XS050

4-Channel

Fast Ethernet Mapping Card

User Handbook

V1.01

2010.5

Revision History

Version	Data	Description
V1.01	2010-5-22	Document Created

.

Contents

Note: As products and technologies have been increasingly updated and perfect, what have been stated in this document might be somehow inconsistent with your practical products, so please contact our sales representatives if you find something different with your products.

1 Introduction

1.1 Overview

XS050, the 4-Channel Fast Ethernet Mapping card, is one of the important plug-in cards in RS1010 equipment. It is connected to a mainboard of the RS1010 equipment via TELECOM-BUS, inserted into the 3rd slot.

XS050 provides four Electrical Ethernet interfaces compatible with IEEE802.3/802.3u standards, supports port-based VLAN and IEEE 802.1Q tag-based VLAN. By adopting ITU-T G.7041, G.7042 and G.707-compliant EOS(Ethernet Over SDH) technology and VLAN technology, each Ethernet port can employs 1~4 separate Virtual Concatenation Groups (VCG), and each VCG can be assigned to one or more Ethernet ports. The bandwidth of VCG can be flexibly configured for efficient transmission of Ethernet data over SDH network.

1.2 Feature

- 4 external Ethernet LAN ports, each LAN port supports 10/100Mbps , full/half duplex work mode by auto-negotiation
- 4 internal Ethernet WAN ports, each WAN port employs a VCG; the total bandwidth of 4VCGs is 63 VC12 and the bandwidth of each VCG is up to 48 VC12
- Supports 802.3 frame and Ethernet II frame
- Supports flow control and broadcast storm filtering control
- Supports MAC address dynamic learning function
- Supports port-based VLAN and 802.1Q tag VLAN
- Supports GFP-F Encapsulation specification complying with ITU-T G.7041
- Supports VCAT specification complying with ITU-T G.707
- Supports LCAS specification complying with ITU-T G.7042
- Provides both LCAS and Non-LCAS modes
- The maximum tolerated differential delay between any two VC-12 channels is 112 ms
- Supports automatic protection switching based on VC-12 in a ring network
- Supports device management based on CLI command and network management based on SNMP protocol

2 Application

As one of the service cards of RS1010, XS050 can be used for transmission of Ethernet data over the existent SDH network. It can communicate with any equipment complying with ITU-T G.7041, G.7042 and G.707 standard from other vendors. XS050 supports point-to-point, link and ring network application. Refer to Fig.2-1 for point-to-point application and Fig.2-2 for Ring application.

