

90000

JunglePAX – Release Notes

Firmware Package p/n 90000-01
Version: 1.14a
Release Date: June 14th, 2019
Type of Release: Production Release

Lentronics JunglePAX



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RELEASE SUMMARY

REQUIREMENTS

- A networked PC with access to the JPAX subnet
- Web-browser (latest version of Chrome, IE or Firefox)
- Terminal session. Putty.exe

DOCUMENTATION CONTROL

Document Version 1.00	PR 1.14a 24428	June 14 th , 2019
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PRODUCT/COMPONENT

This production firmware release is comprised of numerous individual firmware components packaged together and distributed as a controlled JunglePAX part number 90000-01. The overall product structure, including hardware and firmware contains the following sub-components

- CHASSIS, p/n 90001-01
 - Comprised of Backplane, daughter-card and mechanical
- CORE Module, p/n 90010-01
 - EM-10 firmware version **1.14a** (jpax_nms.itb) Management Plane
 - DP-10 firmware version **1.14a** (jpax_dp.itb) Data Plane - OS
 - FP-10 firmware version **1.14** (jpax_fpga.itb) Data Plane - FPGA
 - UB-10 firmware version **1.06** (jpax_uboot.itb) Bootloader
- 48/130 VDC POWER Module, p/n 90110-01, HW version **0301**
- 115/250 VAC POWER Module, p/n 90100-01
- ACCESS CONTROL, Bootloader version **1.08.05** (ab90xxx08.bin & ab90xxx50.bin)
- ETHERNET SFP Unit, p/n 90200-01
 - Application firmware version **2.01.09** (ac9020001.bin)
- ETHERNET RJ45 Unit, p/n 90201-01
 - Application firmware version **2.01.08** (ac9020101.bin)
- T1/E1 Unit, p/n 90300-01
 - Application firmware version **2.01.08** (ac9030002.bin)
- CBUS Unit, p/n 90301-01
 - Application firmware version **2.01.08** (ac9030101.bin)



- PROTECTION C37.94 Unit, 1-port, p/n 90360-01
 - Application firmware version **1.15** (AF9036001.bin)
 - FPGA version **1.11**
- PROTECTION C37.94 Unit, 4-port, p/n 90360-02
 - Application firmware version **1.15** (AF9036002.bin)
 - FPGA version **1.11**
- PROTECTION Direct Relay Unit (RS232 & G.703), 1-port, p/n 90350-01
 - Application firmware version **2.01.03** (AF9036002.bin)
 - FPGA version **1.5**
- PROTECTION Direct Relay Unit (RS232 & G.703), 4-port, p/n 90350-02
 - Application firmware version **2.01.03** (AF9036002.bin)
 - FPGA version **1.5**

CORE UNIT DATA PLANE FIRMWARE

The data plane firmware provides the real-time operating environment responsible for the real-time components of the JPAX system and where all the time critical functionalities are implemented, including:

- data path configuration
- data path status monitoring
- alarm monitoring and reporting
- hardware drivers and control
- inter-core operation
- system initialization
- inventory
- node health status
- logging and event notification

The data plane is comprised of critical interfaces and associated systems that affect the flow of data within a JunglePAX node (Inter-core configuration and monitor) and across a JunglePAX network, including the CBUS Interface, TDM packetizer, MPLS capable switch, FPGA, Power Supply, DPLL, SFP status, alarm control and status, access unit control, and system logging functionality.

CORE UNIT MANAGEMENT PLANE FIRMWARE

The management plane firmware provides embedded management environment responsible for management plane functionality of the JunglePAX including:

- Configuration
- Alarm logging



- Status reporting
- Transaction and Session Management
- Security, including role-based access control
- Firmware upgrades
- Network discovery and remote management

The EM10 system is comprised of functional modules including the ConfD Infrastructure, Applications and Daemons, and the Interfaces that support the configuration of, and status/alarms-reporting from, the RTOS Components, which are also referred to as the Data Plane Components.

