Using Authorized IP Managers

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Overview

Authorized IP Manager Features

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<tr>
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<td>None</td>
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</tr>
<tr>
<td>Building IP Masks</td>
<td>n/a</td>
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<td>Operating and Troubleshooting Notes</td>
<td>n/a</td>
<td>page 11-12</td>
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</tr>
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</table>

The Authorized IP Managers feature uses IP addresses and masks to determine which stations (PCs or workstations) can access the switch through the network. This covers access through the following means:

- Telnet and other terminal emulation applications
- The switch’s web browser interface
- SNMP (with a correct community name)

Also, when configured in the switch, the Authorized IP Managers feature takes precedence over local passwords, TACACS+, RADIUS, Port-Based Access Control (802.1X), and Port Security. This means that the IP address of a networked management device must be authorized before the switch will attempt to authenticate the device by invoking other access security features. If the Authorized IP Managers feature disallows access to the device, then access is denied. Thus, with authorized IP managers configured, having the correct passwords is not sufficient for accessing the switch through the network unless the station attempting access is also included in the switch’s Authorized IP Managers configuration.

You can use Authorized IP Managers along with other access security features to provide a more comprehensive security fabric than if you use only one or two security options. Refer to table 1-1, “Management Access Security Protection” (page 1-4) for a listing of access security features with the security coverage they provide.
Configuration Options

You can configure:

- Up to 10 authorized manager addresses, where each address applies to either a single management station or a group of stations
- Manager or Operator access privileges (for Telnet, SNMPv1, and SNMPv2c access only)

Caution

Configuring Authorized IP Managers does not protect access to the switch through a modem or direct connection to the Console (RS-232) port. Also, if an authorized station “spoofs” an authorized IP address, it can gain management access to the switch even though a duplicate IP address condition exists. For these reasons, you should enhance your network’s security by keeping physical access to the switch restricted to authorized personnel, using the username/password and other security features available in the switch, and preventing unauthorized access to data on your management stations.

Access Levels

Note

The Authorized IP Manager feature can assign an access level to stations using Telnet, SNMPv1, or SNMPv2c for switch access. The access level the switch allows for authorized stations using SSH, SNMPv3, or the web browser interface is determined by the access application itself, and not by the Authorized IP Manager feature.

For each authorized manager address using Telnet, SNMPv1, or SNMPv2c, you can configure either of these access levels:

- **Manager**: Enables full access to all web browser and console interface screens for viewing, configuration, and all other operations available in these interfaces.
- **Operator**: Allows read-only access from the web browser and console interfaces. (This is the same access that is allowed by the switch’s operator-level password feature.)
Defining Authorized Management Stations

- **Authorizing Single Stations:** The table entry authorizes a single management station to have IP access to the switch. To use this method, just enter the IP address of an authorized management station in the Authorized Manager IP column, and leave the IP Mask set to 255.255.255.255. This is the easiest way to use the Authorized Managers feature. (For more on this topic, see “Configuring One Station Per Authorized Manager IP Entry” on page 11-9.)

- **Authorizing Multiple Stations:** The table entry uses the IP Mask to authorize access to the switch from a defined group of stations. This is useful if you want to easily authorize several stations to have access to the switch without having to type an entry for every station. All stations in the group defined by the one Authorized Manager IP table entry and its associated IP mask will have the same access level—Manager or Operator. (For more on this topic, refer to “Configuring Multiple Stations Per Authorized Manager IP Entry” on page 11-10.)

To configure the switch for authorized manager access, enter the appropriate Authorized Manager IP value, specify an IP Mask, and select either Manager or Operator for the Access Level. The IP Mask determines how the Authorized Manager IP value is used to allow or deny access to the switch by a management station.

**Overview of IP Mask Operation**

The default IP Mask is 255.255.255.255 and allows switch access only to a station having an IP address that is identical to the Authorized Manager IP parameter value. (“255” in an octet of the mask means that only the exact value in the corresponding octet of the Authorized Manager IP parameter is allowed in the IP address of an authorized management station.) However, you can alter the mask and the Authorized Manager IP value to specify ranges of authorized IP addresses.

