TrangoLINK ApexPlus

Software v3.2.0
Release Notes &
Upgrade Instructions

28 October 2015

Table of Contents

TrangoLINK ApexPlus v3.2.0 Release

The release consists of the following software images

FPGA version:	0116050B
OS version	**2p6r22b0D101915**
FW version	**3p2r0D101915**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

Supported Modulation/Symbol rate combination in this release

BW	Sym Rate	QPSK	QAM16	QAM32	QAM64	QAM128	QAM256
4	3	4	9	12	15	18	20
7	5.6	9	19	24	30	35	39
10	8.3228	14	29	36	45	52	59
14	12.2	21	44	54	66	78	88
20	17.4228	31	63	78	96	111	126
28/30	26	47	95	118	142	166	190
40	34.825	63	128	158	192	225	256
50	43	78	157	195	238	277	318
55/56/80	49.5	90	181	225	275	320	365*

375 Mbps support available on speed 80 qam256 [Ethernet Only, Non-ACM Mode]

Overview

This release provides a significant improvement in Ethernet performance under heavy traffic loading conditions, this release is valid only for Hardware ID 2 based radios. Hardware ID 1 radios should use v3.1.5. It is highly recommended that the upgrade be done to prevent packet loss under traffic loading of over 100 Mbps.

New Features

1. New CLI to add user VLAN TRAFFIC

   vlan_add <port> <id>: Add vlan ID to a specific port.

   vlan_add_range <port> <id_min> <id_max>: Add a range of VLAN ID to a specific port.

   vlan_clear: Clear all vlan id for both ports

2. Flow Control between modem and internal switch improved to dynamically adjust to incoming traffic. Egress margin fine tuning is no longer needed and should be set to 0 percent or higher to prevent capacity limiting.

3. Gigabit burst performance improved to allow higher TCP capacity over high latency networks by expanding packet buffer size.

Bug fixes
1. Egress setting was not configured correctly after system reboot, only works on the command setting. Egress is not longer needed due to flow control improvements.
2. Port flooding conditions which could exist in some situations were eliminated by enabling switch learning.

Notes
1. Use config as the username for the config login on web interface.
2. Default opmode is observed when changing frequency, bandwidth, modulation, datapath, etc. If default opmode is *off*, opmode is *on* and the speed is changed, the opmode will be *OFF* after setting the new speed.
3. Ethernet ports are enabled by default and LEDs may indicate a link even when no cable is attached. Once a cable is added or removed the LEDs will function as expected.

Known Limitations
1. BER is based on CRC errors and might not reflect the accurate BER on live data. WA: Use External test equipment to measure accurate BER for testing.

Software Image Upgrade Procedure

Please review these instructions before starting to ensure that you have adequate time scheduled to perform the upgrade as well as fully understand the implications of the process. While all software is tested by Trango Systems on current hardware before being released, it is strongly suggested that you initially perform this upgrade on your lab equipment and not initially in a production environment and test for any and all needed functionality before deploying.

Image upgrade for OMU will be copied to flash during image upgrade (bootimage upgrade omu) and will not affect the working link until the system is rebooted / power cycled.

To perform the firmware upgrade using FTP, use the *ftp* command to load the images into memory, then the *bootimage upgrade* commands. The FTP method is much faster and has built in error checking than TFTP. If you prefer to use the TFTP method, instructions can be found in the user's manual.

All that is needed is the IP address of the ftp server, a username/password, and the filename to be uploaded.   The new file to be uploaded should be placed on the server. The ftp server will prompt for the password before allowing access.

If the ApexPlus is configured with a route to the Internet, you can even pull the new software images directly from our ftp server. If you would rather load them into a local server, please change the IP addresses and directory structure in the examples below as needed. You will need an appropriate default gateway setup in the ApexPlus as well as a route to the Internet through management or IBM. Trango suggests checking connectivity with ping from debug prompt before attempting the ftp upgrade. To do that, login to the CLI view node, then config node and then debug node. Ping 74.62.177.9 to test for connectivity to our FTP server.

1. Plan to use the file directly from Trango's FTP server or copy it to your own local FTP server. We recommend verifying the file name and path to ensure that nothing has changed since this document was prepared.

