Оглавление

1. CONFIGURING TIME RANGE

1.1. Time Range Introduction

1.1.1. Overview

Time Range is a time module controlling the effective time and the failure time of a function (For instance, expansion IP access control list).

Time Range can play its role only when cooperating with other modules which support the Time Range function.

Time Range is consisted of separate time ranges. These time ranges have two kinds: one is absolute and the other is periodic. Of these, periodic is classified into two kinds further: isolate and from-to.

The whole system has many Time Ranges. Each Time Range is differentiated according to their names(case sensitive). Each Time Range has at most only one absolute time range but many periodic time ranges.

1.1.2. Absolute Time Range

Absolute Time Range is a time range starting and ending with concrete date and time (The Absolute Time Range without concrete starting date and time is taken as the current time; the absolute time range without concrete ending time is taken as effective forever.). For example, 08:08 8 8 2008 - 10:10 10 10 2010 is an absolute time range.

1.1.3. Periodic Time Range

Periodic Time Range is a back-and-forth time range. It has no concrete starting time and ending time, but it has concrete starting week and moment and ending date and moment. For example, a periodic time range starts from 20:00~21:00 on every Tuesday, Thursday and Sunday; or starts from 09:00 on every Tuesday to 18:00 on every Thursday. More examples such as 09:00~10:00 in every weekend; 23:00~07:00 everyday; and 09:00~18:00 on weekdays.

1.1.4. Isolating Time Range

Isolate Time Range is one type of Periodic Time Range. It is periodical. And its starting time and ending time will not span 24 hours. For example,19:00~19:30 on every Monday is an isolate time range; 20:00~21:00 on every Tuesday, Thursday and Sunday is an isolate time range; but time from 09:00 on Tuesday to 18:00 on every Thursday is not an isolate time range, but "from-to time range" described below.

1.1.5. From-to Time Range

From-to Time Range is also a type of Periodic Time Range. It is periodical. Moreover, its starting time and ending time must span at least 24 hours. For example, time from 09:00 on Tuesday to 18:00 on every Thursday is a from-to time range.

1.1.6. Activating Time Range

A Time Range can have the absolute time range and periodic time range simultaneously. The state of Time Range can be divided into 4 situations according to whether the absolute time range/periodic time range is configured.

Situation 1

If a Time Range neither configure absolute time range nor periodic time range, it is called EMPTY. The Time Range does not exist activating time range.

Situation 2

If a Time Range doesn't have the absolute time but has periodic time range, the activating time range of the Time Range is the total time ranges of the periodic time range.

Situation 3

If a Time Range doesn't have the periodic time but has absolute time range, the activating time range of the Time Range is the total time ranges of the absolute time range.

Situation 4

If a Time Range neither have the periodic time nor the absolute time range, the activating time range of the Time Range is set intersection of the set union of the absolute time range and all periodic time range.

The complementary set of the activating time range of a Time Range is considered as non-activating time range.

If the system time is in an activating time range of a Time Range, the Time Range is active; if a Time Range has the activating time range but the system time does not in the activating range, the time range is inactive; if a Time Range does not have the activating time range, the Time Range is empty.

When a Time Range changes among inactive, active and empty, the Time Range is changed. Otherwise, the Time Range is unchanged.

1.2. Time Range Configuration Task List

- Adding/ing Time Range
- Adding/Deleting Absolute Time Range

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- ▪ Adding/ing Periodic Time Range
- ▪ Applying Time Range
- ▪ Monitoring the configuration and state of Time Range

1.3. Time Range Configuration Task

1.3.1. Adding/Deleting Time Range

The whole system has many Time Ranges. Each Time Range is differentiated according to their names (case sensitive).

Run the following commands to configure Time Range:

Command	Purpose
time-range *name*	Add a Time Range named name and enter the configuration mode of Time Range
exit	Exit the configuration mode of Time Range
no time-range *name*	Delete Time Range named name

Note:

If the system has Time Range named name, *run command* time-range name to enter the **TimeRange** *configuration mode,* but not create the new TimeRange.

