

RedPort

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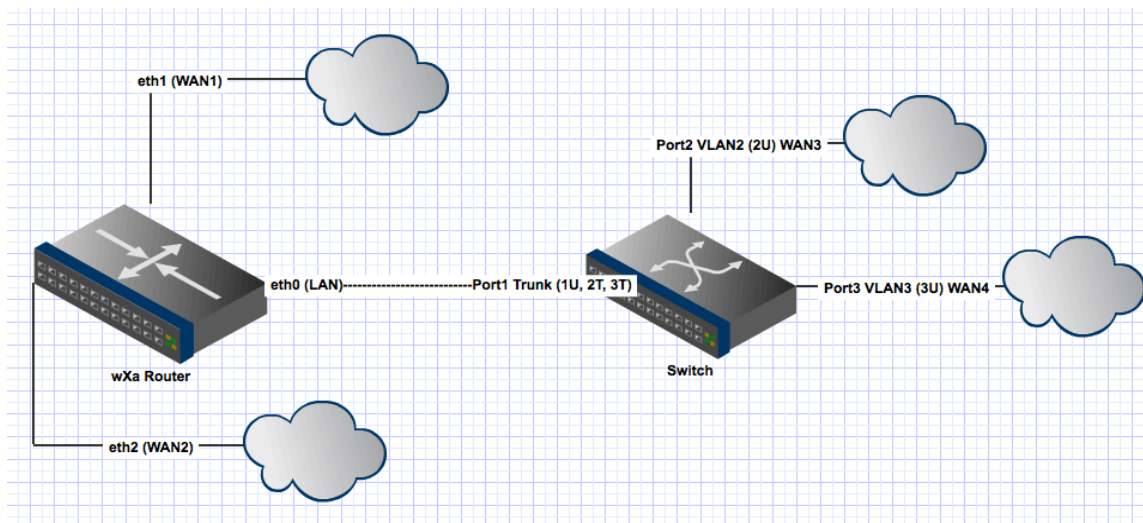
Admin Guide Addendum

WAN Over VLAN

RedPort Routers

**wXa-202; wXa-303; wXa-305; wXa-500;
wXa-503; wXa-513**

1 Adding Additional WAN Ports Using a VLAN Switch



Standard RedPort routers are shipped with 1, 2, or, 5 WAN ports. Under certain circumstances a system integrator may need to configure additional WAN ports. Vessels with Wi-Fi, GSM, and hardwired WAN networks and/or with multiple satellite types such as dual VSAT, FBB, and Iridium Pilot may wish additional ports to allow routing to/from these devices.

An effective way to add WAN ports is to use smart VLAN capable switches. These switches are readily available and allow the easy configuration of additional WAN ports to RedPort routers. It is important to note that VLAN based WAN ports work exactly (and are indistinguishable) from standard WAN ports. These VLAN WANs can be used for manual or automatic fail over and load balancing for example.

The example presented here discusses the configuration of two additional WAN ports (WAN3 and WAN4), which may be used to add broadband networks to an installation. A Cisco SG200-08 layer two switch

(http://www.cisco.com/en/US/docs/switches/lan/csbss/sf20x_sg20x/quick_start/78-19516-01.pdf)

is configured with port 2 and 3 as WAN ports and 1, 4-8 as standard Ethernet ports on the vessels LAN. Note that the switches port 2 (WAN2) and port 3 (WAN3) are totally isolated from the other LAN ports creating a secure environment where users coming into the system through port 4 must have all of their traffic routed to port 3 and can not access the WAN devices directly.

Note: That although discussion focuses on the SG200-08 the exact same procedure can be used with an SG200-X switch whether it has 8 or 100 ports. Also note that smart switches from other manufacturers will also work although the exact procedure for integrating these will vary from those presented here.

1.1.1 Setup or find your route to your switch:

1. Plug Ethernet cable into port 1 on switch and into eth0 (LAN) port on your wXa router.
2. Navigate to the wXa router GUI (192.168.10.1 LAN 192.168.20.1 WLAN by default)
3. Default user name is **admin** and default password is **webxaccess**.
4. Select Status->DHCP Leases
5. This should give you the IP address of your switch.