2. Note down the current version of the firmware loaded in the radio (CLI version).

3. Connect Management Ethernet port to PC.

4. Configure an IP address in unit if not already done.

5. Start a Telnet or SSH session. Log into the ApexPlus, go to config node, and then debug node to test connectivity to your ftp server.

Debug> ping 74.62.177.9
PING 74.62.177.9 (74.62.177.9): 56 data bytes
64 bytes from 74.62.177.9: seq=0 ttl=127 time=0.965 ms
64 bytes from 74.62.177.9: seq=1 ttl=127 time=10.009 ms

Press ctrl+c to stop the ping.

--- 74.62.177.9 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 0.965/5.487/10.009 ms

If the ping test is not successful, check your IP address and default gateway to ensure that those are addresses that will reach the Internet through your firewall.

6. After verifying connectivity, return to config node and save your config if not already done so:

Debug> cli

Trango System: TrangoLINK ApexPlus Command Line Interface v3.0.0

(CLI-view)# config
Password: trango
(CLI-config)# config save
New configuration saved

   SUCCESS

7. Run the *ftp* command from the command line as follows to open access to the server:

(CLI-config)# ftp 74.62.177.9 giga
password: giga4773

If prompted for the password multiple times, check the connectivity to the server by pinging the FTP server IP address from the debug prompt. You may also test the ftp credentials from a laptop or other computer on the same network subnet.

8. Next, get the file from the FTP server by typing the get command from the ftp prompt.

ftp> get TL-ApexPlus/omu_ApexPlus_v3.1.0.tar.gz
#
Get operation successful with passive mode

9. Logout of the ftp session

ftp> logout

10. Process the upgrade using the bootimage upgrade omu command.

(CLI-config)# bootimage upgrade omu

. . . . .
. . . . . SUCCESS.

11. After the process returns success, reboot the radio for the new image to be loaded into active memory.
    (CLI-config)# reboot

12. Check the new version on the system with CLI command "version". It should match with the versions listed below. **In case of mismatch version, please perform the upgrade again from step 1.**

FPGA version:	0116050B
OS version	**2p6r22b0D101915**
FW version	**3p2r0D101915**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

Please follow all the instructions as listed above in the upgrade instructions. In the case of version mismatch on the system (local/remote/system) the system is NOT guaranteed to work. In the event of a power failure during the upgrade process or any mismatch conflict, please contact technical support <techsupport@trangosys.com> for further assistance. Serial console remote access to the OMUs might be required in the event of such failure. It is suggested that all customers have at least one serial/console cable available at each site.

Please don't make any implicit assumptions.
In case of any doubt please contact technical support for clarification.

ApexPlus Software Change History

Software Version 3.1.0

FPGA version:	0116050B
OS version	**2p6r22b0D100112**
FW version	**3p1r0D100112**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

Bug fixes

1. ACM profile n/a to display in the appropriate column. This was previously reversed.
2. Increase reliability of remote status indicators on web interface.
3. Fixed display of HP2 ODU serial numbers starting with C1203 and C1205.
4. Load the correct filter for HP1 ODUs with bandwidth 30 for proper RSSI display.
5. Corrected missing threshold triggering action for link down parameter.
6. Numerous web and CLI improvements and corrections.

Software Version 3.0.2

FPGA version:	0116050B
OS version	**2p6r22b0D052512**
FW version	**3p0r2D052512**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

Bug fixes

1. Loopback IF fix to restore proper operation.
2. Correct erroneous numbers in siglevel command.

Software Version 3.0.1

FPGA version:	0116050B
OS version	**2p6r22b0D05162**
FW version	**3p0r1D051612**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

Bug fixes

1. Status port counter fix. In v3.0.0 the counters reported erroneous numbers.
2. Now able to change config node web interface password. Previously this resulted in an error.
3. Change in switch initialization settings to protect against loss of Ethernet link.

Software Version 3.0.0

FPGA version:	0116050B
OS version	**2p6r22b0D033012**
FW version	**3p0r0D033012**
PIC version	14
Modem Version	1
HP ODU FW version	150410
HP1 ODU FW version	060211
HP2 ODU FW version	142

New Features

1. Custom speed profile support allows the use of custom speed profile (binary) for specific needs. User may load as many custom profiles on the IDU as required. The file loaded will override the default profile with the same speed, modulation, datapath and ACM setting. The custom profile may be removed at a later time and the user may revert to the default profile for the given speed combination.

