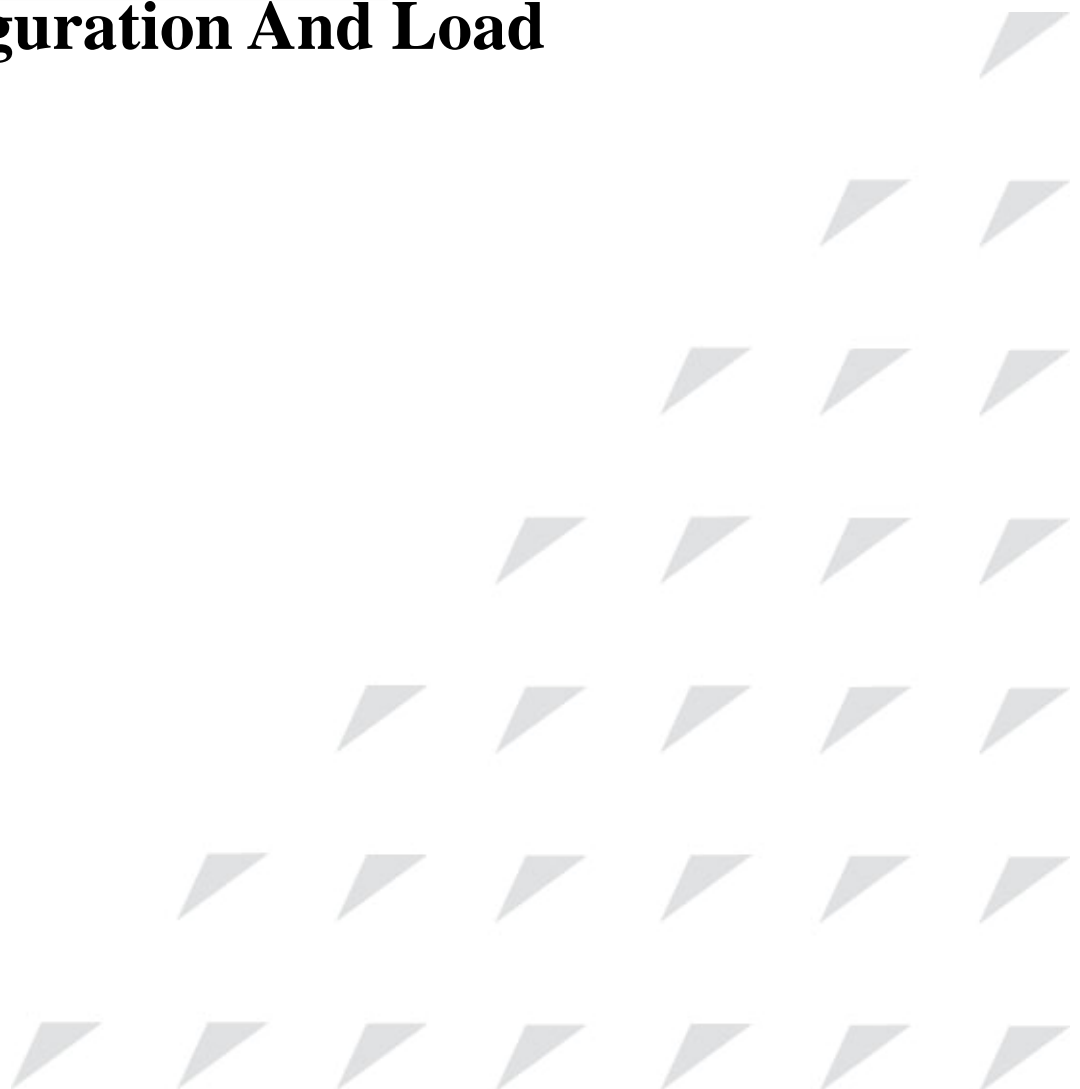


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Auto-configuration And Load



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<http://www.raisecom.com/en/xcontactus/contactus.htm>.

If you have comments on the ... specification, instead of the web page above, please send comments to:

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Release Notes

Date of Release	Manual Version	Software Version	Revisions

Preface

About This Manual

This manual introduces primary functions of the configuration management software for RC series products.

Who Should Read This Manual

This manual is a valuable reference for sales and marketing staff, after service staff and telecommunication network designers. For those who want to have an overview of the features, applications, structure and specifications of ... device, this is also a recommended document.

