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1 Configuring Time Range

1.1 Introduction

1.1.1 Overview

Time range is a time control service. Users can create a time range and reference the time range in a service to control the time of the service. For example, to make an access control list (ACL) take effect in a time range within a week, configure a time range and associate the ACL with the time range. In this case, the ACL is effective only in the specified time range.

1.1.2 Principles

1. Basic Concepts

A time range is defined in the following modes:

- Absolute time range

An absolute time range indicates the time range from the specified start time to the end time, for example, from 12:00:00 on January 1, 2000 to 12:00:00 on January 1, 2001.

- Period

A period indicates a periodic time range, for example, from 8:00 Monday to 17:00 Friday.

2. Using an Absolute Time Range

When a function is enabled in a service that references a time range, the service determines whether the current time of the system is in an absolute time range. If yes, the function can be enabled or disabled in the current time.

3. Using a Period

When a function is enabled in an application based on a time range, the application determines whether the current time of the system is in a period. If yes, the function can be enabled or disabled in the current time.

1.2 Configuring Basic Features

1.2.1 Overview

This section describes how to create a time range and configure an absolute time range or a period.

1.2.2 Restrictions and Guidelines

- Before modifying an absolute time range or a period for a service, you are advised to disassociate the time range. After the absolute time range or period is modified, associate the time range again.
- In a time range, you can configure multiple effective periods.
- If an absolute time range and a period are configured in a time range, the effective time range is a period in

the absolute time range. If multiple periods are configured, the effective time is the multiple periods configured in the absolute time range.

1.2.3 Procedure

(1) Enter the privileged EXEC mode.

enable

(2) Enter the global configuration mode.

configure terminal

(3) Configure a time range.

time-range *time-range-name*

(4) (Optional) Configure effective time of the time range. Configure at least one of the following tasks.

- o Configure an absolute time range.

absolute { **start** *hh:mm DD/MM/YY* | **end** *hh:mm DD/MM/YY* }*

No absolute time range is configured. The maximum time range is used by default.

- o Configure a period.

periodic *day-of-the-week time to [day-of-the-week] time*

No period is configured by default. The current time is considered to be within a period.

1.3 Monitoring

Run the **show** commands to check the running status of a configured function to verify the configuration effect.

Table 1-1 Time Range Monitoring

| Command | Purpose |
|---|------------------------|
| show time-range [<i>time-range-name</i>] | Displays a time range. |

1.4 Configuration Examples

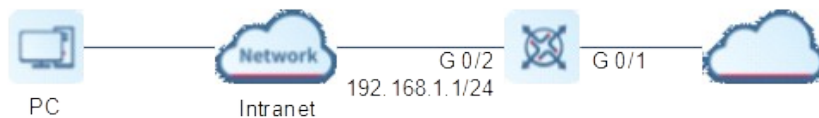
1.4.1 Configuring Basic Features of Time Range

1. Requirements

In the traffic control, an enterprise needs to control the traffic type and traffic in a specific period. For example, an enterprise prohibits employees from accessing the Internet during work and allows them to do so after work. In this case, an ACL can be configured to associate with a time range. During the working hours (9:00 to 12:00 and 14:00 to 18:00), PCs in the Intranet are prohibited from accessing the Internet. In other time ranges, the PCs are allowed to access the Internet. The PCs can access one another at any time.

2. Topology

Figure 1-1 Topology for Configuring the Basic Features of Time Range



3. Notes

- First configure system time for the device. The effective time of an ACL is based on the system time of the device.
- A time range cannot cross 0:00, that is, to create a time range from 22:00 to 7:00 the next day, create two time ranges.

4. Procedure

Configure system time in the following format: hh:mm:ss MMDDYY.

```

Hostname> enable
Hostname # clock set 10:00:00 12 1 2012
  
```

Set the time zone of the device to GMT+8.

```

Hostname# configure terminal
Hostname(config)# clock timezone beijing 8
  
```

Create a time range named **time1**, which is effective from 9:00 to 12:00 and from 14:00 to 18:00 every day.

```

Hostname(config)# time-range time1
Hostname(config-time-range)# periodic daily 9:00 to 12:00
Hostname(config-time-range)# periodic daily 14:00 to 18:00
Hostname(config-time-range)# exit
  
```

(1) Configure an ACL to be associated with the time range.

In the time range **time1**, configure the ACL to reject any traffic from the Intranet PCs in the network segment 192.168.1.0/24 to the Internet.

```

Hostname(config)# ip access-list extended 100
Hostname(config-ext-nacl)# 10 deny ip 192.168.1.0 0.0.0.255 any time-range time1
  
```

Configure the ACL to allow the Intranet PCs in the network segment 192.168.1.0/24 to access the Internet in non-working hours.

```

Hostname(config-ext-nacl)# 20 permit ip any any
Hostname(config-ext-nacl)# exit
  
```

Apply the ACL to interface GigabitEthernet 0/1.

```

Hostname(config)# interface GigabitEthernet 0/2
Hostname(config-if-GigabitEthernet 0/1)# ip access-group 100 in
  
```

5. Verification

Run the **show clock** command to display the time of the device.

```

Hostname# show clock
10:14:01 beijing Sat, Dec 1, 2012
  
```

Run the **show time-range** command to display the time range configurations.

```
Hostname# show time-range time1

time-range entry: time1 (active)
  periodic Daily 9:00 to 12:00
  periodic Daily 14:00 to 18:00
```

Run the **show access-lists** command to display the ACL configurations. When the time of the device is in the time range **time1**, the displayed status of the ACL is active; when the time of the device is not in the effective time of ACL, the displayed status of the ACL is inactive.

```
Hostname# show access-lists
ip access-list extended 100
10 deny ip 192.168.1.0 0.0.0.255 any time-range time1 (active)
20 permit ip any any
```

Run the **show ip access-group** command to display the calling of the ACL on the interface.

```
Hostname# show ip access-group
ip access-group 100 in
Applied On interface GigabitEthernet 0/1.
```

Set the system time to working hours so that PCs in the Intranet cannot ping the Internet during working hours.

```
Hostname# show clock
14:52:26 beijing Tue, Dec 15, 2020
Hostname# ping 14.215.177.38
Sending 5, 100-byte ICMP Echoes to 14.215.177.38, timeout is 2 seconds:
 < press Ctrl+C to break >
.....
Success rate is 0 percent (0/5).
```

6. Configuration Files

```
hostname Device
!
ip access-list extended 100
 10 permit ip host 10.10.10.20 any
 20 permit ip any any
!
time-range time1
  periodic Daily 9:00 to 12:00
  periodic Daily 14:00 to 18:00
!
interface GigabitEthernet 0/2
 no switchport
 ip access-group 100 in
 ip address 192.168.1.1 255.255.255.0
!
end
```