A JunglePAX model is created through the YANG modelling language and incorporated into the code build. The ConfD compilation infrastructure creates the north-bound interfaces (Netconf, CLI, HTTPS and SNMP). SNMP is not currently supported in this release. Each parameter set/get request is sent to the ConfD server, which will pass it via an Application or Daemon (often referred to as a Data Provider) to the Data Plane. The Data Provider uses functions in the Interfaces to send the requests to the Data Plane.

For this release of the EM-10, access to the JunglePAX is via the **webui (aa.bb.cc.dd)**, where **abcd** represent the IP address of the locally connected CORE module. This release supports local and remote unit access, with remote navigation provided by a Network node list. Access to either left or right remote CORE units is offered through the network node list.

Physical access to the embedded manager is provided through the TOP NMS port (RJ-45) on either left or right CORE modules.

Access to the Command Line Interface (CLI) is accessible via the webUI interface by pressing the CLI button, or using an SSH client like PuTTY on the standard SSH port 22. Connect to IP address of the CORE unit. The advantage of the SSH client is better window size flexibility and text handling like pasting scripts.

CORE UNIT BOOTLOADER

The Core Unit Bootloader controls the boot process of JPAX. It is responsible for the following:

- Loading factory firmware images from TFTP or SD card
- Extracting/Verifying and Booting EM and DP firmware images
- Extracting/verifying/flashing FPGA images to serial flash
- Configuring system memory map for all peripherals
- Storing MAC addresses, default IP settings and factory calibration settings
- Low-level system debugging support



ACCESS UNIT FIRMWARE

The access unit firmware for the microprocessor consists of two parts: the bootloader and the user application. There are five different user applications to support the five types of access units (4-port Ethernet Optical (SFP), 4-port Ethernet Copper (RJ-45), T1/E1, CBUS, 1 & 4-port C37.94 and 1 & 4-port Direct Relay unit supporting RS232 (up to 4 ports) and G.703 (1 port).



RELEASE DETAILS

SUMMARY - NEW FEATURES (1.14/1.14A)

GE's JunglePAX is a purpose-built optical packet switched solution that's hardened through layers of redundancy for secure and dependable utility communications. This production release of the CORE units' firmware introduces a variety of new product features and fixes with the major items summarized below. The complete list is included along with their JIRA (issue tracking) number. Where a detailed description of the issue is required, please contact GE with the JIRA number

Firmware version 1.14 new features

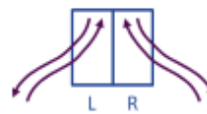
- Added support for a new Direct Relaying (DR-4A) unit (p/n 90350-02, 4-port version)
 - This is the second dedicated JPAX access cards using iCBUS (internal Channel BUS), a proprietary backplane interface that connects up to 240 DS0 channels between the core card and multiple access cards.
- Further improved switching times on CBUS ports

1+1 vs. 1:1: Protection Switching Time

Protection Mode	Failure Type	Port Type	Switching Time
1+1	Fiber Break	iDSO	< 2 ms
		SFP, PHY, CBUS, T1/E1	< 3 ms
	Core Extract	All port types	0 ms
1:1	Fiber Break	All port types	< 16 ms
	Core Extract	All port types	< 50 ms

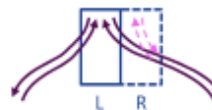
1+1 requires:

- Presence of both Cores
- Access ports in Bulk mode



1:1 is mandatory for:

- VPLS services (Ethernet P2MP, MP2MP)
- Access ports in Shared mode
- Applications with Left Core only



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- Improved embedded manager UI responsiveness
 - Allows WebUI to load with larger network elements
- Alarm severity & alignment of equipment LEDs with fixed priority in Node list
 - Equipment LEDs and Alarm severities shown in the WebUI are now completely aligned



- New Power Supply Unit alarms for temperature and current monitoring are included
- Mismatched Access cards (against slot assigned card type) alarms
- Added User-configurable Alert and Fail Thresholds for WAN ports' Rx Power in the list of new features.
- Added Switching Time measurement tool for both C37.94 and DR-4A units
 - The actual switching for protection circuits running over these iDS0 cards is available (displayed in the WebUI).
- Tunnel and Service Builder through GE's NMS solution (p/n 90000-50/G, and p/n 90000-51/G for high-availability) is optionally available.

