# Cisco 12000 Series Internet Router Architecture: Software Overview

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# Introduction

This document provides an overview of the Cisco 12000 Series Internet Router software architecture.

# Prerequisites

## Requirements

Readers of this document should be knowledgeable of the following:

- How to Choose a Cisco IOS Software Release

## Components Used

The information in this document is based on the following hardware:

- Cisco 12000 Series Internet Router

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

# Choosing a Cisco IOS Software

Depending on the features you need, Cisco IOS® software versions 11.2GS, 12.0S, or 12.0ST can be installed on a Cisco 12000 Series Internet Router. The choice should be made based on the features that are required, the hardware parts that are installed, and the available memory.

Cisco IOS Software Release 12.0S is directly pulled from the Cisco IOS Software 12.0 main line. It provides

the combination of features, performance, and platform support required by the Internet Service Provider (ISP) community. Cisco IOS Software Release 12.0 S is the follow−up release to Cisco IOS Software Release 11.1 CC. See Cisco IOS Software Release 12.0S Early Deployment (ED) Release Summary.

Cisco IOS Software Release 12.0 ST is pulled from 12.0S and provides new technology support. The driving factors in 12.0ST are Multi−Protocol Label Switching (MPLS)/Virtual Private Network (VPN), Label Distribution Protocol (LDP), Fast Re−Route, and high availability. For example, 12.0(16)ST introduced MPLS−VPN support for the 12000 router 6xCT3 line card, as well as MPLS−VPN support, VLAN to MPLS VPN mapping, and VLAN "P" bits mapping to IP Type of Service (ToS)/MPLS Class of Service (CoS) bits on the 3xGE line card (LC).

**Notes:**

- A release such as 12.0(16)S1 or 12.0(16)S2 includes bug fixes to the feature set in the maintenance image. For example, 12.0(19)S2 is a superset of 19S1, and 19S3 is a super set of 19S2, and so on. Thus, a bug integrated in 12.0(16)S4 is not integrated in 12.0(17)S or 12.0(18)S since these images were released before 12.0(16)S4. However, fixes in 12.0(16)S4 are eventually integrated back into the 12.0S main release.
- As from 12.0(22)S/ST, the ST train will merge to the S train and all the features supported in the ST train will be supported in the S train. There will be only one train for the Cisco 12000 Series Internet Router, the 12.0S train.

As a reference guide to decide which Cisco IOS software to install, consult the Release Notes below. They give a detailed overview of the features and hardware components that are supported for each Cisco IOS software release.

- Release Notes for Cisco IOS Software Release 11.2GS
- Release Notes for Cisco IOS Software Release 12.0S
- Release Notes for Cisco IOS Software Release 12.0ST

The Software Advisor tool ( registered customers only) is available to help you choose the right Cisco IOS software release. Should you encounter any conflicting information when using the Software Advisor, we recommend that you rely on the Release Notes.

# Cisco IOS Software Installation

Once you have decided on a software release, you can download the image from the Cisco web site. All the images are available to registered customers at the Download Software Area ( registered customers only) . See Software Installation and Upgrade Procedure for the Cisco 12000 Series for helpful guidelines.

# Cisco IOS Software Recovery

If you experience problems during the Cisco IOS software installation or upgrade, see ROMmon Recovery Procedure for the Cisco 12000 Series for troubleshooting steps to help you recover.

# Microcode Upgrade

After a Cisco IOS software upgrade, it might be necessary to upgrade the microcode of some line cards to remove warning messages concerning line card ROM Monitor or the fabric downloader warning messages. See Upgrading Line Card Firmware on a Cisco 12000 Series Internet Router for instructions on how to do this.

## Related Information

- **Cisco 12000 Series Internet Router Architecture − Chassis**
- **Cisco 12000 Series Internet Router Architecture − Switch Fabric**
- **Cisco 12000 Series Internet Router Architecture − Route Processor**
- **Cisco 12000 Series Internet Router Architecture − Line Card Design**
- **Cisco 12000 Series Internet Router Architecture − Memory Details**
- **Cisco 12000 Series Internet Router Architecture − Maintenance Bus, Power Supplies and Blowers, and Alarm Cards**
- **Cisco 12000 Series Internet Router Architecture − Packet Switching**
- **Understanding Cisco Express Forwarding**
- **Cisco IOS Software**
- **Cisco IOS Software Roadmap**
- **Technical Support & Documentation − Cisco Systems**

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