

Gas Pipeline Remote Monitoring



GAIL (India) Limited is the largest gas transmission and distribution company in India. Facing challenges such as aging infrastructure and unstable pipeline controls near their New Dehli distribution pipeline, GAIL found it difficult to meet the increasing demand for natural gas in the area. To address these issues, GAIL undertook an aggressive plan to upgrade the pipeline network with an advanced remote monitoring and control system. This remote monitoring system would reduce operating costs by allowing technicians to monitor the aging infrastructure without on-site visits, allowing the company to provide a higher quality of service while reducing engineering expenses, on-site visits and travel time. The development of this solution required a simple wireless communications device that would transmit monitoring data from the field controllers to the operations center.

The project requirements included:

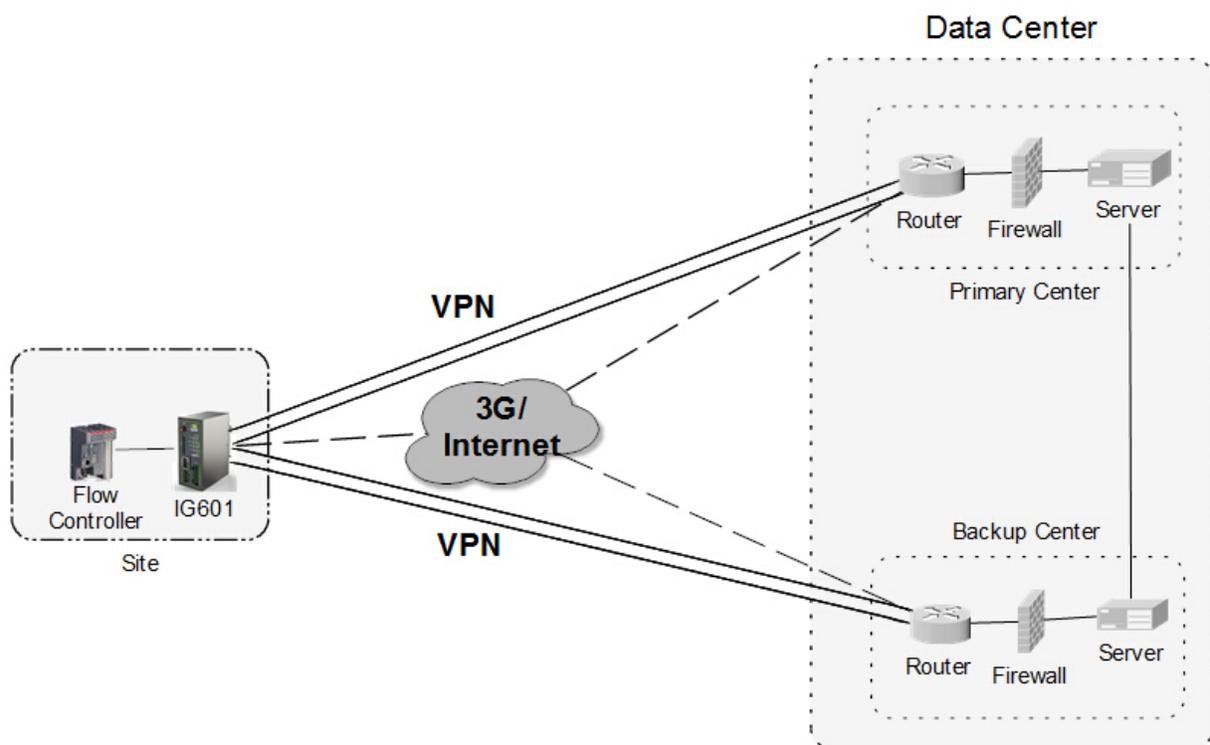
- Data transfer from pipe flow controllers to a SCADA system with high-speed HSPA+ cellular
- IPsec VPN, RS-232 and RS485 serial to provide a secure remote serial connection for a variety of flow controllers
- Longevity with EMC level III and resistance to India's warm, humid climate
- Compact design for control panels

The solution was realized through:

- The **InHand Networks InGateway601** - a compact industrial gateway able to transmit serial data over GPRS, WCDMA and HSPA+. It supports an RS232 or RS485 software selectable serial ports with support for a wide range of serial

RTUs and PLCs. The IG601 monitors the flow controllers and uploads the data in real-time by translating the serial data to standard TCP/IP.

- The field devices were designated for a ten-year lifecycle. In order to provide continued network security for these devices over a ten-year lifecycle, GAIL chose to protect the communications with an IPsec VPN. Two Cisco routers would act as the primary and backup VPN servers to provide high availability while protecting the system from network or power outages.



The solution provided the following advantages:

- **Reliable connectivity:** the IG601 provides stable data transmission over the 3G HSPA+ network
- **Reduced costs:** remote monitoring of flow controllers greatly reduces operating cost and on-site visits
- **Increased reliability:** detect abnormal conditions with real-time data and live faulty indication