Gigabit Ethernet Aggregation TAP
# USR4523 - Installation Guide

The USR4523 Aggregation TAP (Test Access Point) will tap a single network link or segment and make copies of traffic. Network segments may be monitored using a network analyzer, security devices or any monitoring appliance or tool. Capture full-duplex traffic without dropping any packets or in SPAN Mode duplicate input traffic to up to 3 monitor ports.

Package Contents:
- USR4523 Gigabit Ethernet Aggregation TAP with mounting tabs for use with URS4522-RMK (4 unit 1U rackmount)
- 1 AC power supply with clips for US, UK, EU, AU
- 2 mounting screws
- Information Card

Front View

LFP: Link Failure Propagation
LNK: Link Activity
BP: (no purpose)
A/B/C/D: RJ45 Ethernet Ports

RJ45 Ethernet Ports
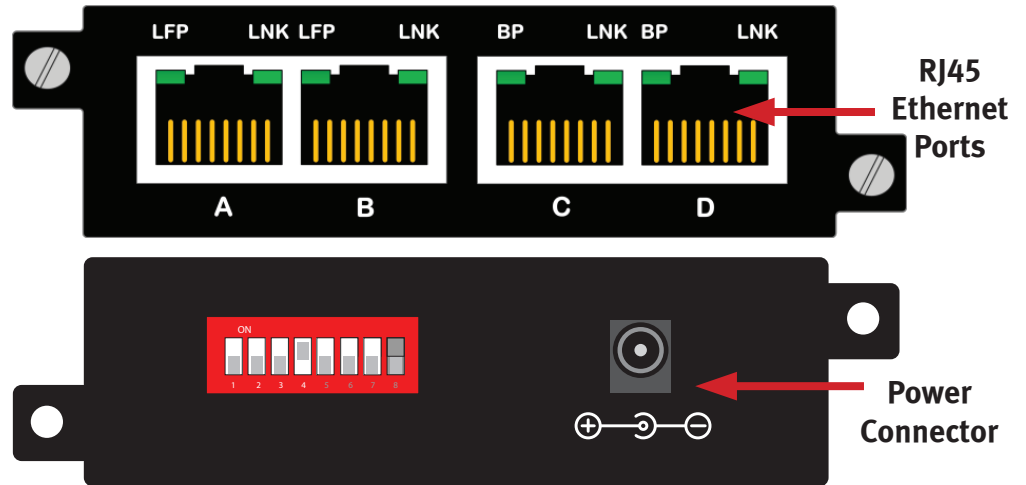
Rear View

DIP switches shown in Aggregation mode

Power Connector

Installation Steps

1. Unpack the TAP and, if desired attach to the optional rack mount. Instructions are provided on page 4. DO NOT CONNECT THE POWER at this point.
2. Configure the DIP switches (located on the back side of the unit) for the operating mode of your choice (see next section for details on different configuration setups).
3. Install the network TAP into the live network. **This step needs to be done with no power connected to the TAP.** Using standard Ethernet cables, connect ports A and B between two live network devices where monitoring is desired.
4. Verify network traffic is flowing, confirming that network cabling is correct.
5. Connect ports C and D to the monitoring tools for traditional traffic monitoring (SPAN mode may also be used for regenerating outputs).
6. Connect the power supply to the USR4523 and plug it in to an available power source.

> Notes: The BP LED serves no purpose on this model.
>
> Anytime the configuration switches are changed, remove and then re-apply power for the changes to take effect.

