90000

JUNGLEPAX – RELEASE NOTES

Firmware Package p/n	90000-01
Version:	1. 28.34161
Release Date:	June 30th, 2026
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
- Advanced NMS (p/n 90000-50, -50/G, -51, -50/G) versions 8.3.2, 8.4.5 or 8.5.0

DOCUMENTATION CONTROL

Document Version 1.00	PR 1.28.34161	February 06th, 2026

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

JPAX Firmware Package 1.28.34161

- CHASSIS, p/n 90001-01
    - Comprised of Backplane, daughter-card and mechanical
- CORE Module, p/n 90010-01

NMS	jpax_nms.itb	version=1.28
DP	jpax_dp.itb	version=1.28
FPGA	jpax_fpga.itb	version=1.24
UBOOT	jpax_uboot.itb	version=1.07

- ACCESS CARDS

EF-4A	ac9020001.bin	version=2.01.16
EC-4A	ac9020101.bin	version=2.01.11
T1E1-4A	ac9030002.bin	version=2.01.08
CBUS-4A	ac9030101.bin	version=2.01.08
C3794-1A	ac9036001.bin	version=2.01.15
C3794-4A	ac9036002.bin	version=2.01.15

C3794-1A-FPGA	af9036001.bin	version=1.13
C3794-4A-FPGA	af9036002.bin	version=1.13
DR-1A	ac9035001.bin	version=2.01.03
DR-4A	ac9035002.bin	version=2.01.03
DR-1A-FPGA	af9035001.bin	version=1.08
DR-4A-FPGA	af9035002.bin	version=1.08
G703D-4A	ac9036601.bin	version=1.00.00
G703D-4A-FPGA	af9036601.bin	version=1.03
DTT-2A-01	ac9034101.bin	version=1.14.00
DTT-2A-03	ac9034103.bin	version=1.14.00
DTT-2A-05	ac9034105.bin	version=1.14.00
DTT-2A-01-FPGA	af9034101.bin	version=1.06
DTT-2A-03-FPGA	af9034103.bin	version=1.06
DTT-2A-05-FPGA	af9034105.bin	version=1.06
XTDM-8A	ac9030801.bin	version=1.00.21
XTDM-8A-FPGA	af9030801.bi0	version=1.05
XTDM-8A-FPGA	af9030801.bi1	version=1.03
AC_BOOT08	ab90xxx08.bin	version=1.09.00
AC_BOOT50	ab90xxx50.bin	version=1.09.00
AC_BOOT24	ab90xxx24.bin	version=1.02.03

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 NMS 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 NMS, 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 the 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 NMS and DP firmware images
- Extracting/verifying/flashing FPGA images to serial flash
- Configuring system memory map for all peripherals
- Storing default 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 different user applications to support the nine types of access units

- 4-port Ethernet Optical (SFP),
- 4-port Ethernet Copper (RJ-45),
- T1/E1,
- CBUS,
- xTDM,
- 1 & 4-port C37.94
- 1 & 4-port Direct Relay unit supporting RS232 (up to 4 ports) and G.703 (1 port)
- 4-port G.703, and
- 48/130/250VDC Direct Transfer Trip modules

RELEASE DETAILS

SUMMARY - NEW FEATURES (1.28)

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 1.28 new features

1. No new features added. This release provides a fix for the most critical and major bugs that affected the performance of JPAX in larger network setups. The fixes addressed WebUI refresh speed and alarm reporting functionalities. It also removes SFP Rx power as a trigger for the protection switching engine.

RESOLVED LIMITATIONS

The following is a list of limitations that have been resolved in JPAX firmware package 1.28.31594

Case	Title	Severity
CICLCS-317	Unhook SFP Rx Power from the Protection Switching Engine. Ignore invalid values of SFP Alarm bit fields.	Medium
JXKSO-1278	Improved performance for dsiplaying the node list.	Medium
JXKSO-1631	WebUI unable to load with larger networks: changed the worker connection values to 2048.	Medium
JXKSO-3685	Heavily loaded cores can reboot twice]: resolved this issue by changing the timeout settings from 90 to 180s.	Medium
JXKSO-3687	Tunnel Data providers saves global ID upon config fail: added new yang model validation that now prevents invalid tunnel from getting configured in HW and instead it aborts the operation cleanly.	Medium
JXKSO-3688	Bogus iCBUS_LOS alarms can be present after a reboot: Resolved.	Medium
JXKSO-3706	BulkT1E1 SONET/SDH service's VTU drop-down list allows selection of non-xTDM VTUs: Resolved this issue where all VTUs are listed (the ones that has xtdm checked and unchecked) during service configuration that is only using xtdm access port.	Medium
JXKSO-3679	High Number of Conversion services impact iDS0 iCBUS AIS flags upon service creation: Resolved this issue which prevented all TDM bundles that exceed service #32 from switching upon fiber/tunnel break.	Medium
JXKSO-3682	iCBUS AIS Flags not Raised during Protection Switching Event: Resolved this issue by updating the cached tdm ports to tunnels table after every tunnel edit.	Medium

JXKSO-3709	Access card alarms are masked when cards installed in slot 14 and 16] Resolved this issue where alarms from slot 14 and 16 are masked from the installed access cards	Medium
JXKSO-3708	Newer host key algorithms are not supported by JPAX (for Telenium): Added support for ssh-ed25519 host keys.	

ENGINEERING RULES ASSOCIATED WITH JUNGLEPAX OPERATING MODES

GE allows for a mixture of firmware release 1.14a, 1.16d/e, 1.18, 1.18a/b, 1.20, 1.24, 1.26 and 1.28 in the same network; however, network visibility is compromised when running multiple different firmware versions in the same network. Traffic is expected to work but GE can't guarantee highest performance when configured across differing firmware.

Ideally, all nodes within a JunglePAX network should be running the same firmware package.

FIRMWARE UPGRADE PROCEDURE

Contact GE technical support team for instruction on upgrading the unit firmware. There is currently no cost to customers to upgrade their JunglePAX firmware to release 1.28.

CONTACTS

For additional details or technical assistance, you may contact:

Customer Technical Service

Burnaby, BC Canada

Phone: 1-604-421-8610

Lentronics.TechServices@gevernova.com