entries, they discard Layer 3 traffic and broadcast Layer 2 traffic in the SVF system.

- Hybrid forwarding: Leaf switches learn only local ARP and MAC address entries. (Only service ports learn entries, while ports connecting to the parent switch do not learn entries). They send broadcast and multicast traffic to the parent switch for forwarding and forward unicast traffic based on local ARP and MAC address entries preferentially. If they fail to find the matching entries, they send unicast traffic to the parent switch for forwarding.

  CE6810LI switches without Layer 3 forwarding capability learn only MAC address entries.

☐ NOTE

- The forwarding model configured for an SVF system takes effect only after you restart the SVF system.

- CE6810LI switches do not support the distributed forwarding model when they function as leaf switches.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **stack** command to enter the stack management view.

Step 3 Run the **stack forwarding-model** { **centralized** | **distributed** | **hybrid** } command to set a forwarding model for the SVF system.

By default, the forwarding model of leaf switches in an SVF system depends on the model of the parent switch:

- When the parent switch is a CE6850HI/CE6850U-HI/CE6851HI/CE6855HI/CE7855EI, the leaf switches use the hybrid forwarding model.

- When the parent switch is another model, the CE6810LI leaf switches use the hybrid forwarding model and the leaf switches of other models use the distributed forwarding model.

To enable low-specification leaf switches to have the feature capabilities and specifications of parent switches, use the hybrid forwarding mode.

Step 4 Run the **commit** command to commit the configuration.

----End

5.5 (Optional) Configuring the Device Type or Serial Number of a Leaf Switch Allowed to Join an SVF System

Context

To prevent devices from incorrectly joining an SVF system and ensure SVF security, you can configure the device type or serial number of a leaf switch allowed to join an SVF system. When the device type or serial number of a leaf switch is consistent with the configured one, the leaf switch can join the SVF system. Otherwise, the leaf switch cannot join the SVF system.

By default, all the devices that can function as leaf switches can join an SVF system.

> **NOTE**
>
> When a leaf switch has joined an SVF system, it leaves the SVF system if the changed device type or serial number is inconsistent with the configured one.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **stack** command to enter the stack management view.

Step 3 (Optional) Configure the device type or serial number of a leaf switch allowed to Join an SVF system.

- Run the **leaf member** *member-id* **type** *type* command to configure the device type of a leaf switch allowed to join an SVF system.

  By default, the device type of a leaf switch allowed to join an SVF system is not configured.

- Run the **leaf member** *member-id* **serial-number** *serial-number* command to configure the serial number of a leaf switch allowed to join an SVF system.

  By default, the serial number of a leaf switch allowed to join an SVF system is not configured.

Step 4 Run the **commit** command to commit the configuration.

----End

5.6 (Optional) Preventing a CE5810EI from Joining an SVF System as a Leaf Switch

Context

By default, a CE5810EI can join an SVF system as a leaf switch. However, if the SVF system has leaf switches of the CE6810-48S4Q-EI, CE6810-48S4Q-LI, or CE6810-32T16S4Q-LI model, splitting the last 40GE interface of CE6810-48S4Q-EI, CE6810-48S4Q-LI, or CE6810-32T16S4Q-LI is not allowed. If the last 40GE interface of a CE6810-48S4Q-EI, CE6810-48S4Q-LI, or CE6810-32T16S4Q-LI needs to be split, prevent a CE5810EI from joining the SVF system as a leaf switch.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **device exclude leaf-type ce5810ei** command to prevent a CE5810EI from joining an SVF system as a leaf switch.

By default, a CE5810EI can join an SVF system as a leaf switch.

Step 3 Run the **commit** command to commit the configuration.

----End

6 (Optional) Configuring a Leaf Switch

6.1 Configuring the Working Mode of Leaf Switches

Context

By default, if a leaf switch starts with no configuration, it performs a negotiation with the parent switch and attempts to join the SVF system in leaf mode, and you do not need to perform any configuration on the leaf switch.

If a switch starts with a configuration file, it enters the stack mode by default and cannot join the SVF system as a leaf switch. In this case, set the working mode of the switch to leaf mode using the BIOS menu or working mode menu during the startup process or using commands after the switch starts. The switch will then join the SVF as a leaf switch after each restart.

Procedure

- An unconfigured switch is plug-and-play and does not require any manual configuration.

  By default, the working mode of a switch is auto-negotiation. That is, an unconfigured switch is plug-and-play and does not require any manual configuration.

