

www.raisecom.com

Extended OAM Configuration Guide

Legal Notices

Raisecom Technology Co., Ltd makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. **Raisecom Technology Co., Ltd** shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Warranty.

A copy of the specific warranty terms applicable to your Raisecom product and replacement parts can be obtained from Service Office.

Restricted Rights Legend.

All rights are reserved. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of **Raisecom Technology Co., Ltd.** The information contained in this document is subject to change without notice.

Copyright Notices.

Copyright ©2007 Raisecom. All rights reserved.

No part of this publication may be excerpted, reproduced, translated or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in Writing from **Raisecom Technology Co., Ltd.**

Trademark Notices

RAISECOM is the trademark of Raisecom Technology Co., Ltd.

Java™ is a U.S. trademark of Sun Microsystems, Inc.

Microsoft® is a U.S. registered trademark of Microsoft Corporation.

Windows NT® is a U.S. registered trademark of Microsoft Corporation.

Windows® 2000 is a U.S. registered trademark of Microsoft Corporation.

Windows® XP is a U.S. registered trademark of Microsoft Corporation.

Windows® and MS Windows® are U.S. registered trademarks of Microsoft Corporation.

Contact Information

Technical Assistance Center

The Raisecom TAC is available to all customers who need technical assistance with a Raisecom product, technology, or, solution. You can communicate with us through the following methods:

Address: 2nd Floor, South Building of Rainbow Plaza, No.11 Shangdi Information Road,
Haidian District, Beijing 100085

Tel: +86-10-82883305

Fax: +86-10-82883056

World Wide Web

You can access the most current Raisecom product information on the World Wide Web at the following URL:

<http://www.raisecom.com>

Feedback

Comments and questions about how the ... system software works are welcomed. Please review the FAQ in the related manual, and if your question is not covered, send email by using the following web page:

<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:

export@raisecom.com

We hope to hear from you!

CONTENTS

Release Notes	5
Chapter 1 Extended OAM Configuration Guide	1
1.1 Extended OAM principle overview	1
1.2 Extended OAM managemet	2
1.2.1 Default extended OAM configuration	2
1.2.2 Extended OAM configuration mode	2
1.2.3 Remote equipment system configuration	3
1.2.4 Configure extended OAM protocol	4
1.2.5 Configure remote equipment port	5
1.2.6 Upload/download files from remote equipment	10
1.2.7 Configure remote equipment to network management enabled equipment	16
1.2.8 Save remote equipment configuration information to local end	19
1.2.9 Reset remote equipment	19
1.2.10 Extended OAM statistic clear function	20
1.2.11 Monitoring and maintenance	20
1.2.12 Typical configuration example	21

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 Extended OAM Configuration Guide

1.1 Extended OAM principle overview

Extended OAM, using IEEE802.3ah OAM to manage and monitor the remote device. It is composed by 3 parts:

1. Get the attribute of remote device;
2. Upload and down file of remote device;
3. Manage extended OAM link state and statistic.

Extended OAM includes the followings:

- Get remote attribute: the extended OAM attribute can be used to get the remote attribute from the center site.
- Set remote device: config the remote device, including host name, enable and disable port, duplex, bandwidth, fault transfer etc.
- Set remote device network management parameter: can config remote device network management parameter, such as ip address, gateway, community parameter and management VLAN etc, then implement full management with SNMP protocol.
- Remote TRAP: when the port of remote device show LINK UP/DOWN, the remote device will send extended OAM notification frame to inform the center site, then the center device will send TRAP.
- Extended remote loopback: the remote optical port can be set loopback function, the function of whether to count repeatedly can be set.
- Reset remote device: send command to reset remote device.
- Other remote device function management: with the increasing of remote device, center device can manage more remote device with extended OAM function such as: SFP、Q-in-Q、 Virtual Circuit diagnosis etc.
- Download remote file: the remote can get remote file from FTP/TFTP server. The file also can be send from the server to center device, then the remote device can get from the center device.
- Upload remote file: put the file to FTP/TFTP server, or from the remote device to center one, then put to server from the center device.
- Link statistic and management of extended OAM function.

Note: extended OAM link can only be established between center and remote site. The devices of two end must be set to master and passive, or the link can't be up.

