

# 90000

## JunglePAX – Release Notes

Firmware Package p/n 90000-01  
Version: 1.24.31594  
Release Date: Nov 22<sup>nd</sup>, 2022  
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 1.24.31594	November 22 <sup>nd</sup> , 2022
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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

#### JPAX Firmware Package 1.24.31594

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

NMS	jpax_nms.itb	version=1.24
DP	jpax_dp.itb	version=1.24
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 (1.24)

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 1.24 new features

1. Ability to pass Ethernet traffic over an Evolution-to-JPAX WAN link in a non-redundant (single-homed) or redundant (dual-homed) fashion
  - Implements a new LER tunnel type ("Evolution") that originates on an Evolution unit and terminates at the Core card residing at the far end of the Evolution-to-JPAX WAN link.
  - Implements a new service type (Local Ethernet), which is used to switch Ethernet traffic between ports at the same JPAX node. This type of service does not require tunnel configuration.
  - Implements a proprietary pseudo-STP (PSTP) protocol to prevent loops in Ethernet domains established in redundant (dual-homed) JMUX-to-JPAX Ethernet-over-Evolution configurations. The protocol guarantees fast (<50 ms) switching time.
2. Ability to detect an STP/RSTP/MSTP Topology Change Notice (TCN) flag and flush the MAC address table upon its receipt. This feature allows for supporting redundant Ethernet links to external switches / Ethernet domains.
3. Ability to transport bulk T1/E1 services originated on xTDM-8A card's ports over the SONET/SDH transport layer. Such T1/E1 signals may be destined for remote JPAX or JMUX nodes. Only xTDM cards in TDMoS mode (installed in slots 8-12) support this function.
4. Ability to transport of Nx64kb/s services originated on xTDM-8A card's T1/E1 ports over the MPLS transport layer. These services may be destined for remote JPAX or JMUX nodes. Only xTDM cards in TDMoP mode (installed in slots 1-7, 13, 15) support this function.
5. WAN#1 and WAN#2 ports now support 10GBase-R (non-WIS) format in addition to the WIS format.
  - Both WAN#1 and WAN#2 ports are simultaneously configurable for WIS (default) or non-WIS mode. The latter is used to establish 10G WAN connectivity to non-JPAX MPLS equipment.
  - WAN encryption is supported in both WIS and non-WIS modes.
6. WAN#4 and WAN#6 ports now operate in 1GBase-R (non-WIS) format. These ports do NOT support WIS mode anymore. These ports must be used when establishing 1G WAN connectivity to non-JPAX MPLS equipment or Ethernet microwave radio equipment.
  - WAN encryption is not supported on these ports.
  - These ports cannot be connected to Evolution cards.
7. WAN#3 and WAN#5 ports are individually configurable for WIS (default) or Evolution mode. The latter is used when the port is connected to the Evolution unit.



8. Supports Ethernet Synchronization Message Channel (ESMC) frames on non-WIS port. These frames are treated as priority 7 frames.
9. Introduces “Restore Time” parameter for ports in non-WIS mode. It determines how long the data received from a reestablished WAN signal will be suppressed after a Loss of Signal condition has been cleared. Default is 2 sec.
10. Introduces ‘Far-End MAC Learning Enable’ parameter (default is ‘true’). Must be set to ‘true’ when a WAN port in non-WIS mode is connected to non-JPAX equipment.
11. Introduces Tunnel Type parameter for LER tunnels. Configurable for Normal (default), Local, NMS, Evolution. (Replaces the ‘Local Tunnel’ parameter, configurable for True or False.)
12. Ability to carry inter-JPAX NMS data as a dedicated P2P-Ethernet service (“NMS service”) over an MPLS tunnel dedicated for that purpose (“NMS tunnel”).
  - Introduces ‘NMS Tunneling’ parameter (default=‘false’) for WAN ports in non-WIS mode whose NMS Enable is set to ‘true’. Must be set to ‘true’ to support inter-JPAX NMS data over a WAN port in non-WIS mode.
  - Introduces “NMS tunnel” (a new LER tunnel type) as a tunnel originating on a near-end JPAX non-WIS WAN port and terminating on a far-end JPAX non-WIS WAN port operating at the same rate.
    - There may be only one NMS tunnel defined per eligible WAN port. (Eligible means a port in non-WIS mode with NMS Tunneling enabled.)
    - There may be only one NMS Service defined per NMS tunnel.
    - Non-NMS services are not allowed on NMS tunnels.