1.3.2. Adding/Deleting Absolute Time Range

Each TimeRange has only at most only one absolute time range. Absolute Time Range can have the starting time and the ending time simultaneously or it has the ending time but not the starting time, or it has the starting time but not the ending time. When the absolute time has no starting time, the current time is the starting time; when the absolute time has no ending time, the absolute time is effective forever.

To configure the absolute time range, run the following command:

Command	Purpose
absolute { start *hour:minute day month year* end *hour:minute day month year*	Adds an absolute time range

| start *hour:minute day month year* | end *hour:minute day month year* }	
no absolute	Deletes the absolute time range

Note:

Time Range has the absolute time range, the absolute command modifies the absolute time range.

1.3.3. Adding/Deleting Periodic Time Range

A Time Range can has many periodic time ranges. Each periodic time range is not all the same, but the time range can overlap.

To configure the periodic time, run the following command:

Command	Purpose
periodic { daily *hour:minute* to *hour:minute* | weekdays *hour:minute* to *hour:minute* | weekend *hour:minute* to *hour:minute* | {Friday | Monday | Saturday | Sunday | Thursday |Tuesday|Wednesday} *hour:minute* to *hour:minute* | {Friday | Monday | Saturday | Sunday | Thursday | Tuesday | Wednesday} *hour:minute* to {Friday | Monday | Saturday | Sunday | Thursday | Tuesday | Wednesday} *hour:minute* }	Adds a periodic time range
no periodic [daily *hour:minute* to *hour:minute* | weekdays *hour:minute* to *hour:minute* | weekend *hour:minute* to *hour:minute* | {Friday | Monday | Saturday | Sunday | Thursday |Tuesday|Wednesday}	Deletes a periodic time range

hour:minute to *hour:minute* | {Friday | Monday | Saturday | Sunday | Thursday | Tuesday | Wednesday} *hour:minute* to {Friday | Monday | Saturday | Sunday | Thursday | Tuesday | Wednesday} *hour:minute*]	

1.3.4. Applying Time Range

A created Time Range can be applied to one or more function modules. At present the Time Range can only be applied to IP ACL function module.

In order to apply Time Range to IP ACL, you must enter the name of Time Range to the end of the sub-command of time-range.

Note:

Time Range can only be applied to extensible ACL, but not to the standard ACL.

1.3.5. Monitoring the configuration and state of Time Range

To monitor Time Range Configuration, run the following command:

Command	Purpose
show time-range	Shows the configuration of all Time Range in the system
show time-range *name*	Shows the configuration *of* Time Range named name.

Attach: The result analysis of the command

Take the result of the typical configuration as an example:

```
Switch_config#show time-range

Now: Date: 2016.3.4    Time: 13:16    Day: Tuesday

time-range entry: x (inactive)
      absolute start 12:00 1 January 2008 end 13:00 2 January 2016
      periodic weekdays  09:00 to 18:00
time-range entry: y (empty)
time-range entry: z (active)
```

```
      periodic daily     12:00 to 13:00
      periodic Monday   Thursday  Friday    08:00 to 09:00
      periodic Saturday  15:00 to Sunday    20:00
      periodic daily     9:00 AM to 6:00 PM


   Switch_config#
```

In the first line shows "Now: Date: 2016.3.4   Time: 13:16   Day: Tuesday", which means the date is 4th March, 2016; the time is 13:16; the day is Tuesday.

Subsequently the screen shows the configuration and status of Time Ranges which named x, y and z respectively. Time Range x has two items: absolute time and period, and it is in the inactive state; Time Range y has no item and it is in the empty state; Time Range z has 4 periods and it is in active state.

1.4.   Configuration Example

The following example shows how to apply a Time Range named sample to a rule of extensible IP ACL ex.

```
Switch_config# time-range sample

Switch_config_tr# periodic monday 12:00 to 13:00

Switch_config_tr# exit

Switch_config# ip access-list extended ex

Switch_config_ext#

Switch_config_ext# permit ip 192.168.213.180 255.255.255.255 any time-range
sample

Switch_config_extl# exit
```