Firmware version 1.14a new features

With the release of GE's Advanced NMS solution (90000-50, -50/G, -51 and -51/G), JPAX NMS ports now support routing on OSPF/IPv6 to facilitate a network-wide connectivity scheme from a single gateway node. Customers can now monitor their entire JunglePAX network from any NMS port at any node in the JunglePAX network with this licensed NMS software. Edge to Edge provisioning is also now supported through the NMS interface, significantly simplifying the process of creating tunnels and services.



Screen shot of GE's Advanced NMS Provisioning Manager



COMPLETE LIST OF NEW FEATURES (1.14A)

Feature/Functional Change	JIRA
Added the ability to append local endpoints to a VPLS service, without tearing down the entire service (which affects traffic on other PWs/endpoints). This goes for adding new PWs to the service as well.	JXKSO-1696
Corrected logic handling of the delete/recreate of VLAN port ID and its respective VLAN based on service criteria/traffic selection.	JXKSO-1701
IPv4 NMS gateway using routing on OSPF/IPv6	Improvement

COMPLETE LIST OF NEW FEATURES (1.14)

Feature/Functional Change	JIRA
Added support for DR-4 (Direct Relaying Access Card)	JXKSO-1648
Added Switching Time Feature for both C37.94 and DR-4	JXKSO-1649
Fixes for C37.94 Unit	JXKSO-1553 JXKSO-1622 JXKSO-1625 JXKSO-1626
Improvements to prevent PCIe lockup	JXKSO-702 JXKSO-856
Added Companion Configuration Sync for Frequency and TDM Interfaces	JXKSO-1416 JXKSO-1428
Increased NGINX working connections to allow WebUI to load with larger networks	JXKSO-1631
Fixes for PHY Unit Configuration/Status	JXKSO-1333 JXKSO-1515 JXKSO-1668 JXKSO-1578
Improvements to Protection Switching Times for CBUS	JXKSO-1315



Exposed Power Supply Unit (PSU) status	JXKSO-1665
Uboot Upgrade for expanding Configuration Space	JXKSO-1663
PHY Unit Bug Fixes	JXKSO-1333 JXKSO-1515 JXKSO-1668
Alarm LED based on Severity	Improvement
Alarm LED WAN improvements	Various Improvements
Added New PSU Alarms: current ,PSU temp, AC current	Improvement
Added two more instances of Link Down alarm	Improvement
Added User-configurable Alert and Fail Thresholds for WAN ports' Rx Power	JXKSO-1580
Added Alarm Support for Mismatched Access Cards	JXKSO-1579 JXKSO-1281

LIMITATIONS

The following is a list of known limitations related to JPAX firmware package 1.14. 24428

- Loss of power to the node is not reflected as an alarm on the nodal alarm contacts
- WAN port connectivity table may not instantly reflect Node Name changes
- The presently available iDS0 level units are recommended to be installed in Slots 9 to 14. This limitation will be addressed in the next release of these units.



ENGINEERING RULES ASSOCIATED WITH JUNGLEPAX OPERATING MODES

1. GE allows for a mixture of firmware release 1.12a, 1.14 and 1.14a in the same network. Ideally, all nodes within a JunglePAX network must be running the same firmware package.

FIRMWARE UPGRADE PROCEDURE

Contact GE technical support team for instruction on upgrading the unit firmware. Also, refer to GE's Technical Practice and Installation Manual (TPIM) for instructions on upgrading the unit firmware.

CONTACTS

For additional details or technical assistance, you may contact:

Customer Technical Service

Burnaby, BC Canada

Phone: 1-604-421-8610

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