For example, a mask of 255.255.255.0 and any value for the Authorized Manager IP parameter allows a range of 0 through 255 in the 4th octet of the authorized IP address, which enables a block of up to 254 IP addresses for IP management access (excluding 0 for the network and 255 for broadcasts). A mask of
255.255.255.252 uses the 4th octet of a given Authorized Manager IP address to authorize four IP addresses for management station access. The details on how to use IP masks are provided under “Building IP Masks” on page 11-9.

**Note**

The IP Mask is a method for recognizing whether a given IP address is authorized for management access to the switch. This mask serves a different purpose than IP subnet masks and is applied in a different manner.

**Menu: Viewing and Configuring IP Authorized Managers**

From the console Main Menu, select:

2. Switch Configuration …

7. IP Authorized Managers

```
+-------------------+------------------+
| Authorized Manager | IP Mask           |
| 13.20.227.101     | 255.255.255.252  |
| 13.20.227.104     | 255.255.255.254  |
| 13.20.227.106     | 255.255.255.255  |
| 13.20.227.125     | 255.255.255.255  |

Manager
Operator
Manager
Manager
```

1. Select Add to add an authorized manager to the list.

**Figure 11-1. Example of How To Add an Authorized Manager Entry**
Figure 11-2. Example of How To Add an Authorized Manager Entry (Continued)

**Editing or Deleting an Authorized Manager Entry.** Go to the IP Managers List screen (figure 11-1), highlight the desired entry, and press [E] (for Edit) or [D] (for Delete).

**CLI: Viewing and Configuring Authorized IP Managers**

**Authorized IP Managers Commands Used in This Section**

<table>
<thead>
<tr>
<th>Command</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>show ip authorized-managers</td>
<td>below</td>
</tr>
<tr>
<td>ip authorized-managers</td>
<td>11-7</td>
</tr>
<tr>
<td>&lt;ip-address&gt;</td>
<td>11-8</td>
</tr>
<tr>
<td>&lt;ip-mask-bits&gt;</td>
<td>11-8</td>
</tr>
<tr>
<td>[access &lt;operator</td>
<td>manager&gt;]</td>
</tr>
</tbody>
</table>

**Listing the Switch’s Current Authorized IP Manager(s)**

Use the `show ip authorized-managers` command to list IP stations authorized to access the switch. For example:
Using Authorized IP Managers
Defining Authorized Management Stations

Figure 11-3. Example of the Show IP Authorized-Manager Display

The above example shows an Authorized IP Manager List that allows stations to access the switch as shown below:

<table>
<thead>
<tr>
<th>IP Mask</th>
<th>Authorized Station IP Address:</th>
<th>Access Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>255.255.255.252</td>
<td>10.28.227.100 through 103</td>
<td>Manager</td>
</tr>
<tr>
<td>255.255.255.254</td>
<td>10.28.227.104 through 106</td>
<td>Manager</td>
</tr>
<tr>
<td>255.255.255.255</td>
<td>10.28.227.125</td>
<td>Manager</td>
</tr>
<tr>
<td>255.255.255.0</td>
<td>10.28.227.0 through 255</td>
<td>Operator</td>
</tr>
</tbody>
</table>

Configuring IP Authorized Managers for the Switch

**Syntax:**  
`ip authorized-managers <ip address>`  
*Configures one or more authorized IP addresses.*

`<ip-mask-bits>`  
*Configures the IP mask for <ip address>*

`[access <operator | manager>]`  
*Configures the privilege level for <ip address>*

*Applies only to access through Telnet, SNMPv1, and SNMPv2c. Refer to the Note on page 11-3.*

To Authorize Manager Access. This command authorizes manager-level access for any station having an IP address of 10.28.227.0 through 10.28.227.255:

```
ProCurve(config)# ip authorized-managers 10.28.227.101 255.255.255.0 access manager
```
Similarly, the next command authorizes manager-level access for any station having an IP address of 10.28.227.101 through 103:

```
ProCurve(config)# ip authorized-managers 10.28.227.101 255.255.255.252 access manager
```