## KNOWN LIMITATIONS

The following is a list of known limitations related to JPAX firmware package 1.24.31594.

Case	Title	Severity
JXKSO-2227	Interfaces: Remove remote-framer and local-framer loopbacks.	Normal
JXKSO-2503	Browser issue with self-signed JPAX certificate	Normal
JXKSO-2683	Inappropriate position of vertical slide bar after opening MP-Ethernet QoS window	Normal
JXKSO-2915	Sync-In Unit: Linux's L/R-Sync-In force-rx-ssm-sonet value is initially inconsistent with VxWorks setting	Normal
JXKSO-2919	Cannot enable/disable T1E1 packetizer port with PRBS configurations in same commit	Normal
JXKSO-2924	Sync-In Unit: Freq Sync Tab: PLL State reports Holdover instead of Clock Source	Normal
JXKSO-2930	Sync-In Unit: Going to Sync-In Unit Missing and OK states takes a long to time to be reported	Normal
JXKSO-2931	Sync-In Unit: Sync-In Freq LOS and Sync Unit Missing alarms are simultaneously reported in Alarm Engine on Sync-In Unit extraction	Normal
JXKSO-2935	Sync-In Unit: Sync-In Status reports 'Inactive' state	Normal
JXKSO-2985	WebUI/ems_cli: Distribute Firmware Package tab display and certain elements are not compliant to Firmware Tab v0.7.pptx specification	Normal
JXKSO-2988	An SQL database file, eventlog.db, may gradually wear out the flash on the core unit	Normal
JXKSO-3079	E1 PRBS Sync Status does not update on channels higher than Ch.24	Normal



JXKSO-3134	xTDM: Traffic Errors for standalone T1MX using Adaptive Recovery Output Clock Mode	Normal
JXKSO-3155	xTDM: Unit can enter a completely unresponsive state *MONITOR*	Normal
JXKSO-3241	Port Mirroring doesn't mirror from the correct port when certain TDM ACs are configured	Normal
JXKSO-3255	Attaching a service to a different tunnel only takes effect after node reboot	Normal
JXKSO-3394	WebUI does not allow selection of side when creating conversion service	Normal
JXKSO-3441	xTDM: xTDM's Interface -> VTU Status BER and CV counts are not updated	Normal
JXKSO-3514	WebUI: Cannot change an Authorization Role's Functionality prior to committing once selected	Normal
JXKSO-3522	Operators can retrieve User Management information by intercepting HTTP requests	Normal
JXKSO-3523	Operators can view sensitive files and data via CLI	Normal
JXKSO-3525	Nginx update required to patch publicly disclosed vulnerabilities	Normal
JXKSO-3526	Insecure DES3 CBC encryption algorithms configured in ConfD	Normal
JXKSO-3527	Modified firmware images aren't detected as errors	Normal
JXKSO-3534	Restarting Core Card Wipes Alarm Logs in ConfD	Normal
JXKSO-3571	WebUI P2P Bulk T1E1 services Does Not Have 1:1 Protection Listed	Normal



JXKSO-3572	Incorrect Mux Position After Core Reboot for MP Ethernet Unprotected	Normal
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## RESOLVED LIMITATIONS