1.2 Extended OAM managemet

1.2.1 Default extended OAM configuration

Function	Default configuration
Powered configuration request	Enable
Extended OAM notice	Enable
Remote end trap switch	open

1.2.2 Extended OAM configuration mode

To configure remote equipments on a local end equipment, you need to enter remote configuration mode. The steps to enter remote configuration mode are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode

To configure remote equipment ports on local equipment, you need to enter remote interface configuration mode. The steps are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	interface client <i>client-id</i>	Enter remote physical port configuration mode <i>Clinet-id</i> port ID

1.2.3 Remote equipment system configuration

Configure remote equipment system configuration, including configuring remote equipments' hostname, the maximum frame length, save and delete the configuration files.

The steps to configure remote equipment hostname and remote equipment maximum frame length are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	hostname <i>HOSTNAME</i>	Configure remote equipment hostname <i>HOSTNAME</i> remote system network name
5	system mtu <1500-8000>	Configure remote equipment maximum frame length
6	show remote-device information	Show current remote equipment hostname and actual effective maximum frame length

Note: configure the maximum frame length of remote equipment, the actual effective value may be different because of different remote equipment. For example, RC552-GE can configure remote maximum frame length to 1916 bytes or 1536 bytes. If the remote end is RC552-GE, and the configuration value is less than 1916, the effective value is 1536, or it is 1916.

The steps to save remote equipment configuration file is as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode

		<i>Portid</i> physical port number
3	remote-device	Enter remote configuration mode
4	write	Save remote equipment configuration file

The steps to delete remote equipment configuration file is as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port number
3	remote-device	Enter remote configuration mode
4	erase	Delete remote equipment configuration file

When executing the command to delete remote equipment configuration file, you need to confirm your operation.

Note:

- The operation to the configuration file is to save and delete the file on remote equipment, not to operate the local equipments file system.
- It takes a long time save and delete remote files, so when executing the command, there may be some unusual situations like OAM link breaking down.

1.2.4 Configure extended OAM protocol

The steps to enable/disable powered configuration request configuration are as follows:

Step	Command	Description
1	config	Enter global configuration
2	extended-oam config-request enable	Enable/disable powered configuration request

	extended-oam	Enable enable powered configuration request
	config-request disable	Disable disable powered configuration request
3	exit	Return to privileged EXEC mode
4	show extended-oam status	Show extended OAM link state

The steps to disable/enable sending extended OAM notices configuration are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	extended-oam notification enable	Enable/disable sending extended OAM notice
	extended-oam notification disable	Enable enable sending extended OAM notice Disable disable sending extended OAM notice
3	exit	Return to privileged EXEC mode
4	show extended-oam notification	Show OAM informing frame enable configuration state

1.2.5 Configure remote equipment port

- Configure remote equipment port enable/disable

The steps to disable remote equipment ports are as follows:

step	command	description
1	config	Enter global configuration mode

2	<code>interface {port line client} portid</code>	Enter ethernet physical port mode <i>Portid</i> port physical ID
3	<code>remote-device</code>	Enter remote configuration mode
4	<code>interface client client-id</code>	Enter remote physical port configuration mode <i>Client-id</i> port ID
5	<code>shutdown</code>	Shutdown remote equipment port

In remote port configuration mode, use **no shutdown** to enable remote equipment port.

- Configure remote equipment port rate/duplex

The steps to configure remote equipment ports rate/duplex are as follows:

step	command	description
1	<code>config</code>	Enter global configuration mode
2	<code>interface {port line client} portid</code>	Enter ethernet physical port mode
3	<code>remote-device</code>	Enter remote configuration mode
4	<code>interface client client-id</code>	Enter remote physical port configuration mode
5	<code>speed {auto 10 100 1000 } duplex { full half }</code>	Configure port rate and duplex mode

When the equipment has 1000M optical port, we can configure optical port auto-negotiation function, the steps are as follows:

step	command	description
1	<code>config</code>	Enter global configuration mode
2	<code>interface {port line client} portid</code>	Enter ethernet physical port mode <i>Portid</i> physical port ID

3	remote-device	Enter remote configuration mode
4	line-speed auto	Configure remote equipment optical port auto-negotiation

In remote configuration mode, use **no line-speed auto** to shutdown optical port auto-negotiation function.

Note: when remote equipment is configured port rate/duplex, there may be some unusual situations like OAM link breaking down.