  ☐ NOTE

    If the negotiated working of a switch is leaf, the switch starts in leaf mode. To start the switch in other modes, manually configure the working mode of the switch.

- If a switch starts with a configuration file, use either of the following methods to configure the leaf mode on the switch:

  – Method 1: Use commands to set the leaf mode after the switch starts.

    i.   Run the **system-view** command to enter the system view.

    ii. Run the **stack** command to enter the stack management view.

    iii. Run the **switch mode leaf member** { *member-id* | **all** } command to set the working mode of the switch to leaf mode.

      By default, the working mode of a switch is auto-negotiation. That is, the working mode of a switch is determined through auto-negotiation.

  ☐ NOTE

    The configured working mode takes effect after the switch restarts.

    This command can also be used on parent switches and takes effect only on the leaf switches that have joined an SVF system.

  – Method 2: Use the BIOS menu to set the leaf mode during the startup process.

i.   Log in to the switch through the console port.

ii.   During the startup process, press **Ctrl**+**B** to enter the BIOS menu. The prompt information is "Press CTRL+B to enter BIOS menu".

iii.   In the BIOS menu, choose **6. Modify stack parameters** > **2. Modify stack configuration** > **3. Leaf mode** > **3. Return** > **1. Continue to boot** to set the working mode of the switch to leaf mode, and then choose to continue the startup process.

–   Method 3: Use the working mode menu to set the leaf mode during the startup process.

i.   Log in to the switch through the console port.

ii.   During the startup process, press **Ctrl**+**Y** to enter the working mode menu. The prompt information is "Press CTRL+Y to modify the switch mode".

iii.   In the working mode menu, choose **3. Leaf mode** to set the working mode of the switch to leaf mode, and then the switch automatically restarts.

The working mode menu is as follows:

```
Press CTRL+Y to modify the switch mode ...................... 3


If you modify the switch mode, the switch will reboot.


        Switch Mode Menu


    1. Auto-negotiation mode     //Set the working mode to
auto-negotiation.
    2. Stack mode                //Set the working mode to stack.
    3. Leaf mode                 //Set the working mode to leaf.
    4. Continue to boot          //Continue to start.


You have 30 seconds to select the menu, the system will continue to boot
when time is up.
Enter your choice(1-4):
```

----End

6.2 Configuring the Type of Leaf Switch Ports to Be Connected to the Parent Switch

Context

By default, leaf switches connect to a parent switch using some default ports. You can also configure the leaf switch ports to be connected to a parent switch according to networking requirements. Subsequently, leaf switches can use only the configured ports to connect to a parent switch.

To learn about the default and configured leaf switch ports to be connected to a parent switch, see Table 6-1.

Table 6-1 List of leaf switch ports to be connected to a parent switch

Version	Leaf Switch Model	Default Port	Configured Port
V100R003C00	• CE5810-48T4S -EI • CE5810-24T4S -EI	Last four 10GE ports	Configured ports are not supported.
	CE6810-48S4Q-EI	Last eight 10GE ports	• 10GE: last eight 10GE ports • 40GE: last four 40GE ports
V100R003C10 V100R005C00	• CE5810-48T4S -EI • CE5810-24T4S -EI	Last four 10GE ports	Configured ports are not supported.
	CE6810-48S4Q-EI	Last four 40GE ports or last eight 10GE ports perform auto-negotiation: • If only 10GE ports are connected to a parent switch, 10GE ports are preferred. • If only 40GE ports are connected to a parent switch, 40GE ports are preferred. • If both 10GE and 40GE ports are connected to a parent switch, 40GE ports are preferred.	• auto-negotiation • 10GE: last eight 10GE ports • 40GE: last four 40GE ports
V100R005C10 V100R006C00 V200R001C00	• CE5810-48T4S -EI • CE5810-24T4S -EI	4*10GE	Configured ports are not supported.
	• CE5850-48T4S 2Q-EI • CE5855-48T4S 2Q-EI • CE5855-24T4S 2Q-EI	2*40GE	• 4*10GE • 2*40GE
	CE6810-48S4Q-EI	8*10GE and 4*40GE ports perform auto-negotiation: • If only 10GE ports	• auto-negotiation • 4*10GE • 8*10GE

