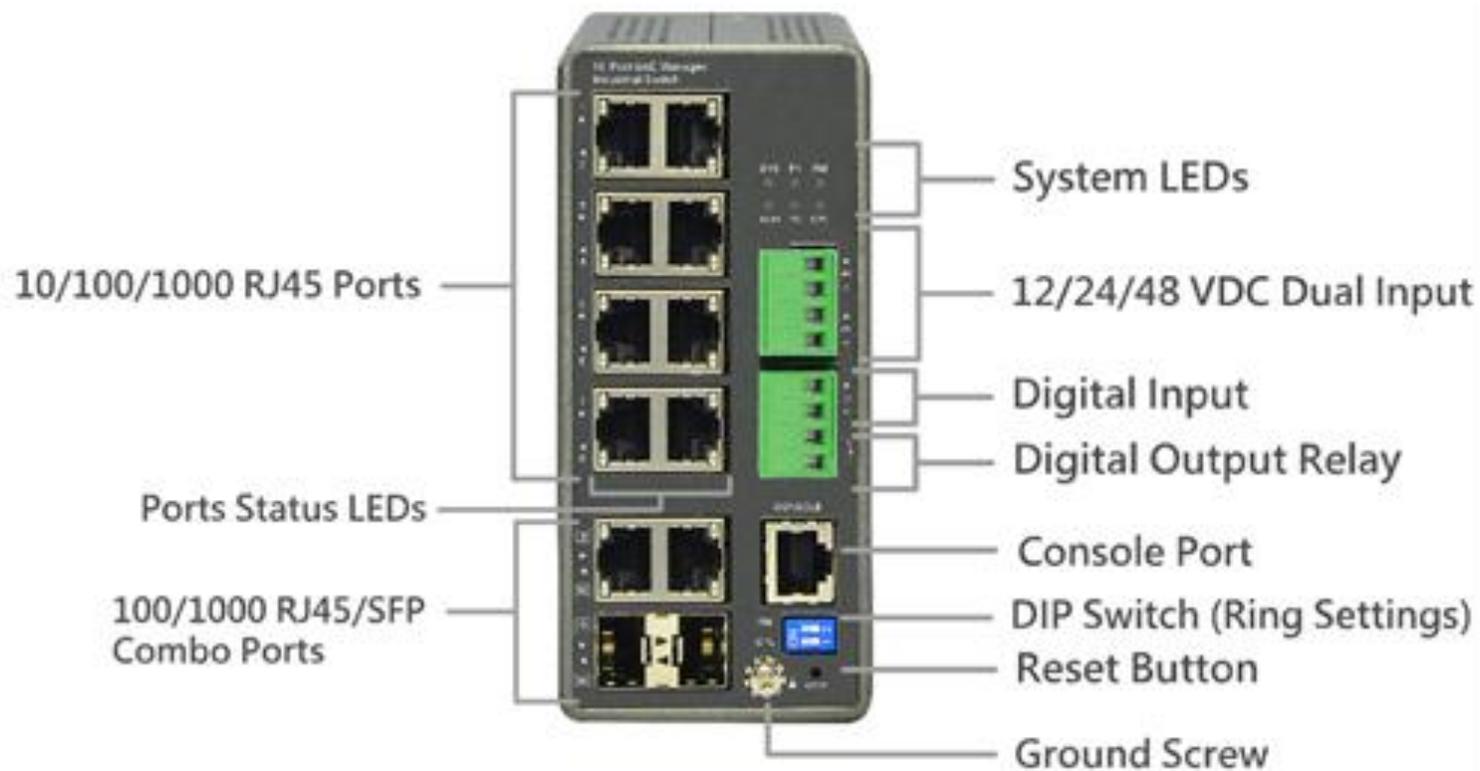


RADIO LINKS AGGREGATION

Guide des Configurations du switch HYC5310-C2

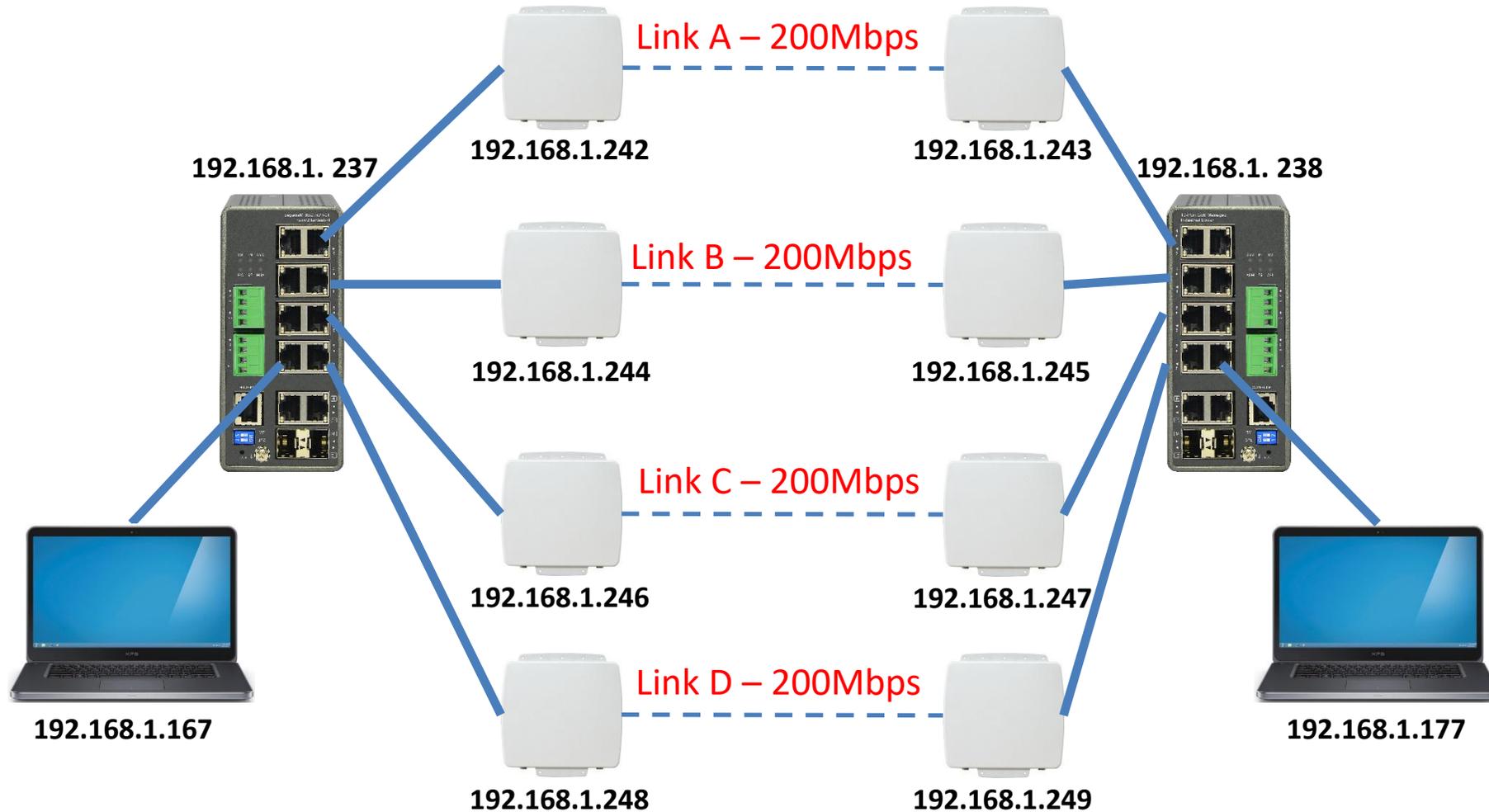


INTERFACES DU HYC5310-C2



STRUCTURE DES DÉBITS AGGRÉGÉS

200Mbps x 4 liaisons agrégées = 800Mbps



LACP PORT CONFIGURATIONS

LINK AGGREGATION CONTROL PROTOCOL

The screenshot shows a web-based configuration page for LACP Port Configuration on a device named TNS-5310-C2. The page has a navigation menu on the left with categories like Configuration, System, Green Ethernet, Ports Configuration, DHCP, Security, Aggregation, Loop Protection, Spanning Tree, IPMC Profile, MVR, IPMC, LLDP, MAC Table, VLANs, and Private VLANs. The main content area displays a table of port configurations.