2. Ethernet port rate and utilization counters provide individual port utilization in Mbps and percentage over the period of twenty seconds.

3. Remote link status reporting is added to display locally the status of the remote end radio. Remote status will only show when local radio link is locked. The status indicator will provide information on the remote link lock, RSSI, MSE and current Rx modulation profile.

4. Two level access is added to the web interface to provide a view only user and a user with configuration rights.

5. Web interface error messages are updated with more detail on the failed command.

6. Automatic loopback diagnostic function. This feature will disable Ethernet ports, turn ODU power off, run loopback IF and loopback DIG, capture the results to a file for later display, then turn ODU power back on and enable the Ethernet ports. This is especially useful for running a diagnostic loopback on a remote radio.

7. New threshold parameter for link down. Allows the link down threshold to trigger alarm, trap, RPS or hardware switchover as desired.

8. Link status recording for future diagnostic comparison. This provides an internal tool to capture the current system condition when radio is in a good running condition as a baseline for future reference or diagnostic data.

9. Reload in a given time allows the user to pre-program the radio to reboot the system after a given time (in minutes). This is useful for testing a feature that may cause link loss or other management inaccessibility. After the given time, the radio will reboot to the saved configuration and potentially provide a backup method to recreate the link.

10. Linktest feature added to the web interface. This allows users to run a repetitive linktest similar to the CLI command and display the result in the web browser.

11. Add web page refresh rate configuration to allow the user to set the frequency the web pages refresh from 5-60 seconds. Setting the refresh to 0 will cause the pages to not auto refresh.

12. Quality of Service improvements including DSCP and WRR support. Allows the user to configure QoS setting including QoS mode (strict or weighted round robin) and map DSCP tags to priority buckets for each port.

13. General web interface enhancements
    a. Configure syslog level.
    b. Configure threshold settings.

   c. Change SNMP community strings.
   d. Display min & max tx freq range when configuring ODU frequency.
   e. Remote status display at top status bar.
   f. Uptime to use system uptime instead of SNMP uptime.

14. SNMP OID harmonization between products. **Must use the new Trango-PTP-MIB which is also compatible with GigaPlus 3.0.**
15. Allow standard SNMP OIDs for Linux features to monitor the radio CPU. (Ethernet ports that show as part of the standard IF-MIB are for the radio management and not the radio's data ports as the data ports do not run through the CPU.)
16. No longer required to turn opmode off for frequency changes.
17. RSSI & MSE to display as N/A in the web interface when no ODU is detected.
18. Default speed change to 30 MHz qam32 to provide maximum bandwidth and system gain with no license key.
19. TDM status reorganized on web interface. Only the relevant status indicators will display for T1 or E1 mode. Values that are on/off are indicated with a green or red dot instead of 1 or 0 as the used to be.

Bug fixes
1. Command server crash which caused management to become unresponsive has been fixed and additional diagnostic functionality has been added to catch any future issues.
2. IBM setting for ge2/sfp port.
3. OMU PLL unlock at cold temperatures by reloading the proper calibration data.

Software Version 2.0.0

FPGA version: **0116050B**
OS version   **2p6r22b0D092711**
FW version   **2p0r0D092711**
PIC version   14
Modem Version   1
HP ODU FW version 150410
HP1 ODU FW version 060211
HP2 ODU FW version 142

New Features

1. Support for HP1 ODUs. Previously HP ODUs were identified as HP1, which is a new series of ODUs.
2. Special band mapping for HP2 11/15/23 bands for proper model number reporting.
3. Detect the status of the SFP module to indicate if plugged in or not. The system cannot detect if a cable is connected to the SFP module, only if the module is present or not.
4. 1+1 HSB Keepalive message for switchover in the event of active unit power failure or reboot.
5. Complete T1/E1 support for all speeds
6. 1+1 HSB Keepalive message now contains protection status to enable hardware switchover and prevent standby vs. standby case.
7. Siglevel addition of GFP drop counters. Counters are accumulative and cleared with status clear.
8. Egress rate setting from internal switchport to modem for improved QoS handling based on the current speed's throughput. Egress margin setting allows the user to fine tune the rate for smaller packets or stricter QoS queue priority. Also improves some speed test results due to buffer control.
9. 1+1 HSB Keep-alive message will monitor switchover condition.
10. Loopback options updated to reflect hardware features available (rf_gen and rf_refl removed).