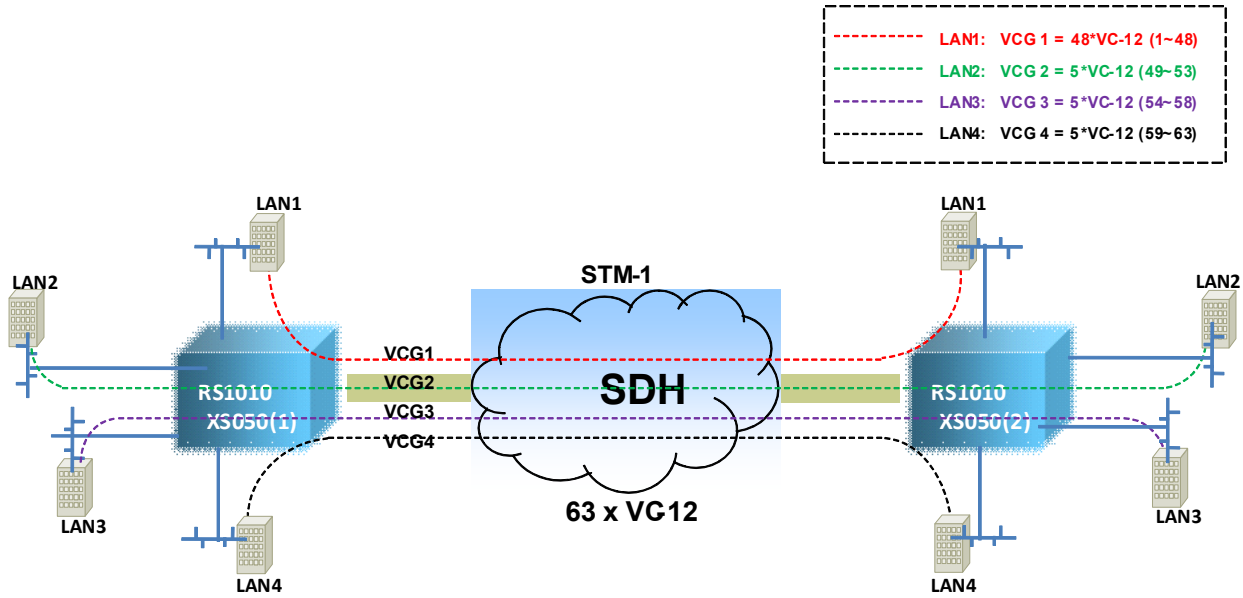


Fig.2-1 XS050 Point-to-point application

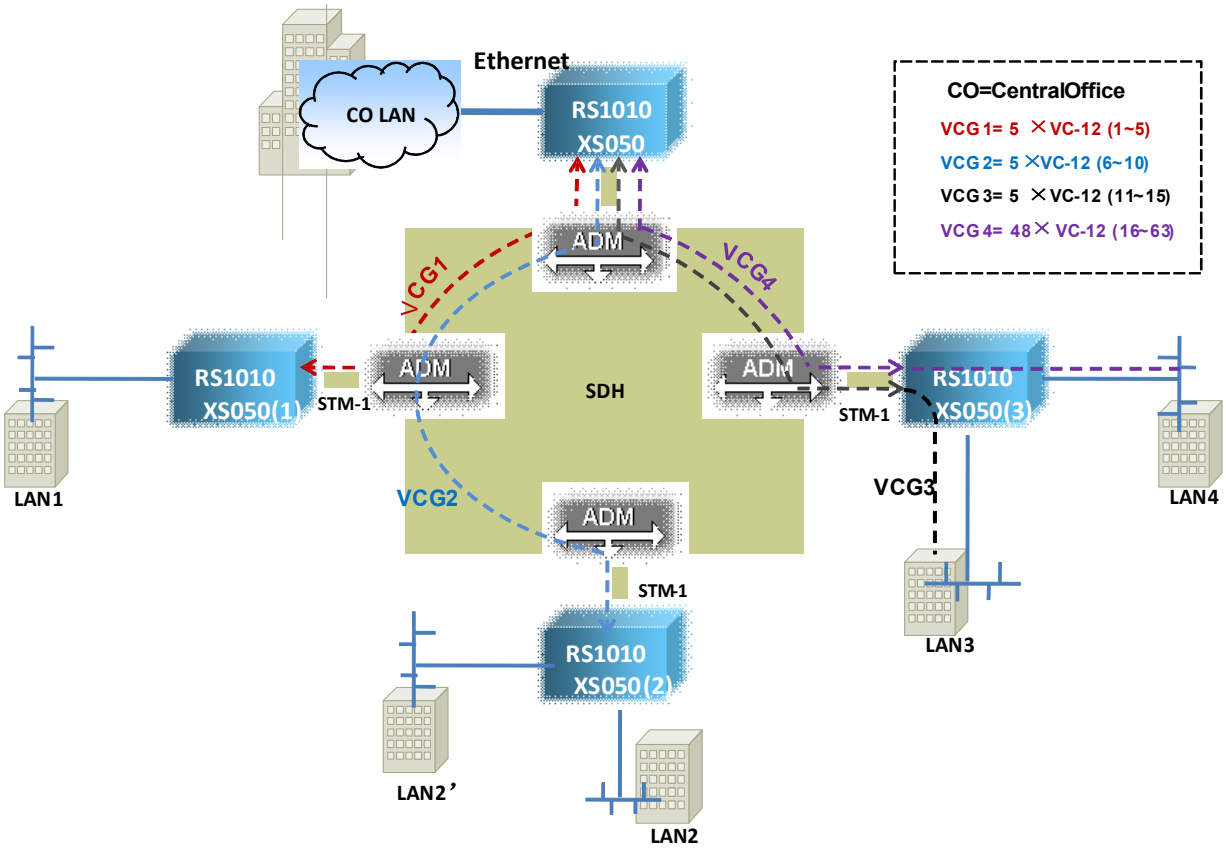


Fig.2-2 XS050 Ring Application

3 Description of Panel

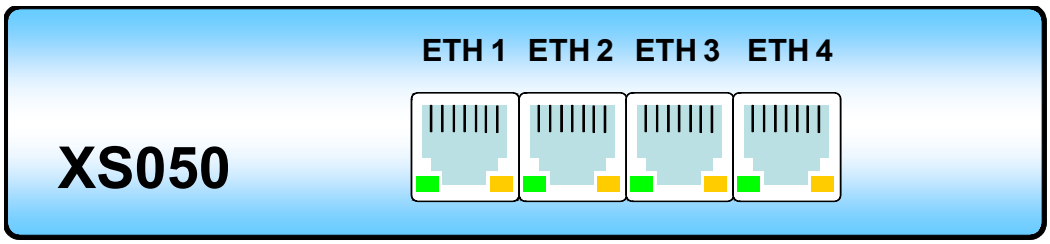


Fig. 3-1 XS050 Panel

Table 3-1 Panel Description

Name	Description	Remarks
ETH1/2/3/4	Electrical Ethernet port 1/2/3/4, support 100Mb/s and 10Mb/s. Refer to '5.1 Ethernet Interface' for more.	The Ethernet interfaces can be enabled/disabled by network management software; In default, the interfaces are enabled.

Table 3-2 Indicators of Panel

Type	Name	Description
Indicators of ETH1/2/3/4 interface	Link/ACT	Ethernet link indicator. Green. ON: Normal link but no data transmitting or receiving; Blink: Normal link and there are data transmitting or receiving; OFF: No link or interface is disabled.
	Speed	Ethernet speed indicator. Yellow ON: operating with 100M; OFF: operating with 10M.

4 Block Diagram

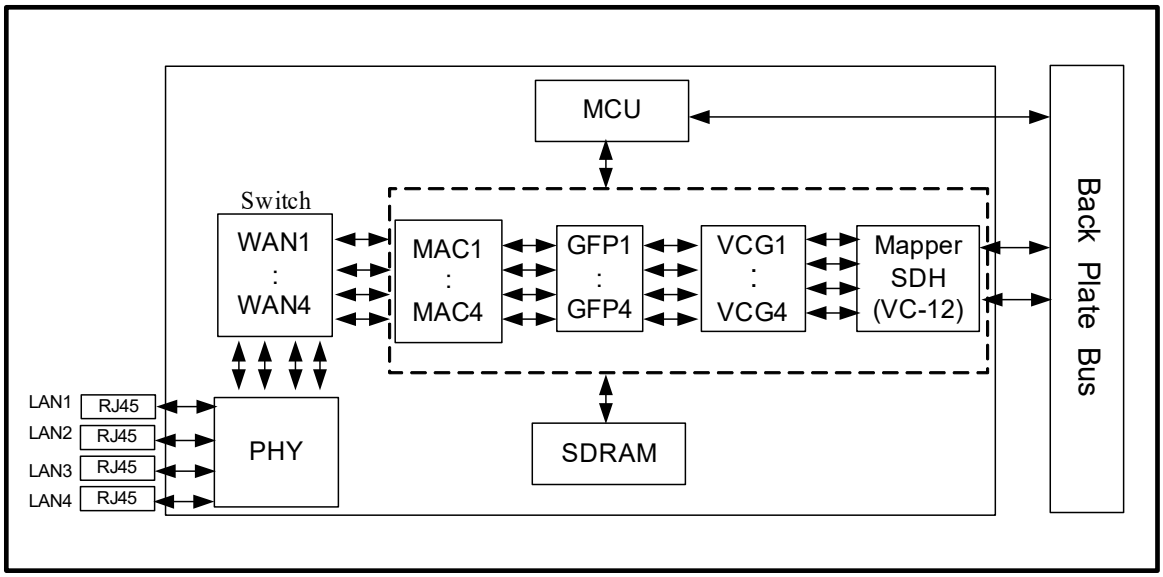


Fig. 4-1 Block Diagram

5 Functional Description

5.1 Ethernet Interface

XS050 provides four Ethernet interfaces compliant with IEEE 802.3/802.3u; each interface can work in 100M full duplex, 100M half duplex, 10M full duplex or 10M half duplex mode by auto-negotiation; each interface supports flow control and can be enabled or disabled by management software.

XS050 supports up to 1536/1552 bytes per Ethernet frame, it can be configured by management software to meet the user's needs. In default, the maximum packet length is 1552 bytes.

In order to meet the user's various requirements, XS050 supports the following three MAC address table aging modes:

- Quick aging: The MAC address learning is enabled and the aging time is 12s;
- Standard aging: The MAC address learning is enabled and the aging time is 300s;
- Close aging: The MAC address learning is disabled and the aging time is 12s. (suitable

for fault testing).

For more configuration information, refer to " Rayview User Guide" or "Guide to CLI command OF RS1010 ".

