Secure Copy

The Secure Copy (SCP) feature provides a secure and authenticated method for copying device configurations or device image files. SCP relies on Secure Shell (SSH), an application and protocol that provide a secure replacement for the Berkeley r-tools suite (Berkeley university’s own set of networking applications). This document provides the procedure to configure a Cisco device for SCP server-side functionality.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and 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 module.

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 Secure Copy (SCP), you must correctly configure Secure Shell (SSH), authentication, and authorization on the device.

- Because SCP relies on SSH for its secure transport, the device must have a Rivest, Shamir, and Adelman (RSA) key pair.
Information About Secure Copy

How Secure Copy Works

The behavior of Secure Copy (SCP) is similar to that of remote copy (RCP), which comes from the Berkeley r-tools suite (Berkeley university’s own set of networking applications), except that SCP relies on Secure Shell (SSH) for security. In addition, SCP requires that authentication, authorization, and accounting (AAA) authorization be configured so that the device can determine whether the user has the correct privilege level.

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

Note
Enable the SCP option while using the pscp.exe file with the Cisco software.

How to Configure Secure Copy

Configuring Secure Copy

To configure a Cisco device for Secure Copy (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
8. exit
9. show running-config
10. debug ip scp

DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1 enable</td>
<td>Enables privileged EXEC mode.</td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
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<tr>
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</tbody>
</table>
| **Example:**  
Device> enable | • Enter your password if prompted. |
| **Step 2**  
**configure terminal** | Enters global configuration mode. |
| **Example:**  
Device# configure terminal | |
| **Step 3**  
**aaa new-model** | Sets AAA authentication at login. |
| **Example:**  
Device(config)# aaa new-model | |
| **Step 4**  
**aaa authentication login**  
*default* | Enables the AAA access control system. |
| *list-name*  
*method1*  
*method2* | |
| **Example:**  
Device(config)# aaa authentication login default  
group tacacs+ | |
| **Step 5**  
**aaa authorization**  
*network*  
*exec*  
*commands level*  
*reverse-access*  
*configuration*  
*default*  
*list-name*  
*method1*  
*method2* | Sets parameters that restrict user access to a network. |
| **Example:**  
Device(config)# aaa authorization exec default  
group tacacs+ | |
| **Note**  
The *exec* keyword runs authorization to determine if the user is allowed to run an EXEC shell; therefore, you must use the *exec* keyword when you configure SCP. |
| **Step 6**  
**username**  
*name*  
*privilege level*  
*password*  
*encryption-type*  
*encrypted-password* | Establishes a username-based authentication system. |
| **Example:**  
Device(config)# username superuser privilege 2  
password 0 superpassword | |
| **Note**  
You may omit this step if a network-based authentication mechanism, such as TACACS+ or RADIUS, has been configured. |
| **Step 7**  
**ip scp server enable** | Enables SCP server-side functionality. |
| **Example:**  
Device(config)# ip scp server enable | |
| **Step 8**  
**exit** | Exits global configuration mode and returns to privileged EXEC mode. |
| **Example:**  
Device(config)# exit | |
### Command or Action

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 9</strong></td>
<td><strong>show running-config</strong></td>
</tr>
<tr>
<td></td>
<td>(Optional) Displays the SCP server-side functionality.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td><strong>Device# show running-config</strong></td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td><strong>debug ip scp</strong></td>
</tr>
<tr>
<td></td>
<td>(Optional) Troubleshoots SCP authentication problems.</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td><strong>Device# debug ip scp</strong></td>
</tr>
</tbody>
</table>

## Configuration Examples for Secure Copy

### Example: Secure Copy Configuration Using Local Authentication

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

```plaintext
! AAA authentication and authorization must be configured properly in order for SCP to work.
aaa new-model
aaa authentication login default local
aaa authorization exec default local
username user1 privilege 15 password 0 lab
! SSH must be configured and functioning properly.
ip scp server enable
```

### Example: Secure Copy Configuration Using Network-Based Authentication

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

```plaintext
! AAA authentication and authorization must be configured properly in order 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 scp server enable
```
Additional References

Related Documents

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
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<tbody>
<tr>
<td>Cisco IOS commands</td>
<td>Cisco IOS Master Command List, All Releases</td>
</tr>
<tr>
<td>Secure Shell Version 1 and 2 support</td>
<td>Secure Shell Configuration Guide</td>
</tr>
<tr>
<td>Authentication and authorization commands</td>
<td>Cisco IOS Security Command Reference: Commands A to C</td>
</tr>
<tr>
<td>Configuring authentication and authorization</td>
<td>Authentication, Authorization, and Accounting</td>
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<td></td>
<td>Configuration Guide</td>
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Technical Assistance

<table>
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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>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.</td>
<td><a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a></td>
</tr>
</tbody>
</table>

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.
Table 1: Feature Information for Secure Copy

<table>
<thead>
<tr>
<th>Feature Name</th>
<th>Releases</th>
<th>Feature Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure Copy</td>
<td>Cisco IOS 12.0(21)S</td>
<td>The Secure Copy (SCP) feature provides a secure and authenticated method for copying device configurations or device image files. SCP relies on Secure Shell (SSH), an application and protocol that provide a secure replacement for the Berkeley r-tools suite. The following commands were introduced or modified: <strong>debug ip scp, ip scp server enable.</strong></td>
</tr>
<tr>
<td></td>
<td>Cisco IOS 12.2(2)T</td>
<td></td>
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<tr>
<td></td>
<td>Cisco IOS 12.2(25)S</td>
<td></td>
</tr>
</tbody>
</table>

Glossary

**AAA**—authentication, authorization, and accounting. A 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. Relies on Remote Shell (Berkeley r-tools suite) for security; RCP copies files such as device images and startup configurations to and from devices.

**SCP**—secure copy. Relies on SSH for security; SCP support allows secure and authenticated copying of anything that exists in the Cisco IOS File System (IFS). SCP is derived from RCP.

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