Looking Ahead to a Productive 2018

In this issue of our newsletter – the first of an exciting new year – we wanted to take a step away from our higher-capacity systems like the G-SMU or the G-400 Series, and introduce you to one of our smaller products that is a robust powerhouse of its own: the G-202 Remote Radio Unit.

Don’t let the name fool you – the versatile G-202 can do a lot more than just connect a remote radio. It gives you GPIO, RS-232 and an inexpensive radio repeater, all in one compact and easy-to-use product.

The G-202 might just be the cost-effective solution you’ve been looking for.

Thanks to several of the software upgrades we made in 2017, it’s easier than ever to include a G-202 in a wide area or expanded system using the G-SMU, the G-408/R or G-404 to increase capacity. Of course, there were other upgrades as well that improved our modules, our displays and your experience. Whether large or small, all of these upgrades – and the ones to come in 2018 – add value.

Usually, we put all our Fun Facts on the last page of our newsletter, but we decided to spread them around a bit this time for fun. You can access full explanations to all Fun Facts questions and read prior newsletters on our website: http://www.global-comm-tech.com

Fun Fact #1: Network Voice Protocol (NVP) specifications were designed for ARPANET in 1977, but technical shortcomings kept it from working fully to expectations. What is the functional, modern day equivalent? (Hint: Think network phones.)
The G-202: More Than Just a Remote Radio Unit

Hiding behind the G-202 Remote Radio Unit’s unassuming name and exterior lies an inexpensive, versatile surprise. While it’s certainly true that the G-202 does exactly what you’d imagine – provide access to radios at remote sites – you can use the two built-in radio interfaces, each of which is connected to its own network streaming interface, to make a simple, affordable radio repeater.

When you configure the G-202 as a radio repeater to join two radio systems, you essentially receive audio on one radio and automatically transmit that audio on a different radio, rather than to a remote location. The radios can be on completely different frequencies and/or be from different manufacturers.

Why might you want to do this? Imagine a public utility like an electric power system. When linemen are working, they are elevated off the ground to be at the same height as the power lines. However, they aren’t really working alone. In order to be safe and to do their job well, they need to have contact with the people on the ground and with the other workers stationed elsewhere in the system. You could give them a heavy, unwieldy radio that will be expensive to replace when it’s accidentally dropped. Alternatively, configure a G-202 as a repeater and put it in the lineman’s truck. Attach one side to the radio in his truck, and the other to a low-power radio to match the light, inexpensive one you give to the lineman. Now, all audio will be relayed between the low-power radio and the actual radio system.

Configuring the G-202 as a repeater is easy. Using the web-based configuration, just point the two network streaming interfaces in the G-202 at each other. Audio coming in from one radio is streamed to the second radio, which then transmits it over the air. The network streamed audio never leaves the G-202, so it does not consume any bandwidth.

This type of repeater can be used at fixed sites, but – as with the example of the lineman above – it is also highly appealing in a mobile or a tactical application. The G-202’s low price and compact size make it well suited for transport and for when multiple people need their own repeater, such as a short-range relay station to a radio installed in a work vehicle.

Fun Fact #2: What did one do with a théâtrophone? What technology took its place?
The G-202’s built-in GPIO hardware connection provides two GPIO “Aux-In” and two GPIO “Aux-Out” connections, plus an RS-232 serial port. You can access them using the G-202’s multilingual web interface, giving you control over them from remote locations using a web browser. Alternatively, you can mirror those connections over a network to another G-202 or a G-400 Series GPIO module.

You might consider a G-202 for:

- Remote Device Control – Monitor and/or engage door locks, alarms, temperature, tower lights, air conditions, etc.
- Network RS-232 (Serial) Port – Bridge a serial port over a network for various data purposes like radio control, telemetry, SCADA, etc.
- Pipeline Maintenance – Redundant telemetry monitoring at municipal pumping stations. (The G-202 would also let you communicate with maintenance and/or repair crews over the length of the pipeline).
- Environmental Alarm Monitoring – Monitor sensors for conditions.
New Feature Reminder:
Using the G-202 as Part of an Expanded System

With our recent Expanded System software upgrade, the G-202 can now seamlessly be attached to a G-400 Series product, without consuming virtual modules. Our G-408/R and G-404 Expanded System configuration takes advantage of our networking features to greatly simplify combining multiple systems, even when those systems are not all on the same LAN.