5.2 VLAN Function

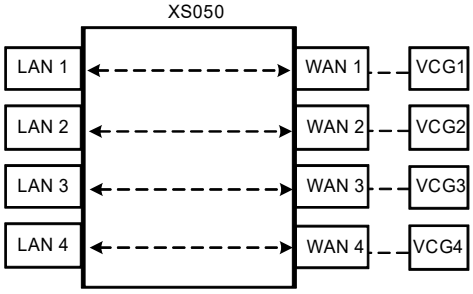
5.2.1 Port-based VLAN

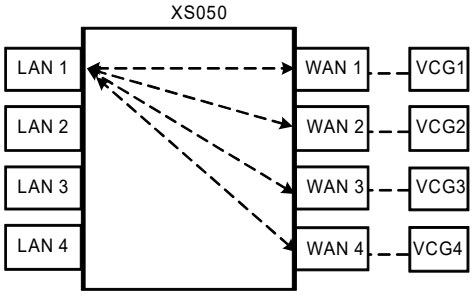
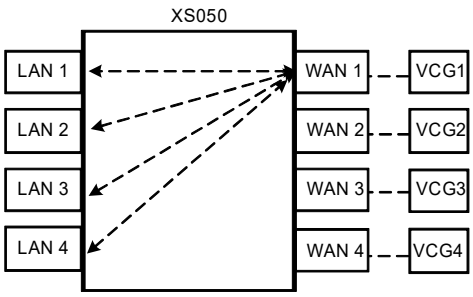
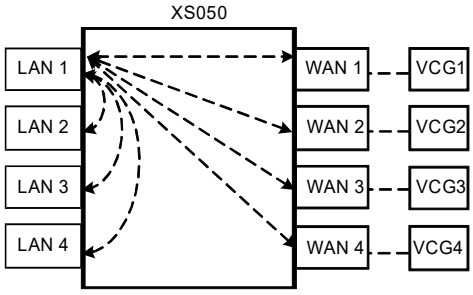
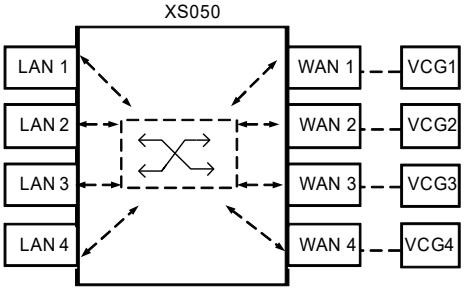
Port-based VLAN is used to assign each port of one switch to a separate VLAN, or multiple ports to the same VLAN. Port-based VLAN can't across different switches.

Port-based VLAN doesn’t require its bridge to recognize the VLAN-tagged frames or to look up the VLAN table; Packets received from a port will only go forward to its associated ports - port members, so you must define the port member for each port, that is, to define the final destination ports allowed for each port.

XS050 supports Port-based VLAN function, which can be configured by both RAYVIEW management software and CLI command. To facilitate the operation for users, RAYVIEW management software provides five fixed modes to do VLAN configuration, as table 5-2-1 shows, all the users have to do is to select the associated mode for each port, refer to "Rayview User Guide" for more. For CLI command, there is no modes selection of VLAN, users have to do VLAN configuration one command by one command, here will give several CLI commands for the corresponding VLAN modes in table 5-2-1 , refer to 'Guide to config RS1010 via CLI commands' for more.

Table 5-2-1 VLAN Configuration Mode

Mode	Diagram	CLI Command
Mode 1		Device>disvlan Device>setporttable 1 1,5 Device>setporttable 2 2,6 Device>setporttable 3 3,7 Device>setporttable 4 4,8 Device>setporttable 5 1,5 Device>setporttable 6 2,6 Device>setporttable 7 3,7

		Device>setporttable 8 4,8 Note: 1: LAN1; 2: LAN2; 3: LAN3; 4: LAN4 5:WAN1; 6:WAN2; 7:WAN3 8:WAN4
Mode 2		Device>disvlan Device>setporttable 1 1,5,6,7,8 Device>setporttable 5 1,5 Device>setporttable 6 1,6 Device>setporttable 7 1,7 Device>setporttable 8 1,8
Mode 3		Device>disvlan Device>setporttable 5 1,2,3,4,5 Device>setporttable 1 1,5 Device>setporttable 2 2,5 Device>setporttable 3 3,5 Device>setporttable 4 4,5
Mode 4		Device>disvlan Device>setporttable 1 1,2,3,4,5,6,7,8 Device>setporttable 5 1,5 Device>setporttable 6 1,6 Device>setporttable 7 1,7 Device>setporttable 8 1,8 Device>setporttable 2 1,2 Device>setporttable 3 1,3 Device>setporttable 4 1,4
Mode 5		Device>disvlan Device>setporttable 1 1,2,3,4,5,6,7,8 Device>setporttable 2 1,2,3,4,5,6,7,8 Device>setporttable 3 1,2,3,4,5,6,7,8 Device>setporttable 4 1,2,3,4,5,6,7,8 Device>setporttable 5 1,2,3,4,5,6,7,8 Device>setporttable 6 1,2,3,4,5,6,7,8 Device>setporttable 7 1,2,3,4,5,6,7,8 Device>setporttable 8 1,2,3,4,5,6,7,8