Live Network Device 1

Live Network Device 2

Monitor Port A

Monitor Port B
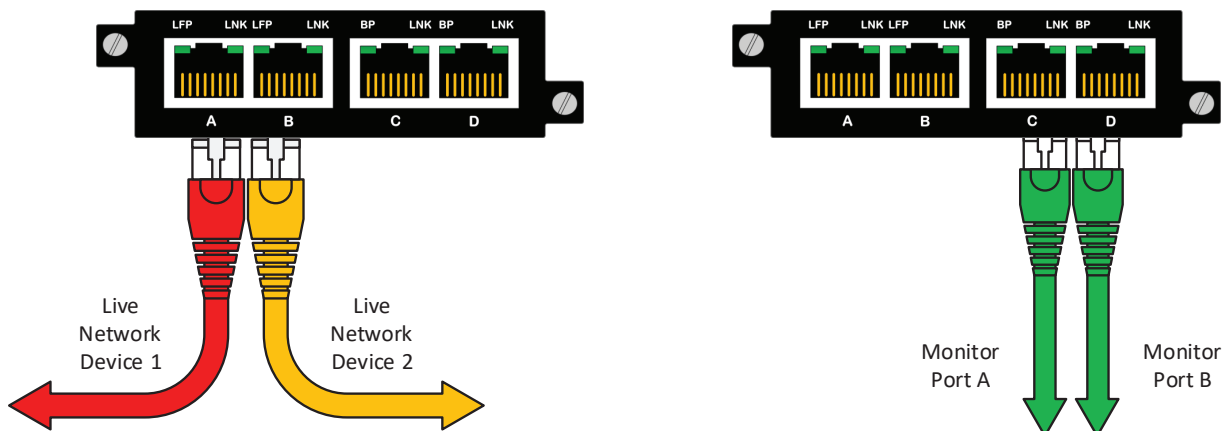
Configuration/DIP Switch Settings

DIP switches on the back of the TAP can be used to configure speeds, modes, and link failure propagation.

Definitions

AGG (Aggregation): Combines data flows
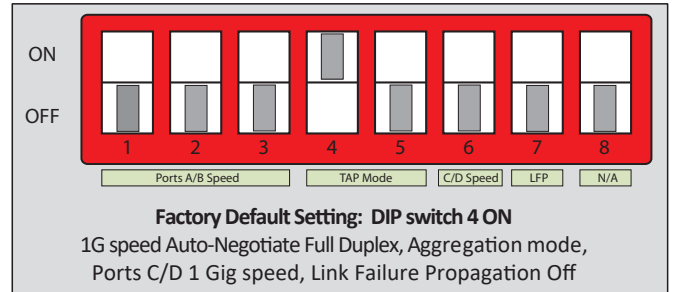
BRE (Breakout): Separates data flows

LFP (Link Failure Propagation): Allows link state to be mirrored to the adjacent live network interfaces.

SPAN or Regenerate: Allows users to multiply one input to one or more outputs.

SYNC (Synchronization): Allows auto-negotiate to choose the link speed and synchronizes the link speed of the network ports.

N/A (Not applicable): The N/A DIP switch has no effect on this product.

Factory Default Settings

Factory Default Setting: DIP switch 4 ON
1G speed Auto-Negotiate Full Duplex, Aggregation mode,
Ports C/D 1 Gig speed, Link Failure Propagation Off

	Ports A/B Speed			TAP Mode		C/D Speed	LFP	N/A
ON	SYNC	SYNC	SYNC	AGG or SPAN	SPAN	100M	LFP ON	N/A
OFF	AUTO or FORCED	AUTO or FORCED	AUTO or FORCED	BRE or SPAN	AGG or BRE	1G	LFP OFF	N/A
	1	2	3	4	5	6	7	8

Ports A/B Speed Mode			
	SW1	**SW2**	**SW3**
1 Gbps speed Auto-Negotiate Full Duplex	OFF	OFF	OFF
1 Gbps speed Forced Full Duplex	ON	OFF	OFF
100 Mbps speed Auto-Negotiate Full Duplex	OFF	ON	OFF
100 Mbps speed Forced Full Duplex	ON	ON	OFF
10 Mbps speed Auto-Negotiate Full Duplex	OFF	OFF	ON
10 Mbps speed Forced Full Duplex	ON	OFF	ON
Sync Mode* Forces AUTO Duplex Forces LFP ON	OFF	ON	ON
	ON	ON	ON

TAP Mode			
		SW4	**SW5**
Breakout		OFF	OFF
Aggregation		ON	OFF
Span		OFF	ON
		ON	ON

Ports C/D Speed	
	SW6
100 Mbps	ON
1 Gbps	OFF

Link Failure Propagation	
	SW7
LFP On	ON
LFP Off	OFF

*Synchronization Mode provides a plug-n-play zero configuration design. Synchronization Mode will determine the highest supported speed of network ports [A] and [B]. Ports [A] and [B] will link, then advertise and connect at the highest supported common network speed.