- Configure remote equipment port stream control/speed control

The steps to enable/disable remote equipment stream control are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} portid	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	interface client client-id	Enter remote physical port configuration mode
5	flowcontrol { on off }	Enable/disable remote equipment port stream control function

The steps to configure remote equipment port in/out direction bandwidth are as follows:

step	command	description
1	config	Enter global configuration mode
2	interface {port line client} portid	Enter ethernet physical port mode <i>Portid</i> physical port ID

3	remote-device	Enter remote configuration mode
4	rate-limit line <i>line-id</i> ingress <i>rate</i> rate-limit client <i>client-id</i> ingress <i>rate</i>	Configure remote equipment port in direction bandwidth <i>Line-id</i> line port ID <i>Client-id</i> client port ID <i>Rate</i> bandwidth
5	rate-limit line <i>line-id</i> egress <i>rate</i> rate-limit client <i>client-id</i> ingress <i>rate</i>	Configure remote equipment port out direction bandwidth

Run **no rate-limit line** *line-id* **ingress** or **no rate-limit client** *client-id* **ingress** to restore in remote configuration mode.

Run **no rate-limit line** *line-id* **egress** or **no rate-limit client** *client-id* **egress** to restore in remote configuration mode.

- Configure remote equipment port description

The steps to configure remote port information are as follows:

step	command	description
1	config	Enter global configuration
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	description line <i>line-id</i> <i>WORD</i> description client <i>client-id</i> <i>WORD</i>	Configure remote equipment port description information <i>Line-id</i> <i>WORD</i> remote port description information <i>Client-id</i> <i>WORD</i> remote port description information

In remote configuration mode, use **no description line** *line-id* or **description client** *client-id* *WORD* to delete the description information.

In remote configuration mode, use **show interface port** and **show interface port detail** to show remote port configuration information.

- Start/shutdown extended remote loopback

Starting loopback function may affect data transmission.

Enable remote equipment optical port inside-loopback, you can select the parameter so that the response end could recalculate CRC. The configuration steps are as follows:

step	command	description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	inside-loopback [crc-recalculate]	Start remote equipment optical port inside-loopback

In remote configuration mode, use **no inside-loopback** to stop remote equipment inside-loopback, use **show inside-loopback** to show remote optical port inside-loopback state and parameter.

- Run remote equipment line diagnoses function

Executing remote equipment line diagnoses function may affect the link and data transmission. The steps are as follows:

step	command	description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration

		mode
4	test cable-diagnostics	Run remote equipment line diagnoses

In remote configuration mode, use **show cable-diagnostics** to show remote equipment line diagnoses result.

1.2.6 Upload/download files from remote equipment

- Download the file from server to remote equipment

The system bootroom file, startup file, startup configuration file and FPGA file of remote device can be downloaded from server to remote device (center device as the relay). This function can be started by center device or remote device, and multiple remote devices can be upgraded at the same time.

Center device starts, download from FTP/TFTP server:

step	command	description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	download { bootstrap system-boot startup-config fpga } ftp <i>A.B.C.D</i> <i>USERNAME</i> <i>PASSWORD</i> <i>FILENAME</i> download { bootstrap system-boot startup-config fpga } tftp <i>A.B.C.D</i> <i>FILENAME</i>	Download the file from FTP server to remote equipment <i>A.B.C.D</i> Server IP address <i>USERNAME</i> FTP server username <i>PASSWORD</i> FTP server password <i>FILENAME</i> The filename on the server Download the files from TFTP server to remote equipment

A.B.C.D server IP address

FILENAME the filename on
the server

Acting from the remote equipment, the steps to download files from FTP/TFTP server to remote end are as follows:

step	command	description
1	config	Enter global configuration mode
2	interface { port line client } <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	download { bootstrap system-boot startup-config fpga } ftp <i>A.B.C.D</i> <i>USRNAME</i> <i>PASSWORD</i> <i>FILENAME</i>	Download the file from FTP server to remote equipment <i>A.B.C.D</i> Server IP address <i>USRNAME</i> FTP server username <i>PASSWORD</i> FTP server password <i>FILENAME</i> The filename on the server
	download { bootstrap system-boot startup-config fpga } tftp <i>A.B.C.D</i> <i>FILENAME</i>	Download the files from TFTP server to remote equipment <i>A.B.C.D</i> server IP address <i>FILENAME</i> the filename on the server

When the file downloading is over, the remote equipment can be shown with **dir** in privileged EXEC mode, and use **erase** to delete.