5.2.1.1 Typical Application for Port-based VLAN

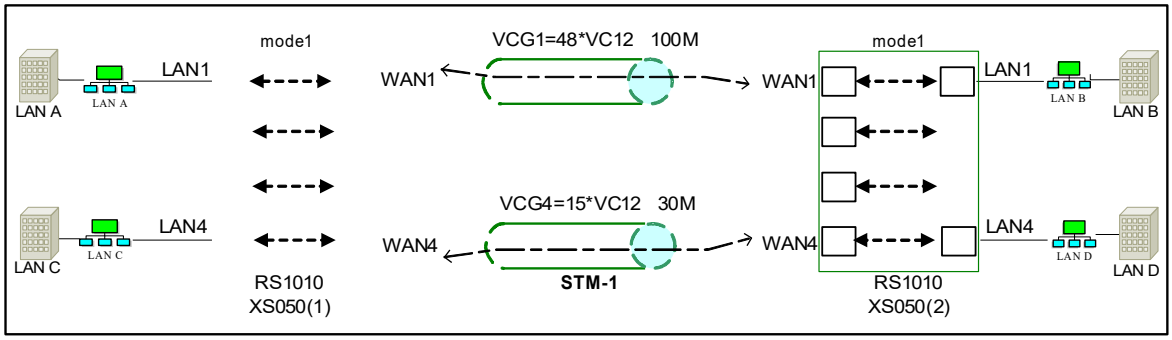


Fig.5-2-1-1 Application I for port-based VLAN

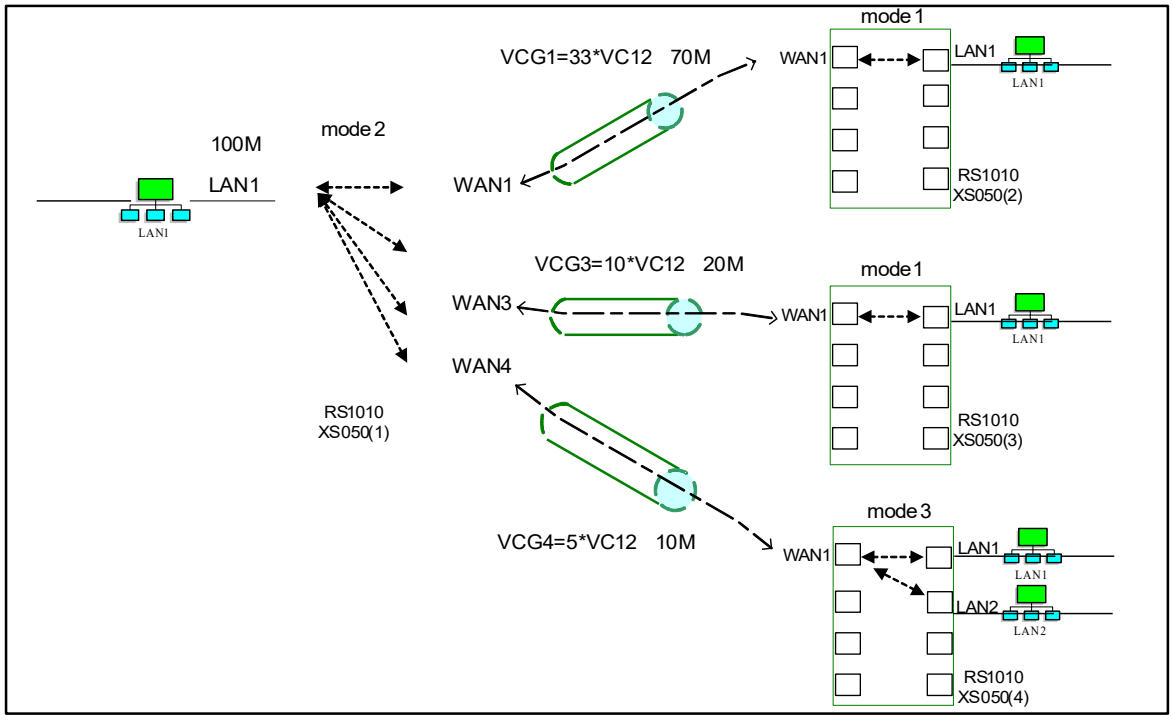


Fig.5-2-1-2 Application II for port-based VLAN

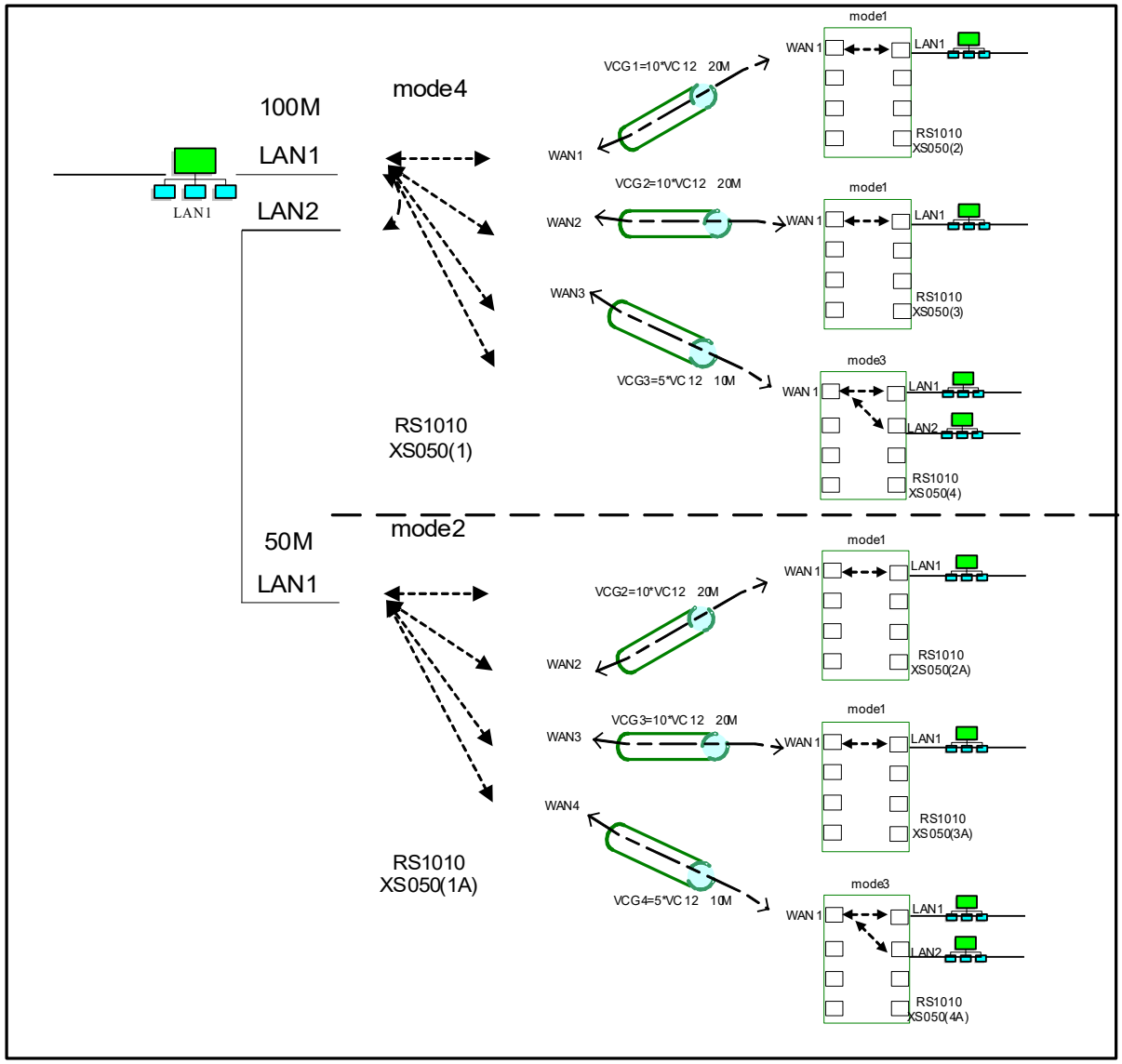


Fig.5-2-1-3 Application III for port-based VLAN

5.2.1.2 Configuration Instance

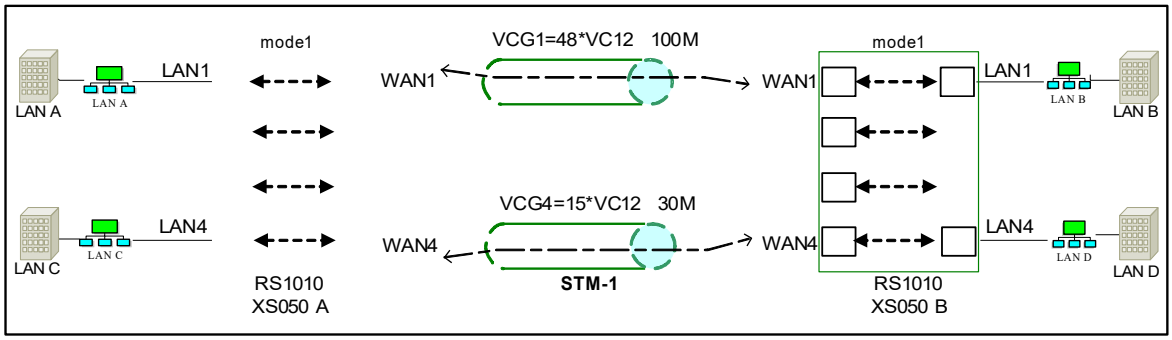


Fig.5-2-1-2 Application I for port-based VLAN

As Fig.5-2-1-2 shows, by creating port-based VLAN to the two equipments (XS050A and

