

Encrypt Pre-shared Keys in Cisco IOS Router Configuration Example

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Introduction

Cisco IOS® Software Release 12.3(2)T code introduces the functionality that allows the router to encrypt the ISAKMP pre-shared key in secure type 6 format in nonvolatile RAM (NVRAM). The pre-shared key to be encrypted can be configured either as standard, under an ISAKMP key ring, in aggressive mode, or as the group password under an EzVPN server or client setup. This sample configuration details how to set up encryption of both existing and new pre-shared keys.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on this software version:

- Cisco IOS Software Release 12.3(2)T

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

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Configure

This section presents you with the information you can use to configure the features this document describes.

Note: Use the Command Lookup Tool (registered customers only) to obtain more information on the commands

used in this section.

These two new commands are introduced in order to enable pre-shared key encryption:

- **key config-key password-encryption** [*master key*]
- **password encryption aes**

The [*master key*] is the password/key used to encrypt all other keys in the router configuration with the use of an Advance Encryption Standard (AES) symmetric cipher. The master key is *not* stored in the router configuration and *cannot* be seen or obtained in any way while connected to the router.

Once configured, the master key is used to encrypt any existing or new keys in the router configuration. If the [*master key*] is not specified on the command line, the router prompts the user to enter the key and to re-enter it for verification. If a key already exists, the user is prompted to enter the old key first. Keys are not encrypted until you issue the **password encryption aes** command.

The master key can be changed (although this should not be necessary unless the key has become compromised in some way) by issuing the **key config-key...** command again with the new [*master-key*]. Any existing encrypted keys in the router configuration are re-encrypted with the new key.

You can delete the master key when you issue the **no key config-key...** However, this renders all currently configured keys in the router configuration useless (a warning message displays that details this and confirms the master key deletion). Since the master key no longer exists, the type 6 passwords cannot be unencrypted and used by the router.

Note: For security reasons, neither the removal of the master key, nor the removal of the **password encryption aes** command unencrypts the passwords in the router configuration. Once passwords are encrypted, they are *not* unencrypted. Existing encrypted keys in the configuration are still able to be unencrypted provided the master key is not removed.

Additionally, in order to see debug-type messages of password encryption functions, use the **password logging** command in configuration mode.

Configurations

This document uses these configurations on the router:

- Encrypt the Existing Pre-shared Key
- Add a New Master Key Interactively
- Modify the Existing Master Key Interactively
- Delete the Master Key

Encrypt the Existing Pre-shared Key

```
Router#show running-config
Building configuration...
.
.crypto isakmp policy 10
 authentication pre-share
crypto isakmp key cisco123 address 10.1.1.1
.
.
endRouter#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#key config-key password-encrypt testkey123
Router(config)#password encryption aes
```

```
Router(config)#^Z
Router#
Router#show running-config
Building configuration...
.
.
password encryption aes
.
.
crypto isakmp policy 10
 authentication pre-share
crypto isakmp key 6 FLgBaJHXdYY_AcHZZMgQ_RhTDJXHUBAAB address 10.1.1.1
.
.
end
```

Add a New Master Key Interactively

```
Router(config)#key config-key password-encrypt
New key: <enter key>
Confirm key: <confirm key>
Router(config)#
```

Modify the Existing Master Key Interactively

```
Router(config)#key config-key password-encrypt
 Old key: <enter existing key>
New key: <enter new key>
Confirm key: <confirm new key>
Router(config)#
*Jan  7 01:42:12.299: TYPE6_PASS: Master key change heralded,
re-encrypting the keys with the new master key
```

Delete the Master Key

```
Router(config)#no key config-key password-encrypt
WARNING: All type 6 encrypted keys will become unusable
Continue with master key deletion ? [yes/no]: yes
Router(config)#
```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [Encrypted Preshared Key](#)
 - [IPsec Support Page](#)
 - [Technical Support & Documentation – Cisco Systems](#)
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