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Loopback Detection Configuration Guide
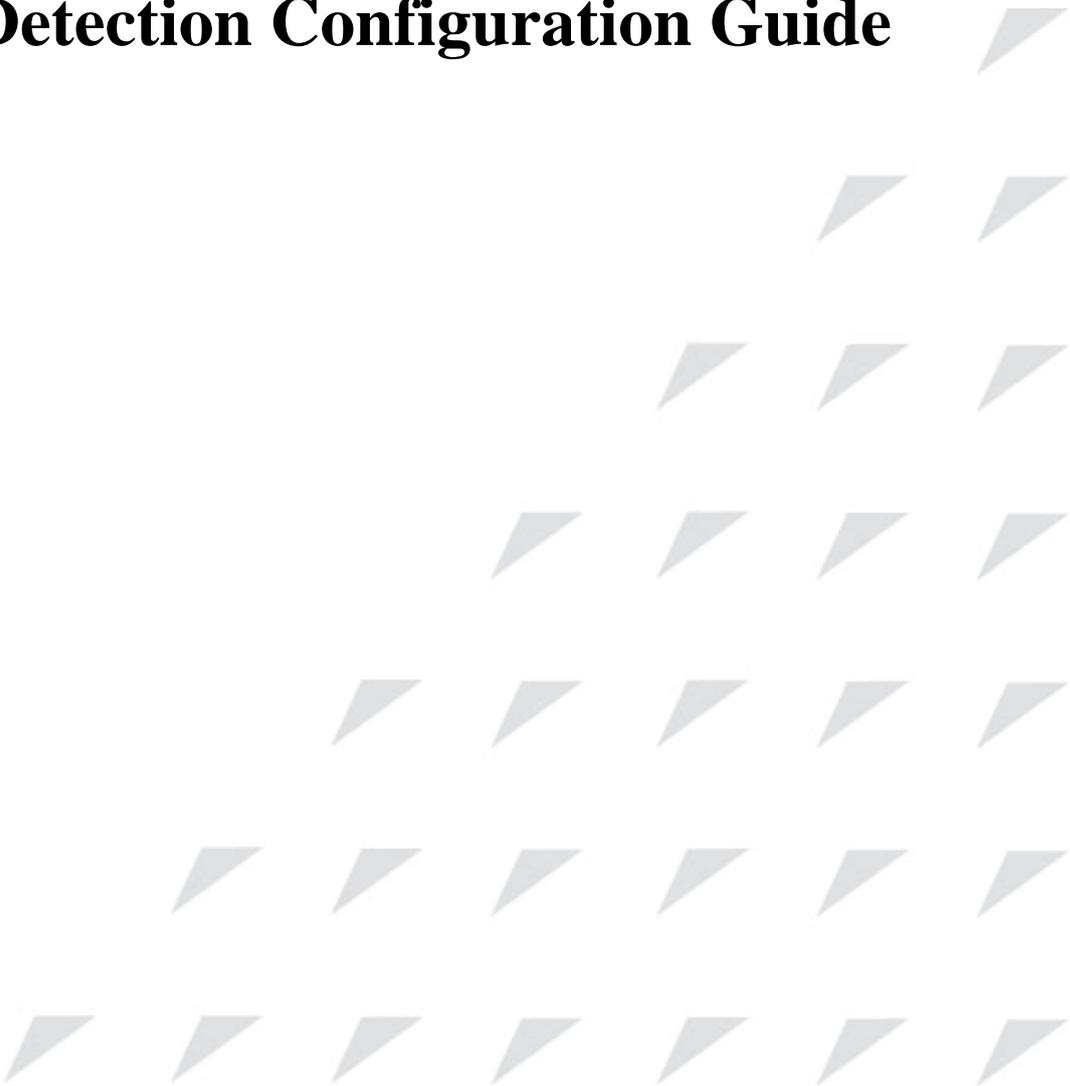
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Contact Information

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:

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World Wide Web

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

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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:

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We hope to hear from you!