Bug fixes

1. Bandwidth setting for HP ODU was not done in the proper order during power up sequence and is now fixed.
1. If an existing guard time is in place, don't start a new conflicting guard time.
2. Observe default_opmode setting during a hardware switchover. If default_opmode is set to off, 1+1 HSB/failover will not enable opmode. Both radios should be configured with default_opmode on.

Software Version 1.1.2

FPGA version:	0010030B
OS version	**2p6r22b0D050511**
FW version	**1p1r2D051111**
PIC version	14
Modem Version	1
HP1 ODU FW version	150410
HP2 ODU FW version	142

New Features
1. IP address format validation for web interface.
2. Factory_default command to reset to default configuration from debug prompt. Requires use of tg_reboot afterwards.

Bug fixes
1. SNMP IP Address format for type A instead of string for wider snmp manager support.
2. Tg__reboot command enabled from debug node.

Software Version 1.1.1

FPGA version: 0010030B
OS version   **2p6r22b0D050411**
FW version   **1p1r1D050411**
PIC version   14
Modem Version   1
HP1 ODU FW version   150410
HP2 ODU FW version   142

New Features
1. T1 Support added for bandwidth 30 modulation qam32.
2. CLI commands datapath, tdm and status tdm.

Bug fixes
1. Slow memory leak left from original software debugging.
2. SNMP: The IpAddr format is changed to IpAddress for greater compatibility with SNMP managers.

Software Version 1.1.0

FPGA version: 0010030B
OS version   **2p6r22b0D040411**
FW version   **1p1r0D040411**
PIC version   14
Modem Version   1
ODU FW Version [HP1]   150410
ODU FW Version [HP2]   142

Bug Fixes

1. Numerous web interface settings, including the initial command from the web would timeout causing problems for future commands at times.
2. Speed setting validation.
3. Packet counters updated for traffic over 1518 bytes.
4. Remove alignment mode as it is only applicable to SP ODU which is not supported in ApexPlus.

Known Limitations

1. BER is based on CRC errors and might not reflect the accurate BER on live data. WA: Use External test equipment to measure accurate BER for testing.

Software Version 1.0

FPGA version:	**0010030B**
OS version	**2p6r22b0D031411**
FW version	**1p0r0D031411**
PIC version	**14**
Modem Version	**1**
ODU FW Version [HP1]	**150410**
ODU FW Version [HP2]	**33**

Key Features

1. 3.5Mhz – 56Mhz channel bandwidth, FCC and ETSI compliant
2. Supported frequency 6-38 GHz HP1 ODU and 6-38 HP2 ODU
3. 1+1 Monitored Hot Standby support
4. Hitless Adaptive Modulation for all modulations except QPSK
5. Native Ethernet Support
6. Packet QoS based on 802.1p
7. GigE ports supports configurable Speed, Duplex, Rate limiting and Jumbo packets
8. Rapid Port Shutdown
9. ATPC
10. CLI access via Serial Console/SSH/Telnet
11. SNMPv2 support (Trango MIBS)
12. Web Access supports both secure (HTTPS) and regular (HTTP)
13. Threshold Monitoring
14. In Band Management
15. Dual Image Upgrade Support
16. Reliable image transfer using FTP, also support TFTP

Known Limitations

1. BER is based on CRC errors and might not reflect the accurate BER on live data

WA: Use External test equipment to measure accurate BER for testing

2. In 1+1 mode the system doesn't support automatic detection of partner OMU loss, but the link will still switchover due to loss of RF link.
   WA: If power cycling Standby unit, no action required. If power cycling Active unit, issue a manual switchover command on the Active before power cycle and Standby will take over, Alternate way is to issue reboot command on the OMU to be power-cycled and the SW will initiate the switch-over

3. Rf gen/rf refl loopback not supported in this release
   WA: Use IF loopback for debugging

4. Adding new unit to 1+0 system to make it 1+1 and license key setting from web interface might not work reliably
   WA: Use the CLI interface