Link Failure Propagation (LFP) :

- LFP is used mostly for High Availability (HA) designed networks.
- LFP applies to Network ports only.
- When enabled, LFP can sense a network failure and reflect the failure to the adjacent port of the live network allowing the network's failover mechanism to switch over to the secondary network path.
- LFP ensures an instant switch to the secondary link to maintain 100% uptime.
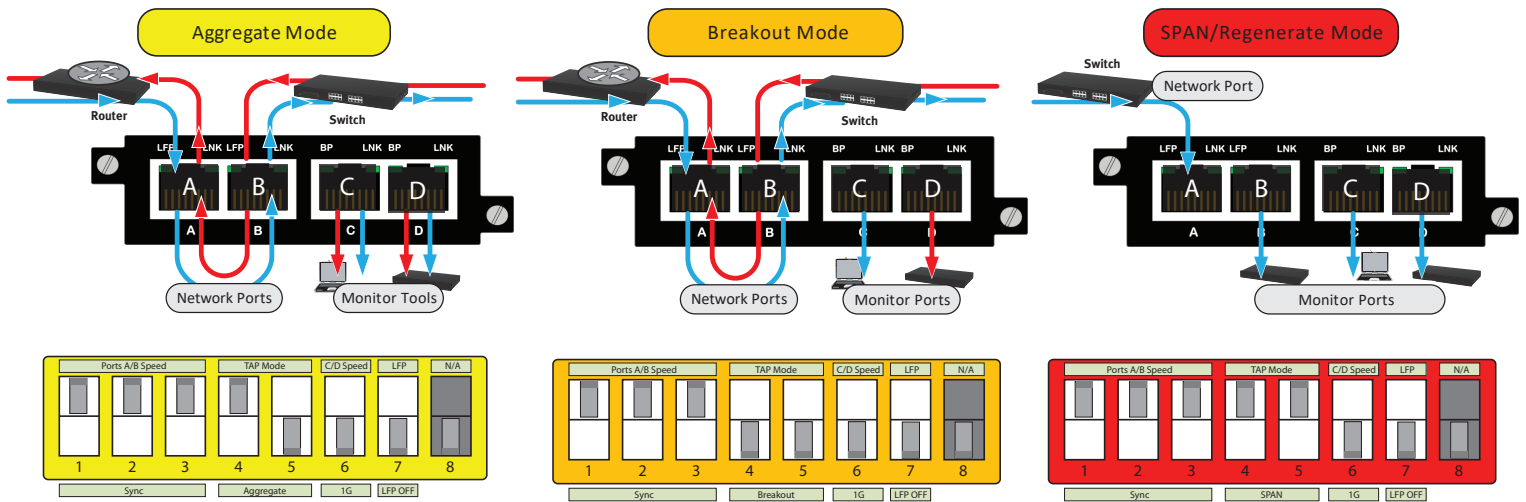
Configuration/DIP Switch Examples

- When the TAP is set to Aggregation mode (switch 4 ON, switch 5 OFF), the TAP combines traffic from both port A and port B and transmits an aggregated copy from each monitor port (ports C and D).
- When the TAP is set to Breakout mode (switch 4 OFF, switch 5 OFF), traffic received on port A transmits from monitor port C, and traffic received on port B transmits from monitor port D. Traffic continues to flow between A and B.
- When the TAP is set to SPAN mode (switch 5 ON), traffic received on port A transmits a copy from ports B, C & D. Traffic does not travel from B to A.

LEDs

The USR4523 has 8 LED indicators - 2 for each port as shown to the right.
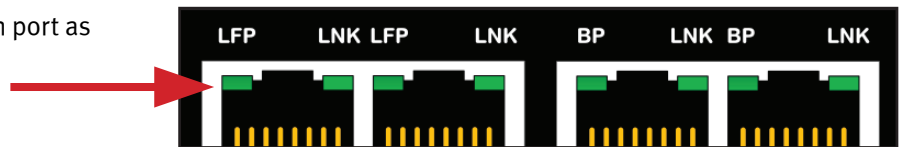
| LED		Status	Meaning
LNK		ON	Link is active
		FLASHING	Link is active and packets are flowing
		OFF	Link is not active
LFP	LFP enabled (DIP 7 ON)	ON	Link failure is detected
		OFF	Link failure is not detected
	LFP disabled (DIP 7 OFF)	OFF	LFP is disabled
BP			Not Applicable