Version	Leaf Switch Model	Default Port	Configured Port
		• are connected to a parent switch, 10GE ports are preferred. • If only 40GE ports are connected to a parent switch, 40GE ports are preferred. • If both 10GE and 40GE ports are connected to a parent switch, 40GE ports are preferred.	• 4*40GE
	• CE6810-48S4Q-LI • CE6810-32T16S4Q-LI	4*40GE	• 4*10GE • 8*10GE • 4*40GE
	CE6810-24S2Q-LI	2*40GE	• 4*10GE • 8*10GE • 2*40GE
	CE6810-48S-LI	8*10GE	• 4*10GE • 8*10GE
	• CE6850-48S6Q-HI • CE6850-48T6Q-HI • CE6851-48S6Q-HI	6*40GE	• 4*10GE • 8*10GE • 4*40GE • 6*40GE

Notes

• N*10GE/N*40GE indicates the last N 10GE/40GE interfaces on the device.

• When auto-negotiated or configured N*10GE or N*40GE ports are connected to a parent switch, these ports cannot be used as common service ports again. For example, when any one of 40GE1/0/1 to 40GE1/0/4 on a CE6810-48S4Q-EI is connected to a parent switch, the other ports of 40GE1/0/1 to 40GE1/0/4 cannot be used as common service ports.

• In V100R005C00 and later versions, the auto-negotiation function takes effect on a CE6810-48S4Q-EI switch only one time. Leaf switches can use only the ports negotiated for the first time to connect to a parent switch. To change the leaf switch ports, you must manually configure the type of leaf switch ports.

Procedure

• Method 1: Use commands to set the type of leaf switch ports to be connected to the parent switch after the switch starts.

a. Run the **system-view** command to enter the system view.

b. Run the **stack** command to enter the stack management view.

c. Run the **leaf uplink-port type** { **auto-negotiation** | **4*10ge** | **8*10ge** | **2*40ge** | **4*40ge** | **6*40ge** } **member** { *member-id* | **all** } command to set the type of leaf switch ports to be connected to the parent switch.

   By default, leaf switches connect to a parent switch using ports listed in Table 6-1.

☐ **NOTE**

After you configure the type of leaf switch ports to be connected to a parent switch, restart the switch for the configuration to take effect.

This command can also be used on parent switches and takes effect only on the leaf switches that have joined an SVF system.

- Method 2: Use the BIOS menu to set the type of leaf switch ports to be connected to the parent switch during the startup process.

  a. Log in to the switch through the console port.

  b. During the startup process, press **Ctrl+B** to enter the BIOS menu. The prompt information is "Press CTRL+B to enter BIOS menu".

  c. In the BIOS menu, choose **6. Modify stack parameters** > **2. Modify stack configuration** > **1. Auto negotiation mode/3. Leaf mode** > **1. Auto negotiation mode/2. 4*10GE/3. 8*10GE/4. 4*40GE** > **3. Return** > **1. Continue to boot** to set the type of leaf switch ports to be connected to the parent switch, and then choose to continue the startup process.

  This step uses a CE6810-48S4Q-EI as an example and may vary according to device models.

- Method 3: Use the working mode menu to set the working mode during the startup process.

  a. Log in to the switch through the console port.

  b. During the startup process, press **Ctrl+Y** to enter the working mode menu. The prompt information is "Press CTRL+Y to modify the switch mode".

  c. In the working mode menu, choose **4. Continue to boot** > **1. Auto negotiation mode/2. 4*10GE/3. 8*10GE/4. 4*40GE** to set the type of leaf switch ports to be connected to the parent switch.

  This step uses a CE6810-48S4Q-EI as an example and may vary according to device models.

  The working mode menu is as follows:

```
Press CTRL+Y to modify the switch mode ...................... 3

If you modify the switch mode, the switch will reboot.

        Switch Mode Menu

     1. Auto-negotiation mode      //Set the working mode to auto-negotiation.
     2. Stack mode                 //Set the working mode to stack.
     3. Leaf mode                  //Set the working mode to leaf.
     4. Continue to boot           //Continue to start the device.

You have 30 seconds to select the menu, the system will continue to boot when
time is up.
Enter your choice(1-4):4

Modify the uplink port type if needed.
```

```
      Uplink Port Menu

   1. Auto-negotiation mode     //Configure the uplink port to work in
auto-negotiation mode.
   2. 4*10GE                    //Configure the last four 10GE ports as
uplink ports.
   3. 8*10GE                    //Configure the last eight 10GE ports as
uplink ports.
   4. 4*40GE                    //Configure the last four 40GE ports as
uplink ports.
   5. Continue to boot          //Continue to start the device.
Enter your choice(1-5):
```

----End

7 Connecting Parent and Leaf Switches

Context

After completing SVF configurations, connect the leaf switches to the parent switches to set up an SVF system. If you change the working mode of a leaf switch through commands or change the type of the port that connects a leaf switch to a parent switch, restart the leaf switch to make the modification take effect.