The powerful Expanded System upgrade lets an operator increase capacity by building nets and monitoring connections from one primary G-400 Series system with any of the modules from any of the connected systems, as if they were all local. For example, you can attach a local or a remote G-202 to a G-408, G-408R or G-404 and patch the G-202’s radio interfaces to any other module in the system.

No reason to stop at just one G-202, since an Expanded System can combine up to eight different systems and control up to 36 modules, regardless of what system those modules are on. With so many systems working together, you might wonder about network streaming management and module use/availability. Any required network audio streams for the Expanded System are created automatically, which means virtual modules or network streaming interfaces on connected systems are not consumed.

A true upgrade advantage rather than solely a configuration ease-of-use option, the Expanded System feature on the G-400 Series products lets you get the most value and capacity from every Global intercommunication system, including the G-202 Remote Radio Unit.
What’s the difference between a software update and a software upgrade? Value.
Most of the time, an update just fixes problems. While that’s certainly important, it’s not the same as an upgrade, which provides you – the user – with some additional value. Although we all tend to use the terms interchangeably at times, when you take a look at the list of some of our software updates, it quickly becomes clear that Global is really giving you software upgrades.

When we added Smart Networking Features to the G-SMU, what we really did was make it easier to set up and run more efficiently. For example, since the G-SMU is an advanced, wide area system that dynamically links multiple systems together, it’s vital that its software be capable of handling systems whose network information may change, such as DHCP-based IP addresses. We don’t have space here to go into all of the details, but you can read more about our G-SMU Smart Networking Features in our Network Setup Guide.

Fun Fact #3: The Interface Message Processor (IMP) was conceived of in 1967 to be used with ARPANET. It was a gateway, or a way of joining different types of networks. What is the modern term for this type of device?

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Our upgrades also gave you:

- Web-based serial access console for GPIO modules and the G-202 GPIO interface.
- PSTN module full-duplex feature with sidetone (echo) reduction.
- More Bluetooth module connectivity options and auto-reconnect feature.
- Ability to reject incoming calls for GSM, Bluetooth and SIP.
- DHCP support for the G-202, G-120 and G-110, further simplifying use with the G-SMU.
- GPS module graphical map feature.
We include SIP (Session Initiation Protocol). SIP is a standard that provides telephone-like audio connectivity over a network instead of using physical phone lines. You’re probably familiar with what SIP does if you think about a VoIP (Voice over IP) phone. Since SIP provides network-based audio features, adding it to Global products made perfect sense. Using SIP is optional, but we help by providing multiple robust SIP features for traversing routers (STUN, ICE and TURN). If you decide to use SIP, you can register it with a PBX or a commercial VoIP service provider, or use it directly with SIP devices. Either way, with Global systems, you have SIP functionality for free.

What about DTMF injection? DTMF is short for dual-tone multi-frequency signaling and – as you probably already know – it’s standardized pairs of tones representing each of the numbers 0-9 and the symbols * and #. It’s those tones you hear when dialing a phone. Why is that useful? Think about all of those times you’ve called a number and been told by an automated system to select an option from several choices or dial an extension. That’s why we include DTMF injection on all of our audio modules.

Fun Fact #4: Network Address Translation (NAT) is commonly used today for security and/or to preserve IPv4 addresses, but why was it originally created?

Fun Fact #5: Voice recognition is replacing DTMF tones in some automated menu systems, but this does not work all the time. Why is DTMF still a solid solution?

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Even more upgrades:
- Additional RX/TX display options for tied virtual modules.
- GSM registration time and count to help diagnose signal quality issues.
- A configurable login session timeout.
- GSM module sidetone (echo) cancellation.

Fun Fact #6: In communications, what is the cliff effect?
You can find all our Fun Facts answers and explanations on our website, along with this and previous newsletters.