XS050B）separately, the following communication can be implemented via VCG channel:

LAN A<---------->LAN B

LAN C<---------->LAN D

Configuration steps:

Step 1: Disable the 802.1Q tag-based VLAN of both the two equipments;

Step 2: Configure the port table of XS050 A, as table5-2-1-2-1 shows:

Table 5-2-1-2-1

port	Port Member
LAN1	LAN1，WAN1
LAN4	LAN4，WAN4
WAN1	LAN1，WAN1
WAN4	LAN4，WAN4

Note: If you use RAYVIEW management software to do the configuration, just select mode1 for both the LAN interface and the WAN interface.

Step 3: Configure port table for XS050 B, as table 5-2-1-2-1 shows, therefore, the port-based VLAN has been created for the two equipments;

Step 4: Configure cross-connection for the two equipments, Assign 48 VC-12 to VCG1(WAN1 port) of the two equipments separately, and 15 VC-12 to VCG4 (WAN4 port).

----------Config finish----------

Note: If the 802.1Q Tag-based VLAN is disabled, the VLAN ID and priority is invalid, and the port VLAN mode should be fixed to 'Hybrid'.

5.2.1.3 Network loop

The usage of mode2, mode4 and mode5 should be taken care. As Fig.5-2-1-3 shows, both devices are set as mode5, and that will cause network loop. All the mode configurations resulting in Ethernet abnormal should be forbidden, such as both two sides are set as mode2 or one side is mode2 and the other side is mode5, and so on.

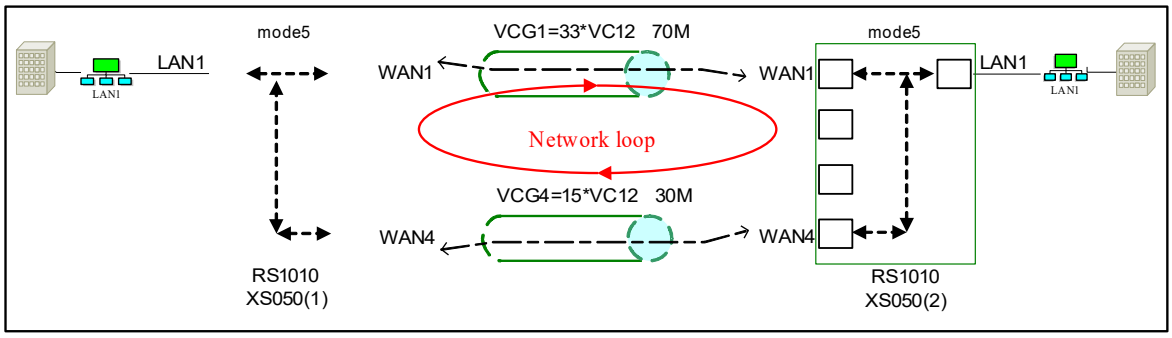


Fig. 5-2-1-3 Network loop

5.2.2 802.1 Q Tag-based VLAN

The 802.1Q Tag-based VLAN requires its bridge to recognize frames with a VLAN tag; lookup the VLAN table to find out the record whose VLAN ID is identical with the packet tag; forward packet according to both the record of VLAN table and the port members.

The 802.1Q Tag-based VLAN is used to achieve VLAN across switches, that is, it allows the ports of different switches be assigned to the same VLAN.

XS050 supports IEEE802.1Q Tag-based VLAN, which can be configured by both RAYVIEW management software and CLI command. Refer to "Rayview User Guide" and "Guide to config RS1010 via CLI commands" for more.

5.2.2.1 802.1Q Tag-based VLAN Term

Tag: 802.1Q VLAN Tag header, which is a field within a frame that identifies the VLAN.

Tagged frame: A data frame that contains 802.1Q VLAN tag header.

Untagged frame: A data frame that does not contain 802.1Q VLAN tag header.

VLAN ID: VLAN IDentification, a unique number (between 1 and 4094) that identifies a particular VLAN. The default VLAN ID is '1. (VLAN ID=0 is NULLVLAN, 4095 is reserved.)

PVID: Port VLAN ID, a unique number (between 1 and 4094), the default PVID for all the ports is '1'. PVID is an identification used to classify incoming untagged frames when they are received, for example, if PVID of port 1 of switch is '2', it means that any untagged incoming traffic received on port 1 of switch will be considered as traffic of VLAN 2 in the switch.

Access, Trunk, Hybrid: The port mode for VLAN, refer to Table 5-2-2-1 for more.

Table 5-2-2-1 Port mode

Mode	Description	Remark
Access	All the packets received on the ingress of the 'Access port' can only belong to one VLAN; On the ingress of the port, when the tagged packet received on the port, if the VLAN ID is consistent to the port PVID, the packet will be forward; otherwise, the packet will be discarded; when the untagged packet received on the port, the packet will be added on PVID tag, then go forward to the specific VLAN according to the PVID; On the egress of the port, the tag will be removed before forwarding to the end station.	When an Ethernet port is connected with terminal device such as a PC, this port mode is recommended.
Trunk	It is also called Tag-aware port mode; Packets with different Tag received on the ingress of the 'Trunk port' could belong to different VLANs. On the ingress of the port, the received packet that is already VLAN-tagged can be correctly forwarded; the untagged packet received will be added on PVID tag and forwarded to the specific VLAN according to the PVID; On the egress of the port, the tagged packet will be transmitted directly.	when an Ethernet port is connected with device that can distinguish and deal with VLAN tag such as SWITCH with VLAN function, this mode is recommended
Hybrid	Packets with different Tag received on the ingress of the 'Hybrid port' could belong to different VLANs; On the ingress of the port, the process of forwarding in Hybrid mode is the same as that in Trunk mode. On the egress of the port, if it is the untagged packet before	Hybrid Port connects LAN that combines tagged or untagged devices or switches, this port mode can be

	entering into the device, the output will be untagged packet on the egress of the port; if it is the tagged packet before entering into the device, the output will be the tagged packet on the egress of the port.	adopted in more complex environment

5.2.2.2 Typical Application for 802.1Q tag-based VLAN

The 802.1Q Tag-based VLAN will achieve more network application than that configured by port-based VLAN; it won't be list by example here.