Port	LACP Enabled	Key	Role	Timeout	Prio
*	<input type="checkbox"/>	<input type="text" value="<"/>	<input type="text" value="<"/>	<input type="text" value="<"/>	32768
1	<input type="checkbox"/>	Auto	Active	Fast	32768
2	<input checked="" type="checkbox"/>	Auto	Active	Fast	32768
3	<input type="checkbox"/>	Auto	Active	Fast	32768
4	<input checked="" type="checkbox"/>	Auto	Active	Fast	32768
5	<input type="checkbox"/>	Auto	Active	Fast	32768
6	<input checked="" type="checkbox"/>	Auto	Active	Fast	32768
7	<input type="checkbox"/>	Auto	Active	Fast	32768
8	<input checked="" type="checkbox"/>	Auto	Active	Fast	32768
9	<input type="checkbox"/>	Auto	Active	Fast	32768
10	<input type="checkbox"/>	Auto	Active	Fast	32768

At the bottom of the table, there are buttons for 'Apply' and 'Reset'.

This page allows the user to inspect the current **LACP** port configurations, and possibly change them as well an **LACP** trunk group with more than one ready member-ports is a “real trunked” group.

An **LACP** trunk group with only one or less than one ready member-ports is not a “real trunked” group.



WEB INTERFACE

To configure the Trunk Aggregation LACP parameters in the web interface:

1. Click Configuration, LACP, Configuration
2. Evoke to enable or disable the LACP on the port of the switch.
3. Scroll the Key parameter with Auto or Specific Default is Auto.
4. Scroll the Role with Active or Passive. Default is Active
5. Click the save to save the setting
6. If you want to cancel the setting then you need to click the reset button. It will revert to previously saved values



PARAMETER DESCRIPTION:

- **Port** :The switch port number.
- **LACP Enabled** : Controls whether LACP is enabled on this switch port. LACP will form an aggregation when 2 or more ports are connected to the same partner.
- **Key** : The Key value incurred by the port, range 1-65535 . The Auto setting will set the key as appropriate by the physical link speed, 10Mb = 1, 100Mb = 2, 1Gb = 3. Using the Specific setting, a user-defined value can be entered. Ports with the same Key value can participate in the same aggregation group, while ports with different keys cannot.
- **Role** : The Role shows the LACP activity status. The Active will transmit LACP packets each second, while Passive will wait for a LACP packet from a partner (speak if spoken to).
- **Timeout** : The Timeout controls the period between BPDU transmissions. Fast will transmit LACP packets each second, while Slow will wait for 30 seconds before sending a LACP packet.
- **Prio** : The Prio controls the priority of the port. If the LACP partner wants to form a larger group than is supported by this device then this parameter will control which ports will be active and which ports will be in a backup role. Lower number means greater priority.
- **Buttons**
 - **Apply** – Click to save changes.
 - **Reset**- Click to undo any changes made locally and revert to previously saved values.



LACP ON AIR CONFIGURATIONS

EXCLUSIVE PROTOCOL FOR WIRELESS RADIOS

The screenshot shows the 'LACP On Air' configuration page for a switch named 'TNS-5310-C2'. The page is accessed via a browser at the URL '192.168.1.238/lacp_on_air.htm'. The configuration is organized into a table with four rows, each representing a radio couple. Each row has a 'Port' dropdown menu and two 'Couple IP' input fields.

Port	Couple IP	Couple IP
1 Port 2	192.168.1.243	192.168.1.242
2 Port 4	192.168.1.245	192.168.1.244
3 Port 6	192.168.1.247	192.168.1.246
4 Port 8	192.168.1.249	192.168.1.248

An 'Apply' button is located at the bottom left of the table.