The following is a list of limitations that have been resolved

Case	Title	Severity
JXKSO-784	Single node isolated from Node List	Normal
JXKSO-835	PSU voltage alarm name is unclear	Normal
JXKSO-1217	Dead Companion Unit alarms at a node after rebooting Core Card	Normal
JXKSO-1411	R3.00-5.2.3 Add port mirroring	Normal
JXKSO-1418	R3.00-5.2.1 Ability to configure aging time	Normal
JXKSO-1568	Ensure quick update of MAC table after STP topology change	Normal
JXKSO-1646	Session Idle Timeout in WebUI can be configured past acceptable idleTimeout values	Normal
JXKSO-1924	Unframed E1 may latch an RAI warning in the alarm engine	Normal
JXKSO-2044	Failover service does not switch if secondary tunnel is another service's primary tunnel	Normal
JXKSO-2232	Unable to delete iDSO services that never had an access card inserted (final fix)	Normal



JXKSO-2318	Long traffic outage with core card reinsertion for 1+1 and 1:1 services	Normal
JXKSO-2320	Add validation when deactivating an active TDMoS CBUS port	Normal
JXKSO-2405	Cannot Access WebUI/ems_cli after Core Card reboot	Normal
JXKSO-2465	iDSO: Shared memory status is inconsistently displayed	Normal
JXKSO-2521	Channel Offset by one in E1 observed with all PRBS patterns	Normal
JXKSO-2590	"Missing DS0 Level Unit" alarm not cleared under access card status in WebUI	Normal
JXKSO-2597	Mux switch commands may be sent to wrong access cards	Normal
JXKSO-2655	Configuring TDM card type requires active bundles to be deleted from correlated port	Normal
JXKSO-2719	STM-X CBW connections are shown as Invalid	Normal
JXKSO-2934	Core Unit may not boot properly due to PCIe monitor failure at startup	Normal
JXKSO-2941	WebUI: cannot tunnel to other CCs in the network via nodelist	Normal
JXKSO-3040	WAN port displays OK when its SFP is missing	Normal
JXKSO-3076	T1E1 PRBS Insert Error causes Application Communication Failure	Normal
JXKSO-3093	iDSO: Pre-existing configurations in an iDSO Access Card do not get cleared in slots that have a different iDSO Access Card offline configuration	Normal



JXKSO-3094	iDSO: Inserted iDSO Access Cards must clear their configurations when installed in unprovisioned or mismatched iDSO slot configurations before traffic flow is allowed	Normal
JXKSO-3107	WebUI: LAN Interface Traffic Monitor "Clear All", "Clear Peaks" button doesn't do anything when clicked	Normal
JXKSO-3120	Restrict same tunnel usage on primary and secondary at the same time for shared services	Normal
JXKSO-3121	xTDM: P2P-Bulkt1E1 services is missing Output status	
JXKSO-3145	Using service ID 32767 to create TDM services results in Aborted: Resource Denied	Normal
JXKSO-3162	T1E1: Unframed Adaptive Recovery allows disabling of its T1E1 port without first removing the p2p-bulkt1e1 service	Normal
JXKSO-3168	xTDM: Pre-existing bundle configurations may not be deleted from xTDM EEPROM when ports are not used in new configuration (configuration replay)	Normal
JXKSO-3169	Implement "Off on Disconnect" feature	Normal
JXKSO-3172	xTDM: Jitter Buffer Underrun alarms and warnings can be persistently declared for p2p-bulkt1e1 services	Normal
JXKSO-3176	WebUI + CLI: Bundle diagnostic alarms are displayed as "warning" instead of "Alarm"	Normal
JXKSO-3190	Reinstate Management Plane Only Reboot	Normal
JXKSO-3192	Link trace table does not display correct node-number for first node	Normal
JXKSO-3201	Process restartability not enabled in 1.20 release	Normal
JXKSO-3221	BW Utilization checkbox removal	Normal



