



Secure Copy

Last Updated: January 16, 2012

The Secure Copy (SCP) feature provides a secure and authenticated method for copying router configuration or router image files. SCP relies on Secure Shell (SSH), an application and a protocol that provide a secure replacement for the Berkeley r-tools.

- [Finding Feature Information, page 1](#)
- [Prerequisites for Secure Copy, page 1](#)
- [Information About Secure Copy, page 2](#)
- [How to Configure SCP, page 2](#)
- [Configuration Examples for Secure Copy, page 4](#)
- [Additional References, page 5](#)
- [Feature Information for Secure Copy, page 6](#)
- [Glossary, page 7](#)

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

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

Prerequisites for Secure Copy

- Before enabling SCP, you must correctly configure SSH, authentication, and authorization on the router.
- Because SCP relies on SSH for its secure transport, the router must have an Rivest, Shamir, and Adelman (RSA) key pair.



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Information About Secure Copy

- [How SCP Works, page 2](#)

How SCP Works

The behavior of SCP is similar to that of remote copy (rcp), which comes from the Berkeley r-tools suite, except that SCP relies on SSH for security. In addition, SCP requires that authentication, authorization, and accounting (AAA) authorization be configured so the router can determine whether the user has the correct privilege level.

SCP allows a user who has appropriate authorization to copy any file that exists in the Cisco IOS XE File System (IFS) to and from a router by using the **copy** command. An authorized administrator may also perform this action from a workstation.

How to Configure SCP

- [Configuring SCP, page 2](#)
- [Verifying SCP, page 3](#)
- [Troubleshooting SCP, page 4](#)

Configuring SCP

To enable and configure a Cisco router for SCP server-side functionality, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **aaa new-model**
4. **aaa authentication login** { default | list-name } method1[method2...]
5. **aaa authorization** { network | exec | commands level | reverse-access | configuration } { default | list-name } [method1 [method2...]]
6. **username name** [privilege level]{password encryption-type encrypted-password}
7. **ip scp server enable**

DETAILED STEPS

Command or Action	Purpose
Step 1 enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.

Command or Action	Purpose
<p>Step 2 <code>configure terminal</code></p> <p>Example:</p> <pre>Router# configure terminal</pre>	Enters global configuration mode.
<p>Step 3 <code>aaa new-model</code></p> <p>Example:</p> <pre>Router (config)# aaa new-model</pre>	Sets AAA authentication at login.
<p>Step 4 <code>aaa authentication login { default list-name } method1[method2...]</code></p> <p>Example:</p> <pre>Router (config)# aaa authentication login default group tacacs+</pre>	Enables the AAA access control system.
<p>Step 5 <code>aaa authorization { network exec commands level reverse-access configuration } { default list-name } [method1 [method2...]]</code></p> <p>Example:</p> <pre>Router (config)# aaa authorization exec default group tacacs+</pre>	<p>Sets parameters that restrict user access to a network.</p> <p>Note The <code>exec</code> keyword runs authorization to determine if the user is allowed to run an EXEC shell; therefore, you must use it when you configure SCP.</p>
<p>Step 6 <code>username name [privilege level]{password encryption-type encrypted-password}</code></p> <p>Example:</p> <pre>Router (config)# username superuser privilege 2 password 0 superpassword</pre>	<p>Establishes a username-based authentication system.</p> <p>Note You may skip this step if a network-based authentication mechanism--such as TACACS + or RADIUS--has been configured.</p>
<p>Step 7 <code>ip scp server enable</code></p> <p>Example:</p> <pre>Router (config)# ip scp server enable</pre>	Enables SCP server-side functionality.

Verifying SCP

To verify SCP server-side functionality, perform the following steps.

SUMMARY STEPS

1. enable
2. show running-config

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p>enable</p> <p>Example:</p> <pre>Router> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<p>show running-config</p> <p>Example:</p> <pre>Router# show running-config</pre>	<p>Verifies the SCP server-side functionality.</p>

Troubleshooting SCP**SUMMARY STEPS**

1. enable
2. debug ip scp

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p>enable</p> <p>Example:</p> <pre>Router> enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<p>debug ip scp</p> <p>Example:</p> <pre>Router# debug ip scp</pre>	<p>Troubleshoots SCP authentication problems.</p>

Configuration Examples for Secure Copy

- [Example SCP Server-Side Configuration Using Local Authentication, page 5](#)
- [Example SCP Server-Side Configuration Using Network-Based Authentication, page 5](#)

Example SCP Server-Side Configuration Using Local Authentication

The following example shows how to configure the server-side functionality of SCP. This example uses a locally defined username and password.

```
! AAA authentication and authorization must be configured properly for SCP to work.
aaa new-model
aaa authentication login default local
aaa authorization exec default local
username tiger privilege 15 password 0 lab
! SSH must be configured and functioning properly.
ip ssh time-out 120
ip ssh authentication-retries 3
ip scp server enable
```

Example SCP Server-Side Configuration Using Network-Based Authentication

The following example shows how to configure the server-side functionality of SCP using a network-based authentication mechanism:

```
! AAA authentication and authorization must be configured properly for SCP to work.
aaa new-model
aaa authentication login default group tacacs+
aaa authorization exec default group tacacs+
! SSH must be configured and functioning properly.
ip ssh time-out 120
ip ssh authentication-retries 3
ip scp server enable
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
Security commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>Cisco IOS Security Command Reference</i>
Secure Shell	Configuring Secure Shell and Secure Shell Version 2 Support feature modules.
Configuring authentication and authorization	Configuring Authentication , Configuring Authorization , and Configuring Accounting feature modules.

Standards

Standards	Title
None	--

MIBs

MIBs	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Secure Copy

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

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

Table 1 **Feature Information for Secure Copy**

Feature Name	Releases	Feature Configuration Information
Secure Copy	Cisco IOS XE Release 2.1	<p>The Secure Copy (SCP) feature provides a secure and authenticated method for copying router configuration or router image files. SCP relies on Secure Shell (SSH), an application and a protocol that provide a secure replacement for the Berkeley r-tools.</p> <p>In Cisco IOS XE Release 2.1, this feature was introduced on Cisco ASR 1000 Series Aggregation Services Routers.</p> <p>The following commands were introduced or modified: debug ip scp, ip scp server enable.</p>

Glossary

AAA --authentication, authorization, and accounting. Framework of security services that provide the method for identifying users (authentication), for remote access control (authorization), and for collecting and sending security server information used for billing, auditing, and reporting (accounting).

rcp --remote copy. Relying on Remote Shell (Berkeley r-tools suite) for security, rcp copies files, such as router images and startup configurations, to and from routers.

SCP --secure copy. Relying on SSH for security, SCP support allows the secure and authenticated copying of anything that exists in the Cisco IOS XE File Systems. SCP is derived from rcp.

SSH --Secure Shell. Application and a protocol that provide a secure replacement for the Berkeley r-tools. The protocol secures the sessions using standard cryptographic mechanisms, and the application can be used similarly to the Berkeley rexec and rsh tools. SSH Version 1 is implemented in the Cisco IOS XE software.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2012 Cisco Systems, Inc. All rights reserved.