Note: It is also important to caution the network loop mentioned above.

5.2.2.3 Configuration Instance

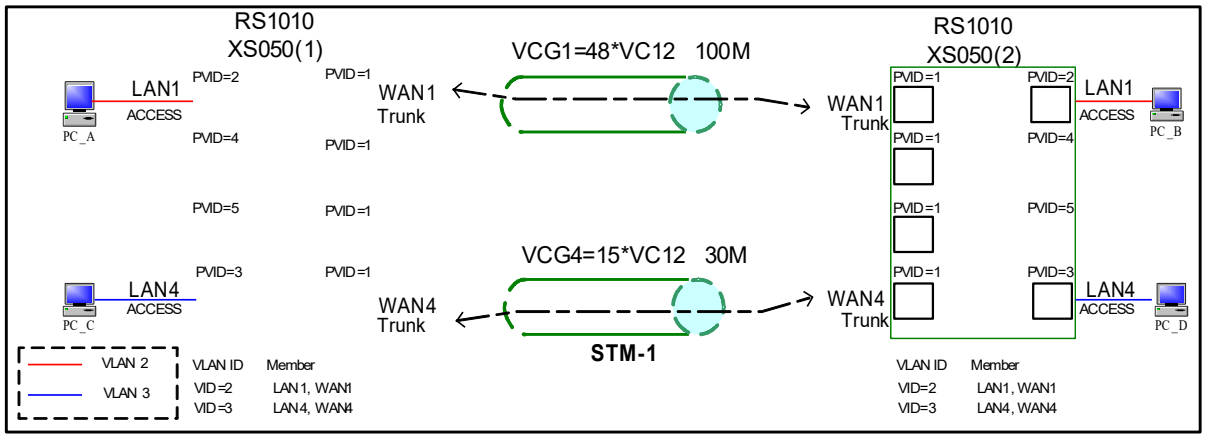


Fig. 5-2-2-3 Typical Application for 802.1Q Tag-based VLAN

As Fig.5-2-2-3 shows, by creating tag-based VLAN to the two equipments(XS050A and XS050B) separately, the following communication can be implemented via VCG channel:

PC_A<---------->PC_B

PC_C<---------->PC_D

See the steps below for VLAN configuration of equipment A, the configuration to equipment B is similar:

Configuration steps:

Step 1: Enable the 802.1Q tag-based VLAN of both the two equipments;

Step 2: Add the VLAN records in the following table to VLAN table:

VLAN ID	VLAN members
2	LAN1， WAN1

3	LAN4， WAN4

Step 3: Configure the port mode for each Ethernet port:

Port	Mode
LAN1	Access
LAN4	Access
WAN1	Trunk
WAN4	Trunk

Step 4: Configure the port PVID for each Ethernet port

port	VLAN_ID（PVID）	priority
LAN1	2	0 (default)
LAN4	3	0 (default)
WAN1	1（default）	0 (default)
WAN4	1（default）	0 (default)

Step5: Configure the port table for each port

port	Port members
LAN1	LAN1， WAN1
WAN1	LAN1， WAN1
LAN4	LAN4， WAN4
WAN4	LAN4， WAN4

therefore, the Tag-based VLAN has been created for the two equipments;

Step 6: Configure cross-connection for the two equipments, Assign 48 VC-12 to VCG1(WAN1 port) of the two equipments separately, and 15 VC-12 to VCG4 (WAN4 port).

----------Config finish----------

5.3 GFP-F function

GFP-F (Frame-mapped Generic Framing Procedure) is a protocol specified in the ITU G.7041 which mapping variable length payload into an octet-synchronous transport container. As shown in Figure 5-3-1, the Ethernet frame (not contain of Preamble and Start of Frame Delimiter) is encapsulate into the GFP frame, the GFP FCS, GFP extension header is optional field and the Type is configurable.

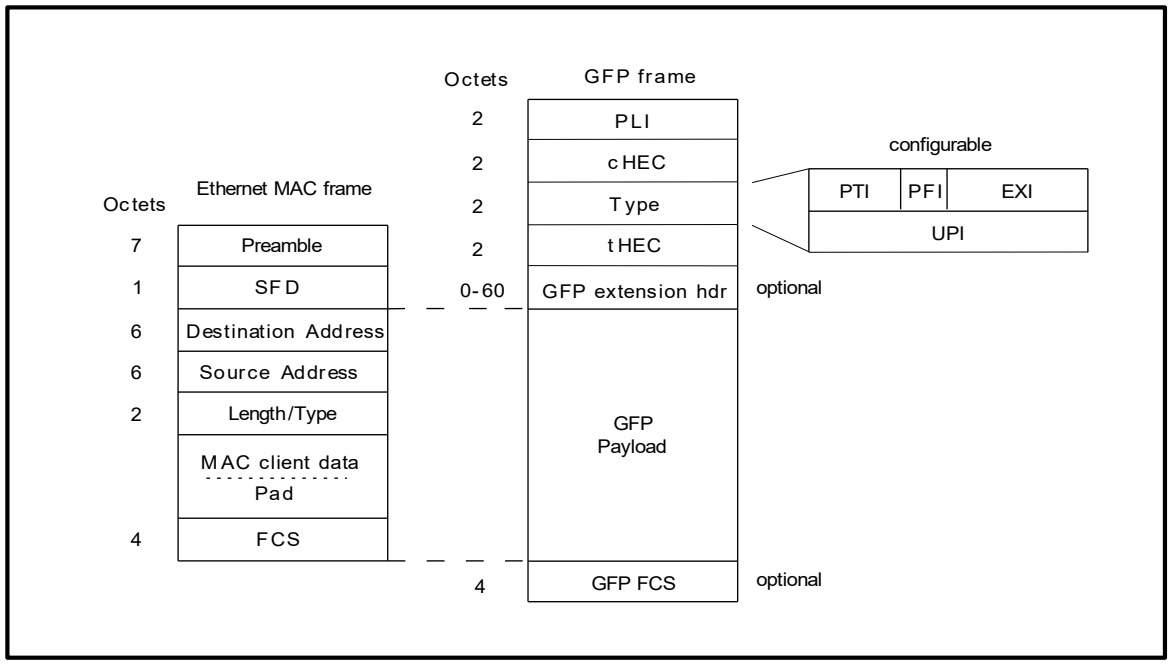


Fig. 5-3-1 GFP frame structure

In order to communicate with equipment from other vendors, XS050 supports the following configuration for GFP frame implemented by management software:

- PFI (Payload FCS Indicator): it is used to indicate the presence or the absence of the payload FCS filed.

  Enable PFI: use the payload FCS filed;

  Disable PFI: Not use the payload FCS filed.

  Default value: Disable PFI.

- EXI（Extension Header Identifier）: it is used to identify the type of extension header, Null header or linear header is optional.