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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 Loopback Detection

1.1 Loopback detection introduction

Loopback detection is to solve the network problem due to Loop (inner loop and outer loop), so as to enhance the network self-diagnostic capability, fault compatibility and robustness.
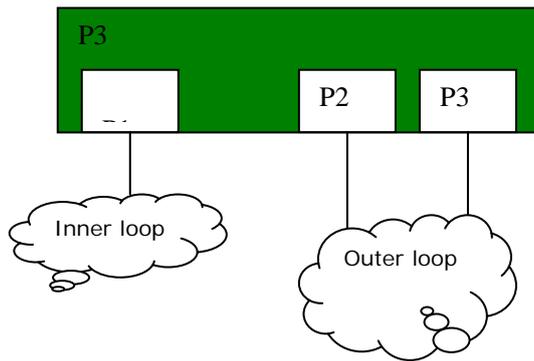

Fig 1

The loop discovery process:

1. Each port of the switch sends Loopback-detection packet periodically (the interval is configurable, generally as 4 seconds)

2. Switch will check the CUP MAC section of received packet, if the CPU MAC section has the same MAC as the switch, loop exsits on certain ports; otherwise, packet will be dropped;

3. If the port series number which sends out packed is the same with the port number which receives packets, self loopback exists; otherwise, outer loop exists;

4. When loop exists, port with bigger series number will be shutdown;

⚠ Notice:

➢ When several loops exists, all the ports may be shutdown.

1.2 Default port loopback detection configuration

Command	Default value
Enable/disable loopback detection function	Enable all the ports loopback detection function
Configure the type of loopback detection	Destination MAC will be

function and destination address type	the broadcasting address
Configure the operation time of port's receiving/sending packet shutdown	The loop can not recover when it is shutdown
Configure the loopback detection time hello time	The hello time time of loopback detection is 4s.

1.3 Configure loopback detection function

Loopback detection function configuration includes the four parts follow:

- ➢ Enable/disable loopback detection function
- ➢ Configure loopback detection type, or destination address type
- ➢ Configure the operation time of loop port receiving/sending packet shutdown
- ➢ Configure loopback detection hello time

To enable/disable loopback detection function:

Step	Command	Description
1	config	Enter global configuration function
2	loopback-detection { *enable* | *disable* } port-list { *port-list* | all }	Enable/disable the given port's loopback function. By default it is enabled *Enable*, enable loopback detection function *Disable*, disable loopback detection function *port-list* physical port number, use ',' and '_' for multi-ports input *All* all the ports
3	exit	Quit from global configuration mode and enter privileged EXEC mode
4	show loopback-detection	Show port loopback detection state

To configure loopback detection type (destination address type)

Step	Command	Description
1	config	Enter global configuration mode
2	loopback-detection destination-address [*mac-address* vlan *vlan-id*]	Configure loopback detection type or destination address type, including unicast packet, multicast packet and broadcast packet. Configure multicast and unicast as pointing to the stable MAC of CPU port and writing into hardware address table. By default it is sending broadcast packet
3	exit	Quit from global configuration mode and enter privileged EXEC mode
4	show loopback-detection	Show port loopbcak detection state

Configure the operation time of shutting down the receiving/sending packet of the loop port:

Step	Command	Description
1	config	Enter global configuration mode
2	interface port *portnumber*	Enter physical port configuration mode
3	loopback-detection down-time {<0-65534>| infinite}	The operation time of shutting down the receiving/sending packet of the loop port when a loop is detected <0-65534> the time that the loop port is in down state Infinite: the loop port can not recover when disabled
4	exit	Quit from physical port mode and enter global configuration mode
5	exit	Quit from global configuration mode and enter privileged EXEC mode

6	show loopback-detection	Show the port loopback detection state

To configure loopback detection hello-time

St ep	Command	Description
1	config	Enter global configuration mode
2	loopback-detection hello-time <1-65535>	Configure loopback detection hello-time. 1-65535, the interval of sending detection packet, unit is second, by default it is 4s;
3	exit	Quit from global configuration mode and enter privileged EXEC mode
4	show loopback-detection	Show port loopback detection state

To restore default configuration use global configuration command: no loopback-detection hello-time.

1.4 Monitoring and maintenance

Show port loopback detection state:

Show loopback-detection

Show loopback detection hello-time, destination address. Showing loopback detection state includes loopback detection function switch states: enable, disable; if there is port loopback: yes, no; port state/shutdown time; the source port that is in the loop with this port.