If you omit the `<mask bits>` when adding a new authorized manager, the switch automatically uses 255.255.255.255 for the mask. If you do not specify either Manager or Operator access, the switch automatically assigns the Manager access. For example:

```
ProCurve(config)# ip authorized-managers 10.28.227.101 255.255.255.0 access operator
```

The above command replaces the existing mask and access level for IP address 10.28.227.101 with 255.255.255.0 and operator.

The following command replaces the existing mask and access level for IP address 10.28.227.101 with 255.255.255.255 and manager (the defaults) because the command does not specify either of these parameters.

```
ProCurve(config)# ip authorized-managers 10.28.227.101
```

To Delete an Authorized Manager Entry. This command uses the IP address of the authorized manager you want to delete:

```
ProCurve(config)# no ip authorized-managers 10.28.227.101
```
Web: Configuring IP Authorized Managers

In the web browser interface you can configure IP Authorized Managers as described below.

To Add, Modify, or Delete an IP Authorized Manager address:
1. Click on the Security tab.
2. Click on [Authorized Addresses].
3. Enter the appropriate parameter settings for the operation you want.
4. Click on [Add], [Replace], or [Delete] to implement the configuration change.

For web-based help on how to use the web browser interface screen, click on the [?] button provided on the web browser screen.

Building IP Masks

The IP Mask parameter controls how the switch uses an Authorized Manager IP value to recognize the IP addresses of authorized manager stations on your network.

Configuring One Station Per Authorized Manager IP Entry

This is the easiest way to apply a mask. If you have ten or fewer management and/or operator stations, you can configure them quickly by simply adding the address of each to the Authorized Manager IP list with 255.255.255.255 for the corresponding mask. For example, as shown in Figure 11-3 on page 11-7, if you configure an IP address of 10.28.227.125 with an IP mask of 255.255.255.255, only a station with an IP address of 10.28.227.125 has management access to the switch.

Table 11-1. Analysis of IP Mask for Single-Station Entries

<table>
<thead>
<tr>
<th>IP Mask</th>
<th>1st Octet</th>
<th>2nd Octet</th>
<th>3rd Octet</th>
<th>4th Octet</th>
<th>Manager-Level or Operator-Level Device Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized Manager IP</td>
<td>10</td>
<td>28</td>
<td>227</td>
<td>125</td>
<td>The “255” in each octet of the mask specifies that only the exact value in that octet of the corresponding IP address is allowed. This mask allows management access only to a station having an IP address of 10.33.248.5.</td>
</tr>
</tbody>
</table>
Configuring Multiple Stations Per Authorized Manager IP Entry

The mask determines whether the IP address of a station on the network meets the criteria you specify. That is, for a given Authorized Manager entry, the switch applies the IP mask to the IP address you specify to determine a range of authorized IP addresses for management access. As described above, that range can be as small as one IP address (if all octets in the mask, or can include multiple IP addresses (if one or more octets in the mask are set to less than 255).

If a bit in an octet of the mask is “on” (set to 1), then the corresponding bit in the IP address of a potentially authorized station must match the same bit in the IP address you entered in the Authorized Manager IP list. Conversely, if a bit in an octet of the mask is “off” (set to 0), then the corresponding bit in the IP address of a potentially authorized station on the network does not have to match its counterpart in the IP address you entered in the Authorized Manager IP list. Thus, in the example shown above, a “255” in an IP Mask octet (all bits in the octet are “on”) means only one value is allowed for that octet—the value you specify in the corresponding octet of the Authorized Manager IP list. A “0” (all bits in the octet are “off”) means that any value from 0 to 255 is allowed in the corresponding octet in the IP address of an authorized station. You can also specify a series of values that are a subset of the 0-255 range by using a value that is greater than 0, but less than 255.

