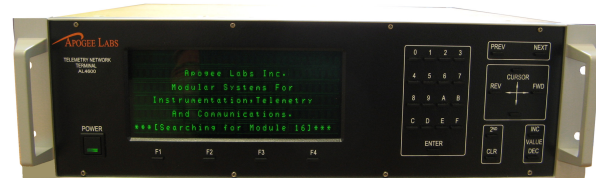




MULTIPLEXED DATA OVER IP USING DATA NODE APPLIANCES



OVERVIEW

This paper will provide instructions on how to send MITC(AL4301/AL4302) data over IP using DNAs. These instructions will set the link up on a separated network and send two 10 mbps PRN streams over IP. Once this is done, the settings can be modified so that the DNA will accept up to 35 Mbps of aggregate data from the MITC. The MITC can be configured to accept a multitude of different I/O signals, thus making this a rather modular setup. This setup will assume that the DNAs are in the default state. If the DNAs are not in the default state, this can be achieved by powering up the units, and after 30 seconds press the reset button, making sure that the Ethernet and Power buttons blink.

EQUIPMENT REQUIRED

- 2 MITC Chassis – AL4302
- 1 MUX9 Modules – AL2016
- 1 DEMUX9 Module – AL2017
- 1 PACK Module – AL2024
- 1 DEPACK Module – AL2025
- 1 SPIN – AL1110
- 1 SPON – AL1111
- 1 DLT1 – AL6500
- 2 BERT – AL6599
- 1 10/100 or GigE switch/router
- 1 PC/Laptop

CARD CONFIGURATION

Place the MUX9 and PACK into the first MITC chassis (any slots), named **MITC-In** for the rest of the document, and place the DEMUX9 and DEPACK into the second MITC chassis (any slots), named **MITC-Out** for the rest of the document. Next, place both BERTs into the DLT1. Apply power to all three units.

BERT CONFIGURATION

Configure the **Output Type** to PRN, **Output Code** to NRZ-L, **Output Polarity** to +clk/+dat, the **PRN Pattern** to 2e+15, and the clock **Bit Rate** to 10 Mbps on both of the cards. For the input, set the **Interface** to TTL, **Rx Code** to NRZ-L, **Rx Polarity**, +clk/+dat and **Rx Mode** to Accumulate. The majority of these settings are the default values, but should be checked for this test.

MITC CONFIGURATION

MITC-In

Attach data and clock outputs from the BERTS to channel 1 and 2 of the MUX9. On the MUX9, set **CH1ID** to 0x001 and **CH2ID** to 0x002. On the PACK, set the **SI Time** to 1 ms, the **Clock Src** to S-SYN, and the **Rate** to 21,000,000. Connect the data and clock output from the PACK to the data and clock input on the SPIN.

MITC-Out

Attach data and clock inputs from the BERTS to channel 1 and 2 of the DEMUX9. On the DEMUX9, set **CH1ID** to 0x001 and **CH2ID** to 0x002. On the DEPACK, set the **Input I/F** to Serial. Connect the data and clock output from the SPON to the DEPACK.

NETWORK CONFIGURATION

Connect the SPIN, SPON and PC to the switch/router with CAT5e or CAT6 Ethernet cables. Connect power to the SPIN and SPON.

If a router with DHCP is being used, the DNAs will acquire IP addresses from the DHCP server. The default network names for the SPIN is **SPIN** and SPON is **SPON**. To control the units, open a web browser and type <http://spin> for the SPIN and <http://spon> for the SPON. Login to the units using admin as the username and admin1 as the password. If there are issues communicating with the DNAs, please consult the troubleshooting chapter of the manuals.

If a switch or a router without a DHCP server is being used, configure the PC to IP address 192.168.0.9. Power up the SPIN first with the SPON disconnected. After a minute and a half, open a web browser and type <http://192.168.0.5> into the address bar. Go to the IP Setup page, change the IP address to 192.168.0.6 and click on the **commit** button. You will be logged out of the SPIN. Next, power up the SPON. Again, after a minute and a half, open a web browser and type <http://192.168.0.5> into the address bar. Go to the IP Setup page, change the IP address to 192.168.0.7 and click on the **commit** button. To control the units, open a web browser and type <http://192.168.0.6> for the SPIN and <http://192.168.0.7> for the SPON. Login to the units using admin as the username and admin1 as the password. If there are issues communicating with the DNAs, please consult the troubleshooting chapter of the manuals.

Under the IP Setup tab for both units, change the Remote IP to the IP address of the other unit. For example, if the SPIN is at address 192.168.0.6 and the SPON is at address 192.168.0.7, set the SPIN's Remote IP to 192.168.0.7 and the SPON's Remote IP to 192.168.0.6.

SPIN CONFIGURATION

Set the SPIN to the following:

Data Setup

Data Interface:	TTL
Data Polarity:	+clk/+dat
Data Header:	Time+TMoIP
Data Buffering:	Maximum Bandwidth

IP Setup

Protocol:	UDP/IP Unicast
Data Port:	1500
MTU Size:	1500

SPON CONFIGURATION

Data Setup

Data Polarity: +clk/+dat

IP Setup

Protocol: UDP/IP Unicast

Data Port: 1500

MTU Size: 1500

SYSTEM STATUS VERIFICATION

Before sending the data, a verification check should be performed to make sure the equipment in front of the SPIN is setup properly. On the MUX9, both channels should show approximately 10 Mbps input rate. On the PACK, it should show no overflow. The SPIN should show PCM Input Rate (under the Status tab) of approximately 21 Mbps and be in an Idle state.

CONNECTING THE DNA's

Under the IP Setup tab, set the **Ethernet Flow** to Connect on both the SPIN and SPON. Switch to the Status tab and verify the SPIN Actual Tx Rate is slightly higher than the PCM Input Rate. Verify the SPON shows a PCM Output Rate of approximately 21 Mbps and it's Rx Rate is slightly higher than the PCM Output Rate. Next, press **F3** on the DEPAK page of the Mitc-out chassis and verify there are no new CRC or SEQ errors and the DEMUX shows approximately 10 Mbps on each channel. Finally, on the BERT's, check the **Measurement** page for errors. There will be errors on startup, so clear the errors and make sure no new errors are inserted in the stream.

EXPANSION

Now that you have seen two 10 Mbps TM streams sent over Ethernet, the modularity of the MITC can be harnessed to combine a wide variety of I/O streams and transport the multiplexed stream over Ethernet.