☐ NOTE

- One leaf switch can connect to only one SVF system through only one fabric port.
- During the setup of an SVF system, there is no order between the software configuration and cable connection. You can perform the software configuration and then connect cables; alternatively, connect cables and then perform the software configuration.

8 Checking the Configuration

Context

After completing SVF configuration and connecting the parent and leaf switches, you can log in to a parent switch to check whether the SVF system is set up successfully.

Procedure

- Run the **display stack** [**member** *member-id*] command to check information about SVF member switches.
- Run the **display stack configuration** [**member** *member-id* | **all** | **leaf**] command to check the SVF configuration.
- Run the **display stack topology** [**link** | **neighbor**] command to check SVF topology information.
- Run the **display stack troubleshooting** [**member** *member-id*] [**history**] command to check the SVF fault events.
- Run the **display stack link-state last-down-reason** command to check the reason why SVF link protocol is Down.
- Run the **display stack blocked-interface** [**member** *member-id*] command to check packet congestion information on member ports of the fabric port.

----End

Follow-up Procedure

- During the setup of an SVF system, if the number of member switches exceeds the upper threshold (two switches) because of incorrect configuration or connection, excess parent devices cannot join the SVF system and ports of these parent devices will enter the Error-Down state (The device records the status of an interface as Error-Down when it detects that a fault occurs. The interface in Error-Down state cannot receive or send packets and the interface indicator is off.). In the following example, a service port is in Error-Down state.

```
<HUAWEI> display interface 10ge 3/0/1
10GE3/0/1 current state : ERROR DOWN(spine-member-exceed-limit) (ifindex: 12)
Line protocol current state : DOWN
......
```

After ports of excess parent devices enter the Error-Down state, modify the configuration or connection to remove excess parent devices and then check whether the ports recover from the Error-Down state.

You can recover ports from the Error-Down state using either of the following methods:

– Manually recover ports from the Error-Down state (after the ports become Error-Down).

■ Run the **shutdown** and then **undo shutdown** commands or run the **restart** command on each port to restart the port.

■ Run the **reboot** command to restart a member switch to recover all the ports from the Error-Down state.

– Enable ports to automatically recover from the Error-Down state (before the ports become Error-Down).

To enable service ports to automatically recover from the Error-Down state, run the **error-down auto-recovery cause spine-member-exceed-limit interval** *interval-value* command in the system view to enable ports in Error-Down state to become Up automatically and set the delay after which ports become Up automatically.

📖 **NOTE**

This method takes effect only for the ports that become Error-Down after this command is executed but not for those that have been in Error-Down state before this command is executed.

● CE6850-48T4Q-EI/CE6850-48T6Q-HI/CE6855-48T6Q-HI cannot function as a parent switch to join an SVF system. When they attempt to join a stack set up by the parent switch of an SVF system, their service ports will become Error-Down (The device records the status of an interface as Error-Down when it detects that a fault occurs. The interface in Error-Down state cannot receive or send packets and the interface indicator is off.). In the following example, a service port is in Error-Down state.

```
<HUAWEI> display interface 10ge 3/0/1
10GE3/0/1 current state : ERROR DOWN(spine-type-unsupported) (ifindex: 12)
Line protocol current state : DOWN
......
```

If ports of a CE6850-48T4Q-EI/CE6850-48T6Q-HI/CE6855-48T6Q-HI switch enter the Error-Down state, you are advised to remove the cable between the switch and the SVF system first.

You can recover ports from the Error-Down state using either of the following methods:

– Manually recover ports from the Error-Down state (after the ports become Error-Down).

■ Run the **shutdown** and then **undo shutdown** commands or run the **restart** command on each port to restart the port.

■ Run the **reboot** command to restart a member switch to recover all the ports from the Error-Down state.

– Enable ports to automatically recover from the Error-Down state (before the ports become Error-Down).

To enable service ports to automatically recover from the Error-Down state, run the **error-down auto-recovery cause spine-type-unsupported interval** *interval-value* command in the system view to enable ports in Error-Down state to become Up automatically and set the delay after which ports become Up automatically.