This page allows the user to define the relationships between the radios and ports of the switch.

Parameters descriptions:

Port: port number of the switch

Couple IP: IP address of the Radios which connect to the front port.



LOOP PROTECTION SETTINGS

The loop Protection is used to detect the presence of traffic. When switch receives packet's (looping detection frame) MAC address the same as oneself from port, show Loop Protection happens.

The port will be locked when it received the looping Protection frames. If you want to resume the locked port, please find out the looping path and take off the looping path, then select the resume the locked port and click on "Resume" to turn on the locked ports.

The screenshot shows a web interface for configuring loop protection on a switch. The browser address bar shows '192.168.1.238/loop_config.htm'. The left sidebar contains a navigation menu with 'Loop Protection' selected. The main content area has a 'Shutdown Time' field set to '180 seconds'. Below is a 'Port Configuration' table with columns for Port, Enable, Action, and Tx Mode. The 'Enable' column has checkboxes for each port, and the 'Action' column has dropdown menus. At the bottom, there are 'Apply' and 'Reset' buttons.

Port	Enable	Action	Tx Mode
*	<input checked="" type="checkbox"/>	-	-
1	<input checked="" type="checkbox"/>	Shutdown Port	Enable
2	<input type="checkbox"/>	Shutdown Port	Enable
3	<input checked="" type="checkbox"/>	Shutdown Port	Enable
4	<input type="checkbox"/>	Shutdown Port	Enable
5	<input checked="" type="checkbox"/>	Shutdown Port	Enable
6	<input type="checkbox"/>	Shutdown Port	Enable
7	<input checked="" type="checkbox"/>	Shutdown Port	Enable
8	<input type="checkbox"/>	Shutdown Port	Enable
9	<input checked="" type="checkbox"/>	Shutdown Port	Enable
10	<input checked="" type="checkbox"/>	Shutdown Port	Enable



WEB INTERFACE

1. Click Configuration, Loop Protection.
2. Evoke to select enable or disable the port loop Protection
3. Click the save to save the setting
4. If you want to cancel the setting then you need to click the Reset button. It will revert to previously saved values



PARAMETER DESCRIPTION:

- **Enable Loop Protection:** Controls whether loop protection is enabled (as a whole).
- **Transmission Time:** The interval between each loop protection PDU sent on each port. Valid values are 1 to 10 seconds.
- **Shutdown Time:** The period (in seconds) for which a port will be kept disabled in the event of a loop is detected (and the port action shuts down the port). Valid values are 0 to 604800 seconds (7 days). A value of zero will keep a port disabled (until next device restart).
- **Port No:** The switch port number of the port.
- **Enable :** Controls whether loop protection is enabled on this switch port
- **Action:** Configures the action performed when a loop is detected on a port. Valid values are Shutdown Port, Shutdown Port and Log or Log Only.
- **Tx Mode :** Controls whether the port is actively generating loop protection PDU's, or whether it is just passively looking for looped PDU's.
- **Buttons:**
 - **Apply** – Click to save changes.
 - **Reset**- Click to undo any changes made locally and revert to previously saved values.



CIST PORT CONFIGURATIONS

COMMON AND INTERNAL SPANNING TREE

The screenshot shows a web-based configuration interface for a switch. The browser address bar indicates the URL is 192.168.1.238/mstp_port_config.htm. The interface is divided into two main sections: 'CIST Aggregated Port Configuration' and 'CIST Normal Port Configuration'. Both sections contain a table of port settings.

Port	STP		Path Cost	Priority	Admin Edge	Auto Edge	Restricted		BPDU Guard	Point-to-point
	Enabled	Path Cost					Role	TCN		
-	<input checked="" type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Forced True
CIST Normal Port Configuration										
*	<input checked="" type="checkbox"/>	∞		∞	∞	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	∞
1	<input checked="" type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
2	<input type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
3	<input checked="" type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
4	<input type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
5	<input checked="" type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
6	<input type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
7	<input checked="" type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
8	<input type="checkbox"/>	Auto		128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto

When you implement an Spanning Tree protocol on the switch that the bridge instance. You need to configure the CIST Ports.

