Configuring SNMP

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Configuring SNMP (CLI)

• Create an SNMP community name by entering this command:
  \texttt{config snmp community create name}

• Delete an SNMP community name by entering this command:
  \texttt{config snmp community delete name}

• Configure an SNMP community name with read-only privileges by entering this command:
  \texttt{config snmp community accessmode ro name}

• Configure an SNMP community name with read-write privileges by entering this command:
  \texttt{config snmp community accessmode rw name}

• For IPv4 configuration—Configure an IPv4 address and subnet mask for an SNMP community by entering this command:
  \texttt{config snmp community ipaddr ip-address ip-mask name}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Note} & This command behaves like an SNMP access list. It specifies the IP address from which the device accepts SNMP packets with the associated community. An AND operation is performed between the requesting entity’s IP address and the subnet mask before being compared to the IP address. If the subnet mask is set to 0.0.0.0, an IP address of 0.0.0.0 matches to all IP addresses. The default value is 0.0.0.0. \\
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\end{tabular}
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\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Note} & The controller can use only one IP address range to manage an SNMP community. \\
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\end{tabular}
\end{table}

• For IPv6 configuration—Configure an IPv6 address and prefix-length for an SNMP community by entering this command:

\texttt{config snmp community ipaddr ipv6-address ipv6-mask name}
config snmp community ipaddr ipv6-address ip-mask name

- Enable or disable a community name by entering this command:
  config snmp community mode {enable | disable}

- Enable or disable a community name by entering this command:
  config snmp community ipsec {enable | disable}

- Configure the IKE authentication methods by entering this command:
  config snmp community ipsec ike auth-mode {certificate | pre-shared-key ascii/hex secret}
  Authentication mode can be configured per trap receiver. By default, the authentication mode is set to certificate.

- Configure a destination for a trap by entering this command:
  config snmp trapreceiver create name ip-address

- Delete a trap by entering this command:
  config snmp trapreceiver delete name

- Change the destination for a trap by entering this command:
  config snmp trapreceiver ipaddr old-ip-address name new-ip-address

- Configure the trap receiver IPSec session entering this command:
  config snmp trapreceiver ipsec {enable | disable} community-name
  Trap receiver IPSec must be in the disabled state to change the authentication mode.

- Configure the IKE authentication methods by entering this command:
  config snmp trapreceiver ipsec ike auth-mode {certificate | pre-shared-key ascii/hex secret community-name}
  Authentication mode can be configured per trap receiver. By default, the authentication mode is set to certificate.

- Enable or disable the traps by entering this command:
  config snmp trapreceiver mode {enable | disable}

- Configure the name of the SNMP contact by entering this command:
  config snmp syscontact syscontact-name
  Enter up to 31 alphanumeric characters for the contact name.

- Configure the SNMP system location by entering this command:
  config snmp syslocation syslocation-name
  Enter up to 31 alphanumeric characters for the location.

- Verify that the SNMP traps and communities are correctly configured by entering these commands:
  show snmpcommunity
  show snmptrap

- See the enabled and disabled trap flags by entering this command:
  show trapflags
  If necessary, use the config trapflags command to enable or disable trap flags.

- Configure when the warning message should be displayed after the number of clients or RFID tags associated with the controller hover around the threshold level by entering this command:
  config trapflags {client | rfid} max-warning-threshold {threshold-between-80-to-100 | enable | disable}
The warning message is displayed at an interval of 600 seconds (10 minutes).

- Configure the SNMP engine ID by entering this command:
  ```bash
  config snmp engineID engine-id-string
  ```

**Note**
The engine ID string can be a maximum of 24 characters.

- View the engine ID by entering this command:
  ```bash
  show snmp engineID
  ```
- Configure the SNMP version by entering this command:
  ```bash
  config snmp version {v1 | v2c | v3} {enable | disable}
  ```

### SNMP Community Strings

The controller has commonly known default values of "public" and "private" for the read-only and read-write SNMP community strings. Using these standard values presents a security risk. If you use the default community names, and since these are known, the community names could be used to communicate to the controller using SNMP. Therefore, we strongly advise that you change these values.

### Changing the SNMP Community String Default Values (GUI)

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Choose <strong>Management</strong> and then <strong>Communities</strong> under SNMP. The SNMP v1 / v2c Community page appears.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>If &quot;public&quot; or &quot;private&quot; appears in the Community Name column, hover your cursor over the blue drop-down arrow for the desired community and choose <strong>Remove</strong> to delete this community.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Click <strong>New</strong> to create a new community. The SNMP v1 / v2c Community &gt; New page appears.</td>
</tr>
<tr>
<td>Step 4</td>
<td>In the Community Name text box, enter a unique name containing up to 16 alphanumeric characters. Do not enter &quot;public&quot; or &quot;private.&quot;</td>
</tr>
<tr>
<td>Step 5</td>
<td>In the next two text boxes, enter the IPv4/IPv6 address and IP Mask/Prefix Length from which this device accepts SNMP packets with the associated community and the IP mask.</td>
</tr>
<tr>
<td>Step 6</td>
<td>Choose <strong>Read Only</strong> or <strong>Read/Write</strong> from the Access Mode drop-down list to specify the access level for this community.</td>
</tr>
<tr>
<td>Step 7</td>
<td>Choose <strong>Enable</strong> or <strong>Disable</strong> from the Status drop-down list to specify the status of this community.</td>
</tr>
<tr>
<td>Step 8</td>
<td>Click <strong>Apply</strong> to commit your changes.</td>
</tr>
<tr>
<td>Step 9</td>
<td>Click <strong>Save Configuration</strong> to save your settings.</td>
</tr>
<tr>
<td>Step 10</td>
<td>Repeat this procedure if a &quot;public&quot; or &quot;private&quot; community still appears on the SNMP v1 / v2c Community page.</td>
</tr>
</tbody>
</table>
Changing the SNMP Community String Default Values (CLI)

