

Success Story

Suncor Energy

Securing refinery operations with access control and video



Photo credit: James from Boulder

Customer Highlights

Challenges

- Communications network for centrally monitoring >70 access keycard readers and >100 IP video security cameras; required high capacity and reliability plus low latency
- Network needed in middle of metal storage tank farm creating a difficult environment for wireless communications
- Single network to support both fixed nodes and mobile nodes in security officer vehicles enabling viewing live video feeds

Solution

- TropOS mesh network delivers the high capacity and reliability as well as low latency needed for support of >100 video cameras
- Single network integrates both fixed and mobile nodes
- Ease in scaling network capacity and coverage area as desired
- Centralized network visibility and control

Results

- Single reliable, high capacity network connects video feeds from ~110 IP video cameras to central location for monitoring and recording, increasing facility security and safety
- Mobile security officer has access to live video feeds providing situational awareness as they respond to potential problems
- ~75 keycard readers centrally monitored; provides site access control and alert of unauthorized entry or attempts

Systems and services

- ABB Wireless broadband wireless mesh network
 - TropOS 7320 and TropOS 1410 mesh routers, TropOS 4210 Mobile Mesh Router
 - Tropos Control (now SuprOS) wireless network management system
- Axis Communications
 - IP video cameras and streamers
- Honeywell
 - Honeywell DVM (Digital Video Manager)
 - Honeywell EBI (Enterprise Building Integrator)
 - Honeywell PCSC keycard reading system
 - TropOS network and Axis camera installations
 - TropOS network operation and maintenance

Background

Suncor Energy is Canada's leading integrated energy company and the fifth largest energy company in North America. The company's long history began in 1917 when it was founded as Sun Company and began supplying lubricating oils, kerosene and spirits to war plants in the Montreal area. Today, Suncor's corporate headquarters are in Alberta and its operations include oil sands development and upgrading, conventional and off-shore oil and gas production, petroleum refining, and product marketing under the Petro-Canada brand. Suncor is also developing a growing renewable energy portfolio.

Suncor is a public company and has common shares (symbol: SU) listed on the Toronto and New York stock exchanges. Corporate revenues in 2012 totaled C\$39 billion. Suncor operates refineries in Alberta, Ontario and Quebec, Canada, and in Colorado, USA. They purchased the Commerce City, Colorado refinery in April 2003 from ConocoPhillips along with its storage, pipeline, and distribution facilities. In May 2005, Suncor also purchased the adjacent Valero Refinery. Located just outside Denver, with a combined capacity of 98,000 barrels per day, the Commerce City refinery complex is the largest refining operation in the Rocky Mountain region producing gasoline, diesel fuel, and paving-grade asphalt.

Challenges

In 2008, Suncor desired to upgrade physical security at its Commerce City refinery which has approximately 2,500 workers on various shifts and schedules. They contracted with Honeywell for assistance in the project design and installation. The scope of the project included a technology refresh of the dated access control used at entry gates around the site. Specifically, they sought to outfit all gates with a system that would ensure only authorized individuals could enter the facility and other critical internal areas. Video security was desired at entry points to the refinery as well as other locations around the facility for additional security and safety. For both access control and video security, Suncor wanted centralized monitoring at their security command center.

Honeywell identified a private communications network would be needed to connect the access security systems and video cameras. There was no existing network communications installed around the perimeter and getting fiber or cable to those locations would be environmentally and financially prohibitive. The area targeted for the network was located in the middle of a storage tank farm; power was readily accessible. Wireless was an obvious choice for connecting the security devices however; the environment was unfriendly for most wireless communications with the many RF signal reflections from the metal tanks which could reduce network capacity. The video application required a network that was reliable and could deliver high capacity and low latency. In addition, the network needed to provide support for both fixed and mobile network nodes.

Solution

Honeywell recommended the TropOS wireless mesh network as the communications pipe for aggregating both the access control and video security traffic based upon successful mutual deployments at other locations. The network was installed in 2008 and five years later, remains fully operational and covers the facility's storage tank farm. The TropOS routers configured as gateways connect to fiber for backhaul. Most routers are powered by a 24 Volt DC power supply with battery backup to ensure the network stays up even if a power failure occurs. Some of the nodes utilize high-power solar to support both the TropOS node and an IP camera.

Today, the network supports approximately 75 access keycard readers located around the perimeter of the facility at all entry gates and personnel turnstiles as well as select internal doors. There are also more than 100 [Axis Communications](#) IP video

cameras connected to the network. Information from the access keycard readers and video feeds are sent to security command where they are monitored and centrally recorded. A Honeywell DVM coordinates video feeds and playback. Mobile security has the ability to view the video feeds from any of the cameras enabling them to respond faster to problems and providing them with situational awareness, improving officer safety.

The TropOS network also allows for the use of a portable turnstile security unit. This unit can be moved around the plant as required during periods of increased construction and maintenance activity, allowing easy access for construction personnel.

Results

The TropOS mesh has improved Suncor's physical security and efficiencies enabling centralized visibility and recording on who is entering the facility and when. Security personnel are alerted to incidences early, reducing response time and risk while increasing worker and site safety. The TropOS network has proven highly reliable in regards to maintaining critical security communications. With the high volume of video traffic on the network, the TropOS mesh delivers high capacity and low latency essential to ensure security of the site and enable immediate action should a breach occur.

Additional Applications Under Consideration

- Addition of more fixed TropOS mesh nodes to increase performance and capacity.
- Separate VLAN for operations applications to improve operations and speed access to information. An example is use of handheld wireless devices to take tank measurements such as tank pressure, and send it to a centralized database.

Click the link to learn more about ABB Wireless [communication networks for oil and gas](#).

ABB Wireless

3055 Orchard Drive
San Jose, CA 95134, USA
Phone: +1 408 331 6800
E-Mail: wireless.sales@nam.abb.com

www.abb.com/unwired

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