JXKSO-3224	Implement cli_ac_reset equivalent in CLI/WebUI	Normal
JXKSO-3243	T1E1-4A: E1 mode missing channel 25-31 from services	Normal
JXKSO-3250	WebUI: Unit Type text for Slot 15 ef-4a is inconsistent in comparison to other slots	Normal
JXKSO-3253	TDMoP 1:1 service can select the same tunnel as Primary and Secondary	Normal
JXKSO-3258	Alarm severity mismatch between Service Status and Alarm Log	Normal
JXKSO-3296	Card requests to revert CBUS @TDMoS service upon reinsertion even if in LOS state	Normal
JXKSO-3317	Access board warning and SFP port warnings are not marked correctly when extracted from access cards	Normal
JXKSO-3319	Conversion: Enabling stitching of unhealthy tunnels to healthy VTUs doesn't result in forced VTU RDI towards JMUX	Normal
JXKSO-3323	Conversion: Tunnel to VTU synchronization lost when tunnel is down while stitching configuration is toggled and results in a latched force CH AIS and VTU RDI	Normal
JXKSO-3332	WebUI: User cannot select Port Type for Nx64k services	Normal
JXKSO-3334	Change Profile 2 priority for iCBUS alarms to Major	Normal
JXKSO-3342	WAN B1/B3 alarms shown when SFP is missing	Normal
JXKSO-3374	BFD Alarms not Raised When BFDs are Down	Normal
JXKSO-3381	Cannot configure LER through WebUI	Normal



JXKSO-3383	DP fails to stitch LER to VT	Normal
JXKSO-3384	xTDM (TDMoP) traffic completely out when inserting another xTDM AC with identical configurations in the same chassis	Normal
JXKSO-3403	CBUS Port 4 TDMoS Does not Revert Mux when Core is brought back Online	Normal
JXKSO-3405	Core Card's VTU Drop Rx Test Bytes are not displayed	Normal
JXKSO-3406	Core Card's VTU Drop Status displays constant BER and inconsistent CV counts	Normal
JXKSO-3408	WebUI: Cannot delete Local-Ethernet services from within the Local-Ethernet accordion	Normal
JXKSO-3409	LINK_DOWN alarm not cleared or set after switch port enabling	Normal
JXKSO-3410	Tunnel configuration fails for Local Tunnel creation and p2p-nx64k Conversion service can't be associated to it	Normal
JXKSO-3411	Cleared VT chan AIS alarm on one of 2 services for same MPLS tunnel cause an early revert on MPLS tunnel ( clear forced LDI)	Normal
JXKSO-3412	MPLS Tunnel LDI and RDI insertion is broken when VT alarm is cleared or activated	Normal
JXKSO-3414	VTU Thru Status display shows AIS constantly	Normal
JXKSO-3415	Toggling Interface's Default VLAN ID results in untagged traffic loss	Normal
JXKSO-3434	Editing a WAN port in VT through from local to companion port does not configure registers correctly	Normal
JXKSO-3439	Ethernet over Evolution Application: Switching time increases for each additional By Port and VLAN service using TCN flush per VPN	Normal



JXKSO-3447	WebUI: Blank parameters are filled with "undefined" text	Normal
JXKSO-3449	Node list update can fail if there is a core deletion	Normal
JXKSO-3456	WebUI VTU Drop doesn't display VTU Label Mismatch with the appropriate colouring in the VTU Drop accordion	Normal
JXKSO-3459	xTDM/T1/E1/CBUS: 1+1 services' Rx priority uses the wrong side if primary tunnel is configured on a broken path	Normal
JXKSO-3460	Smart SFP parameters improperly displayed in EF-4A Inventory and Interface views	Normal
JXKSO-3476	LER Tunnel: Cannot configure NMS tunnels via WebUI	Normal
JXKSO-3477	Left Core Extractions Can Lead to Long Outage Times for MP-Ethernet Service	Normal
JXKSO-3482	Remove extraneous parameters from LERs set as Tunnel Type: NMS	Normal
JXKSO-3504	Creating a new Authorization Role without any Allow/Deny options selected does not raise a validation error	Normal
JXKSO-3505	Local Ethernet traffic stops completely when Rx Priority is set/switched to the right CC	Normal
JXKSO-3506	xTDM: Insertion of xTDM cards into offline configured slots results in configuration errors for unprotected services	Normal
JXKSO-3507	Unprotected Evolution configured tunnels display BFD_LOC with an alarm entry	Normal
JXKSO-3510	Disallowing User/Security/Time Management capabilities while allowing other functionalities under Privileges will incorrectly raise a validation error	Normal
JXKSO-3511	WebUI: Adding a new Authorization Role with User/Security Management disabled will hide User/Security Management configurations for the current user's WebUI session	Normal





