



## Application notes



# RAY Switch Settings Examples

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# 1. Switch settings examples

The examples of the most common configurations.

## 1.1. Default settings

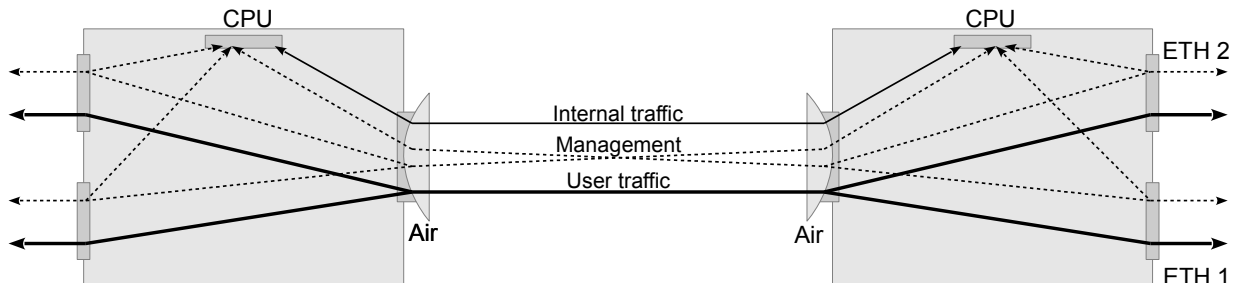


Fig. 1.1: Default

### Description of communication:

User traffic entering the ETH 1 can be output to a remote station from ETH 1 or ETH 2. Additionally, packets entering ETH 2 can be output to a remote station from ETH 1 or ETH2.

Ports ETH1 to ETH2 are not interconnected. The menu "VLAN / Member / p2, p4".

The link is transparent for the untagged and tagged frames that are queued according to their priority. The menu "VLAN / VTU priority override / none".

Management of units is possible from any port. "Management VLAN" is disabled by default and when turned on, the switch does not need to be set.

Internal traffic uses the "Internal VLAN" and has the highest priority set (7). It is queued number 3, again with the highest priority. Valid for "Link settings / Service access / Services / Service channel = standard". When "Service channel = direct" is set, internal operation with unit IP addresses is performed, without default priority setting.

**Setting procedure:**

Initial settings: Show defaults

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>Global</b> <span style="float: right;">?</span>							
Link authorization guard	<input checked="" type="checkbox"/>						
Remove one provider tag	<input type="checkbox"/>						
ARP without broadcast checking	<input checked="" type="checkbox"/>						
<b>Ports settings</b>							
Port name	p2 Eth1	p4 Eth2	p5 CPU	p6 Air			
Egress mode	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>			
802.1q mode	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>			
Discard tagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Discard untagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VTU priority override	<input type="text" value="none"/>	<input type="text" value="none"/>	<input type="text" value="none"/>	<input type="text" value="none"/>			
Force default VID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Default VID	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>			
FID	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
IGMP snooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
ARP mirroring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VLAN tunnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Member							
p2 Eth1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p4 Eth2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p5 CPU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
p6 Air	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
<input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Show defaults"/> <input type="button" value="Show backup"/>							

## 1.2. Interconnection ETH1 and ETH2 ports

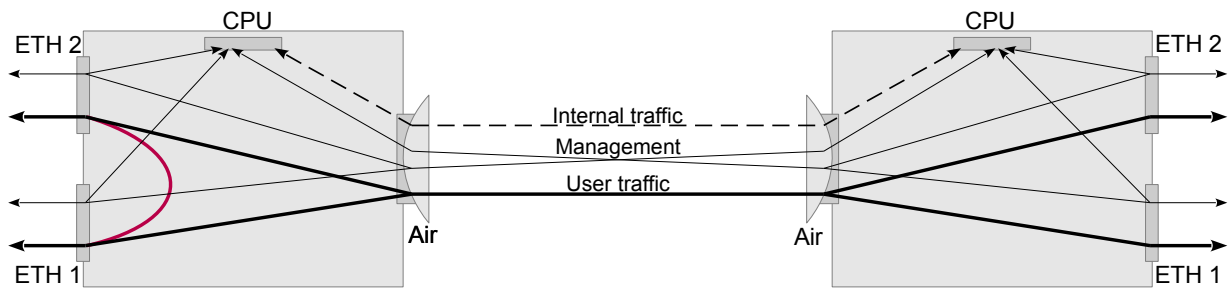


Fig. 1.2: ETH1 + ETH2

### Description of communication:

Connection from port ETH 1 to ETH 2 is added to default configuration.  
Menu "VLAN / Member / p2, p4".