Operating Notes:

- Before setting the USR4523 to aggregation mode, it is important to consider the link utilization on the network links. If the combined bidirectional traffic over the network ports exceeds the speed of the monitoring devices, loss of the traffic through the monitoring ports will occur.
- At the default settings, all ports on the USR4523 are set to 1G speed. If these ports are connected to networking devices with manual speed settings, confirm that the devices on either side of the TAP are at the same speed. For optimal results set all connected networking devices to AUTO speed negotiation.
- Oversubscription (i.e. packet loss) of the monitor ports may occur if the network speed and the utilization percentage of the combined data volume exceed the monitor port capacity.
- For up to 1 Gbps speeds, use Cat 5 or better cable with a maximum length between network devices (not including the TAP) of 100 meters.
- The TAP ethernet ports use Auto-MDI/MDI-X, so either crossover cables or straight cables may be used.
- If power is lost on the USR4523, internal relays on the network ports will close and allow traffic to continue to pass through. Monitor ports will not transmit traffic while the device is powered off.
- Supports jumbo frame sizes up to 9,216 bytes.
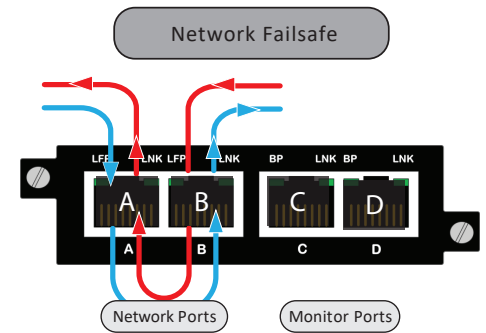
Rackmounting the USR4523 Aggregation TAP

The USR4522-RMK rackmount kit is available separately to mount 4 units horizontally.
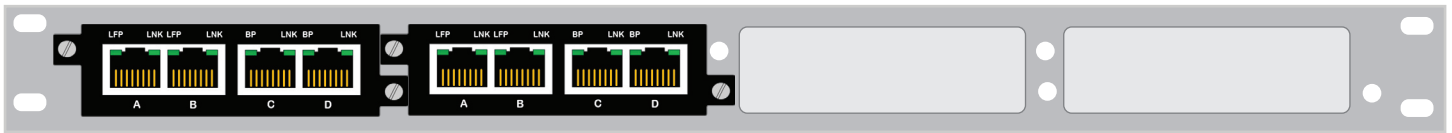
Installing the USR4523 Aggregation TAP into the USR4522-RMK Rackmount unit:

1. Insert the TAP into any available slot of the installed rackmount.
2. Align the rackmount tabs.
3. Insert and tighten included screws to secure the TAP to the rack.
4. Install into a 1U space in a standard 19" rack. Mounting screws are included with the USR4522-RMK.

Warranty and Support Information:

This product is subject to the U.S. Robotics Corporation Limited Warranty. To view a copy of the Limited Warranty, please see: **www.usr.com/support/4523**

For information on how to contact USR Technical Support, please see the USR corporate website at: **www.usr.com/support**

Regulatory Information:

CE Compliance Declaration of Conformity
Hereby, USRobotics declares that this TAP, USR Gigabit Ethernet Aggregation TAP, is in compliance with the essential requirements and other relevant provisions of RoHS Directive EU 2015/863; EMC Directive 2014/30/EU; Low Voltage Directive 2014/35/EU and ErP Directive 2009/125/EC. An electronic copy of the original CE Declaration of Conformity is available at the USR website: **www.usr.com/support/4523**

This product is subject to Directive 2012/19/EU of the European Parliament and the Council of the European Union on waste electrical and electronic equipment (WEEE) and, in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal waste. Please utilize your local WEEE collection facilities in the disposition of this product and otherwise observe all applicable requirements. For further information on the requirements regarding the disposition of this product and collection facilities that may be available to you, please visit: **www.usr.com/weee**

www.usr.com/regulatory-compliance-export/