The section describes it allows the user to inspect the current STP CIST port configurations, and possibly change them as well.



WEB INTERFACE

To configure the Spanning Tree CIST Ports parameters in the web interface:

1. Click Configuration, Spanning Tree, CIST Ports
2. Scroll and evoke to set all parameters of CIST Aggregated Port Configuration.
3. Evoke to enable or disable the STP, then scroll and evoke to set all parameters of the CIST normal Port configuration.
4. Click the apply to save the setting
5. If you want to cancel the setting then you need to click the Reset button. It will revert to previously saved values



PARAMETER DESCRIPTION:

- **Port** : The switch port number of the logical STP port.
- **STP Enabled** : Controls whether STP is enabled on this switch port.
- **Path Cost** : Controls the path cost incurred by the port. The Auto setting will set the path cost as appropriate by the physical link speed, using the 802.1D recommended values. Using the Specific setting, a user-defined value can be entered. The path cost is used when establishing the active topology of the network. Lower path cost ports are chosen as forwarding ports in favor of higher path cost ports. Valid values are in the range 1 to 200000000.
- **Priority** : Controls the port priority. This can be used to control priority of ports having identical port cost. (See above).
- **operEdge (state flag)** : Operational flag describing whether the port is connecting directly to edge devices. (No Bridges attached). Transition to the forwarding state is faster for edge ports (having operEdge true) than for other ports. The value of this flag is based on AdminEdge and AutoEdge fields. This flag is displayed as Edge in Monitor->Spanning Tree -> STP Detailed Bridge Status.
- **AdminEdge** : Controls whether the operEdge flag should start as set or cleared. (The initial operEdge state when a port is initialized).
- **AutoEdge** : Controls whether the bridge should enable automatic edge detection on the bridge port. This allows operEdge to be derived from whether BPDU's are received on the port or not.



PARAMETER DESCRIPTION:

- **Restricted Role** : If enabled, causes the port not to be selected as Root Port for the CIST or any MSTI, even if it has the best spanning tree priority vector. Such a port will be selected as an Alternate Port after the Root Port has been selected. If set, it can cause lack of spanning tree connectivity. It can be set by a network administrator to prevent bridges external to a core region of the network influence the spanning tree active topology, possibly because those bridges are not under the full control of the administrator. This feature is also known as Root Guard.
- **Restricted TCN** : If enabled, causes the port not to propagate received topology change notifications and topology changes to other ports. If set it can cause temporary loss of connectivity after changes in a spanning tree's active topology as a result of persistently incorrect learned station location **information**. It is set by a network administrator to prevent bridges external to a core region of the network, causing address flushing in that region, possibly because those bridges are not under the full control of the administrator or the physical link state of the attached LANs transits frequently.
- **BPDU Guard** : If enabled, causes the port to disable itself upon receiving valid BPDU's. Contrary to the similar bridge setting, the port Edge status does not affect this setting. A port entering error-disabled state due to this setting is subject to the bridge Port Error Recovery setting as well.
- **Point to Point** - Controls whether the port connects to a point-to-point LAN rather than to a shared medium. This can be automatically determined, or forced either true or false. Transition to the forwarding state is faster for point-to-point LANs than for shared media.
- **Buttons**
 - **Apply** – Click to save changes.
 - **Reset**- Click to undo any changes made locally and revert to previously saved values.