1.5 Typical configuration example

The topology structure is shown below:
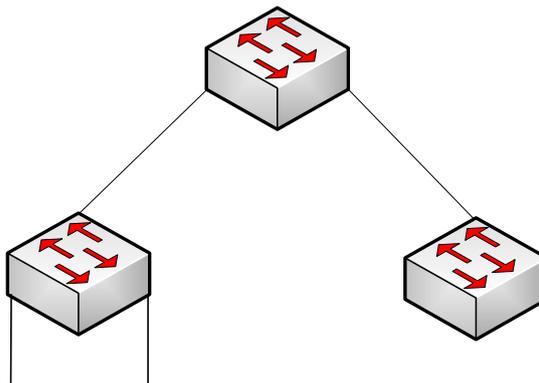
Fig 1 Loopback detection topology structure

As is shown in figure 1, configure Switch2 and Switch3 to loopback detection disable, and configure Switch1 to loopback detection enabled, when there is loop between Port3 and Port8 of Switch, Switch will detect loop and shut the Port1 of Switch1.

Switch1configuration is shown below:

Raisecom# **config**

Raisecom(config)# **loopback-detection hello-time** 3

Raisecom(config)# **loopback-detection** enable **port-list** all

Raisecom(config)# **exit**

Raisecom# **show loopback-detection**

Period of loopback-detection: 3 s

VLAN: 1

Destination address: FFFF.FFFF.FFFF

Port	Detection State	Loop Flag	State/Time	Source Port
1	enable	yes	down/infin	1
2	enable	no	--/infin	--
3	enable	no	--/infin	--
4	enable	no	--/infin	--
5	enable	no	--/infin	--
6	enable	no	--/infin	--
7	enable	no	--/infin	--
8	enable	no	--/infin	--
9	enable	no	--/infin	--
10	enable	no	--/infin	--
11	enable	no	--/infin	--
12	enable	no	--/infin	--
13	enable	no	--/infin	--
14	enable	no	--/infin	--
15	enable	no	--/infin	--
16	enable	no	--/infin	--
17	enable	no	--/infin	--
18	enable	no	--/infin	--
19	enable	no	--/infin	--
20	enable	no	--/infin	--

Port	Detection State	Loop Flag	State/Time	Source Port
21	enable	no	--/infin	--
22	enable	no	--/infin	--
23	enable	no	--/infin	--
24	enable	no	--/infin	--

Switch2 configuration is shown below:

Raisecom# **config**

Raisecom(config)# **loopback-detection** disable **port-list** all

Raisecom(config)# **exit**

Raisecom# **show loopback-detection**

Period of loopback-detection: 4 s

VLAN: 1

Destination address: FFFF.FFFF.FFFF

Port   Detection State   Loop Flag   State/Time   Source Port

----

Port	Detection State	Loop Flag	State/Time	Source Port
1	disable	no	--/infin	--
2	disable	no	--/infin	--
3	disable	no	--/infin	--
4	disable	no	--/infin	--
5	disable	no	--/infin	--
6	disable	no	--/infin	--
7	disable	no	--/infin	--
8	disable	no	--/infin	--
9	disable	no	--/infin	--

Switch3 configuration is shown below:

Raisecom# **config**

Raisecom(config)# **loopback-detection** disable **port-list** all

Raisecom(config)# **exit**

Raisecom# **show loopback-detection**

Period of loopback-detection: 4 s

VLAN: 1

Destination address: FFFF.FFFF.FFFF

Port   Detection State   Loop Flag   State/Time   Source Port

----

1	disable	no	--/infin	--
2	disable	no	--/infin	--
3	disable	no	--/infin	--
4	disable	no	--/infin	--
5	disable	no	--/infin	--
6	disable	no	--/infin	--
7	disable	no	--/infin	--
8	disable	no	--/infin	--
9	disable	no	--/infin	--

1	disable	no	--/infin	--
2	disable	no	--/infin	--
3	disable	no	--/infin	--
4	disable	no	--/infin	--
5	disable	no	--/infin	--

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