

## LCTCP — Mexico

### Providing a Competitive Advantage for Port Operations



Photo: SEKVO

#### Customer Highlights

##### Challenges

- Minimizing costly time in port for ships and shipping containers
- Challenging wireless network environment, with large, constantly-moving metal structures
- Harsh environmental conditions – hot and humid, exposure to salt water

##### Solution

- Tracking and real time location of shipping containers both outdoors and in the warehouse, enabled by a wireless broadband network
- Foundation for adding additional high-value applications that will further increase operational efficiencies and reduce costs
- Ability to securely open network usage to partners and customers

##### Results

- Containers are on their way, usually in 24 hours or less, controlling costs and keeping ship schedules
- Reliable network operations in an extremely harsh environment

##### Systems and Services

- Tropos 5210 outdoor and Tropos 3210 indoor mesh routers
- Alvarion Networks: point-to-point backhaul
- HEMAC Teleinformática: architecture design, installation and network maintenance

Located in the state of Michoacán on Mexico's west coast, the port terminal Lázaro Cárdenas Terminal Portuaria de Contenedores S.A. de C.V. (LCTPC) is centrally located for trade between Asia, Australia, Mexico, and the United States. Trade between the Asian Pacific countries and U.S. West Coast ports has grown almost 50 percent over the last 5 years, and LCTPC is expecting to help support this sharp increase. LCTPC is the largest container port under construction in Latin America, and is well positioned to provide additional capacity as needed. The port offers a comprehensive set of container and port services, including loading and unloading, storage and warehousing, labeling and palletizing, customs, maintenance and management, inspection, and refrigerated container (reefer) power supply and monitoring. Operations began in November 2007, and it is anticipated that 375,000 intermodal shipping containers will pass through every year. A first phase expansion will be completed in May 2008, with 600 meters of quay (dock) added.

##### The Challenge

The globalization of goods means more raw materials and finished products are moving around the world, placing additional demands on shipping containers and the transportation hubs that direct them to their next destination. Modern ports need to process containers quickly, and this is especially true for a large operation such as LCTPC. Many of the containers passing through its ports are destined for the U.S., even though it is located hundreds of miles south of the border. Quickly processing ships and containers will aid in LCTPC's growth. IT systems can manage and inventory the containers, including the manifest,

schedule, storage requirements, and so on. In addition, a key requirement is knowing the location of each container is at all times.

The port considered using handheld PCs to track containers, but keeping them connected to the network was going to be a challenge. LCPTC currently covers 15.4 hectares (37 acres), comprising quay, covered and reefer warehouses, open-air storage, rail yard, and other facilities. The environment presented literal obstacles to using a wireless network, plus a constantly-changing terrain. Large metal cranes – up to 100 meters tall – move about as they load and unload containers. Containers placed around the port are stacked up to 18 meters tall, the equivalent of a five-story building. In addition, the tropical locale, with its high temperatures and high humidity as well as exposure to salt water is often problematic for outdoor electronic devices.

## Results

LCTPC personnel use handheld, voice-enabled computers to identify and track containers from aboard ship until they leave the port. Using the system, LCTPC is able to communicate the status and location of any container. The network enables real time inventory control and tracking – containers are typically offloaded and through the port quickly. Dry cargo is on its way within 24 hours, or the next day if by rail. Reefers make require up to 36 hours before leaving because their contents are verified through a quality mark.

“Our port operations rely on Tropos to provide communication coverage where and when we need it which is critical in this type of operation. Tropos’ reliable and innovative solution has provided us with a huge business advantage.”

Alfredo Peto Martinez  
IT Systems Manager  
LC Terminal Portuaria de Contenedores S.A. de C.V.

## Tropos Solution

A Tropos wireless mesh network provides broadband connectivity for port operations. Tropos 5210 outdoor mesh routers are placed high on poles throughout the port, and on each of the port’s three cranes, for complete coverage. Tropos 3210 indoor mesh routers are placed inside the port’s warehouse, and in the main office building for indoor communications and extension of the outdoor mesh network inside.

For more information please contact:

### ABB Inc.

#### Wireless Communication Systems

555 Del Rey Avenue  
Sunnyvale, CA 94085  
Phone: +1 408.331.6800  
E-Mail: sales@tropos.com

[www.abb.com/tropos](http://www.abb.com/tropos)

The LCTCP network was installed by HEMAC Teleinformática in Guadalajara, which also provides ongoing management and support of the network. According to project manager Angélica Guadalupe Hernández Lugo, “We chose Tropos because it covered more area with less equipment, and provided consistent and reliable connections to the network. They are working very well, even in our extreme heat and humid conditions.”

LCTCP also uses Tropos Control a purpose-built element management system (EMS) for Tropos mesh networks.

Alvarion Networks provides point-to-point backhaul bridging equipment.

## Future Applications

The port opened for operation in November 2007, and is expanding to meet demand. Now that the broadband wireless network is in place, LCTCP is considering additional applications.

- Video surveillance – Port security is a high priority, and the ability to place video surveillance cameras throughout the port is important. The Tropos network makes this easy to do – no additional cabling is needed, and the same network can be used.
- Guest access – Many companies do business at LCTPC, such as container leasing companies, fuel suppliers, railroads, freight forwarders, and over-the-road trucking companies, and more. Virtually all of these, plus shipboard personnel, have requested wireless Internet access. Tropos MetroMesh security and network management capabilities allow the network to provide authentication while prioritizing LCTPC traffic and protecting LCTPC information.
- Voice over IP – Cellular calls are expensive at the port, and HEMAC is examining VoIP as a less expensive alternative.