Configuring SSH

This chapter contains the following sections:

Information About SSH

SSH Server

You can use the Secure Shell (SSH) server to enable an SSH client to make a secure, encrypted connection. SSH uses strong encryption for authentication. The SSH server can operate with publicly and commercially available SSH clients.

TACACS+ user authentication and locally stored usernames and passwords are supported for SSH.

SSH Client

The SSH client feature is an application that runs over the SSH protocol to provide device authentication and encryption. The SSH client enables a secure, encrypted connection to any device that runs the SSH server. This connection provides an encrypted outbound connection. With authentication and encryption, the SSH client produces secure communication over an insecure network.

The SSH client works with publicly and commercially available SSH servers.

SSH Server Keys

SSH requires server keys for secure communication. You can use SSH server keys for the following SSH options:

- SSH version 2 using Rivest, Shamir, and Adelman (RSA) public-key cryptography
- SSH version 2 using the Digital System Algrorithm (DSA)

Be sure to have an SSH server key-pair with the correct version before enabling the SSH service. Generate the SSH server key-pair according to the SSH client version used. The SSH service accepts two types of key-pairs for use by SSH version 2:

- The dsa option generates the DSA key-pair for the SSH version 2 protocol.
- The rsa option generates the RSA key-pair for the SSH version 2 protocol.

By default, an RSA key that uses 1024 bits is generated.

SSH supports the following public key formats

- OpenSSH
- IETF Secure Shell (SECSH)
- Public Key Certificate in Privacy-Enhanced Mail (PEM)

Caution If you delete all of the SSH keys, you cannot start the SSH services.

Prerequisites for SSH

- Configure IP on a Layer 3 interface, out-of-band on the mgmt 0 interface.
- Before enabling the SSH server, obtain the SSH key.

Guidelines and Limitations for SSH

- Only SSH version 2 (SSHv2) is supported.
- SSH is enabled by default.
- Cisco NX-OS commands might differ from the Cisco IOS commands.

Default Settings

Parameters	Default
SSH server	Enabled
SSH server key	RSA key generated with 2048 bits
RSA key bits for generation	1024

Configuring SSH

Generating SSH Server Keys

You can generate an SSH server key based on your security requirements.

The default SSH server key is an RSA key that is generated using 1024 bits.

Before You Begin

Log in to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **no feature ssh**
3. switch(config)# **ssh key** {**dsa** [**force**] | **rsa** [*bits* [**force**]]}
4. switch(config)# **feature ssh**
5. (Optional) switch# **show ssh key**
6. (Optional) switch# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **no feature ssh**	Disables SSH.
Step 3	switch(config)# **ssh key** {**dsa** [**force**] | **rsa** [*bits* [**force**]]}	Generates the SSH server key. **dsa—**If specified, the ssh command uses the Digital Signature Algorithm (DSA) public key algorithm. **rsa—**If specified, the ssh command uses the Ron Rivest, Adi Shamir, and Leonard Adleman (RSA) public key algorithm.

	Command or Action	Purpose
		bits—The number of bits used to generate the key. The range is from 768 to 2048. The default value is 1024. **force**—Replaces an existing key.
Step 4	switch(config)# **feature ssh**	Enables SSH.
Step 5	switch# **show ssh key**	(Optional) Displays the SSH server keys.
Step 6	switch# **copy running-config startup-config**	(Optional) Copies the running configuration to the startup configuration.