IP PINGING RESULTS

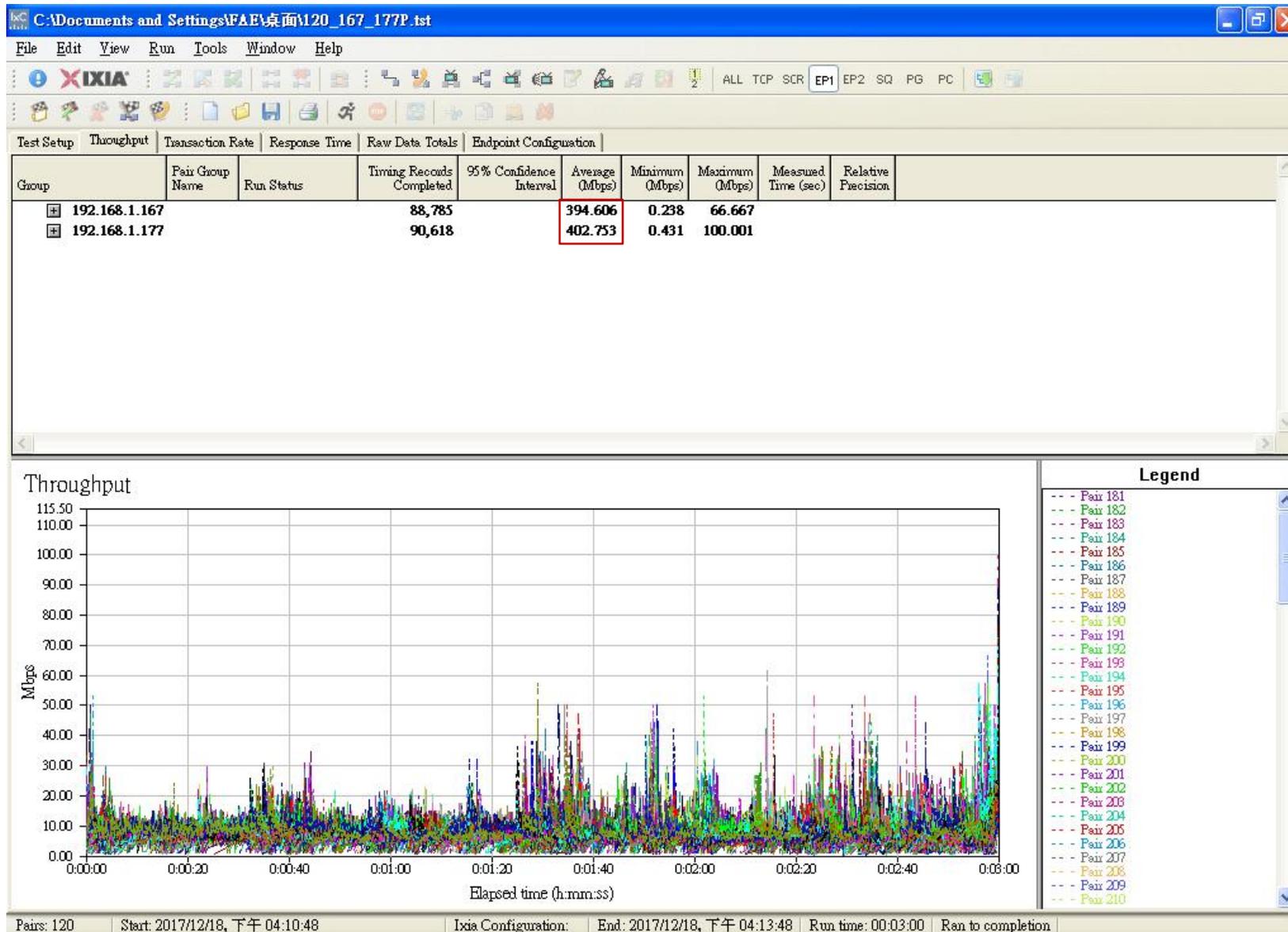
The image displays a 4x3 grid of Windows command prompt windows, each showing the results of a ping command. The windows are arranged in four rows and three columns. Each window has a title bar that reads "C:\WINDOWS\system32\cmd.exe - ping l...". The output of each ping command is as follows:

- Row 1, Column 1: 2.168.1.242: bytes=32 time=2ms TTL=64, 2.168.1.242: bytes=32 time=3ms TTL=64, 2.168.1.242: bytes=32 time=3ms TTL=64, 2.168.1.242: bytes=32 time=2ms TTL=64, 2.168.1.242: bytes=32 time=4ms TTL=64, 2.168.1.242: bytes=32 time=22ms TTL=64, 2.168.1.242: bytes=32 time=1ms TTL=64
- Row 1, Column 2: 92.168.1.243: bytes=32 time<1ms TTL=64, 92.168.1.243: bytes=32 time<1ms TTL=64
- Row 1, Column 3: 92.168.1.237: bytes=32 time=2ms TTL=64, 92.168.1.237: bytes=32 time=3ms TTL=64, 92.168.1.237: bytes=32 time=3ms TTL=64, 92.168.1.237: bytes=32 time=2ms TTL=64, 92.168.1.237: bytes=32 time=2ms TTL=64, 92.168.1.237: bytes=32 time=2ms TTL=64, 92.168.1.237: bytes=32 time=3ms TTL=64
- Row 2, Column 1: 92.168.1.244: bytes=32 time=2ms TTL=64, 92.168.1.244: bytes=32 time=2ms TTL=64, 92.168.1.244: bytes=32 time=1ms TTL=64, 92.168.1.244: bytes=32 time=2ms TTL=64, 92.168.1.244: bytes=32 time=1ms TTL=64, 92.168.1.244: bytes=32 time=2ms TTL=64, 92.168.1.244: bytes=32 time=1ms TTL=64
- Row 2, Column 2: 2.168.1.245: bytes=32 time<1ms TTL=64, 2.168.1.245: bytes=32 time<1ms TTL=64
- Row 2, Column 3: 92.168.1.238: bytes=32 time<1ms TTL=64, 92.168.1.238: bytes=32 time<1ms TTL=64
- Row 3, Column 1: 92.168.1.246: bytes=32 time=3ms TTL=64, 92.168.1.246: bytes=32 time=3ms TTL=64, 92.168.1.246: bytes=32 time=3ms TTL=64, 92.168.1.246: bytes=32 time=3ms TTL=64, 92.168.1.246: bytes=32 time=4ms TTL=64, 92.168.1.246: bytes=32 time=3ms TTL=64, 92.168.1.246: bytes=32 time=2ms TTL=64
- Row 3, Column 2: 92.168.1.247: bytes=32 time<1ms TTL=64, 92.168.1.247: bytes=32 time<1ms TTL=64
- Row 3, Column 3: 2.168.1.167: bytes=32 time=3ms TTL=128, 2.168.1.167: bytes=32 time=1ms TTL=128, 2.168.1.167: bytes=32 time=1ms TTL=128, 2.168.1.167: bytes=32 time=1ms TTL=128, 2.168.1.167: bytes=32 time=2ms TTL=128, 2.168.1.167: bytes=32 time=1ms TTL=128, 2.168.1.167: bytes=32 time=2ms TTL=128
- Row 4, Column 1: 92.168.1.248: bytes=32 time=2ms TTL=64, 92.168.1.248: bytes=32 time=2ms TTL=64, 92.168.1.248: bytes=32 time=1ms TTL=64, 92.168.1.248: bytes=32 time=1ms TTL=64, 92.168.1.248: bytes=32 time=1ms TTL=64, 92.168.1.248: bytes=32 time=4ms TTL=64, 92.168.1.248: bytes=32 time=1ms TTL=64
- Row 4, Column 2: 92.168.1.249: bytes=32 time<1ms TTL=64, 92.168.1.249: bytes=32 time<1ms TTL=64
- Row 4, Column 3: 2.168.1.177: bytes=32 time<1ms TTL=128, 2.168.1.177: bytes=32 time<1ms TTL=128

Customer can ping the IP addresses of all the devices includes PC, switch & Radios



THROUGHPUT TEST RESULT



Throughput test by Ix-chariot
= 394.6+402.7 = 797.3 Mbps

4 links radios aggregations =
almost 200 x 4 = 800Mbps

Success !!