  Default value: Null header

Refer to “RAYVIEW User Guide” or “Guide to CLI command OF RS1010 ” for more.

Note: keep the default value of the GFP configuration when communicating with the same equipment; when communicating with equipment from other vendors, change the default value appropriately to guarantee the normal communication between the two different equipments.

5.4 VCAT & LCAS function

Low speed tributaries with same frame structures may be virtually concatenated together to form larger transport entities (VCG), this is called virtual concatenation (VCAT). Link Capacity

Adjustment Scheme (LCAS) is defined in The ITU-T Recommendation G.7042 that specifies a link capacity adjustment scheme which should be used to increase or decrease the capacity of a container using virtual concatenation, automatically decrease the capacity if a member experiences a failure in the network and increase the capacity when the network fault is repaired.

XS050 supports VCAT & LCAS function: it provides 4 independent VCG; each VCG can achieve LCAS enabled/ disabled and the configuration of V5 and K4_B1.

When LCAS is enabled, the following functions can be achieved:

- Smooth bandwidth adjustment: when users send bandwidth adjustment command, the allocated bandwidth for an Ethernet link can be dynamically reconfigured without packet discarding;
- Automatically decrease the capacity if a member experience a failure: The device is able to decrease the capacity if there are alarms such as TU-LOP or TU-AIS, and increase the capacity when the fault is repaired;
- Trial signal degrade: The device is able to temporary decrease the capacity if the bit error rate exceed the threshold;
- Asymmetry connection: The LCAS generally assumes that the links between two sides can be arranged randomly. This implies connection asymmetry.

Both V5(b5~b7) and K4_B1 indicate the status of VCG, V5（b5～b7）is the Transmitted Signal Label (TSL）, used to identify the type of signal carried on the channel. K4_B1 is the Extended Signal Label (ESL), used to indicate the data encapsulation format. In default, the value of V5 is 0A, and K4_B1 is 0D. When communicating with the equipment of other vendors, if the sending and receiving of V5 / K4_B1 is not identical, the receiving side will generate Payload Mismatched (PLM) alarm, it is recommended that the V5 of equipment of other vendor is set as 0x0A and K4_B1 is set as 0x0D.

Refer to “RAYVIEW User Guide” or “Guide to CLI command OF RS1010 ” for more.

Note: keep the default value of V5 and K4_B1 when communicating with the same equipment; when communicating with equipment from other vendors, change the default value appropriately to guarantee the normal communication between the two different equipments.

5.5 Performance Statistic

XS050 supports TU12 Low order Path (LP) performance statistic, Ethernet performance statistic and GFP performance statistic, as table 5-5-1, 5-5-2 and 5-5-3 shows:

Table 5-5-1 LP Performance

Performance Item		Definition
LP Performance	Local EB	Local error block
	Local ES	Local error second
	Local SES	Local serious error second
	Local UAS	Local unavailable second
	Remote EB	Remote error block
	Remote ES	Remote error second
	Remote SES	Remote serious error second
	Remote UAS	remote unavailable second
	PJPC	Positive pointer adjustment counter
	PJNC	Negative pointer adjustment counter

Table 5-5-2 Ethernet performance

Performance Item		Definition
LAN port and WAN port	RX Byte Count	Ethernet byte counter for the receiving client data frames
	RX Packet Count	Ethernet packet counter for the receiving client data frames
	TX Byte Count	Ethernet byte counter for the transmitting client data frames
	TX Packet Count	Ethernet packet counter for the transmitting client data frames
	Drop packet Count	Packets discarded （including oversize packets, undersize packet , CRC error packet and so on）
	Drop Byte Count	The bytes of dropped packets

Note that the ETH performance can be statistic by bytes or packets; Refer to “RAYVIEW User Guide” or “Guide to CLI command OF RS1010 ” for more.

Table 5-5-3 GFP Performance

Performance Item		Definition
GFP1/2/3/4	RX Byte Count	GFP byte counter for the receiving client data frames
	RX Packet Count	GFP frame counter for the receiving client data frames
	TX Byte Count	GFP byte counter for the transmitting client data frames
	TX Packet Count	GFP frame counter for the transmitting client data frames
	RX Error Packet Count	GFP frame counter for the receiving FCS error
	TX Error Packet Count	GFP frame counter for the transmitting FCS error

5.6 Network Management

XS050 can be managed and configured by RAYVIEW Network management software (based on SNMP protocol) or CLI command, the management system detects the Ethernet channel in real time, provides VLAN configuration, alarm query and performance monitor, Refer to “RAYVIEW User Guide” or “Guide to CLI command OF RS1010 ” for more.

6 Operation

As one of the service cards in RS1010 equipment, XS050 can only be placed to the third slot of RS1010 equipment, providing transmission capacity of 1 to 63 VC12 channel bandwidth. Each XS050 card provides 4 independent VCG channels, and each VCG channel can be assigned to different VC12 channel bandwidth, it is up to 48 VC12 bandwidth for each VCG and the total bandwidth of 4 VCGs is 63 VC12.

Note1: if one VCG has been configured as 48 VC-12, the bandwidth remains for other service of RS1010 is only 15 VC-12 as RS1010 provides 63 VC-12 bandwidth at most.

Note2: XS050 can only be placed to the third slot of RS1010 equipment.

6.1 Default Settings

Table 6-1-1 Jumper Default Settings

ID	Name	Factory Settings	Remarks
J2	UART connection	Connected	The status of J2 and J3 is default factory settings and should not be carelessly changed.
J3	SDRAM_MAC_TEST	disconnected	

Table 6-1-2 Default Configuration of Device Management

ID	Function	Factory Settings
Ethernet Configuration		
1	MAC address Learning	Enable
2	Aging time of MAC address lookup table	300s
3	Maximum packet length	1552
4	Broadcast Storm Filtering Control	Enable
5	Ethernet performance statistic	Statistic by packet

Electrical Ethernet Interface		
1	Port usage	Enable
2	Working mode	Auto-negotiation, the highest ability is 100Mbps&full duplex
3	Flow control	On
4	VLAN	PORT VLAN mode (802.1Q VLAN is disabled), that is port based VLAN, in RAYVIEW management software, the default Ethernet trunk mode is mode1
VCG		
1	Port usage	Enable
2	Flow Control	On
3	PFI	Disable
4	EXI	Null Header
5	LCAS	LCAS enabled
6	V5	0x0A
7	K4_B1	0x0D