Relevant Manuals

《Raisecom NView System User Manual》

《Raisecom Nview System Installation and Deployment Manual》

《... User Manual》

《... Commands Notebook》

Organization

This manual is an introduction of the main functions of ... EMS. To have a quick grasp of the using of the EMS of ... , please read this manual carefully. The manual is composed of the following chapters

Chapter 1 Overview

This chapter briefly introduces the basic function of ...

Chapter 2 Configuration Management

This chapter mainly introduces the central site configuration management function of the

Chapter 3 Performance Management

This chapter focuses on performance management function of

Chapter 4 Device Maintenance Management

This chapter introduces the device maintenance management function of

Appendix A Alarm Type

The alarm types supported by

Compliance

The RC series products developed by Raisecom are strictly complied with the following standards as well as ITU-T, IEEE, IETF and related standards from other international telecommunication standard organizations:

YD/T900-1997 SDH Equipment Technical Requirements - Clock

YD/T973-1998 SDH 155Mb/s and 622Mb/s Technical conditions of optical transmitter module and receiver module

YD/T1017-1999 Network node interface for the Synchronous Digital Hierarchy (SDH)

YD/T1022-1999 Requirement of synchronous digital hierarchy (SDH) equipment function

YD/T1078-2000 SDH Transmission Network Technique Requirements-Interworking of Network Protection Architectures

YD/T1111.1-2001 Technical Requirements of SDH Optical Transmitter/Optical Receiver Modules——2.488320 Gb/s Optical Receiver Modules

YD/T1111.2- 2001 Technical Requirements of SHD Optical Transmitter/Optical Receiver Modules——2.488320 Gb/s Optical Transmitter Modules

YD/T1179- 2002 Technical Specification of Ethernet over SDH

G.703 Physical/electrical characteristics of hierarchical digital interfaces

G.704 Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels

G.707 Network node interface for the synchronous digital hierarchy (SDH)

G.774 Synchronous digital hierarchy (SDH) - Management information model for the network element view

G.781 Synchronization layer functions

G.783 Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks

G.784 Synchronous digital hierarchy (SDH) management

G.803 Architecture of transport networks based on the synchronous digital hierarchy (SDH)

G.813 Timing characteristics of SDH equipment slave clocks (SEC)

G.823 The control of jitter and wander within digital networks which are based on the 2048 kbit/s hierarchy

G.825 The control of jitter and wander within digital networks which are based on the synchronous digital hierarchy (SDH)

G.826 End-to-end error performance parameters and objectives for international, constant bit-rate digital paths and connections

G.828 Error performance parameters and objectives for international, constant bit-rate synchronous digital paths

G.829 Error performance events for SDH multiplex and regenerator sections

G.831 Management capabilities of transport networks based on the synchronous digital hierarchy (SDH)

G.841 Types and characteristics of SDH network protection architectures

G.842 Interworking of SDH network protection architectures

G.957 Optical interfaces for equipments and systems relating to the synchronous digital hierarchy

G.691 Optical interfaces for single channel STM-64 and other SDH systems with optical amplifiers

G.664 Optical safety procedures and requirements for optical transport systems

I.731 ATM Types and general characteristics of ATM equipment

I.732 ATM Functional characteristics of ATM equipment

IEEE 802.1Q Virtual Local Area Networks (LANs)

IEEE 802.1p Traffic Class Expediting and Dynamic Multicast Filtering

IEEE 802.3 CSMA/CD Access Method and Physical Layer Instruction

Chapter 1 Auto-configuration And Load Configuration

1.1 Auto-configuration and load principle

Auto-configuration and load use TFTP protocol to acquire the configuration file stored on TFTP server, it is a way to configure the equipment. Viewing from application, it can be sorted to auto-run when the systems starts and running when the system is running.

Updated auto-configuration and load function allows the configuration files on TFTP server contain the commands related with auto-configuration and load function, so that there can be multi-configuration and load, to supply with the need of auto-configuration and load in complex network environment.

The switch supports several ways to make sure the configuration name on TFTP server correct, like manual input, using DHCP-Client for acquisition, using default configuration file name. Except this, user can specify one configuration file naming convention, using the attribute of the equipment to make sure the corresponding configuration file name by rules.

By combining multi-configuration and load technology and several accesses of acquiring configuration file name, the equipment can do auto-loading without configuration.