The following example generates SSH server keys:

```
switch# configure terminal
switch(config)# no feature ssh
XML interface to system may become unavailable since ssh is disabled
switch(config)# ssh key dsa force
generating dsa key(1024 bits).....
.
generated dsa key
n1000v(config)# feature ssh
n1000v(config)# show ssh key
*************************************
rsa Keys generated:Sun Jul 27 15:18:46 2008

ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyKcb7Nv9Ki1OOId9/tdHHa/ngQujlvK5mXyL/n+DeOXK
fVhHbX2a+V0cm7CCLUkBh+BvZRmpmOVTmU/5awfVhVxMKXMiPOPBc+A6/n3FVroyRwupMki6mWoM6Uwa
GID5gsVPqFjFNSgMWtbhjo97XVKhgjFW+wOVt8QoAcrEtnwEfsnQk1EIr/0XIP1mqTsrqTsmjZ2vLk+f
FzTGYAxMvYZI+BrN47aoH2ywS7CpnODjCDXJuDYSPbc3PA8t0ghU/60m9R+s6AZPuljVQbGfxPrahEu4
GVc6sMJNU1JxmqDJkodhMArObB4Umzj7E3Rdby/ZWx/clTYiXQR1X1VfhQ==

bitcount:2048
fingerprint:
fd:ca:48:73:b9:ee:e7:86:9e:1e:40:46:f1:50:1d:44
*************************************
dsa Keys generated:Sun Jul 27 15:20:12 2008

ssh-dss AAAAB3NzaC1kc3MAAACBALpdxLjXNS/jcCNY+F1QZV9HegxBEb0DMUmq9bSq2N+KAcvHllEh
GnaiHhqarOlcEKqhLbIbuqtKTCvfa+Y1hBIAhWVjg1UR3/M22jqxnfhnxL5YRc1Q7fcesFax0myayAIU
nXrkO5iwv9XHTu+EInRc4kJ0XrG9SxtLmDe/fi2ZAAAAFQDbRabAjZa6GfDpwjXw5smRhrElJwAAAIEA
r50yi3hHawNnb5qgYLXhN+KA8XJF753eCWHtMw7NR8fz6fjQ1R2J97UjjGuQ8DvwpGeNQ5S+AuIo0rGq
svdg7TTecBcbgBOnR7Fs2+W5HiSVEGbvj1xaeK8fkNE6kaJumBB343b8Rgj0G97MP/os1GfkEqmX9glB
0IOM2mgHHyoAAACAfRir27hHy+fw8CxPlsK0R6cFhxYyd/qYYogXFKYIOPxpLoYrjqODeOFThU7TJuBz
aS97eXiruzbffHwzUGfXgmQT5o9IMZRTClWPA/5Ju4O9YABYHccUghf0W+QtgGOT6FOSvBh8uOV0kcHC
GMJAP8omphauZJlc+wgFxhnkyh4=

bitcount:1024
fingerprint:
44:91:32:1f:7a:d1:83:3c:f3:5e:db:53:0a:2d:ce:69
*************************************
```

Configuring a User Account with a Public Key

You configure an SSH public key to log in using the SSH client without being prompted for a password. You can specify the SSH public key in one of three different formats:

- OpenSSH format
- IETF SECSH format
- Public Key Certificate in PEM format

Configuring an OpenSSH Key

You can specify the SSH public keys in OpenSSH format for user accounts.

You can also configure an SSH public key to log in using the SSH client without being prompted for a password. You can specify the SSH public key in one of three different formats:

- OpenSSH format
- IETF SECSH format
- Public Key Certificate in PEM format

Before You Begin

- Log in to the CLI in EXEC mode.
- Generate an SSH public key in OpenSSH format.
- Have an existing user account.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **username** *username* **sshkey** *ssh-key*
3. switch(config)# **exit**
4. (Optional) switch# **show user-account**
5. (Optional) switch# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enter global configuration mode.
Step 2	switch(config)# **username** *username* **sshkey** *ssh-key*	Configures the SSH public key in OpenSSH format with an exiting user account. *username*—The username of the existing user account. *ssh-key*—The SSH public key to use. To create a user account use the **username** *name* **password** *pwd* command. *name*—The name to assign to the user account. *username*—The password to assign to the user account.

	Command or Action	Purpose
Step 3	switch(config)# **exit**	Exits global configuration mode and returns you to EXEC mode.
Step 4	switch# **show user-account**	(Optional) Displays the user account configuration.
Step 5	switch# **copy running-config startup-config**	(Optional) Copies the running configuration to the startup configuration.