The screenshot displays the webX accelerator web interface. At the top, the header includes 'Global Marine Networks' and 'webX accelerator' with the URL 'webxaccelerator.gmn-usa.com'. A navigation bar contains tabs for 'System', 'Interfaces', 'Firewall', 'Services', 'VPN', 'Status', and 'Diagnostics'. A red arrow points to the 'Status' tab. Below the navigation bar, the page title is 'Diagnostics: DHCP leases'. A table lists DHCP leases with columns for IP address, MAC address, Hostname, Start, End, Online status, and Lease Type. Two leases are shown: one for IP 192.168.10.196 (active) and one for IP 192.168.10.193 (offline). A red arrow points to the first row of the table. Below the table is a button labeled 'Show all configured leases'. At the bottom, a footer states 'webXaccelerator is © 2010 by Global Marine Networks LLC. All Rights Reserved. [view license]'.

IP address	MAC address	Hostname	Start	End	Online	Lease Type
192.168.10.196	08:d0:9f:70:22:7c	switch70227C	2012/09/04 20:06:30	2012/09/04 22:06:30	online	active
192.168.10.193	00:26:b0:4d:56:1a		2012/09/03 22:01:15	2012/09/04 22:01:15	offline	active

1.1.2 Setup VLAN on your switch:

1. Log into the switch GUI with its IP address.
2. Select -> **Create VLAN -> Add...**
3. Name your VLAN and give it a VLAN ID.

Note: Your VLAN ID and VLAN name must be identical on your switch and your wXa router.

4. Repeat for as many VLANs as you may need.

☒ VLAN

☒ VLAN ID: (Range: 2-4094)

VLAN Name: (0 to 32 Characters)

☐ Range

☒ VLAN Range: -

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cisco SG 200-08 8-Port Gigabit Smart Switch

Save cisco Language English Logout About Help

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Create VLAN

VLAN ID	VLAN Name	Type
<input type="checkbox"/> 1	Default	Default
<input type="checkbox"/> 2	VLAN2	Static
<input type="checkbox"/> 3	VLAN3	Static

This table is sortable

5. Assign each VLAN to a port.
6. Select -> **Port VLAN Membership->Edit**
7. Move the appropriate available VLAN over to the appropriate selected VLAN.

Note: If your selected VLANs for Port 2 and Port 3 say 2T, 3T instead of 2U, 3U, this is ok and will be fixed in the next step. Must be untagged before it will work.

Port 1	1UP, 2T, 3T
Port 2	2U
Port 3	3U

The image shows three screenshots of the RedPort configuration interface, each for a different port (g1, g2, g3). Each screenshot displays the 'Port VLAN Membership' configuration page. The interface includes fields for 'Interface' (Port, LAG), 'Mode' (Trunk, Access), 'Current PVID', 'VLAN' (Available, Selected), 'Membership' (Tagged, Untagged), and 'PVID'. The 'Apply' and 'Close' buttons are visible at the bottom of each configuration window.

8. Select **->Port To VLAN**
9. Make sure that port 2 is an untagged member of VLAN2 (2U) and port 3 is an untagged member of VLAN3 (3U).
10. Make sure that port 1 is an untagged member of VLAN1 (1U) and a tagged member of VLAN2 (2T) and VLAN3 (3T).

Note: Port 1 is your trunk port for your VLANs.

Port VLAN Membership					
Port VLAN Membership Table					
Filter: Interface Type equals to Port					
	Interface	Mode	PVID	Operational VLAN Membership	
<input type="radio"/>	g1	Trunk	1	1U,2T,3T	
<input checked="" type="radio"/>	g2	Access	2	2U	
<input type="radio"/>	g3	Access	3	3U	
<input type="radio"/>	g4	Trunk	1	1U	
<input type="radio"/>	g5	Trunk	1	1U	
<input type="radio"/>	g6	Trunk	1	1U	
<input type="radio"/>	g7	Trunk	1	1U	
<input type="radio"/>	g8	Trunk	1	1U	
<input type="button" value="Edit..."/> <input type="button" value="Detail..."/>					

11. Save your configuration and reboot switch. Save configuration and reboot option is under the Administration tab.

Note: In the example switch setup, ports 4 -8 are still being used as a normal switch.