1.2 Default auto-configuration and load configuration

Function	Default value
TFTP server address	0.0.0.0 (not available)
The configuration files name on the server	Startup_config.conf
The naming rules of configuration files on the server	No rule number
Cover local configuration file switch state	Disable
On-power auto-configuration and load switch state	Disable
Send completing Trap switch state	Disable
Auto configuration and load running state	DONE

Auto configuration and load running result	NONE
---	------

1.3 Auto configuration and load function configuration

1.3.1 Configure TFTP server address

By default, TFTP server address is 0.0.0.0, 0.0.0.0 can not be configured by the command. Run the opposite command **no service config tftp-server** and TFTP server address will be 0.0.0.0, but 0.0.0.0 can not be take as a available address to download configuration files and load it, and it shows:

Step	Command	Description
1	config	Enter global configuration mode
2	service config tftp-server A.B.C.D	Configure TFTP server address
3	exit	Quit global configuration mode and enter privileged EXEC mode
4	show service config	Show auto-configuration and load information, Config server IP address shows the configuration information of TFTP server address

To restore default address, use **no service config tftp-server**.

⚠ Notice:

- The configure IP address must accord with RFC1166, or it may cause configuration failure.
- After using the command to configure TFTP server address, when you run auto-configuration and load, the address that is configured by the command will be used, not the address acquired from DHCP Client. So, if you don't want to use local configured address, you don't have to configure it; if it has been configured, use **no service config tftp-server** to restore and run auto-configuration and load function.

1.3.2 Configure file name rule

By default, there is no filename naming rule, use **show service config** and it will show: --. When naming rule and filename are not configured, while no configuration filename is acquired successfully from DHCP Client function, the system will use default filename: **startup_config.conf**.

The configured file naming rule has the highest priority. When configured naming rule, you should use the naming rule to make sure the filename according to the equipment attribute.

Step	Command	Description
1	config	Enter global configuration mode
2	service config filename rule	Configure file naming rules

	[<80001-89999>]	
3	exit	Quit from global configuration mode and enter privileged EXEC mode
4	show service config	Show auto-configuration and load information, among them, Config filename rule shows the filename configuration information

Use command **no service config filename rule** to delete the configured filename naming rules.

If there be no input rule number, then the system will create rule number in the way of question according to the answer user offers.

Raisecom(config)#service config filename rule

Enter the first question

Please check device type rule, configuration filename

0 - includes no device type information

1 - includes device type information

Please select:

0 means that the configuration files do not contain equipment type;

1 means that the configuration files do not contain switch type.

Input 0 or 1, press Enter, and enter the second question:

⚠ Notice:

- If the input number is not 0/1, it will be returned fault and failure in rule creation.

Please check MAC address rule, configuration filename

0 - includes no MAC address information

1 - includes the first 2 characters in MAC address

2 - includes the first 4 characters in MAC address

3 - includes the first 6 characters in MAC address

4 - includes the first 8 characters in MAC address

5 - includes the first 10 characters in MAC address

6 - includes all characters in MAC address

Please select:

0 means that ROS software version information is not contained in the configuration filename;

1 means that complete ROS software version information is contained in the configuration filename;

2 means that the software version information except the equipment type is contained in the configuration filename;

3 means that the software version information except the equipment type and date is contained in the configuration filename;

4 means that the software version high 3 figures are contained in the configuration filename;

5 means that the software version high 2 figures are contained in the configuration filename;

6 means that the software version the highest figure is contained in the configuration filename.

Input a random number among 0 and 6, press Enter, and end up rule number configuration.

⚠ Notice:

- If you input any number that is not among 0 and 6, it will return fault and failure in rule creation.

Please check MAC address rule, configuration filename

0 - includes no MAC address information

1 - includes the first 2 characters in MAC address

2 - includes the first 4 characters in MAC address

3 - includes the first 6 characters in MAC address

4 - includes the first 8 characters in MAC address

5 - includes the first 10 characters in MAC address

6 - includes all characters in MAC address

Please select:

⚠ Notice:

- If the input number belongs not to 0-6, it will be returned fault and failure in rule creation.

Please check ROS version rule, configuration filename

0 - includes no ROS version information

1 - includes entire ROS version information

2 - includes all except device type

3 - includes all except device type and date

4 - includes the highest 3 version number

5 - includes the highest 2 version number

6 - includes the highest version number

Please select:

⚠ Notice:

- If the input number belongs not to 0-6, it will be returned fault and failure in rule creation.

The configuration file naming rules are as follows:

The rule number is made up of 5 numbers, myriabit is 8, which has no actual meaning.

1) Kilobit shows the equipment type rules:

0 – equipment type is not included in the configuration file name;

1 – equipment type is included in the configuration file name;

2 – 9, reserved number, for rules extension.