📖 **NOTE**

This method takes effect only for the ports that become Error-Down after this command is executed but not for those that have been in Error-Down state before this command is executed.

9 Maintaining an SVF System

9.1 Configuring a Heartbeat Timeout Interval for SVF Links

Context

In an SVF system, the parent and leaf switches exchange heartbeat packets to maintain link connections between them. If no heartbeat packet is transmitted on an SVF link within the timeout interval, the SVF link is considered abnormal. If SVF links are unstable, you can increase the heartbeat timeout interval of SVF links to maintain SVF system stability. If SVF links are stable, you can shorten the heartbeat timeout interval of SVF links to ensure that traffic can be switched in a timely manner in case of link failures.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **interface fabric-port** *port-id* command to enter the fabric port view.

Step 3 Run the **port holdtime** *hold-time* command to set a heartbeat timeout interval for SVF links of the fabric port.

By default, the heartbeat timeout interval of SVF links is 40 seconds.

Step 4 Run the **commit** command to commit the configuration.

----End

9.2 Configuring a Description for a Leaf Switch

Context

To facilitate management and identification of a leaf switch in an SVF system, configure the description of the leaf switch.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **stack** command to enter the stack management view.

Step 3 Run the **leaf member** *member-id* **description** *description* command to configure a description for a leaf switch.

By default, no description is configured for a leaf switch.

Step 4 Run the **commit** command to commit the configuration.

----End

9.3 Configuring an Alarm Threshold for the Number of Available Fabric Port Links

Context

To ensure fabric port link bandwidth and reliability, you can set an alarm threshold for the number of available fabric port links. When the number of available fabric port links is smaller than the alarm threshold because some links fail, the system generates an alarm. When the number of available fabric port links is larger than or equal to the alarm threshold, the system generates a clear alarm.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **interface fabric-port** *port-id* command to enter the fabric port view.

Step 3 Run the **fabric min-links threshold** *alarm-threshold* command to set an alarm threshold for the number of available fabric port links.

The default alarm threshold is 1.

Step 4 Run the **commit** command to commit the configuration.

----End

9.4 Enabling the Single-Homing Alarm Function for Leaf Switches

Context

On a network requiring high reliability, each leaf switch needs to connect to multiple parent switches. After the single-homing alarm function is enabled, the SVF system generates an alarm if a leaf switch connects to only one parent switch.

Procedure

Step 1 Run the **system-view** command to enter the system view.

Step 2 Run the **stack** command to enter the stack management view.

Step 3 Run the **leaf single-homed alarm enable** command to enable the single-homing alarm function for leaf switches.

By default, the single-homing alarm function is disabled.

Step 4 Run the **commit** command to commit the configuration.

----End

9.5 Maximizing the Uplink Bandwidth on a Leaf Switch

Context

When a leaf switch of the CE5810-24T4S-EI model is dual homed to two parent switches, by default, uplink traffic is not forwarded through the stack link between the parent switches and can only use a maximum of 20GE uplink bandwidth. If the stack link bandwidth is sufficient, you can run the **leaf uplink-traffic maximize** command to cancel the 20GE uplink bandwidth limit. This configuration enables the uplink traffic bandwidth to reach the maximum value of 40GE.

> ◫ **NOTE**
>
> This command is only valid on the CE5810-24T4S-EI.

Procedure

Step 1 Run:

```
system-view
```

The system view is displayed.

Step 2 Run:

```
stack
```

The stack management view is displayed.

Step 3 Run:

```
leaf member member-id uplink-traffic maximize
```

The uplink bandwidth on a leaf switch is configured.

By default, the uplink bandwidth is not maximized on a leaf switch.

Step 4 Run:

```
commit
```

The configuration is committed.

----End

9.6 SVF Upgrade

Context

Three methods can be used to upgrade the software version of an SVF system: system restart, fast upgrade, and in-service software upgrade (ISSU). The following table compares these upgrade methods.

