

How to Assign Privilege Levels with TACACS+ and RADIUS

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Introduction

This document explains how to change the privilege level for certain commands, and provides an example with parts of sample configurations for a router and TACACS+ and RADIUS servers.

Prerequisites

Requirements

Readers of this document should have knowledge of privilege levels on a router.

By default, there are three privilege levels on the router.

- privilege level 1 = non-privileged (prompt is `router>`), the default level for logging in
- privilege level 15 = privileged (prompt is `router#`), the level after going into enable mode
- privilege level 0 = seldom used, but includes 5 commands: **disable**, **enable**, **exit**, **help**, and **logout**

Levels 2–14 are not used in a default configuration, but commands that are normally at level 15 can be moved down to one of those levels and commands that are normally at level 1 can be moved up to one of those levels. Obviously, this security model involves some administration on the router.

To determine the privilege level as a logged-in user, type the **show privilege** command. To determine what commands are available at a particular privilege level for the version of Cisco IOS® software that you are using, type a `?` at the command line when logged in at that privilege level.

Note: Instead of assigning privilege levels, you can do command authorization if the authentication server supports TACACS+. The RADIUS protocol does not support command authorization.

Components Used

The information in this document is based on Cisco IOS Software Releases 11.2 and later.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live

network, ensure that you understand the potential impact of any command before using it.

Conventions

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

Example

In this example, **snmp-server** commands are moved down from privilege level 15 (the default) to privilege level 7. The **ping** command is moved up from privilege level 1 to privilege level 7. When user seven is authenticated, that user is assigned privilege level 7 by the server and a **show privilege** command displays "Current privilege level is 7." The user can ping and do snmp-server configuration in configuration mode. Other configuration commands are not available.

Configurations – Router

Router – 11.2

```
aaa new-model
aaa authentication login default tacacs+|radius local
aaa authorization exec tacacs+|radius local
username backup privilege 7 password 0 backup
tacacs-server host 171.68.118.101
tacacs-server key cisco
radius-server host 171.68.118.101
radius-server key cisco
privilege configure level 7 snmp-server host
privilege configure level 7 snmp-server enable
privilege configure level 7 snmp-server
privilege exec level 7 ping
privilege exec level 7 configure terminal
privilege exec level 7 configure
```

Router – 11.3.3.T and Later (until 12.0.5.T)

```
aaa new-model
aaa authentication login default tacacs+|radius local
aaa authorization exec default tacacs+|radius local
username backup privilege 7 password 0 backup
tacacs-server host 171.68.118.101
tacacs-server key cisco
radius-server host 171.68.118.101
radius-server key cisco
privilege configure level 7 snmp-server host
privilege configure level 7 snmp-server enable
privilege configure level 7 snmp-server
privilege exec level 7 ping
privilege exec level 7 configure terminal
privilege exec level 7 configure
```

Router – 12.0.5.T and Later

```
aaa new-model
aaa authentication login default group tacacs+|radius local
aaa authorization exec default group tacacs+|radius local
username backup privilege 7 password 0 backup
tacacs-server host 171.68.118.101
tacacs-server key cisco
radius-server host 171.68.118.101
radius-server key cisco
```

```
privilege configure level 7 snmp-server host
privilege configure level 7 snmp-server enable
privilege configure level 7 snmp-server
privilege exec level 7 ping
privilege exec level 7 configure terminal
privilege exec level 7 configure
```

Configurations – Server

Cisco Secure NT TACACS+

Follow these steps to configure the server.

1. Fill in the username and password.
2. In Group Settings, make sure shell/exec is checked, and that 7 has been entered in the privilege level box.

TACACS+ – Stanza in Freeware Server

```
Stanza in TACACS+ freeware:
user = seven {
login = cleartext seven
service = exec {
priv-lvl = 7
}
}
```

Cisco Secure UNIX TACACS+

```
user = seven {
password = clear "seven"
service = shell {
set priv-lvl = 7
}
}
```

Cisco Secure NT RADIUS

Follow these steps to configure the server.

1. Enter the username and password.
2. In the Group Settings for IETF, Service-type (attribute 6) = **Nas-Prompt**
3. In the CiscoRADIUS area, check **AV-Pair**, and in the rectangular box underneath, enter **shell:priv-lvl=7**.

Cisco Secure UNIX RADIUS

```
user = seven{
radius=Cisco {
check_items= {
2="seven"
}
reply_attributes= {
6=7
9,1="shell:priv-lvl=7"
}
}
}
```

This is the user file for the username "seven."

Note: The server must support Cisco av-pairs.

- seven Password = **passwdxyz**
- Service-Type = **Shell-User**
- cisco-avpair =**shell:priv-lvl=7**

Related Information

- **RADIUS in IOS Documentation**
 - **RADIUS Support Page**
 - **Requests for Comments (RFCs)**
 - **TACACS+ in IOS Documentation**
 - **TACACS+ Support Page**
 - **Documentation for Cisco Secure ACS for UNIX**
 - **Cisco Secure UNIX Support Page**
 - **Documentation for Cisco Secure ACS for Windows**
 - **Cisco Secure ACS for Windows Support Page**
 - **Technical Support – Cisco Systems**
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