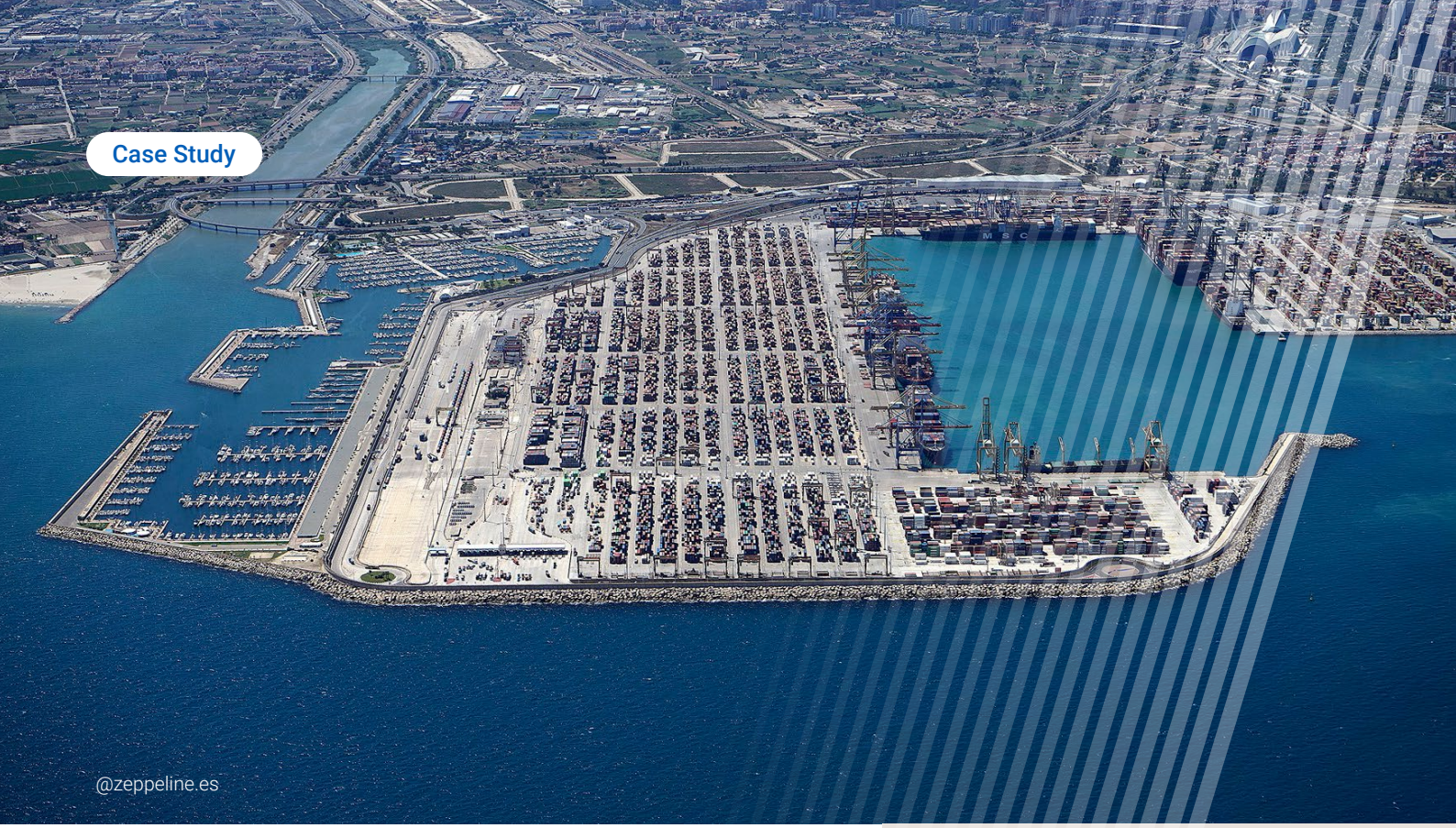

Delivering advanced value-added functionality over MC-Edge™ at CSP's Valencian container port

CSP Iberian Valencia Terminal S.A.U

CSP Iberian Valencia Terminal S.A.U is an affiliated company of COSCO SHIPPING Ports Terminals S.L.U. (CSP Spain). Strategically located in the Mediterranean, the terminal in the port of Valencia enjoys a hub position on the main maritime routes connecting Spain and Europe with other continents and is a key gateway for containerised cargo to and from the Iberian Peninsula. Its 2.3-km berthing line and 145-hectare yard, as well as a port railway terminal with direct connections to Madrid, Zaragoza and Bilbao and an automatic gate system for local cargo flows, explain why CSP Valencia is considered a benchmarking terminal in the Mediterranean.

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anfer RADIOCOMUNICACIONES

Customer

CSP Iberian Valencia Terminal S.A.U (COSCO SHIPPING ports)

Partner

ANFER Radiocomunicaciones

Industry

Logistics – ports

Location

Valencia, Spain

Solutions

- A DIMETRA™ Express system comprising:
  - 3 x MTS4 base stations
  - 2 x geographically redundant servers
  - 500+ subscriber radios (MTP3550, MTM5400 and MXM600)
- 6 x MC-Edge Intelligent IoT Gateways (Remote Terminal Units – RTU)
- 3 x ACE3600 Remote Terminal Units (RTU)

Challenge

This container terminal in Valencia Harbour has been working with Motorola Solutions and ANFER for over twenty years, upgrading its system from an analogue system to a DIMETRA IP Micro, and, more recently, to a DIMETRA Express network supporting over 500 TETRA radios. ANFER has consistently handled the design, installation, and ongoing management and servicing of the systems. As such, it is constantly looking at value-added features to maximise the potential of the mission-critical radio network.