Table 9-1 Upgrade method comparison

Upgrade Method	Upgrade Mechanism	Application Scenario
System restart	After you specify the new system software to use at the next startup, the SVF system restarts.	This upgrade method is commonly used, but it will cause lengthy service interruptions. Therefore, this method can be used in scenarios insensitive to the service interruption time.
Fast upgrade	Member switches in the SVF system are divided into groups and restart group by group during an SVF upgrade.	• This upgrade method shortens service interruption time and is applicable to scenarios sensitive to service interruptions. • Leaf switches must be dual-homed to two parent switches or single-homed to the master parent switch.
ISSU upgrade	Member switches in the SVF system restart one by one during an SVF upgrade. For more details about ISSU upgrade of an SVF system, see ISSU Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches Configuration Guide - Basic Configuration*.	• This upgrade method shortens service interruption time and is applicable to scenarios sensitive to service interruptions. • All leaf switches must be dual-homed to two parent switches.

□ NOTE

- Do not remove or reinstall cards, remove or reinstall optical modules, or power cycle member switches during an SVF upgrade.
- During an SVF upgrade, ensure that the network is stable and do not configure services on the network.

Procedure

Step 1 Upload the system software.

1. Upload the new system software to the master parent switch. For details on how to upload the system software, see File Management in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Basic Configurations*.

2. Run the **copy** *source-filename destination-filename* **all** command to copy the system software version to the standby parent switch.

Step 2 Perform a software upgrade.

- **System restart**

    a. Run the **startup system-software** *system-file* **all** command to specify the system software to use at the next startup.

    b. Run the **reboot** command to restart the SVF system.

- **Fast upgrade**

    a. Run the **startup system-software** *system-file* **all** command to specify the system software to use at the next startup.

    b. Run the **system-view** command to enter the system view.

    c. Run the **stack** command to enter the stack management view.

    d. Run the **stack upgrade fast group** *group-id* { **add** | **delete** } **member** { *member-id1* [**to** *member-id2*] } &<1-26> command to divide member switches in the SVF system into groups for fast SVF upgrade.

       By default. member switches in an SVF system are not divided into groups during a fast upgrade.

       To check information about the upgrade groups, run the **display stack upgrade fast group** [*group-id*] command. To clear the upgrade groups, run the **reset stack upgrade fast group** { *group-id* | **all** } command.

📖 **NOTE**
- The master and standby parent switches must belong to different groups.
- All the member switches in an SVF system must be divided into groups; otherwise, the SVF system cannot be fast upgraded.
- If a leaf switch connects to only the master parent switch, this leaf switch must belong to the same group as the master parent switch.

    e. (Optional) Run the **stack upgrade fast rollback-timer** *time* command to set the timeout period of a fast SVF upgrade.

       By default, the timeout period of a fast SVF upgrade is 60 minutes.

       To check the timeout period, run the **display stack upgrade fast rollback-timer** command.

📖 **NOTE**

The **stack upgrade fast rollback-timer** *time* command specifies the time taken to upgrade the group to which the standby switch belongs instead of the entire SVF system.

    f. Run the **stack upgrade fast** command to start a fast SVF upgrade.

       After performing a fast upgrade, you can run the **display stack upgrade status** command to check the upgrade status.

📖 **NOTE**
- Only the SVF system in which two parent switches set up a stack can be upgraded fast.
- The previous and target versions for fast upgrade must be V200R001C00 or later versions, and the target version must allow all current member switches to set up an SVF system.
- If a leaf switch connects to only the standby parent switch, the SVF system cannot be upgraded fast.
- The current SVF configuration must be the same as the next startup SVF configuration. Otherwise, the SVF system cannot be upgraded fast.

- **ISSU upgrade**

  For details about the ISSU upgrade procedure and precautions, see ISSU Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Basic Configuration*.

  ----End

10 Configuration Examples

10.1 Example for Setting Up an SVF System

Networking Requirements

As a data center network expands, ports provided by access switches are not sufficient for server access. To meet server access requirements, the number of access ports needs to be increased while protecting the previous equipment investment, and the network must be easy to manage and expand.

An SVF system can be set up on the network to meet the preceding requirements. As shown in Figure 10-1, SwitchA and SwitchB can set up a stack and function as parent switches to connect to multiple leaf switches. SwitchA is the master switch of the stack and its stack member ID is 1. SwitchB is the standby switch and its stack member ID is 2.

In this example, the parent switches are CE6850-48S4Q-EI switches, and the leaf switches are CE5810-48T4S-EI switches.

