

## Configuring OM10K VLANs

With port speeds up to 10Gbps, the OM10K is a powerful tool for segregating customer data.

This document covers the following:

- Port based VLAN setup
- VLANs using Tags

### Relevant Application Notes:

These following application notes are available in the *DOWNLOADS* sections of:

[www.luxcom.com/product/om10k-8/](http://www.luxcom.com/product/om10k-8/) and [www.luxcom.com/product/om10k-24/](http://www.luxcom.com/product/om10k-24/)

*App.1 OM10K Management Interface Access.pdf* gives instructions on accessing the OM10K management interface.

*App.2 OM10K LUA CLI Overview.pdf* gives an overview of the CLI (Command Line Interface) command structure, and how to modify the configuration files so the desired CLI commands are executed at startup.

*App.3 OM10K Port Monitor Setup.pdf* gives examples of setting up Span/Tap Monitor ports using the CLI commands.

### Relevant CLI Commands:

*interface ethernet device/port* defines the port which is being configured.

*switchport isolate* command defines a list of ports which will be isolated from ingress traffic on the given port. It must be used with a single port, not a range of ports. All traffic received on a port is dropped if the port is isolated from all destination ports. This is useful for blocking packets received on a port being used for monitoring (span port).

*switchport protected* command overrides the filtering database (FDB). This sends all traffic received on a port to an uplink port. Note that packets sent to other ports are still subject to the FDB.  
*port monitor* command mirrors a ports ingress or egress data to another port.

## Setting up a Port Based VLAN

Port based VLANs allows the data on a selected hardware port (RJ45 or SFP) to be transmitted to/from other specific hardware ports. For instance the OM10K-8 could be configured as eight isolated copper to optical media converters.

### Example: Configure an OM10K as 8 individual media converters.

```
configure
interface ethernet 0/0          -- Note1
switchport isolate 0/0-23,0/25-27 -- Note2
exit
interface ethernet 0/24
switchport isolate 0/0-23,0/25-27 -- Note3
exit
interface ethernet 0/1
switchport isolate 0/0-24,0/26-27
exit
interface ethernet 0/25
switchport isolate 0/0-24,0/26-27
exit
// Repeat the above three lines for all electrical/optical port pairs
end
```

Here ports 0 and 24 form the first converter, ports 1 and 25 the second, etc. The ports of each media converter are isolated from the other converters. One can configure the mode, speed and duplex of each port. Policy filters can be added if desired.

If there are unused ports in your configuration you should define them as *isolate all* or define them with specific destinations so they are not allowed to leak data into the defined port based VLANs.

#### Notes:

<sup>1</sup> 0/0 = *device/port* The *device* is always 0. *Port* numbers are labeled beside the RJ45 or SFP.

<sup>2</sup> Prevents packets which ingress port 0 from egressing any port except 24.

<sup>3</sup> Prevent packets which ingress port 24 from egressing any port except 0.

## Setting up a Tag Based VLAN

Point-to-point OM10Ks could be set up such that data which entered a particular port on one end would only be allowed to exit a particular port on the other end, allowing multiple streams of customer packets to be kept separate and dropped where needed. Ports which are not configured will not leak into the VLAN tagged ports.

### Example: Configure Point to Point OM10Ks as 8 segregated channels.

- Data from Ports 0-7 are to pass between OM10Ks using a 10gigabit fiber on port 27
- Configure both OM10Ks with service/provider ports on 10Gig SFP port 27
- Configure port 0 on one OM10K to only communicate with port 0 on another OM10K
- Repeat the above step for ports 1 to 7

```
configure
tpid device 0 direction ingress index 7 etherType 0x8a88 --Note1
tpid device 0 direction egress index 7 etherType 0x8a88
tpid device 0 direction ingress index 0 etherType 0x8100
tpid device 0 direction egress index 0 etherType 0x8100
//
interface vlan device 0 vid 100-107 --Note2: Create VLANs 100 to 107
exit
interface ethernet 0/27 --Note3: Configure aggregator port.
tpid egress bind 7 ether_type_index 0 -- Set the etherType
tpid egress bind 0 ether_type_index 1
switchport allowed vlan remove 1 --Remove VLAN 1 (default)
switchport allowed vlan add 100-107 tagged -- Allow VID 100-107 packets. Transmit tagged.
exit
interface ethernet 0/0 --Define customer port 0.
switchport pvid 100 -- Note4: Set default port VID to 100.
switchport allowed vlan remove 1 --Don't allow packets with default VID 1
switchport allowed vlan add 100 untagged --Allow packets with VID 100. Transmit untagged.
switchport customer vlan 100 -- Note5:Force all packets to VID 100.
exit
//Repeat the above 6 lines for ports 1-7.
end
```

Note<sup>1</sup>: There are two eight entry tables of Tag Protocol Identifiers (TPIDs) one for ingress and one for egress.

The default TPID value is 0x8100, and is typically used in IEEE 802.1Q applications.

0x8a88 is typically used in QinQ applications such as 802.1ad.

These first two “tpid” commands change the ingress and egress ether types at index 7 to 0x8a88.

The value used with the OM10K-8 is somewhat arbitrary but they should match between boxes.

The tpid commands are not needed if the default TPID, 0x8100, is okay.

However the values as defined allows the OM10K to interwork with Luxcom’s OM1006A in provider tagged mode.

Note<sup>2</sup>: VLAN numbers are arbitrary but must be between 1-4095; since the default packet VLAN is 1 it is better not to use it. A VLAN needs to be created for each customer network.

Note<sup>3</sup>: 0/27 = *device/port* The *device* is always 0.

Port 27 (a 10Gig optics) is configured to be the provider (aggregator) port.

Port numbers are labeled beside the RJ45 or SFP.

Note<sup>4</sup>: Port 0 is setup as a normal network (customer) port.

The “switchport pvid” commands set the ports VID to 100.

We remove the default VLAN 1.

We add VLAN 100 and specify that packets be transmitted untagged from this port.

Note<sup>5</sup>: The *switchport customer vlan 100* command configures the port to encapsulate packets that enter the port to VLAN 100.

Additional tweaks that can be added for filtering, policing, etc.