### Setting procedure:

Only set on Local, Remote can be adjusted in the same way if needed.

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>Global</b>							
Link authorization guard		<input checked="" type="checkbox"/>					
Remove one provider tag		<input type="checkbox"/>					
ARP without broadcast checking		<input checked="" type="checkbox"/>					
<b>Ports settings</b>							
Port name	p2 Eth1	p4 Eth2	p5 CPU	p6 Air			
Egress mode	unmodify	unmodify	unmodify	unmodify			
802.1q mode	disabled	disabled	disabled	disabled			
Discard tagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Discard untagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VTU priority override	none	none	none	none			
Force default VID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Default VID	1	1	1	1			
FID	0	0	0	0			
IGMP snooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
ARP mirroring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VLAN tunnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Member							
p2 Eth1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p4 Eth2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p5 CPU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
p6 Air	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

### 1.3. Prioritization according to the VLAN ID

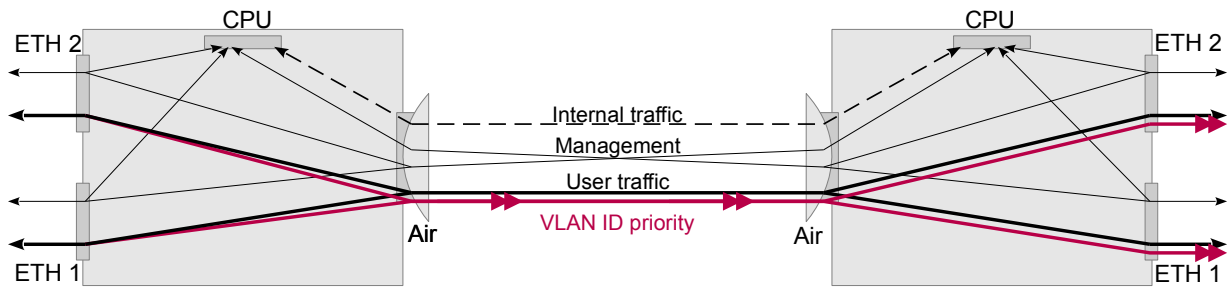


Fig. 1.3: VLAN ID

#### Description of communication:

In the internal switch set the priority of a particular VLAN ID. Menu "VTU / Edit / Use VID priority", "VTU / Edit / VID priority".

Frames in this VLAN will then pass through the link with a higher priority. After passing through the link the frame retains this new priority. Menu "VLAN / 802.1q / fallback", "VLAN / VTU priority override / frame"

#### Setting procedure:

Only set on Local, Remote can be adjusted in the same way if needed.

Local: Step 1, Step 2, Step 3

#### Step 1

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>STU table</b>							
SID	Label	p2 Eth1	p4 Eth2	p5 CPU	p6 Air		
1	all	forwarding	forwarding	forwarding	forwarding		

In table STU the item with number SID = 1 is prepared for reference in VTU table.

#### Step 2

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk		
<b>VTU table</b>									
VID	La...	FID	SID	Pri...	P...	p2 Eth1	p4 Eth2	p5 CPU	p6 Air
10	VTU10	0	1	6	false	egress unmodi...	egress unmodi...	egress unmodi...	egress tagged

A frame with VID = 10 is assigned priority 6 in VTU table with output mode "egress tagged".



## Step 3

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>Global</b>							
Link authorization guard			<input checked="" type="checkbox"/>				
Remove one provider tag			<input type="checkbox"/>				
ARP without broadcast checking			<input checked="" type="checkbox"/>				
<b>Ports settings</b>							
Port name	p2 Eth1	p4 Eth2	p5 CPU	p6 Air			
Egress mode	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>	<input type="text" value="unmodify"/>			
802.1q mode	<input type="text" value="fallback"/>	<input type="text" value="fallback"/>	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>			
Discard tagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Discard untagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VTU priority override	<input type="text" value="frame"/>	<input type="text" value="frame"/>	<input type="text" value="none"/>	<input type="text" value="none"/>			
Force default VID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Default VID	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>			
FID	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
IGMP snooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
ARP mirroring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
VLAN tunnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Member							
p2 Eth1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p4 Eth2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p5 CPU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
p6 Air	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Selecting "802.1q = fallback mode" for the Eth2 and Eth1 port means that the framework prefers to use its own VID when it is contained in VTU (Step 2). The "VTU priority override = frame" causes the frame leaving the RAY unit to have a priority according to VTU table content.

