telestream

SPG9000

Timing and Reference System

Release Notes

This document supports firmware version 3.1.1

www.telestream.net

D00013575G

Contact Telestream
Telestream LLC
848 Gold Flat Road
Nevada City, CA 95959
USA

For product information, sales, service, and technical support:
Worldwide, visit www.telestream.net/telestream-support/video/support.htm to find contacts in your area.

Release Notes

This document describes the new features, fixes, improvements, and limitations of firmware version 3.1.1 for the SPG9000 Timing and Reference System.

Product Updates

Upgrades   All SPG9000 products are eligible for upgrading to 3.1.1 using the standard upgrade process. All customers with earlier releases are strongly encouraged to upgrade as soon as possible to take advantage of the bug fixes and stability improvements.

Downgrades   There are currently no downgrades possible from version 3.1.1 to 3.1 or earlier.

New Features

Version 3.1.1 is a patch release with many fixes and improvements, but also has some new features that are not yet described in the SPG9000 User Manual:

- In the Network Settings section of the System menu, there is now an option to enable or disable Reed-Solomon Forward Error Correction (RS-FEC) for 25 Gbps SFP28 modules for the IP 1 and IP 2 ports.

  By default, RS-FEC is enabled, and this setting is appropriate for most situations. The SPG9000 uses the IEEE 802.3by Clause 108 standard for RS-FEC, which is supported by most network switches for 25G ports. If the link LEDs are not lit when the fiber is connected to the switch, try disabling RS-FEC on both the SPG9000 port and the switch port.

  The RS-FEC setting only applies to 25 Gigabit Ethernet, so the checkbox is not shown for the 1G/10G PTP ports and is not selectable when 10 Gbps SFP+ modules are used for the IP ports.

▼ Network Settings

Addresses

	Enable	SFP Module	RS-FEC	MAC Address	DHCP	IPv4 Address	Subnet Mask	Gateway
PTP 1	☑	10 Gbps / 850 nm		00-90-56-01-10-01	☐	172.16.1.50	255.255.255.0	172.16.1.1
PTP 2	☑	10 Gbps / 850 nm		00-90-56-01-0f-ab	☐	172.16.2.50	255.255.255.0	172.16.2.1
IP 1	☑	10 Gbps / 850 nm	☐	00-90-56-17-41-60	☐	172.16.3.50	255.255.255.0	172.16.2.1
IP 2	☑	25 Gbps / 850 nm	☑	00-90-56-17-41-61	☐	172.16.4.50	255.255.255.0	172.16.2.1

- From the front panel **SYSTEM : INFO** menu, additional submenus have been added for **HOST ID** and for **SERIAL NUMBER**. These values can be useful when identifying the SPG9000 unit when working with Telestream Technical Support.

- The System Information section of the System menu now includes a summary of the network settings for the management interface. These are read-only values on the web interface.

To change the settings for the management interface, you can use the **SYSTEM : NETWORK : MGMT** submenus from the front panel. The hostname, domain name, and DNS server address can also be changed using the HTTP API, by sending a PUT message to the /system/network endpoint. API requests can be sent from the web interface by clicking on the "API Documentation" in the top banner.


Resolved Issues and Improvements

This firmware release has resolved the following issues and makes the following improvements to the previous 3.1 release.

GNSS The SPG9000 firmware update now includes an update for the firmware of the internal GNSS receiver. A small number of SPG9000 systems were incorrectly shipped from the factory with version 1.00 of the GNSS firmware, and these systems occasionally unlocked from the GNSS signal. After upgrading to SPG9000 firmware version 3.1.1, the GNSS receiver will be upgraded to its firmware version 1.02.

With the receiver update, the SPG9000 upgrade process will take an extra 7 minutes to complete, for a total upgrade time of 20-30 minutes. You will see a message during this process that shows the progress of the receiver update:
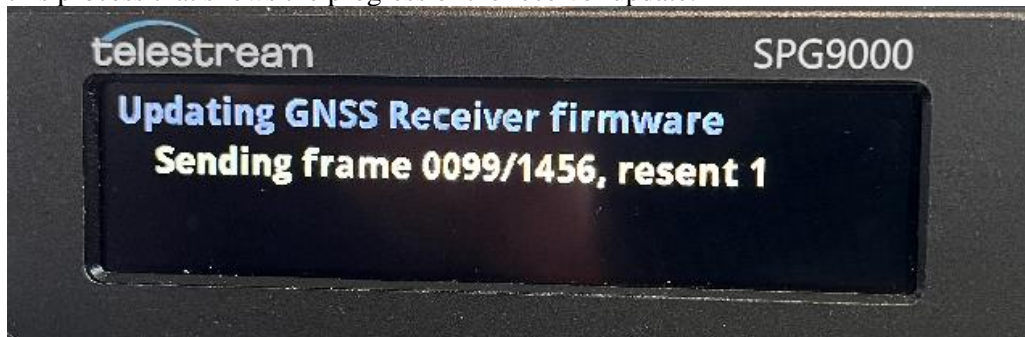
It is not unusual to see a small number of resent frames. The SPG9000 may reboot itself a number of times during its upgrade. After the SPG9000 update has completed and you see the **STATUS** menu from the front panel display, you must cycle the AC power to restart the SPG9000 once again. In some instances, the GNSS receiver update may need to restart the process after the reboot. If it does, please wait until the **STATUS** menu appears again and repeat the power cycle process.

Resolved Issues and Improvements

Previously if the number of satellites in view was greater than 72, then the web interface might report the wrong number of satellites or no satellites. This has been fixed.

PTP When the Reference source is PTP Follower and the second PTP port is configured as a Leader on a different network or domain, its Time Source will now be correctly reported as PTP instead of Internal Oscillator.