Here are some additional Screenshots of settings. If you followed the tutorial, your settings should match exactly.

Port 1 Settings

The screenshot shows the configuration page for Port 1 on a Cisco SG 200-08 8-Port Gigabit Smart Switch. The left sidebar shows the navigation menu with 'VLAN Management' expanded and 'Port To VLAN' selected. The main content area is titled 'Port to VLAN' and shows a filter for 'VLAN ID equals to 1' and 'Interface Type equals to Port'. The table below shows the configuration for Port 1 (g1) and other ports (g2-g8).

Interface	g1	g2	g3	g4	g5	g6	g7	g8
Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Member	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tagged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Untagged	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
PVID	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Buttons: Apply, Cancel

Port 2 Settings

The screenshot shows the configuration page for Port 2 on a Cisco SG 200-08 8-Port Gigabit Smart Switch. The left sidebar shows the navigation menu with 'VLAN Management' expanded and 'Port To VLAN' selected. The main content area is titled 'Port to VLAN' and shows a filter for 'VLAN ID equals to 2' and 'Interface Type equals to Port'. The table below shows the configuration for Port 2 (g2) and other ports (g1, g3-g8).

Interface	g1	g2	g3	g4	g5	g6	g7	g8
Access	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Member	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tagged	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Untagged	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PVID	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Buttons: Apply, Cancel

Port 3 Settings

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Port to VLAN

Filter: VLAN ID equals to

AND Interface Type equals to

Interface	g1	g2	g3	g4	g5	g6	g7	g8
Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trunk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Member	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tagged	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Untagged	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PVID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply Cancel

Interface Settings for All Ports

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Interface Settings

Filter: Interface Type equals to

Entry No.	Interface	Interface VLAN Mode	PVID	Frame Type	Ingress Filtering	VLAN Priority
<input type="radio"/> 1	g1	Trunk	1	Admit All	Enabled	0
<input type="radio"/> 2	g2	Access	2	Admit Untagged Only	Enabled	0
<input type="radio"/> 3	g3	Access	3	Admit Untagged Only	Enabled	0
<input type="radio"/> 4	g4	General	1	Admit All	Enabled	0
<input type="radio"/> 5	g5	General	1	Admit All	Enabled	0
<input type="radio"/> 6	g6	General	1	Admit All	Enabled	0
<input type="radio"/> 7	g7	General	1	Admit All	Enabled	0
<input type="radio"/> 8	g8	General	1	Admit All	Enabled	0

Copy Settings... Edit...

1.2 wXa Router Setup

Warning: Please make sure that your VLAN ID and VLAN names are exactly the same as on the switch.

1.2.1 Make VLANs on wXa Router

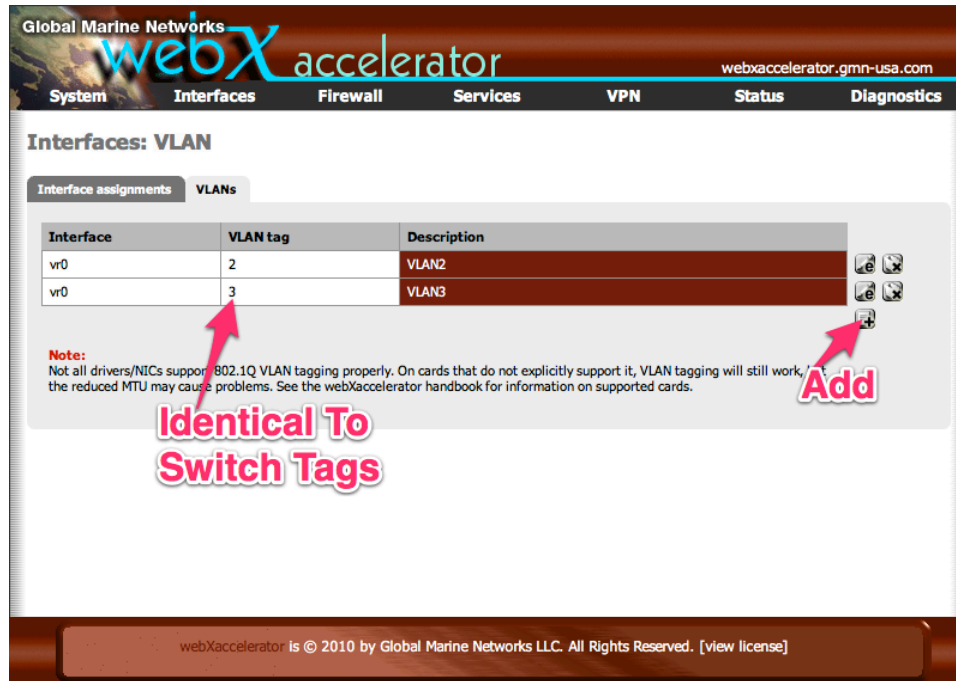
To configure the VLAN on wXa router:

1. Select ->**Interfaces**-> **VLANs**
2. Select ->**Add** Type in the VLAN tag you used on your switch along with the description. Interface should be vr0 (eth0 LAN). Repeat for as many VLANs as you are making.

The screenshot shows the webX accelerator web interface. The top navigation bar includes 'System', 'Interfaces', 'Firewall', 'Services', 'VPN', 'Status', and 'Diagnostics'. The 'Firewall' section is active, and the 'VLAN: Edit' page is displayed. The form contains the following fields:

- Parent interface:** A dropdown menu showing 'vr0 (00:0d:b9:1d:98:dc)'. Below it, a note states: 'Only VLAN capable interfaces will be shown.'
- VLAN tag:** A text input field containing the number '2'. Below it, a note states: '802.1Q VLAN tag (between 1 and 4094)'.
- Description:** A text input field containing 'VLAN2'. Below it, a note states: 'You may enter a description here for your reference (not parsed).'

At the bottom of the form are 'Save' and 'Cancel' buttons. The footer of the interface reads: 'webXaccelerator is © 2010 by Global Marine Networks LLC. All Rights Reserved. [view license]'.



1.2.2 Configure VLANs on wXa Router

1. Select ->**Interfaces** ->**OPT2**
2. Check the box **Enable Optional 2 interface**. You may rename to something different than OPT2 such as WAN3.
3. Be sure to give your VLAN a subnetted IP address and Gateway.
4. Repeat for each VLAN.

Global Marine Networks
webX accelerator
webxaccelerator.gmn-usa.com
System Interfaces Firewall Services VPN Status Diagnostics

Interfaces: Optional 2 (WAN3)

Optional Interface Configuration

☒ Enable Optional 2 interface

Description

WAN3
Enter a description (name) for the interface here.

General configuration

Type

Static

MAC address

[Copy my MAC address](#)

This field can be used to modify ("spoof") the MAC address of the WAN interface (may be required with some cable connections)
Enter a MAC address in the following format: xx:xx:xx:xx:xx:xx or leave blank

MTU

If you enter a value in this field, then MSS clamping for TCP connections to the value entered above minus 40 (TCP/IP header size) will be in effect. If you leave this field blank, an MTU of 1492 bytes for PPPoE and 1500 bytes for all other connection types will be assumed.

IP configuration

Bridge with

none

IP address

192.168.99.15 / 24

Gateway

192.168.99.1

If this interface is an Internet connection, enter its next hop gateway (router) IP address here. Otherwise, leave this option blank.

FTP Helper

FTP Helper

☐ Disable the userland FTP-Proxy application

DHCP client configuration

Hostname

The value in this field is sent as the DHCP client identifier and hostname when requesting a DHCP lease. Some ISPs may require this (for client identification).

Save

Note:
be sure to add [firewall rules](#) to permit traffic through the interface. You also need firewall rules for an interface in bridged mode as the firewall acts as a filtering bridge.

3. Select ->**Save**.

1.3 Finishing Up

You may want to set rules for your new WAN ports under the Firewall tab. Additional information about load balancing and failover can be found in the respective sections of this manual.