- Upload files to the server from remote equipment

The system bootroom file and startup configuration file on the remote equipment can be transmitted through local end to do uploading from remote equipment to the server. The function can be started by local equipment or remote equipment. When it is started from local equipment, we can no upgrade several remote equipments at the same time.

Started from local equipment, the steps to upload file from remote equipment to FTP/TFTP server are as follows:

step	command	description
------	---------	-------------

1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	upload {startup-config system-boot } ftp <i>A. B. C. D</i> <i>USRNAME PASSWORD FILENAME</i>	Upload file from remote equipment to FTP server <i>A.B.C.D</i> Server IP address <i>USRNAME</i> FTP server username <i>PASSWORD</i> FTP server password
	upload {startup-config system-boot } tftp <i>A. B. C. D</i> <i>FILENAME</i>	<i>FILENAME</i> The filename on the server Upload file from remote equipment to TFTP server <i>A.B.C.D</i> server IP address <i>FILENAME</i> the filename on the server

Started from remote equipment, the steps to upload file from remote equipment to FTP/TFTP server are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical interface mode <i>Portid</i> physical port ID
3	upload {startup-config system-boot } ftp <i>A. B. C. D</i>	Upload file from remote equipment to FTP server

USERNAME PASSWORD FILENAME

A.B.C.D Server IP address

USERNAME FTP server
username

PASSWORD FTP server
password

**upload {startup-config |
system-boot } tftp *A. B. C. D*
*FILENAME***

FILENAME The filename on
the server

Upload file from remote
equipment to TFTP server

A.B.C.D server IP address

FILENAME the filename on
the server

- Download remote equipment file from the server to local end

The remote equipment system bootroom file, startup file, startup configuration file and FPGA file can all be downloaded from server to local end using FTP/TFTP protocol, then be saved in local FLASH file system with a designated filename, making preparation for further upgrading.

When local end saves remote file, it will add postfix automatically according to the file type, so the local filename designated by user does not need postfix. What's else, the filename designated by remote file can not be the same with the filename of local end its own in flash. That is, the remote equipment's bootroom file can not be named as system-boot; the remote equipment's startup configure file can not be named as startup-config; the remote equipment's FPGA file can not be named as FPGA. However, the system bootroom file is not saved in FLASH, so the bootroom file of remote equipment can be named as bootstrap.

In privileged EXEC mode, the steps to download remote equipment file from the server to local end are as follows:

Step	Command	Description
1	download {remote-bootstrap remote-system-boot remote-startup-config remote-fpga } ftp <i>A. B. C. D</i> <i>USERNAME PASSWORD FILENAME</i> <i>LOCAL-FILENAME</i>	<i>A. B. C. D</i> server IP address <i>USERNAME</i> FTP server username <i>PASSWORD</i> FTP server password <i>FILENAME</i> the filename on FTP server <i>LOCAL-FILENAME</i> the

```

remote-system-boot | filename saved in local end
remote-startup-config | A.B.C.D server IP address
remote-fpga } tftp A.B.C.D FILENAME the filename on
               the server
               LOCAL-FILENAME the
               filename saved on local end

```

When the downloading is over, you can use **dir** to show the state in privileged EXEC mode on local equipments, and use **erase** to delete.

- Upload remote equipment file from local end to the server

The remote file saved in local equipment's FLASH can be uploaded using FTP/TFTP to the server. The steps are as follows:

Step	Command	Description
1	<pre> upload {remote-bootstrap remote-system-boot remote-startup-config remote-fpga } ftp A.B.C.D USERNAME PASSWORD FILENAME LOCAL-FILENAME </pre>	<p>A.B.C.D server IP address</p> <p>USERNAME FTP server username</p> <p>PASSWORD FTP server password</p> <p>FILENAME the filename on FTP server</p> <p>LOCAL-FILENAME the filename saved in local end</p> <p>A.B.C.D server IP address</p> <p>FILENAME the filename on the server</p> <p>LOCAL-FILENAME the filename saved on local end</p>

- Download file from local end to remote equipment

The remote file saved in local equipment FLASH, can be downloaded to remote equipment using extended OAM protocol. The function can be started from local equipment or remote equipment. When started from local equipment, several remote equipments can be upgraded at the same time.