For the "VLAN ID = 10" priority 6 is set. Packets queued with the highest priority (default priority 6 and 7) should never have a higher bit rate than that which is available "in the air" for the lowest modulation ACM. Priorities 6 and 7 also use internal communication packets that are necessary for the link!

For prioritization work, QoS must be enabled under 802.1p (default setting).  
 "Switch settings / QoS / 802.1p / Enabled"

### 1.4. Prioritization according to MAC address

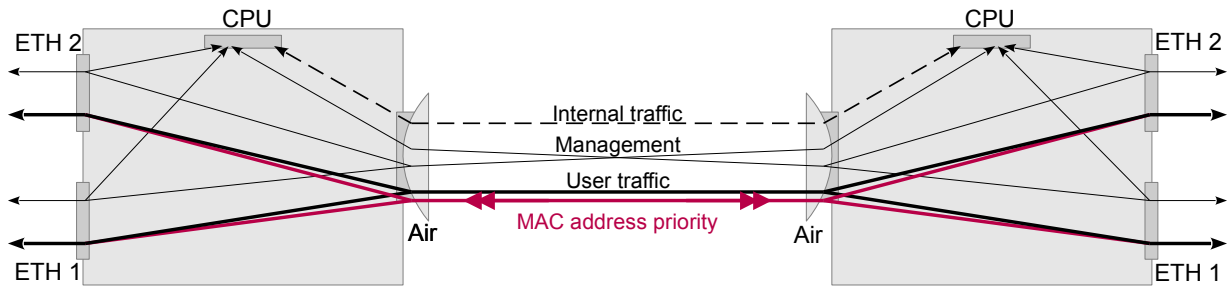


Fig. 1.4: MAC address

#### Description of communication:

In the switch there is priority set according to the source or destination MAC address. Packets with this MAC address will be queued at a higher priority. The packet passes through the link unchanged.

#### Setting procedure:

Set the desired MAC address priority to Local, Remote or both dependant on the direction in which we want the packet to travel.

#### Step 1, Local

- "ATU / Edit / Use MAC priority"
- "ATU / Edit / Entry state = static"
- "ATU / Edit / MAC priority / 5"

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>ATU table</b>							
FID	MAC	Label	Entry state	Prior...	Destination t...	Port association / Trunk id	
0	00:02:a9:9c:26:09	local	static	off	port association	p5 CPU	
0	00:02:a9:9c:29:f1		dynamic	off	port association	p6 Air	
3	00:02:b6:43:4d:4e		dynamic	off	port association	p4 Eth2	
3	00:0c:42:2e:f7:64		dynamic	off	port association	p4 Eth2	
3	00:13:3b:11:71:07		dynamic	off	port association	p4 Eth2	
3	00:21:70:93:d1:78	MAC priority	static	5	port association	p4 Eth2	
3	00:24:81:8f:62:9b		dynamic	off	port association	p4 Eth2	
3	00:24:e8:a8:69:5d		dynamic	off	port association	p4 Eth2	
3	00:26:b9:d5:8d:70		dynamic	off	port association	p4 Eth2	
3	38:63:bb:07:35:88		dynamic	off	port association	p4 Eth2	

For each link with a "MAC priority" set, Entry state = static, Priority level is selected.

**Step 2, Local**

"ATU settings / DA priority override / queue"

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk										
<b>Global</b>								?									
Aging timeout [s]	<input type="text" value="330"/>																
Reserved multicast to CPU	<input type="checkbox"/>																
Reserved multicast priority	<input type="text" value="7"/>																
Reserved multicast DA																	
	x	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
01:80:c2:00:00:0x	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:80:c2:00:00:2x	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Ports settings</b>																	
Port name	p2 Eth1	p4 Eth2			p5 CPU		p6 Air										
Learning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>										
Hold at 1	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>										
ATU refresh	<input type="text" value="unlocked"/>	<input type="text" value="unlocked"/>			<input type="text" value="unlocked"/>		<input type="text" value="unlocked"/>										
DA mapping	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>										
Egress block	<input type="text" value="none"/>	<input type="text" value="none"/>			<input type="text" value="none"/>		<input type="text" value="none"/>										
SA filtering	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>			<input type="text" value="disabled"/>		<input type="text" value="disabled"/>										
Learn limit	<input type="text" value="0"/>	<input type="text" value="0"/>			<input type="text" value="0"/>		<input type="text" value="0"/>										
SA priority override	<input type="text" value="none"/>	<input type="text" value="none"/>			<input type="text" value="none"/>		<input type="text" value="none"/>										
DA priority override	<input type="text" value="none"/>	<input type="text" value="queue"/>			<input type="text" value="none"/>		<input type="text" value="none"/>										
Port association																	
p2 Eth1	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>										
p4 Eth2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>										
p5 CPU	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>		<input type="checkbox"/>										
p6 Air	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input checked="" type="checkbox"/>										