Step 1  See the current list of SNMP communities for this controller by entering this command:
        `show snmp community`

Step 2  If "public" or "private" appears in the SNMP Community Name column, enter this command to delete this community:
        `config snmp community delete name`

        The `name` parameter is the community name (in this case, "public" or "private").

Step 3  Create a new community by entering this command:
        `config snmp community create name`

        Enter up to 16 alphanumeric characters for the `name` parameter. Do not enter "public" or "private."

Step 4  For IPv4 specific configuration, enter the IPv4 address from which this device accepts SNMP packets with the associated community by entering this command:
        `config snmp community ipaddr ip_address ip_mask name`

Step 5  For IPv6 specific configuration, enter the IPv6 address from which this device accepts SNMP packets with the associated community by entering this command:
        `config snmp community ipaddr ip_address prefix_length name`

Step 6  Specify the access level for this community by entering this command, where `ro` is read-only mode and `rw` is read/write mode:
        `config snmp community accessmode {ro | rw} name`

Step 7  Enable or disable this SNMP community by entering this command:
        `config snmp community mode {enable | disable} name`

Step 8  Enable or disable SNMP IPSec sessions for all SNMP communities by entering this command:
        `config snmp community ipsec {enable | disable} name`

        By default SNMP IPSec session is disabled. SNMP IPSec session must be disabled state to change the authentication mode.

Step 9  Configure the IKE authentication methods by entering this command:
        `config snmp community ipsec ike auth-mode {certificate | pre-shared-key ascii/hex secret}`

        • If authentication mode is configured as pre-shared-key, then enter a secret value. The secret value can either be an ASCII or a hexadecimal value. If auth-mode configured is certificate, then WLC will use the ipsecCaCert and ipsecDevCerts for SNMP over IPSEC.

        • If authentication mode is configured as certificate, then controller uses the IPSEC CA and IPSEC device certificates for SNMP sessions. You need to download these certificates to the controller using the `transfer download datatype {ipseccacert | ipsecdevcert}` command.

Step 10 Save your changes by entering this command:
        `save config`

Step 11 Repeat this procedure if you still need to change the default values for a "public" or "private" community string.
Configuring Real Time Statistics (CLI)

SNMP traps are defined for CPU and memory utilization of AP and controller. The SNMP trap is sent out when the threshold is crossed. The sampling period and statistics update interval can be configured using SNMP and CLI.

Note
To get the right value for the current memory usage, you should configure either sampling interval or statistics interval.

- Configure the sampling interval by entering this command:
  ```
  config service statistics sampling-interval seconds
  ```
- Configure the statistics interval by entering this command:
  ```
  config service statistics statistics-interval seconds
  ```
- See sampling and service interval statistics by entering this command:
  ```
  show service statistics interval
  ```

SNMP Trap Enhancements

This feature provides soaking of SNMP traps and resending of traps after a threshold that you can configure called the hold time. The hold time helps in suppressing false traps being generated. The traps that are supported are for CPU and memory utilization of AP and controller. The retransmission of the trap occurs until the trap is cleared.

- Configure the hold time after which the SNMP traps are to be resent by entering this command:
  ```
  config service alarm hold-time seconds
  ```
- Configure the retransmission interval of the trap by entering this command:
  ```
  config service alarm trap retransmit-interval seconds
  ```
- Configure debugging of the traps by entering this command:
  ```
  debug service alarm {enable | disable}
  ```

Configuring SNMP Trap Receiver (GUI)

Step 1
Choose Management > SNMP > Trap Receivers.

Step 2
Click New.

Step 3
On the SNMP Trap Receiver > New page, specify the trap receiver details:

a) In the Community Name box, enter the SNMP trap receiver name.

b) In the IP Address(Ipv4/Ipv6) box, enter the IP address of the receiver. Both IPv4 and IPv6 address formats are supported.
c) From the **Status** drop-down list, choose to **Enable** or **Disable** the trap receiver.

d) Check the **IPSec** check box if you want to configure IPSec parameters for the trap receiver.

e) From the **Auth Method** drop-down list, choose the IKE authentication method as either **Certificate** or **PSK**.

- If authentication mode is configured as certificate, then Cisco WLC uses the IPSEC CA and IPSEC device certificates for SNMP sessions.

- If authentication mode is configured as pre-shared-key, then enter a secret value. The secret value can either be an ASCII or a hexadecimal value. If auth-mode configured is certificate, then Cisco WLC uses the ipsecCaCert and ipsecDevCerts for SNMP over IPSEC.

You can create a maximum of 6 such SNMP trap receivers.

**Step 4**

Save the configuration.