2) Hundred shows MAC address rules: (take 000E08.5118 for example)

0 – the equipment MAC address information is not included in the configuration file name

1 – the first 2 characters of the equipment MAC address is included in the configuration file name (that is 00)

2 – the first 4 characters of the equipment MAC address is included in the configuration file name (000E)

3 – the first 6 characters of the equipment MAC address is included in the configuration file name (000E.5E)

4 – the first 8 characters of the equipment MAC address is included in the configuration file name (000E.5E08)

5 – the first 10 characters of the equipment MAC address is included in the configuration file name (000E.5E08.51)

6 – the first 6 characters of the equipment MAC address is included in the configuration file name (000E.5E.5E08.5118)

7 – 9 reserved number, for extension.

3) Tens show the software version number rule: (take ROS_4.3.2 ISCOM 2926.1.20080602)

0 – no software version information is contained;

1 – complete version information is contained (ROS_4.3.2 ISCOM 2926.1.20080602)

2 – the software version information without equipment type is contained (ROS_4.3.2.1.20080602)

3 – the software version information without equipment type and data is contained in the software version information (ROS_4.3.2.1)

4 – the software version information contains the higher three-figure (ROS_4.3.2)

5 – the software version information contains the higher two-figure (ROS_4.3)

6 – the software version information contains the higher one-figure (ROS_4)

7 – 9 restored, for extension.

4) Units digit shows the extension rules:

0 – extension rule is not supported;

1 – 9 restored, for extension.

The configuration file name is of the following style:

(equipment type)_M(MSC address)_(software version number)

For example: rule number 81650 stands for the configuration file name:

ISCOM2926_M000E.5E08.5118_ROS_4

⚠ Notice:

- After using the command to configure the naming rules, when auto-configuration is loaded, the naming rule will be used to configure the filename, while manual configuration filename and the one acquired from DHCP Client will no be used. So, if you do not want to use the naming rules, you don't have to configure the naming rules, and if it had been configured, use **no service config filename rule** to restore to default cases.

1.3.3 Configure the filename

By default, the filename is empty, use **show service config** and you will see: --. Follow the steps below to configure the filename, the length can not be longer than 80 bytes.

Step	Command	Description
1	config	Enter global configuration mode
2	service config filename <i>FILENAME</i>	Configure the filename <i>FILENAME</i> the filename, shorter than 80 bytes
3	exit	Quit from global configuration mode and enter privileged EXEC mode
4	show service config	Show auto-configuration loading information; config file name shows the configuration information of the filename.

Use **no service config filename** to delete the configured configuration filename.

⚠ Notice

- If the configuration filename rule had been configured, then the configuration filename using this command will not be used.
- Under the promise that no naming rule is configured, if the command is used to configure the filename, then when auto-configuration is loaded, the filename configured by this command will be used, while the filename acquired from DHCP Client will not be used.
- If you want to use the filename acquired from DHCP Client or default filename, there is no need to configure the filename. And if it had been configured, use **no service config filename** to resume and run auto-configuration loading function.

1.3.4 Configure the switch of covering local configuration

Enable/disable covering local configuration file switch function. If it is enabled, use the file on the server to cover local configuration file in the process of auto-configuration loading.

Step	Command	Description
------	---------	-------------

1	config	Enter global configuration mode
2	service config overwrite {enable disable}	Configure the switch of overwriting local configuration file
3	exit	Return to global configuration mode and enter privileged EXEC mode
4	show service config	Show auto-configuration loading information, config file name show the configuration information of the filename

1.3.5 Run auto-configuration loading when the equipment is working

Use manual configuration to run auto-configuration loading, the configuration access is shown below:

Step	Command	Description
1	config	Enter global configuration mode
2	service config	Run auto-configuration loading function
3	show service config	Show the running state and result of auto-configuration loading, operation states shows the state of auto-configuration loading, result shows the result of auto-configuration loading

⚠ Notice:

- When the command is running, the switch of sending Trap when configuration is loaded successfully will be closed automatically.

1.3.6 Running auto-configuration loading automatically when the equipment is started

There are two situations when running auto-configuration loading automatically when the equipment is started:

- 1) the local configuration file of the equipment does not exist, then auto-configuration loading will be carried out automatically when the equipment is started;
- 2) the local configuration file of the equipment exists, and **service config** exists in local configuration file, then auto-configuration loading will be started when local configuration file is loaded;

Step	Command	Description
1	config	Enter global configuration mode
2	service config startup enable	Enable auto-configuration loading when powered
3	write	Write the configuration into local configuration file
4	exit	Quit from global configuration mode and enter privileged EXEC mode
5	reboot now	Restart the switch

1.3.7 Stop auto-configuration loading try

If auto-configuration loading failed the switch will run auto-configuration loading once in a certain interval. The first failure interval is 2 seconds, the second time it is 10 seconds, the third time it is 100 seconds, the fourth time it is 300 seconds.