Figure 11-5. Analysis of IP Mask for Multiple-Station Entries

<table>
<thead>
<tr>
<th>IP Mask</th>
<th>1st Octet</th>
<th>2nd Octet</th>
<th>3rd Octet</th>
<th>4th Octet</th>
<th>Manager-Level or Operator-Level Device Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized Manager IP</td>
<td>255 255 255 0</td>
<td></td>
<td></td>
<td></td>
<td>The “255” in the first three octets of the mask specify that only the exact value in the octet of the corresponding IP address is allowed. However, the zero (0) in the 4th octet of the mask allows any value between 0 and 255 in that octet of the corresponding IP address. This mask allows switch access to any device having an IP address of 10.28.227.xxx, where xxx is any value from 0 to 255.</td>
</tr>
<tr>
<td>Authorized IP Address</td>
<td>10 28 227 125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP Mask</th>
<th>1st Octet</th>
<th>2nd Octet</th>
<th>3rd Octet</th>
<th>4th Octet</th>
<th>Manager-Level or Operator-Level Device Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized Manager IP</td>
<td>255 255 255 249</td>
<td></td>
<td></td>
<td></td>
<td>In this example (figure 11-6, below), the IP mask allows a group of up to 4 management stations to access the switch. This is useful if the only devices in the IP address group allowed by the mask are management stations. The “249” in the 4th octet means that bits 0 and 3 - 7 of the 4th octet are fixed. Conversely, bits 1 and 2 of the 4th octet are variable. Any value that matches the authorized IP address settings for the fixed bits is allowed for the purposes of IP management station access to the switch. Thus, any management station having an IP address of 10.28.227.121, 122, 125, or 127 can access the switch.</td>
</tr>
<tr>
<td>Authorized IP Address</td>
<td>10 28 227 125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using Authorized IP Managers
Building IP Masks

**Figure 11-6. Example of How the Bitmap in the IP Mask Defines Authorized Manager Addresses**

**Additional Examples for Authorizing Multiple Stations**

<table>
<thead>
<tr>
<th>IP Mask</th>
<th>Entries for Authorized Manager List</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized Manager IP</td>
<td>255 255 255 1</td>
<td>This combination specifies an authorized IP address of 10.33.xxx.1. It could be applied, for example, to a subnetted network where each subnet is defined by the third octet and includes a management station defined by the value of &quot;1&quot; in the fourth octet of the station’s IP address.</td>
</tr>
<tr>
<td>Authorized Manager IP</td>
<td>255 238 255 250</td>
<td>Allows 230, 231, 246, and 247 in the 2nd octet, and 194, 195, 198, 199 in the 4th octet.</td>
</tr>
</tbody>
</table>
Operating Notes

- **Network Security Precautions:** You can enhance your network's security by keeping physical access to the switch restricted to authorized personnel, using the password features built into the switch, using the additional security features described in this manual, and preventing unauthorized access to data on your management stations.

- **Modem and Direct Console Access:** Configuring authorized IP managers does not protect against access to the switch through a modem or direct Console (RS-232) port connection.

- **Duplicate IP Addresses:** If the IP address configured in an authorized management station is also configured (or "spoofed") in another station, the other station can gain management access to the switch even though a duplicate IP address condition exists.

- **Web Proxy Servers:** If you use the web browser interface to access the switch from an authorized IP manager station, it is recommended that you avoid the use of a web proxy server in the path between the station and the switch. This is because switch access through a web proxy server requires that you first add the web proxy server to the Authorized Manager IP list. *This reduces security by opening switch access to anyone who uses the web proxy server.* The following two options outline how to eliminate a web proxy server from the path between a station and the switch:
  
  - Even if you need proxy server access enabled in order to use other applications, you can still eliminate proxy service for web access to the switch. To do so, add the IP address or DNS name of the switch to the non-proxy, or “Exceptions” list in the web browser interface you are using on the authorized station.
  
  - If you don’t need proxy server access at all on the authorized station, then just disable the proxy server feature in the station’s web browser interface.