### Step 3, Remote

"ATU / Edit / Use MAC priority"

"ATU / Edit / Entry state = static"

"ATU / Edit / MAC priority / 5"

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>ATU table</b> <span style="float: right;">?</span>							
FID	MAC	Label	Entry state	Prior...	Destination t...	Port association / Trunk id	
0	00:02:a9:9c:26:09		dynamic	off	port association	p6 Air	
0	00:02:a9:9c:29:f1	local	static	off	port association	p5 CPU	
0	00:02:b6:43:4d:4e		dynamic	off	port association	p6 Air	
0	00:0c:42:2e:f7:64		dynamic	off	port association	p6 Air	
0	00:13:3b:11:71:07		dynamic	off	port association	p6 Air	
0	00:21:70:93:d1:78	MAC priority	static	5	port association	p6 Air	
0	00:24:e8:a8:69:5d		dynamic	off	port association	p6 Air	
0	00:26:b9:d5:8d:70		dynamic	off	port association	p6 Air	
0	38:63:bb:07:35:88		dynamic	off	port association	p6 Air	
0	5c:8a:38:d6:ed:4c		dynamic	off	port association	p6 Air	

## Step 4, Remote

"ATU settings / DA priority override / queue"

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk										
<b>Global</b>																	
Aging timeout [s]	<input type="text" value="330"/>																
Reserved multicast to CPU	<input type="checkbox"/>																
Reserved multicast priority	<input type="text" value="7"/>																
Reserved multicast DA																	
	x	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
01:80:c2:00:00:0x	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:80:c2:00:00:2x	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Ports settings</b>																	
Port name	p2 Eth1	p4 Eth2			p5 CPU			p6 Air									
Learning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>									
Hold at 1	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>									
ATU refresh	<input type="text" value="unlocked"/>	<input type="text" value="unlocked"/>			<input type="text" value="unlocked"/>			<input type="text" value="unlocked"/>									
DA mapping	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>									
Egress block	<input type="text" value="none"/>	<input type="text" value="none"/>			<input type="text" value="none"/>			<input type="text" value="none"/>									
SA filtering	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>			<input type="text" value="disabled"/>			<input type="text" value="disabled"/>									
Learn limit	<input type="text" value="0"/>	<input type="text" value="0"/>			<input type="text" value="0"/>			<input type="text" value="0"/>									
SA priority override	<input type="text" value="none"/>	<input type="text" value="none"/>			<input type="text" value="none"/>			<input type="text" value="none"/>									
DA priority override	<input type="text" value="none"/>	<input type="text" value="none"/>			<input type="text" value="none"/>			<input type="text" value="queue"/>									
Port association																	
p2 Eth1	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>									
p4 Eth2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>									
p5 CPU	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			<input type="checkbox"/>									
p6 Air	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input checked="" type="checkbox"/>									

For the MAC address 02: 21: 70: 93: d1: 78 the priority 5 is set. Packets in the queue with the highest priority (default priority 6 and 7), should never have a higher data rate than the "air" for the lowest modulation ACM. This priority/queue using packets of internal communications that are required for the link!

### 1.5. Two separate customers

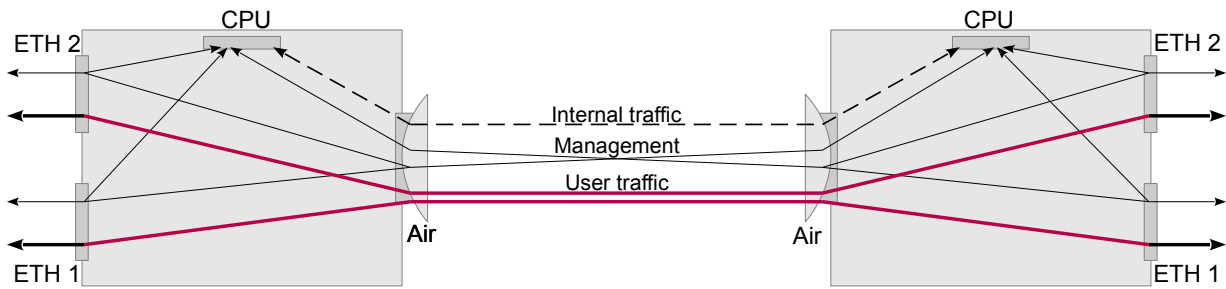


Fig. 1.5: ETH1, ETH2 separated

#### Description of communication:

For two separate customers - ETH 1 and ETH 2; management unit is possible from all ports, management VLAN is not set.