Indeed, container terminals are busy, hazardous areas, due to a combination of heavy machinery, large vehicles (such as cranes, transtainers, lorries and buses), complex operations, dangerous cargo and the proximity of workers to equipment. Therefore, terminals are reliant on effective radio communications to manage incidents, and they welcome any applications that can further enhance safety, operational efficiency, and network security and availability.

Solution

ANFER and CSP decided to deploy six MC-Edge Intelligent IoT RTUs, three of them connected to the three MTS4 base stations. The RTUs have been configured to both send remote SDS commands to user radios to activate automated, recurring scan lists and to constantly monitor the DIMETRA Express network (which has also been deployed in a geographically redundant configuration for increased resilience), proactively running analytics and communicating system status via backhaul. This is important as any operational halts caused by a breakdown in communications would result in significant financial losses for the terminal. In the event of a system failure, ANFER has configured the RTUs to transmit SDS (Short Data Services) messages containing alarm and alert information directly to the IT department's radios in real-time, ensuring that any issues can be addressed swiftly and effectively. Additionally, ANFER is about to roll out a new application for MC-Edge, which will enable the RTUs to also send these notifications via email. This will be particularly beneficial for IT team members beyond radio network coverage.

As safety is a key issue at the terminal, emergency calls are another priority area. If users press the orange emergency button on their radios, these calls are immediately transmitted to all radios, interrupting any ongoing conversations. However, CSP also wanted key personnel working outside the terminal to be notified of any emergencies in real-time so they can react appropriately. The MC-Edge RTU detects emergency calls, and ANFER has configured it so that it sends messages to specific smartphones when such a call is initiated on the DIMETRA Express system.

There are approximately eighty talk groups set up, and virtually all voice communications are made in these talk groups; however, users, especially mobile radios in cranes and lorries, for example, frequently change groups, making it difficult for the control centre to reach them. However, an application (Dimegrupo) has now been set up on MC-Edge, so that controllers can send an SDS message from their radio to the MC-Edge RTU asking which talk group a radio is in. MC-Edge then communicates with the TETRA infrastructure and, once it has the information (usually within a few seconds), it sends a reply SDS to confirm the talk group with a date and time stamp so the controller can communicate on the correct group. This is important for the terminal as, if the controller makes a private call, that user's radio will stop receiving talk group calls during that time and operators may miss vital messages.

> Our DIMETRA Express system delivers reliable, mission-critical voice and data communications at our container terminal. However, we are always looking at ways we can further utilise our network to deliver more, in terms of functionality, safety and security. ANFER introduced us to MC-Edge, which has unlocked a whole range of exciting opportunities in terms of value-added IoT applications and functionality over our TETRA network.
>
> – **Santiago Montesinos, Head of IT, CSP Iberian Valencia Terminal S.A.U**

Buses are constantly travelling around the vast terminal to move workers around and, to improve efficiency and avoid lengthy waiting times, CSP wanted a simple solution to advise the bus drivers if passengers were waiting. There are no wired communications or power at the bus stops. However, as MC-Edge also supports LoRa sensor connectivity, ANFER was able to deploy LoRaWAN push buttons at each stop, which, working alongside the LoRa server embedded in MC-Edge, ensure an SDS message is sent via LoRaWAN to the bus driver's mobile radio every time the push button is pressed, so he or she knows where to collect workers. Once the RTU sees that the bus driver has received the message, the push buttons' integrated loudspeakers broadcast messages confirming buses are on route. Moving forward, this LoRaWAN capability will also be used to track mobile machines around the terminal, as data can be sent to a tracking application using LoRaWAN sensors mounted in these vehicles.

Outcome

Current applications and features summary:

- Network monitoring and remote activation of scan lists
- Emergency calls
- Bus Call
- Dimegrupo (talk groups)
- Vehicle tracking

Users are delighted with the DIMETRA Express network and the added functionality that further maximises the return on investment. Indeed, the built-in wireless capabilities of the MC-Edge gateway offer CSP a vast range of possibilities for remote monitoring, control, and functionality, even in areas with no power or networking, thereby enhancing efficiency, safety, security, and network availability at the terminal. MC-Edge is designed for speed and security, and, being such a flexible solution, ANFER and CSP can continue to collaborate on designing and deploying new applications and features as needed.

Benefits

- The MC-Edge includes built-in security features to keep the data and network safe
- MC-Edge enables CSP to access a range of value-added applications and functionality over its DIMETRA Express network
- These applications and features are giving added value to CSP's TETRA network, supporting integration with other external applications thanks to the wide range of protocols supported by MC-Edge
- The terminal is utilising MC-Edge's capability to support LoRaWAN sensors activity to report this data to the TETRA users and applications
- MC-Edge processes data and makes real-time decisions locally at the network edge, reducing latency and dependence on constant network connectivity to a central cloud, for improved efficiency
- IoT applications are highly flexible, so the terminal, working together with ANFER, can continue to design and deploy new features, as the need arises

To learn more, visit:
www.motorolasolutions.com

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