JXKSO-3513	xTDM: Inserting a preconfigured xTDM unit into a slot only provisioned for Configured Unit Type = xTDM-8A can delete bundles of in-service xTDM unit	Normal
JXKSO-3515	xTDM: Inserting a pre-configured xTDM unit whose stored global service IDs match those of existing non-xTDM units results in traffic loss	Normal
JXKSO-3516	Newly inserted CCs with healthy WAN connections will appear as Unavailable to other CCs in the Node List until a tunnel is established	Normal
JXKSO-3517	xTDM: Bundle settings are not initialized in xTDM EEPROM when deleting TDMoP services	Normal
JXKSO-3518	xTDM: Wiping Core Cards with region setting configured for E1 causes xTDM bundles to not be deleted.	Normal
JXKSO-3521	Date and Time can be set by Operator	Normal
JXKSO-3536	MP Warning Alarms Not Cleared After AAA Distribution On No-Root Builds	Normal
JXKSO-3538	Changing Local Tunnel Name Results in Resource Denied Error	Normal
JXKSO-3539	Changes to TDMoP Port Type aren't reflected once set to an option other than NoType	Normal
JXKSO-3540	Expose jitter buffer reset in eMS	Normal
JXKSO-3544	Enabling another 10G Non-WIS WAN port causes Node List and tunnels to go down that use this 10G Non-WIS WAN port	Normal
JXKSO-3545	Synchronization and SSM doesn't work when using 10G Non-WIS ports	Normal
JXKSO-3546	Multiple NMS services can be configured on one NMS tunnel	Normal
JXKSO-3547	Encryption container/keypath is hidden for 10G Non-WIS WAN ports	Normal



JXKSO-3552	Consistent Frame Drops over Ethernet Traffic on 10G Non-WIS	Normal
JXKSO-3556	Cannot enable encryption on 10G Non-WIS WAN ports via WebUI/CLI	Normal
JXKSO-3566	CBUS-4A: JMUX DS0 Channels aren't displayed in DS0 Channels Tab of CBUS-4A GUI	Normal
JXKSO-3567	CBUS-4A: JMUX 86442-01 DTTRCV DS0 displays Primary Channel value incorrectly in DS0 Channels tab	Normal
JXKSO-3570	CBUS-4A: Signal Status can latch a 'DS0 Level Unit Added' warning with 86441-01 JMUX DTT-XMT units	Normal

**Note 1:** The hybrid networks must load JIF-Share M2 or CDAX units with 2.04c and 3.12f firmware respectively for those units whose VTs face an Evolution Unit.

**Note 2:** For stitched conversion services, the JMUX VT-level cards must use SOY as the switching mechanism is now VT-RDI.

**Note 3:** JMUX Evolution Unit must be upgraded to Version 2.01r.

**Note 4:** A VistaNET 5.14.17201 is required to support the Evolution Unit v2.01r and to properly support a programmable Evolution Mode for CDAX (3.12f) and JIF-Share M2 (2.04c). Note that the latter is also supported by VistaNET 5.12.17159 patch.

#### 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 and 1.24 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 1.24.

### CONTACTS

For additional details or technical assistance, you may contact:

Customer Technical Service

Burnaby, BC Canada

Phone: 1-604-421-8610

[Lentronics.TechServices@ge.com](mailto:Lentronics.TechServices@ge.com)