Packets from port ETH 1 are packed into VLAN 100 and transferred to the other side of the link, where they are unpacked and sent in their original format on the ETH 1. Similarly, packets from port ETH 2 are packed into VLAN 200.

Internal communication is also packed in VLAN 300 to set the highest priority.

#### Setting procedure:

Both units have the same settings.

Remote: Step 1, Step 2, Step 3, Local: Step 1. Step 2, Step 3

#### Step 1: STU table

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>STU table</b>							
SID	Label	p2 Eth1	p4 Eth2	p5 CPU	p6 Air		
10	STU10	forwarding	disabled	forwarding	forwarding		
20	STU20	disabled	forwarding	forwarding	forwarding		
30	STU30	forwarding	forwarding	forwarding	forwarding		

#### Step 2: VTU table

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk		
<b>VTU table</b>									
VID	Label	FID	SID	Priority	Policy	p2 Eth1	p4 Eth2	p5 CPU	p6 Air
100	VLAN100	0	10	off	false	egress untagged	not member	egress untagged	egress tagged
200	VLAN200	0	20	off	false	not member	egress untagged	egress untagged	egress tagged
300	VLAN 300	0	30	7	false	egress untagged	egress untagged	egress untagged	egress tagged

## Step 3: VLAN

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>Global</b>							
Link authorization guard			<input checked="" type="checkbox"/>				
Remove one provider tag			<input type="checkbox"/>				
ARP without broadcast checking			<input checked="" type="checkbox"/>				
<b>Ports settings</b>							
Port name	p2 Eth1	p4 Eth2	p5 CPU	p6 Air			
Egress mode	<input type="text" value="untag"/>	<input type="text" value="untag"/>	<input type="text" value="untag"/>	<input type="text" value="tag"/>			
802.1q mode	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>	<input type="text" value="disabled"/>	<input type="text" value="secure"/>			
Discard tagged	<input type="checkbox"/>		<input type="checkbox"/>				
Discard untagged	<input type="checkbox"/>		<input type="checkbox"/>				
VTU priority override	<input type="text" value="none"/>	<input type="text" value="none"/>	<input type="text" value="none"/>	<input type="text" value="queue"/>			
Force default VID	<input type="checkbox"/>		<input type="checkbox"/>				
Default VID	<input type="text" value="100"/>	<input type="text" value="200"/>	<input type="text" value="300"/>	<input type="text" value="1"/>			
FID	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>			
IGMP snooping	<input type="checkbox"/>		<input type="checkbox"/>				
ARP mirroring	<input type="checkbox"/>		<input type="checkbox"/>				
VLAN tunnel	<input type="checkbox"/>		<input type="checkbox"/>				
Member							
p2 Eth1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p4 Eth2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
p5 CPU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
p6 Air	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

The opening image is simplified to show separation of user traffic. The following figure show the more precise route packets in the VLAN. The diagram highlights the way in which management packets from ETH1 through one VLAN pass towards the CPU. It also highlights packets pass in the other direction from the CPU:

