



## JumboSwitch Adds Extra Benefits To Remote Jungle Mobile Communication Networks

### Situation

A large USA Power Turbine company provided a South American country with large (70 feet) mobile power turbine trailers (MPTT) to generate power for various villages, industrial installations and gas pipelines in remote areas.



Control Cabinet with JumboSwitch 25 Chassis

To help operate and monitor the portable turbines, it needed to create a reliable and durable local communications network between two separate installations that were using three MPTTs up to 2,000 feet apart. Each MPTT was designed to have two separate fiber optic rings of up to 9 nodes. Each node would connect Programmable Logic Devices (PLDs) and controllers.

In addition, these local networks would function as a sub-network that would connect the MPTTs to an existing country-wide SONET backbone network via a gigabit Ethernet interface.

The goal was to install a rugged self-healing ring communications network so that portable generators and gas turbines could be deployed anywhere power was needed. Because the network would be mobile and subject to various configurations, it had to be exceptionally flexible

### Solution

The selection process came down to choosing between a traditional Industrial Ethernet Switch solution and a more robust, value-added solution using the JumboSwitch from TC Communications in Irvine, California.

Although the traditional Ethernet Switch would have satisfied the basic communications requirements of the proposed network, they opted to go with the JumboSwitch. The JumboSwitch offered a more comprehensive solution, especially for future expansion that would likely require more than just Ethernet.

The JumboSwitch also offered a more intuitive and powerful Network Management System and multiple interface card options including TDM-over-IP and VoIP. The JumboSwitch solution cost about 10% more than a standard Ethernet Switch, however the product selection team determined that extra benefits justified the extra cost. Specific benefits to this application included:

- JumboSwitch TCView NMS allows users to monitor the health of the network
- Extensive Network Management System (set card-level thresholds for temperature & power)
- Remote network management capability (worldwide access)
- VoIP virtual PBX (add reliable telephone to remote jungle locations)
- 4 modular chassis options (node configuration flexibility)
- Hot-Swappable, Self-Configuring Ethernet cards (fast, error-proof card changes)

The installation called for deploying the JumboSwitch in two self-healing ring topologies (see Figure 1) providing the communications link to the main SONET ring for plant management and process controls.

Eighteen JumboSwitches were installed at each of 9 network nodes to connect Controllers and PLDs for generators, turbines, compressors and auxiliary communications.

## Case Study

Additional connected devices included Switchgear Protection (Plant Protection); Water Treatment Skid (de-ionized water process for liquid fuel centrifuge); Scrubber Kid (cleans fuel gas); HMI Interface (data from other controllers); and, a SONET Multiplexer (interfaces to the existing SONET OC-3 Ring).

A PMS control panel functioned as the main control point for the ring to provide communications and information gathering for each processor. Each JumboSwitch node consisted of a 2S chassis with a 6-port SFP Ethernet card.

The PMS panel location has an extra 6-port Ethernet card to provide a fiber link to interconnect other rings for centralized management. A 1U chassis provided a Gigabit Ethernet fiber link to interface with the existing SONET ring through a SONET Multiplexer.

To enhance mobility and flexibility, each 9-node ring can be installed singularly or connected as required. Furthermore, rings can be connected over a Single-Mode fiber link at the PMS panel which allows two sub rings to be controlled individually or from a single remote site location.

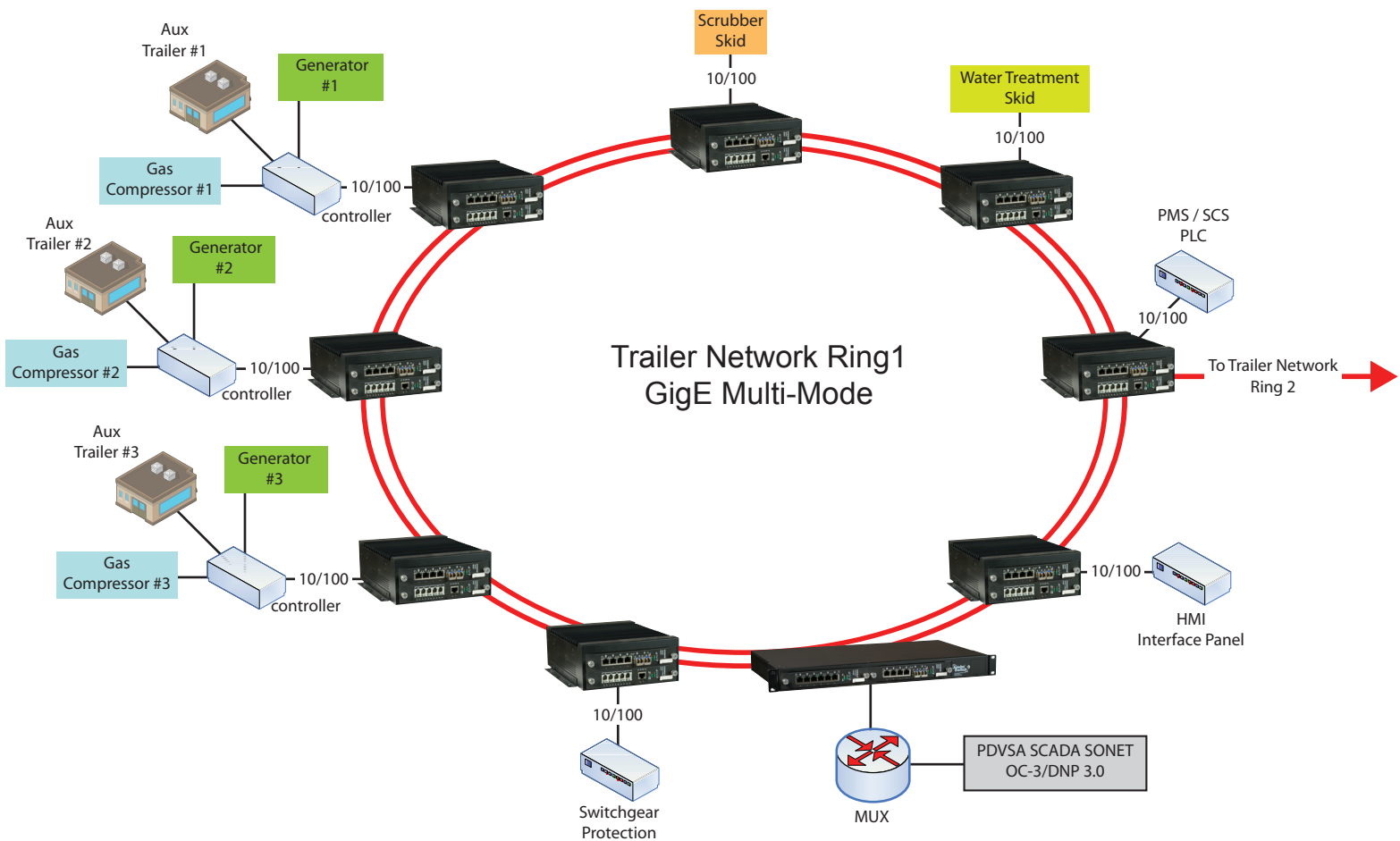


Figure. 1: Mobile Generator Fiber Optic Network SCADA Communications over a Self-Healing Fiber Optic Ring with JumboSwitch 2S and 1U Chassis