The PTP Status information for an instance configured as Ordinary Clock will now show both leader and follower status information in all states.

When the system is re-started, the displayed PTP leader status will not get stuck showing "Initializing" when it has already changed to Active or Passive state.

The correct Announce message interval will be used after changing the PTP profile.

Adding or changing IP addresses in the unicast discovery list for a follower in Unicast mode will now take immediate effect.

System The internal voltage settings and alarm thresholds have been updated for the power supply fan speeds, so spurious fan speed faults on the Status display should no longer be reported.

Recalling a partial preset file (i.e. a JSON object with a subset of configuration settings) will no longer cause the reference clock to be updated.

Syslog messages from the internal processor (used for PTP-related log messages) will no longer show an IP address of 169.254.0.1 but instead show the hostname of the SPG9000 with a suffix of "-2".

IP Packets transmitted from the IP 2 port will no longer have a single-bit error in the IP header checksum for ST 2110-30 audio streams and ST 2110-40 data streams.

The audio "click" feature will now function for ST 2110-30 audio streams as it does for SDI embedded audio channels.

Test patterns for video sources 5-8 (used only for IP streams) will no longer be shifted one pixel left compared to the same patterns used for video sources 1-5 (used for both SDI and IP outputs).

ST 2110-30 audio channel order will no longer change if the SFP module for the IP port changes between 10G and 25G interface speeds.

The time code frame rate for ST 2110-40 data streams will be correct for all formats, and the RTP clock rate will always be 90000 Hz.

RTP timestamps for transmitted packets are now set correctly, independent of the Mode (Leader or Follower) of the PTP ports.

Resolved Issues and Improvements

NMOS   The SPG9000 can now register using a port number other than 80 (HTTP default). Append a colon and the desired port number to the IP address or hostname in the text box for the Manual Discovery setting, such as "10.1.2.3:5000" to use port 5000.

NMOS will now operate when HTTPS (on port 443) has been configured for the SPG9000's web interface and API. However, NMOS will continue to use HTTP on port 80 for its own APIs. In a future release, the SPG9000 will support AMWA BCP-003-01 Secure Communication in NMOS Systems with an independent setting from the HTTP/HTTPS setting for the management interface.

The SPG9000 will no longer send periodic POST /resource requests to the registry, but will instead send the requests only when there is a configuration change to the sender, source, or flow resource.

When NMOS is stopped from the web interface, the SPG9000 will send DELETE requests for its resources so that the registry is immediately updated. In version 3.1, the registry deleted the resources itself after the garbage collection interval of missed heartbeat messages.

The NMOS process on the SPG9000 will no longer stop when it receives a high rate of incoming API requests.

Version 3.1.1 includes many optimizations to the NMOS process for improved message processing performance. The IS-05 bulk sender updates will no longer timeout, for example.

The /self endpoint in the Node API will correctly use a PTP clock type with the correct GM ID instead of using the "internal" clock type.

The /self endpoint in the Node API will report an array of "interfaces" with the "port_id" (MAC addresses) of the two IP ports ("eth3" and "eth4") instead of reporting the information of the management interface.

The NMOS Services checkbox in the Management Settings section of the web interface will correctly show the current status of the NMOS process.

General Limitations

This firmware release has the following general limitations.

GNSS   GNSS does not lock while system is in mobile mode and moving.

The web interface reports that GNSS is locked 10-15 seconds too soon when in Jam Phase holdover recovery mode.

If the GNSS signal quality is low, especially if multipath is present, then the UTC offset may shift and not recover for 12.5 minutes. This was more prevalent in the 1.0.1 release and can be detected by monitoring the syslog output. Software changes in the 2.0 release reduce the probability of this happening. To avoid this, first ensure the GNSS signal is strong. Secondly, configure the SPG9000 to defer leap second changes to a local time at least one hour after UTC midnight.

PTP   1000BASE-T SFP modules from some vendors may report a speed of 2 Gbps, which will appear as an error in the Network Settings on the web interface. The error indication is strictly cosmetic, and the SFP will correctly operate at 1 Gbps.

When using Dynamic Priority with multiple SPG9000s that are powered-on at the same time, the preferred GM (as determined by the configured Priority 1 and Priority 2 values) may not start as the active leader, although GM changes are minimized on system startup Use the Restore function if you wish to reset the active leader to the preferred GM.

SDI   SDI timing adjustment is scaled wrong for some formats, so the amount requested is not equal to the actual offset of the signal.

SDI 3G Level B 47.95 and 48Hz signals are not fully correct.

6G-SDI outputs with 1080-line image size, frame rates of 47.95, 48, 50, 59.94 or 60 fps, and sample structures other than 4:2:2 10-bit are not fully tested due to equipment limitations. These are provided on a best effort basis only. Pathological signals are not correct.

IP   The IP ports may incorrectly report a link down condition. To clear the error, disable and re-enable the ports from the Network Settings menu.

For UHD and 4K formats using the default values, the IP streams may slightly exceed the upper limits for the ST 2110-21 virtual receiver buffer model. This can be corrected by adjusting the source timing to delay the video one or two lines, or by decreasing the TR_{OFFSET} value in the receiver by a few microseconds.

NMOS   NMOS should be disabled and re-enabled if the system's domain name is changed.

General Limitations

System   USB memory devices may erroneously report being damaged after removal from the SPG9000 and mounting on another computer.

Front panel display updates may briefly change to an intermediate setting before displaying the correct setting.

The system may not function properly immediately after a firmware upgrade when a new PLD is loaded. Always power-cycle the system after performing a firmware upgrade.