Started from local equipment, the steps to download file from local end to remote equipments are as

follows:

Step	Command	Description
1	config	Enter global configuration mode
1	interface {port line client} <i>portid</i>	Enter ethernet physical interface mode
3	remote-device	Enter remote configuration mode
4	download { bootstrap system-boot fpga } <i>FILENAME</i>	Download bootroom file, startup file and FPGA file from local end to remote equipment
	download startup-config [<i>FILENAME</i>]	<i>FILENAME</i> the filename on local end Download configuration file from local end to remote equipment <i>FILENAME</i> the filename on local end

Started from remote end, the steps to download file from local end to remote end are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical interface mode <i>Portid</i> physical port ID
3	download { bootstrap system-boot fpga } <i>FILENAME</i>	Download bootroom file, startup file and FPGA file from local end to remote

```

equipment
FILENAME the filename on
local end
download startup-config
[FILENAME]
Download configuration file
from local end to remote
equipment
FILENAME the filename on
local end

```

When file download is over, you can use **dir** to show the state in privileged EXEC mode on remote equipment and use **erase** to delete.

1.2.7 Configure remote equipment to network management enabled equipment

- Configure remote equipment SNMP community and IP address

The steps to configure remote equipment community name and IP address are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} portid	Enter ethernet physical interface mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	snmp-server community community-name { ro rw}	Configure remote equipment community name and priority. <i>community-name</i> community name <i>ro</i> read only <i>rw</i> read & write
5	ip address ip-address [ip-mask] vlan-list	Configure remote equipment IP address <i>ip-address</i> <i>ip-mask</i>

vlan-list the managed VLAN
list

In remote configuration mode, use **no snmp-server community** *community-name* to delete remote equipment community name.

When configuring IP address we need to designate and manage VLAN as well, if the VLAN does not exist, create VLAN (by default all the ports are member port); if related VLAN exists, the member port configuration will not be modified. In remote configuration mode, use **no ip address ip-address** to delete remote port IP address.

In remote configuration mode, use **show remote-device information** to show remote community name and IP address information.

- Configure remote equipment Q-in-Q

Configure remote equipment flexible Q-in-Q function, the attributions that need to be configured include: switch mode, TPID, local VLAN and access interface.

When configuring remote equipment to complete transparent mode, the other configurations, like TPID, local VLAN and access interface, are all not available. The steps are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	switch-mode transparent	Configure remote equipment to complete transparent mode

When configuring remote equipment to Dot1q VLAN transparent mode, or single TAG mode, local VLAN and access port is valid, while TPID is not. When the equipment is configured to single TAG mode, the data packet coming from the access port will be marked local VLAN ID TAG if it has no TAG; if it has, it will not be handled.

The configuration steps are as follows;

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line	Enter ethernet physical port

	<code>client} portid</code>	mode
		<i>Portid</i> physical port ID
3	<code>remote-device</code>	Enter remote configuration mode
4	<code>switch-mode dot1q-vlan native-vlan <1-4094> [line]</code>	Configure remote equipment to Dot1q VLAN transmission mode native-vlan local VLAN <1-4094> VLAN ID; line Line port is the access port, when the keyword line is not selected, it means that client port is the access port

Configure remote equipment to Double tagged VLAN transmission mode, that is in double TAG mode, TPID, local VLAN and access port are all valid. When the equipment is configured double TAG mode, the data packet coming from the access port will be marked specific TPID and local VLAN ID outer layer TAG, whatever it has TAG or not.

The configuration steps are as follows:

Step	Command	Description
1	<code>config</code>	Enter global configuration mode
2	<code>interface {port line client} portid</code>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	<code>remote-device</code>	Enter remote configuration mode
4	<code>switch-mode double-tagged-vlan [tpid HHHH] native-vlan <1-4094> [line]</code>	Configure remote equipment to Double tagged VLAN transmission mode native-vlan local VLAN; <1-4094> VLAN ID; Line Line port is the access

 port

tpid outer-layer tagged TPID

HHHH outer-layer
tagged TPID, hexadecimal
number, 0000 to FFFF

When tpid is not configured, it
means the TPID that takes
0x9100 as the outer-layer TAG

In remote configuration mode, run **show remote-device information** to show remote equipment flexible Q-in-Q function related configuration.