6.2 Alarm Description

Table 6-2-1 Alarm Description

Alarm Name	Severity	Alarm Description	Reason
Drop1_TU_LOP	Critical	Loss of TU Pointer (current working path)	(1) Connection error between Tributary unit and DXC unit; (2) Configuration error.
Drop1_TU_AIS	Critical	TU Alarm indication (current working path)	(1) Configuration error; (2) The corresponding path of remote failed; (3) Occurred by alarm of high order path

			such as R-LOS ; (4) Connection error between Tributary unit and DXC unit.
Drop1_LP_RDI	Critical	Low order Remote Defection Indication (current working path)	(1) Alarm such as AU-AIS/TU-LOP is received at the remote end; (2) Local sending error.
Drop1_LP_PLM	Minor	Trace Identifier of Low order Path Mismatch (current working path)	(1) Trace Identifier of Low order Path Mismatch; (2) Configuration error.
Drop1_UNEQ	Warning	Unequipped (current working path)	(1) Trace Identifier of Low order Path unequipped; (2) Configuration error.
Drop1_K4B1_LOM	Minor	Loss of Multiframe of K4B1(current working path)	(1) Excessive bit errors occurred in low order path; (2) The traffic transmitted by remote do not support virtual concatenation.
Drop1_K4B1_PLM	Warning	label of K4B1 Mismatch (current working path)	(1) Extended signal label of virtual concatenation mismatch; (2) The encapsulation format of traffic transmitted by remote is not GFP format.
Drop1_VC_AIS	Minor	Alarm indication (current working path)	(1) Configuration error; (2) Remote sending error.
Drop2_TU_LOP	Critical	Loss of TU Pointer (protection path)	(1) Connection error between Tributary unit and DXC unit; (2) Configuration error.
Drop2_TU_AIS	Critical	TU Alarm indication (protection path)	(1) Configuration error; (2) The corresponding path of remote failed; (3) Occurred by alarm of high order path such as R-LOS ; (4) Connection error between Tributary unit

			and DXC unit.
Drop2_LP_RDI	Critical	Low order Remote Defection Indication (protection path)	(1) Alarm such as AU-AIS/TU-LOP is received at the remote end; (2) Local sending error.
Drop2_LP_PLM	Minor	Trace Identifier of Low order Path Mismatch (protection path)	(1) Trace Identifier of Low order Path Mismatch ; (2) Configuration error.
Drop2_UNEQ	Warning	Unequipped (protection path)	(1) Trace Identifier of Low order Path unequipped; (2) Configuration error.
Drop2_K4B1_LOM	Minor	Loss of virtual concatenation multiframe Alignment Signal (protection path)	(1) Excessive bit errors occurred in low order path; (2) The traffic transmitted by remote do not support virtual concatenation.
Drop2_K4B1_PLM	Warning	Extended signal label of virtual concatenation Mismatch (protection path)	(1) Extended signal label of virtual concatenation mismatch; (2) The encapsulation format of traffic transmitted by remote is not GFP format.
Drop2_VC_AIS	Minor	Alarm indication (protection path)	(1) Configuration error; (2) Remote sending error.
GFP_LOF	Critical	GFP loss of frame	(1) VCAT path failure in Non-LCAS mode; (2) Serious bit errors occur; (3) GFP parameter mismatch .
LaVCR_GLOA	Critical	Loss of group alignment	1. One group of channel communicates with multiple groups of channel in the local equipment. 2.The channel differential delay exceed the threshold
LaVCR_GIDM	Critical	GID mismatch latch	One group of channel communicates with multiple groups of channel in the local equipment.
LINK_DOWN	Critical	Ethernet physical	Ethernet physical interface LINK_DOWN

		interface LINK_DOWN	
LINE_MACLOOP	3	Ethernet line side loopback	VCG loopback or optical loopback

6.3 Device Management

XS050 is one of the important plug-in card in RS1010 equipment, as RS1010 supports management via CLI command based on serial RS232 port and telnet, the configuration of XS050 can be executed (such as card management, Ethernet settings and so on) by CLI command, the alarm & status can also be monitored. Refer to 'Guide to config RS1010 via CLI commands' for detail.

In addition, XS050 also supports RAYVIEW management platform based on SNMP (V1 and V2C) to complete configuration management and kinds of alarm monitoring. Refer to "RAYVIEW User Guide" for more.

6.4 Notes

I The same VC-12 channel can't be assigned to different cards.

II Hot plugging is not supported

III When using this card for communication with MSTP devices from other manufacturers, the following points must be ensured:

- Make sure that the selection and number sequence of VC-12 in both devices are set to be the same. In this device three VC-12 numbering modes are provided: logic order, path order and line order. The numbering mode must be set as identical with that of the other device.
- Make sure that the V5/J2 overhead bytes are the same, or it will not affect the service of the VC12 carries.
  - If the sending and receiving of V5 are not identical, the receiving side will generate Payload Mismatched (LP_PLM) alarm, Please make sure that service is not affected by such alarms. It is recommended that the V5 of other manufactures is set as 0x0A, which means the b5-b7 is set as 101

- If J2 bits sent and received are not identical, the receiving side will generate trace identifier mismatched (TIM) alarm, Please make sure that service is not affected by such alarms. It is recommended that J2 bytes are set as all ‘0’.

- hat identical LCAS mode is set at both sides. If non-LCAS mode is selected, SQ sequence in VC12 should be configured as continuous and correct
  - Make sure that both devices are ITU G.7041 GFP-F compliant
  - Make sure that the service type of GFP frame is data.
  - Make sure that the identical PFI is set at both sides, i.e. use payload FCS filed in GFP frame in both sides or do not use payload FCS filed in GFP frame in both sides, the default of XS050 is do not use payload FCS filed in GFP frame;
  - Make sure that the identical GFP extension header is set at both sides, i.e. set Null header for GFP extension header in both sides or set linear header for GFP extension header in both sides, the default of XS050 is null header for GFP extension header.

7 Technical Specification

Table 7-1 Working Environment

No.	Item	Parameters
1	Power consumption	2W±10％
2	Voltage input	+4.86V～+5.10VDC
3	Working temperature	0℃～45℃
4	Working humidity	95％, without condensation

Table 7-2 Ethernet parameters

No.	Item	Parameters
1	Minimum frame size	64 bytes
2	Maximum frame size	1552 bytes
3	Flow control	Enabled (by default)
4	MAC address lookup table	8K
5	Aging time of MAC address lookup table	12s/300s, 300s is the default
6	VLAN	Supported
7	Channel Bandwidth	Up to 48 VC12 bandwidth for each VCG and the total bandwidth of 4 VCGs is 63 VC12

Table 7-3 Electrical Ethernet Interface Parameters

No	Item	Parameters
1	Auto-negotiation	The default is auto-negotiation
2	Bit Rate	10/100Mb/s
3	Duplex	half/ full duplex
4	Interface connector	RJ-45
5	Cable	CAT-5, cross-over and straight-through auto-detect
6	Maximum Transmitted distance	100m
7	Standard	IEEE802.3

Appendix I Related Documents

Table A XS050 Related documents list

Item	Name	Remarks
1	XS050 User Handbook	
2	RayView User Guide	
3	Guide to config RS1010 via CLI commands	
4	RS1010 User Handbook	

Figure Index

Table Index