Use **no service config** to stop auto-configuration loading try caused by auto-configuration loading failure.

Step	Command	Description
1	config	Enter global configuration mode
2	no service config	Stop auto-configuration loading try caused by loading failure
3	exit	Quit from global configuration mode and enter privileged EXEC mode

1.4 Monitoring and maintenance

Use **show service config** to show auto-configuration loading information and the running situation.

The information shown is as follows:

Perform on startup: disable
Config server IP address: --
Config file name rule: 81000
Config file name: --
Overwrite local configuration file: disable
Send Completion trap: disable

Operation states: done
Result: none

Use the command below to show the meaning of the configuration filename rule:

Command	Description
show service config filename rule [<i>ruleNum</i>]	Describe the meaning of filename rule, and provide the optical auto-configuration loading command rule number.

1.5 Typical configuration example

1.5.1 Destination:

When the switch is started, by running auto-configuration loading twice, the switch can go through VLAN and get the specific configuration file.

1.5.2 The topology structure

The topology structure is shown below:

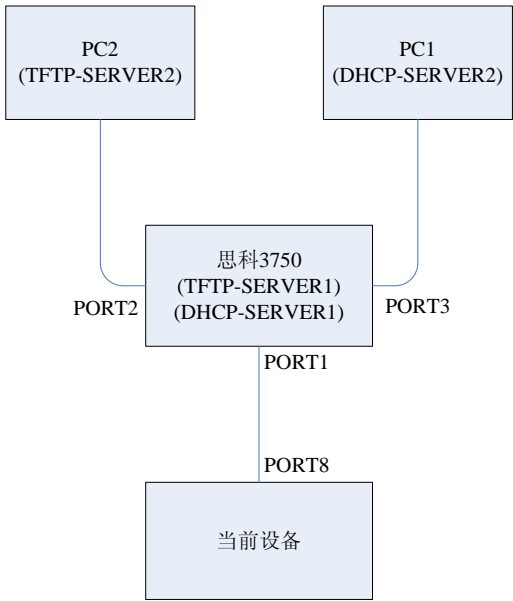


Fig 1 topology structure

1.5.3 The configuration steps on Cisco 3750:

Step 1: configure IP address on VLAN port 100:

```
Switch#config
Switch(config)#interface vlan 100
Switch(config-if)#ip address 20.100.0.100 255.255.255.0
Switch(config-if)#no shutdown
Switch(config-vlan)#exit
```

Step 2: configure TFTP-SERVER1

```
Switch(config)#tftp-server flash:startup_config.conf
```

Step 3: configure DHCP-SERVER1 on VLAN 100:

```
Switch(config)#ip dhcp pool newpool
Switch(dhcp-config)#network 20.100.0.100 255.255.255.0
Switch(dhcp-config)#option 150 ip 20.100.0.100
Switch(dhcp-config)#exit
```

Step 4: configure port 2 to access mode and enter VLAN 200

```
Switch(config)#interface G 1/0/2
Switch(config-if)#switch mode access
Switch(config-if)#switch access vlan 200
Switch(config-if)#exit
```

Step 5: configure port 3 to access mode and enter VLAN 200

```
Switch(config)#interface G 1/0/3
Switch(config-if)#switch mode access
Switch(config-if)#switch access vlan 200
Switch(config-if)#exit
```

Step 6: configure port 1 to Trunk mode and native VLAN to 100

```
Switch(config)#interface G 1/0/1
Switch(config-if)#switch trunk encapsulation dot1q
Switch(config-if)#switch mode trunk
Switch(config-if)#switch trunk native vlan 100
```

The content of the configuration file **startup_config.conf** that is added to TFTP-SERVER1:

```
!ROS Version 3.7.1043.ISCOM2009.84.20080602
```

```
!command in view_mode
```

```
!
```

```
!command in config_mode first-step
```

```
create vlan 200 active
```

```
!
```

```
!command in enable_mode
```

```
!
```

```
!command in ip igmp profile mode
```

```
!
```

```
!command in port_mode
```

```
Interface port 8
```

```
Switch mode trunk
```

```
!
```

```
!command in vlan configuration mode
```

```
!
```

```
!command in ip interface mode
```

```
interface ip 0
```

```
ip address dhcp 200
```

!

!command in cluster_mode

!



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