1.2.8 Save remote equipment configuration information to local end

When remote equipment belongs to RC552 serious, the equipment itself will not save configuration file, but it is able to save remote configuration content to local end using **writ local**. When the local equipment is rebooted, it will load the saved 552 configuration file, and if there is configuration request from remote 552, the saved configuration will be sent to remote end. The saving steps are as follows:

Step	Command	Description
1	config	Enter global configuration mode
2	interface {port line client} portid	Enter ethernet physical interface mode <i>Portid</i> physical port mode
3	remote-device	Enter remote configuration mode
4	write local	Save remote configuration to local FLASH

If there is no 552 configuration file when local end is started, and local end has not sent configuration to remote 552 yet after booting, execute the command and you will be failed.

Saving FLASH file takes a long time, so when executing the command, unusual situations like OAM link breaking down may happen.

1.2.9 Reset remote equipment

The steps to reset remote equipment are as follows:

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

1	config	Enter global configuration mode
2	interface {port line client} <i>portid</i>	Enter ethernet physical port mode <i>Portid</i> physical port ID
3	remote-device	Enter remote configuration mode
4	reboot	Reset remote equipment

You need to confirm you operation after reset command is executed.

When remote equipment is resetting or rebooting, OAM link may break down, and local equipment may lose the connection to remote equipment.

1.2.10 Extended OAM statistic clear function

Extended OAM counts the sending and receiving extended OAM messages number on each OAM link, the extended OAM message types include: variable acquirement and response, variable setting and response, file request and file data, notice and so on. User can follow the steps below to clear statistic information:

Step	Command	Description
1	config	Enter global configuration mode
2	clear extended-oam statistics [port-list <i>port-list</i>] clear extended-oam statistics [line-list <i>line-list</i>] clear extended-oam statistics [client-list <i>client-list</i>]	Clear extended OAM link static information

1.2.11 Monitoring and maintenance

Command	Description
show interface port	Show remote equipment port information

show interface port detail	Show remote equipment port detailed information
show interface port statistics	Show remote equipment port static information
show oam capability	Show remote equipment ability of supporting OAM management
show remote-device information	Show remote equipment basic information
show sfp	Show remote equipment SFP information
show cable-diagnostics	Show link diagnoses result
show inside-loopback	Show remote loopback state and parameter
show extended-oam statistics	Show extended OAM frame static information
show extended-oam status	Show extended OAM link state
show snmp trap remote	Show remote trap enable configuration

1.2.12 Typical configuration example

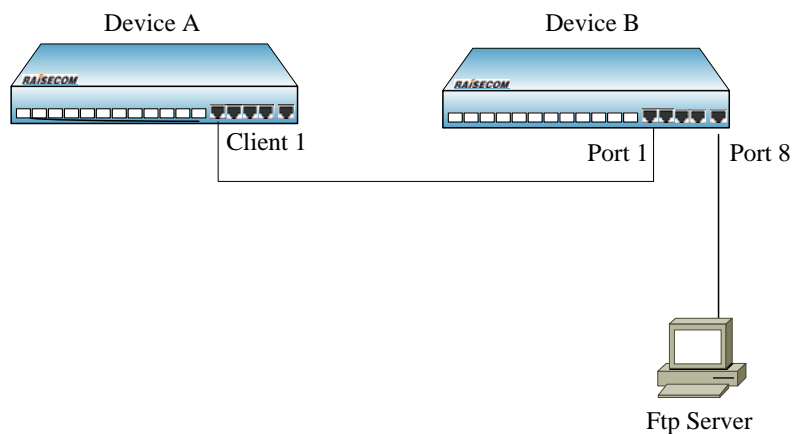


Fig 1 remote file upload/download function typical configuration

If you want to back-up and upgrade device A's startup configuration file on device B, configure B as the steps below:

1) upload startup configuration file to the server from remote device

```
Raisecom#config
```

```
Raisecom(config)# interface port 1
```

```
Raisecom (config-port)# remote-device
```

```
Raisecom(config-remote)# upload startup-config ftp 12.0.0.1 raisecom raisecom  
configfile_version_1
```

2) download startup configuration file to remote device from the server:

```
Raisecom(config-remote)# download startup-config ftp 12.0.0.1 raisecom raisecom  
configfile_version_2
```



北京瑞斯康达科技发展有限公司
RAISECOM TECHNOLOGY CO.,LTD.

Address: 2nd Floor, South Building of Rainbow Plaza, No.11 Shangdi Information Road,
Haidian District, Beijing Postcode: 100085 Tel: +86-10-82883305 Fax: +86-10-82883056
Email: export@raisecom.com <http://www.raisecom.com>