The following example configures an OpenSSH key.

```
switch# configure terminal
switch(config)# username user1 sshkey ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyK
cb7Nv9Ki1OOId9/tdHHa/ngQujlvK5mXyL/n+DeOXKfVhHbX2a+V0cm7CCLUkBh+BvZRmpmOVTmU/5aw
fVhVxMKXMiPOPBc+A6/n3FVroyRwupMki6mWoM6UwaGID5gsVPqFjFNSgMWtbhjo97XVKhgjFW+wOVt8
QoAcrEtnwEfsnQk1EIr/0XIP1mqTsrqTsmjZ2vLk+fFzTGYAxMvYZI+BrN47aoH2ywS7CpnODjCDXJuD
YSPbc3PA8t0ghU/60m9R+s6AZPuljVQbGfxPrahEu4GVc6sMJNU1JxmqDJkodhMArObB4Umzj7E3Rdby
/ZWx/clTYiXQR1X1VfhQ==
switch(config)# exit
switch# show user-account
user:admin
        this user account has no expiry date
        roles:network-admin
user:user1
        this user account has no expiry date
        roles:network-operator
        ssh public key: ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyKcb7Nv9Ki1OOId9/tdH
Ha/ngQujlvK5mXyL/n+DeOXKfVhHbX2a+V0cm7CCLUkBh+BvZRmpmOVTmU/5awfVhVxMKXMiPOPBc+A6
/n3FVroyRwupMki6mWoM6UwaGID5gsVPqFjFNSgMWtbhjo97XVKhgjFW+wOVt8QoAcrEtnwEfsnQk1EI
r/0XIP1mqTsrqTsmjZ2vLk+fFzTGYAxMvYZI+BrN47aoH2ywS7CpnODjCDXJuDYSPbc3PA8t0ghU/60m
9R+s6AZPuljVQbGfxPrahEu4GVc6sMJNU1JxmqDJkodhMArObB4Umzj7E3Rdby/ZWx/clTYiXQR1X1Vf
hQ==
switch# copy running-config startup-config
```

Configuring IETF or PEM Keys

You can specify the SSH public keys in IETF SECSH or PEM format for user accounts.

You can also configure an SSH public key to log in using the SSH client without being prompted for a password. You can specify the SSH public key in one of three different formats:

- OpenSSH format
- IETF SECSH format
- Public Key Certificate in PEM format

Before You Begin

- Log in to the CLI in EXEC mode
- Generate an SSH public key in one of the following formats:
  - IETF SECSH format
  - Public Key Certificate in PEM format

SUMMARY STEPS

1. switch# **copy** *server-file* **bootflash:***filename*
2. switch# **configure terminal**
3. switch(config)# **username** *username* **sshkey file bootflash:***filename*
4. switch(config)# **exit**
5. (Optional) switch# **show user-account**
6. (Optional) switch# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **copy** *server-file* **bootflash:***filename*	Downloads the file containing the SSH key from a server. The server can be FTP, secure copy (SCP), secure FTP (SFTP), or TFTP. *filename*—The name of the file that contains the SSH key.
Step 2	switch# **configure terminal**	Enters global configuration mode.
Step 3	switch(config)# **username** *username* **sshkey file bootflash:***filename*	Configures the SSH public key. *username*—The username of the existing user account. *filename*—The name of the file that contains the SSH key.
Step 4	switch(config)# **exit**	Exits global configuration mode and returns you to EXEC mode.
Step 5	switch# **show user-account**	(Optional) Displays the user account configuration.
Step 6	switch# **copy running-config startup-config**	(Optional) Copies the running configuration to the startup configuration.

The following example configures an SSH key to use when logging in with the specified user account:

```
switch# copy tftp://10.78.1.10/secsh_file.pub bootflash:secsh_file.pub vrf management
Trying to connect to tftp server......
Connection to server Established.
|
TFTP get operation was successful
switch# configure terminal
switch(config)# username User1 sshkey file bootflash:secsh_file.pub
switch(config)# exit
switch# show user-account
user:admin
        this user account has no expiry date
        roles:network-admin
user:user2
        this user account has no expiry date
        roles:network-operator
        ssh public key: ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyKcb7Nv9Ki1OOId9/tdHHa/
ngQujlvK5mXyL/n+DeOXKfVhHbX2a+V0cm7CCLUkBh+BvZRmpmOVTmU/5awfVhVxMKXMiPOPBc+A6/n3FVroyRwupMki6
mWoM6UwaGID5gsVPqFjFNSgMWtbhjo97XVKhgjFW+wOVt8QoAcrEtnwEfsnQk1EIr/0XIP1mqTsrqTsmjZ2vLk+
fFzTGYAxMvYZI+BrN47aoH2ywS7CpnODjCDXJuDYSPbc3PA8t0ghU/60m9R+s6AZPuljVQbGfxPrahEu4GVc6sMJN
```

```
U1JxmqDJkodhMArObB4Umzj7E3Rdby/ZWx/c1TYiXQR1X1VfhQ==
switch# copy running-config startup-config
```