Figure 10-1 SVF networking diagram
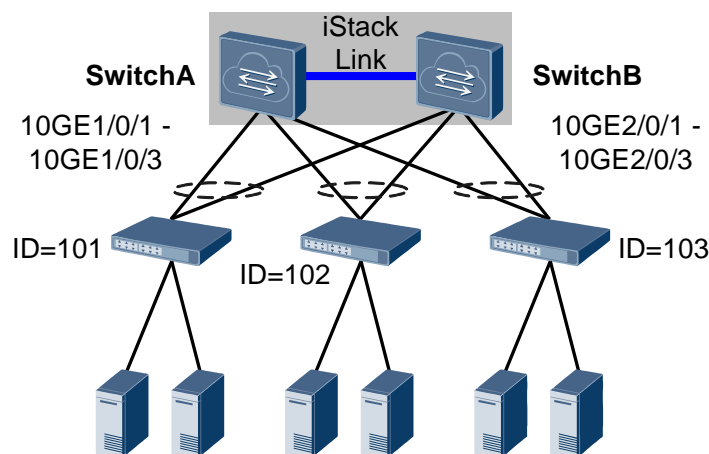
Configuration Roadmap

The configuration roadmap is as follows:

1. Set up a stack between the parent switches to ensure high reliability of the SVF system.

2. Configure fabric ports on the parent switches so that leaf switches can connect to the parent switches.

3. Connect leaf switches to the parent switches.

Procedure

Step 1 Set up a stack between SwitchA and SwitchB. For the configuration procedure, see Stack Configuration in the *CloudEngine 8800&7800&6800&5800 Series Switches   Configuration Guide - Virtualization*.

> 📖 **NOTE**
>
> - When setting up an SVF system, a parent switch must have a stack member ID that is smaller than or equal to 4. If not, run the **stack member** *member-id* **renumber** *new-member-id* [**inherit-config**] command in the stack management view to change the stack member ID to 4 or less. After changing the stack member ID, restart the parent switch to make the modification take effect.
>
> - When a parent switch is a standalone device but not a stack of two devices, the switch must have a stack domain ID configured. Otherwise, it cannot set up an SVF system. If a parent switch does not have a stack domain ID configured, run the **stack member** { *member-id* | **all** } **domain** *domain-id* command in the stack management view to configure a stack domain ID. After configuring a stack domain ID, save the device configuration to make the configuration take effect.
>
>   In this example, parent switches have stack domain IDs configured when setting up a stack.

Step 2 Log in to the stack to complete SVF configuration.

\# Configure fabric port 1, add member ports 10GE1/0/1 and 10GE2/0/1 to fabric port 1, and bind leaf ID 101 to it.

```
<SwitchA> system-view
[~SwitchA] interface fabric-port 1
[*SwitchA-Fabric-Port1] port bind member 101
[*SwitchA-Fabric-Port1] port member-group interface 10ge 1/0/1 2/0/1
Warning: The interface(s) (10GE1/0/1-1/0/4,10GE2/0/1-2/0/4) will be converted to stack
mode and have "port crc-statistics trigger error-down" configured. [Y/N]: y
[*SwitchA-Fabric-Port1] quit
[*SwitchA] commit
```

\# Configure fabric port 2, add member ports 10GE1/0/2 and 10GE2/0/2 to fabric port 2, and bind leaf ID 102 to it.

```
[~SwitchA] interface fabric-port 2
[*SwitchA-Fabric-Port2] port bind member 102
[*SwitchA-Fabric-Port2] port member-group interface 10ge 1/0/2 2/0/2
[*SwitchA-Fabric-Port2] quit
[*SwitchA] commit
```

\# Configure fabric port 3, add member ports 10GE1/0/3 and 10GE2/0/3 to fabric port 3, and bind leaf ID 103 to it.

```
[~SwitchA] interface fabric-port 3
[*SwitchA-Fabric-Port3] port bind member 103
[*SwitchA-Fabric-Port3] port member-group interface 10ge 1/0/3 2/0/3
[*SwitchA-Fabric-Port3] commit
[~SwitchA-Fabric-Port3] return
```

Step 3 Connect leaf switches to the parent switches and power on the leaf switches. The leaf switches connect to the parent switches through uplink 10GE ports.

📖 **NOTE**

- This example assumes that the leaf switches are unconfigured switches, work in auto-negotiation mode, and can join the SVF system through auto-negotiation. No manual configuration is required on the leaf switches.

- If the leaf switches have the startup configuration file, you need to clear the configuration in the next startup configuration file of the leaf switches or configure the working mode of the leaf switches to the leaf mode before restarting the switches (in auto-negotiation mode). For details, see 6.1 Configuring the Working Mode of Leaf Switches.