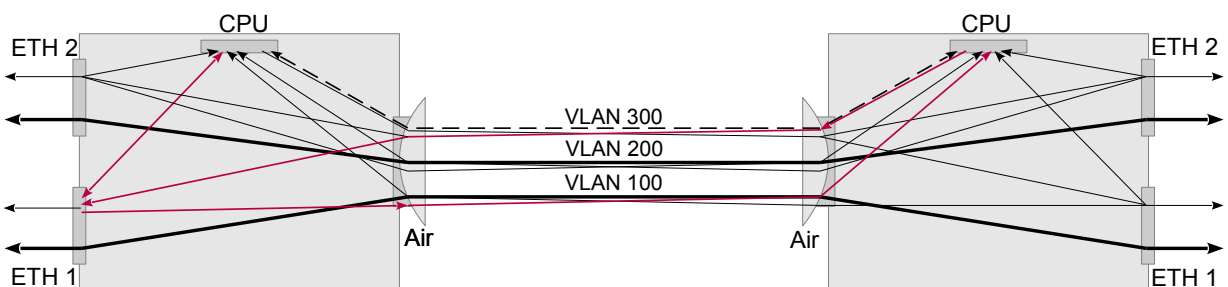


Fig. 1.6: ETH1, ETH2 separated

## 1.6. Separation of unit management from customer traffic

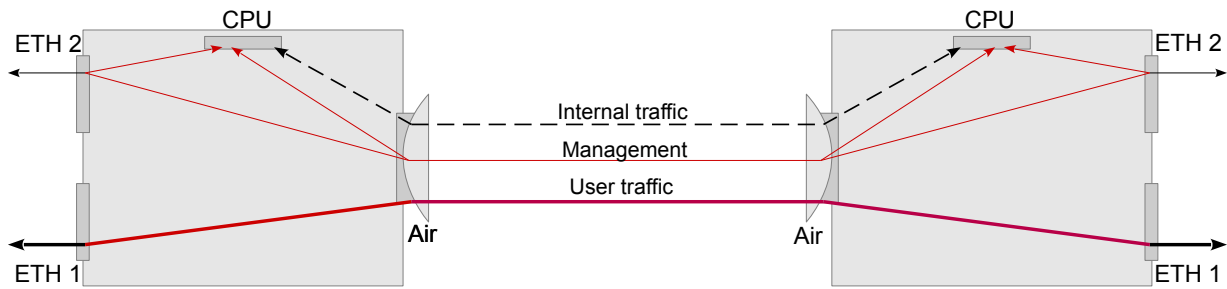


Fig. 1.7: Management separated

### Description of communication:

Unit management is possible from ETH2 port, customer traffic on ETH1, VLAN management not set.

Packets from port ETH 1 are packed into VLAN 100 and transferred to the other side of the link, where they are unpacked and sent in their original format on the ETH 1. These packets can not go to the CPU nor the ETH2 port. Similarly, packets from the EHT 2 port are packaged in the VLAN 200 and can be transferred to the CPU or ETH2 on the opposite side.

Additionally, internal communications are packaged in the VLAN 300 with the highest priority set.

### Setting procedure:

Both units have the same settings.

Remote: Step 1, Step 2, Step 3, Local: Step 1. Step 2, Step 3

### Step 1: STU table

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>STU table</b>							
SID	Label	p2 Eth1	p4 Eth2	p5 CPU	p6 Air		
10	STU10	forwarding	disabled	forwarding	forwarding		
20	STU20	disabled	forwarding	forwarding	forwarding		
30	STU30	forwarding	forwarding	forwarding	forwarding		

### Step 2: VTU table

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk		
<b>VTU table</b>									
VID	Label	FID	SID	Priority	Policy	p2 Eth1	p4 Eth2	p5 CPU	p6 Air
100	VLAN 100	0	10	off	false	egress untagged	not member	not member	egress tagged
200	VLAN 200	0	20	off	false	not member	egress untagged	egress untagged	egress tagged
300	VLAN 300	0	30	7	false	egress untagged	egress untagged	egress untagged	egress tagged



## Step 3: VLAN

VLAN	STU	VTU	ATU settings	ATU	Monitoring, Policy	RSTP	Trunk
<b>Global</b>							
Link authorization guard	<input checked="" type="checkbox"/>						
Remove one provider tag	<input type="checkbox"/>						
ARP without broadcast checking	<input checked="" type="checkbox"/>						
<b>Ports settings</b>							
Port name	p2 Eth1	p4 Eth2	p5 CPU	p6 Air			
Egress mode	untag	untag	untag	tag			
802.1q mode	disabled	disabled	disabled	secure			
Discard tagged	<input type="checkbox"/>						
Discard untagged	<input type="checkbox"/>						
VTU priority override	none	none	none	queue			
Force default VID	<input type="checkbox"/>						
Default VID	100	200	300	1			
FID	0	0	0	0			
IGMP snooping	<input type="checkbox"/>						
ARP mirroring	<input type="checkbox"/>						
VLAN tunnel	<input type="checkbox"/>						
Member							
p2 Eth1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
p4 Eth2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
p5 CPU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
p6 Air	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

The opening image is simplified to show the traffic separation. As with the separation of two customers, the packets go in the direction to the CPU via VLAN ID 200 and back are packed into the VLAN ID 300.

## **Appendix A. Revision History**

Revision 1.0	2017-11-28
First issue	