Starting SSH Sessions

You can start SSH sessions using IP to connect to remote devices.

Before You Begin

- Log in to the CLI in EXEC mode.
- Obtain the hostname and, if needed, the username, for the remote device.
- Enable the SSH server on the remote device.

SUMMARY STEPS

1. switch# **ssh** [**root@**] {*ip-address* | *hostname* } [**vrf** *vrf-name*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **ssh** [**root@**] {*ip-address* | *hostname* } [**vrf** *vrf-name*]	Creates an SSH IP session to a remote device using the device's IP address. *ip-address*—The IP address of the remote device. *hostname*—The hostname of the remote device. The hostname is alphanumeric, case sensitive, and has a maximum of 256 characters. *vrf-name*—The name of the virtual routing and forwarding (VRF) instance. The default value is the default VRF instance.

The following example starts an SSH session:

```
switch# ssh root@172.28.30.77
root@172.28.30.77's password:
Last login: Sat Dec 4 11:07:23 2013 from 171.70.209.64
```

Clearing SSH Hosts

You can clear from your account the list of trusted SSH servers that were added when you downloaded a file from a server using SCP or SFTP, or when you started an SSH session to a remote host.

SUMMARY STEPS

1. switch# **clear ssh hosts**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **clear ssh hosts**	Clears the SSH host sessions.

Disabling the SSH Server

You can disable the SSH server to prevent SSH access to the switch. By default, the SSH server is enabled.

If you disable SSH, you must first generate an SSH server key before you can enable it again.

Before You Begin

Log in to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **no feature ssh**
3. (Optional) switch(config)# **show ssh server**
4. (Optional) switch(config)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **no feature ssh**	Disables the SSH server. The default is enabled.
Step 3	switch(config)# **show ssh server**	(Optional) Displays the SSH server configuration.
Step 4	switch(config)# **copy running-config startup-config**	(Optional) Copies the running configuration to the startup configuration.

The following example disables the SSH server:

```
switch# configure terminal
switch(config)# no feature ssh
XML interface to system may become unavailable since ssh is disabled
switch(config)#  show ssh server
ssh is not enabled
switch(config)# copy running-config startup-config
```

Deleting SSH Server Keys

You can delete SSH server keys after you disable the SSH server.

If you disable SSH, you must first generate an SSH server key before you can enable it again.

Before You Begin

Log in to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **no feature ssh**
3. switch(config)# **no ssh key** [**dsa** | **rsa**]
4. (Optional) switch(config)# **show ssh key**
5. (Optional) switch(config)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config)# **no feature ssh**	Disables the SSH server.
Step 3	switch(config)# **no ssh key** [**dsa** | **rsa**]	Deletes the SSH server key. **dsa—**If specified, the ssh command deletes the Digital Signature Algorithm (DSA) public key. **rsa—**If specified, the ssh command deletes the Ron Rivest, Adi Shamir, and Leonard Adleman (RSA) public key. The default is to delete all of the SSH keys.
Step 4	switch(config)# **show ssh key**	(Optional) Displays the SSH server key configuration.
Step 5	switch(config)# **copy running-config startup-config**	(Optional) Copies the running configuration to the startup configuration.