Step 4 Verify the configuration.

Check information about the SVF member switches.

```
<SwitchA> display stack
Total Spine Number : 2
Total Leaf Number  : 3
--------------------------------------------------------------------------------
MemberID Role    MAC             Priority  DeviceType       Description
--------------------------------------------------------------------------------
1       Master  0004-9f31-d520  150       CE6850-48S4Q-EI
2       Standby 0004-9f62-1f40  100       CE6850-48S4Q-EI
101     Leaf    0001-0406-0800  N/A       CE5810-48T4S-EI
102     Leaf    0025-9e95-7c30  N/A       CE5810-48T4S-EI
103     Leaf    0015-3e65-7f40  N/A       CE5810-48T4S-EI
--------------------------------------------------------------------------------
```

Check the SVF configuration.

```
<SwitchA> display stack configuration
Oper        : Operation
Conf        : Configuration
*           : Offline configuration
Isolated Port : The port is in stack mode, but does not belong to any Stack-Port
              or Fabric-Port


System Forwarding Model:
-------------------------------
Oper           Conf
-------------------------------
distributed     distributed
-------------------------------


Spine Attribute Configuration:
-------------------------------------------------
 MemberID        Domain         Priority
Oper(Conf)      Oper(Conf)      Oper(Conf)
-------------------------------------------------
1(1)            10(10)         150(150)
2(2)            10(10)         100(100)
-------------------------------------------------


Stack-Port Configuration:
--------------------------------------------------------------------------------
Stack-Port    Member Ports
```

```
--------------------------------------------------------------------------------
Stack-Port1/1 40GE1/0/1    40GE1/0/2
Stack-Port2/1 40GE2/0/1    40GE2/0/2
--------------------------------------------------------------------------------

Fabric-Port Configuration:
--------------------------------------------------------------------------------
Fabric-Port    BindMember   Ports
--------------------------------------------------------------------------------
Fabric-Port1   101          10GE1/0/1  10GE2/0/1
Fabric-Port2   102          10GE1/0/2  10GE2/0/2
Fabric-Port3   103          10GE1/0/3  10GE2/0/3
--------------------------------------------------------------------------------

Isolated Port Configuration:
10GE1/0/4   10GE2/0/4

Leaf Attribute Configuration:
-------------------------------------------------
MemberID      Switch Mode      Uplink Port
              Oper(Conf)       Oper(Conf)
-------------------------------------------------
101           Auto(Auto)       4*10GE(4*10GE)
102           Auto(Auto)       4*10GE(4*10GE)
103           Auto(Auto)       4*10GE(4*10GE)
-------------------------------------------------
```

----End

Configuration Files

- Configuration file of the SVF system

```
#
sysname SwitchA
#
stack
 #
 stack member 1 domain 10
 stack member 1 priority 150
 #
 stack member 2 domain 10
#
interface Fabric-Port1
 port bind member 101
#
interface Fabric-Port2
 port bind member 102
#
interface Fabric-Port3
 port bind member 103
#
interface Stack-Port1/1
#
interface Stack-Port2/1
```

```
#
interface 10GE1/0/1
 port mode stack
 fabric-port 1
 port crc-statistics trigger error-down
#
interface 10GE1/0/2
 port mode stack
 fabric-port 2
 port crc-statistics trigger error-down
#
interface 10GE1/0/3
 port mode stack
 fabric-port 3
 port crc-statistics trigger error-down
#
interface 10GE1/0/4
 port mode stack
 port crc-statistics trigger error-down
#
interface 40GE1/0/1
 port mode stack
 stack-port 1/1
 port crc-statistics trigger error-down
#
interface 40GE1/0/2
 port mode stack
 stack-port 1/1
 port crc-statistics trigger error-down
#
interface 10GE2/0/1
 port mode stack
 fabric-port 1
 port crc-statistics trigger error-down
#
interface 10GE2/0/2
 port mode stack
 fabric-port 2
 port crc-statistics trigger error-down
#
interface 10GE2/0/3
 port mode stack
 fabric-port 3
 port crc-statistics trigger error-down
#
interface 10GE2/0/4
 port mode stack
 port crc-statistics trigger error-down
#
interface 40GE2/0/1
 port mode stack
 stack-port 2/1
 port crc-statistics trigger error-down
#
interface 40GE2/0/2
```

```
port mode stack
stack-port 2/1
port crc-statistics trigger error-down
#
return
```