The following example deletes the SSH server keys:

```
switch# configure terminal
switch(config)# no feature ssh
switch(config)# no ssh key rsa
switch(config)# show ssh key
**************************************
rsa Keys generated:Sun Jul 27 15:18:46 2008

ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAQEAyKcb7Nv9Ki1OOId9/tdHHa/ngQujlvK5mXyL/n+DeOXK
fVhHbX2a+V0cm7CCLUkBh+BvZRmpmOVTmU/5awfVhVxMKXMiPOPBc+A6/n3FVroyRwupMki6mWoM6Uwa
GID5gsVPqFjFNSgMWtbhjo97XVKhgjFW+wOVt8QoAcrEtnwEfsnQk1EIr/0XIP1mqTsrqTsmjZ2vLk+f
```

```
FzTGYAxMvYZI+BrN47aoH2ywS7CpnODjCDXJuDYSPbc3PA8t0ghU/60m9R+s6AZPuljVQbGfxPrahEu4
GVc6sMJNU1JxmqDJkodhMArObB4Umzj7E3Rdby/ZWx/clTYiXQR1X1VfhQ==

bitcount:2048
fingerprint:
fd:ca:48:73:b9:ee:e7:86:9e:1e:40:46:f1:50:1d:44
**************************************
dsa Keys generated:Sun Jul 27 15:20:12 2008

ssh-dss AAAAB3NzaC1kc3MAAACBALpdxLjXNS/jcCNY+F1QZV9HegxBEb0DMUmq9bSq2N+KAcvHllEh
GnaiHhqarOlcEKqhLbIbuqtKTCvfa+Y1hBIAhWVjg1UR3/M22jqxnfhnxL5YRc1Q7fcesFax0myayAIU
nXrkO5iwv9XHTu+EInRc4kJ0XrG9SxtLmDe/fi2ZAAAAFQDbRabAjZa6GfDpwjXw5smRhrElJwAAAIEA
r50yi3hHawNnb5qgYLXhN+KA8XJF753eCWHtMw7NR8fz6fjQ1R2J97UjjGuQ8DvwpGeNQ5S+AuIo0rGq
svdg7TTecBcbgBOnR7Fs2+W5HiSVEGbvj1xaeK8fkNE6kaJumBB343b8Rgj0G97MP/os1GfkEqmX9glB
0IOM2mgHHyoAAACAfRir27hHy+fw8CxPlsK0R6cFhxYyd/qYYogXFKYIOPxpLoYrjqODeOFThU7TJuBz
aS97eXiruzbffHwzUGfXgmQT5o9IMZRTClWPA/5Ju4O9YABYHccUghf0W+QtgGOT6FOSvBh8uOV0kcHC
GMJAP8omphauZJlc+wgFxhnkyh4=

bitcount:1024
fingerprint:
44:91:32:1f:7a:d1:83:3c:f3:5e:db:53:0a:2d:ce:69
**************************************
mcs-srvr43(config)# no ssh key rsa
mcs-srvr43(config)# show ssh key
**************************************
could not retrieve rsa key information
**************************************
dsa Keys generated:Sun Jul 27 15:20:12 2008

ssh-dss AAAAB3NzaC1kc3MAAACBALpdxLjXNS/jcCNY+F1QZV9HegxBEb0DMUmq9bSq2N+KAcvHllEh
GnaiHhqarOlcEKqhLbIbuqtKTCvfa+Y1hBIAhWVjg1UR3/M22jqxnfhnxL5YRc1Q7fcesFax0myayAIU
nXrkO5iwv9XHTu+EInRc4kJ0XrG9SxtLmDe/fi2ZAAAAFQDbRabAjZa6GfDpwjXw5smRhrElJwAAAIEA
r50yi3hHawNnb5qgYLXhN+KA8XJF753eCWHtMw7NR8fz6fjQ1R2J97UjjGuQ8DvwpGeNQ5S+AuIo0rGq
svdg7TTecBcbgBOnR7Fs2+W5HiSVEGbvj1xaeK8fkNE6kaJumBB343b8Rgj0G97MP/os1GfkEqmX9glB
0IOM2mgHHyoAAACAfRir27hHy+fw8CxPlsK0R6cFhxYyd/qYYogXFKYIOPxpLoYrjqODeOFThU7TJuBz
aS97eXiruzbffHwzUGfXgmQT5o9IMZRTClWPA/5Ju4O9YABYHccUghf0W+QtgGOT6FOSvBh8uOV0kcHC
GMJAP8omphauZJlc+wgFxhnkyh4=

bitcount:1024
fingerprint:
44:91:32:1f:7a:d1:83:3c:f3:5e:db:53:0a:2d:ce:69
**************************************
mcs-srvr43(config)# no ssh key dsa
mcs-srvr43(config)# show ssh key
**************************************
could not retrieve rsa key information
**************************************
could not retrieve dsa key information
**************************************
no ssh keys present. you will have to generate them
**************************************
```

Clearing SSH Sessions

You can clear SSH sessions from the device.

Before You Begin

Log n to the CLI in EXEC mode.

SUMMARY STEPS

1. switch# **show users**
2. switch# **clear line** *vty-line*
3. (Optional) switch# **show users**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **show users**	Displays user session information.
Step 2	switch# **clear line** *vty-line*	Clears a user SSH session. *vty-line*—The Virtual Teminal Line (VTY) to clear.
Step 3	switch# **show users**	(Optional) Displays user session information.

The following example clears the SSH sessions from the device:

```
switch# show users
NAME     LINE         TIME         IDLE          PID COMMENT
admin    tty1         Jul 25 19:13  old         2867
admin    pts/0        Jul 28 09:49 00:02       28556 (10.21.148.122)
admin    pts/1        Jul 28 09:46   .         28437 (::ffff:10.21.148.122)*
switch# clear line 0
switch# show users
NAME     LINE         TIME         IDLE          PID COMMENT
admin    tty1         Jul 25 19:13  old         2867
admin    pts/1        Jul 28 09:46   .         28437 (::ffff:10.21.148.122)*
mcs-srvr43(config)#
```

Verifying the SSH Configuration

You can verify the configuration with the following commands:

Command	Purpose
show ssh key [**dsa** | **rsa**]	Displays SSH server key-pair information. **dsa—**If specified, displays the Digital Signature Algorithm (DSA) public key information. **rsa—**If specified, displays the Ron Rivest, Adi Shamir, and Leonard Adleman (RSA) public key information. The default is to display information for all of the SSH keys.
show running-config security [**all**]	Displays the SSH and user account configuration in the running configuration. **all—**Displays the default values for the SSH and user accounts.
show ssh server	Displays the SSH server configuration.

Configuration Example for SSH

The following example shows how to configure SSH with an OpenSSH key:

1. Disable the SSH server:

```
switch# configure terminal
switch(config)# no feature ssh
```

2. Generate an SSH server key:

```
switch(config)# ssh key rsa
generating rsa key(1024 bits).....
.generated rsa key
```

3. Enable the SSH server:

```
switch(config)# feature ssh
```

4. Display the SSH server key:

```
switch(config)# show ssh key
rsa Keys generated:Sat Sep 29 00:10:39 2007

ssh-rsa AAAAB3NzaC1yc2EAAAABIwAAAIEAvWhEBsF55oaPHNDBnpXOTw6+/OdHoLJZKr+MZm99n2U0
ChzZG4svRWmHuJY4PeDWl0e5yE3g3EO3pjDDmt923siNiv5aSga60K36lr39HmXL6VgpRVn1XQFiBwn4
na+H1d3Q0hDt+uWEA0tka2uOtXlDhliEmn4HVXOjGhFhoNE=

bitcount:1024
fingerprint:
51:6d:de:1c:c3:29:50:88:df:cc:95:f0:15:5d:9a:df
*************************************
could not retrieve dsa key information
*************************************
```

5. Specify the SSH public key in OpenSSH format:

```
switch(config)# username User1 sshkey ssh-rsa
AAAAB3NzaC1yc2EAAAABIwAAAIEAy19oF6QaZl9G+3f1XswK3OiW4H7YyUyuA50rv7gsEPjhOBYmsi6PAVKui1nIf/
DQhum+lJNqJP/eLowb7ubO+lVKRXFY/G+lJNIQW3g9igG30c6k6+XVn+NjnI1B7ihvpVh7dLddMOXwOnXHYshXmSiH
3UD/vKyziEh5S4Tplx8=
```

6. Save the configuration:

```
switch(config)# copy running-config startup-config
```

Feature History for SSH

Feature Name	Releases	Feature Information
SSH	Release 5.2(1)SK1(2.1)	This feature was introduced.