IP SURVEILLANCE IN PORT OF DAKAR, SENEGAL

InfiNet wireless

DP WORLD

Dubai Port World introduces state-of-the-art IP video surveillance solution across its' Dakar port facility to improve security and employee safety

Introduction

Cargo plays a major role in the transportation industry on the African West Coast, and the recent increase in traffic and services throughout the ports of the Middle East and Africa is driving growth and expansion in many transportation and container facilities throughout the region.

Dubai Port World is a global marine terminal operator with 49 terminals in 27 countries, and ranks amongst the world's four largest container terminal operators. In June 2007, DP World announced that the Port of Dakar, Senegal, had awarded it the concession to operate and further develop the existing container terminals at Dakar, with the aim of more than doubling the capacity of the existing terminal.

Objective: Improving local security and worker safety through Video Surveillance

DP World took the decision to prioritise the security coverage across the Dakar Port site in order to improve the control, access and health & safety processes throughout the facility. As part of this initiative, the need for real-time video-surveillance across the existing four terminals was identified as a priority, including at the main access point, which was also the location where employees were paid their salaries. Improved security at this point would not only enhance the overall security of goods and services to the site, it would also act as a safety mechanism for the employees.

Key to the Video Surveillance solution would be three factors: firstly, the establishment of a central video and security control point towards the centre of the site, which could be manned by security and safety staff around the clock; secondly, the need for the surveillance solution to be wireless based, given the nature of the facility where large bulk cargo and containers are regularly moved and reorganised to cope with the differing volumes and types of port traffic; and thirdly, the need for the solution to blanket-cover the four terminals of the port, which would be important not only for the security and theft prevention programme but also for reasons of health and safety, to ensure that employees operating machinery are aware of any obstacles or other people working throughout the site.

Key Challenges

There were essentially four key technical challenges and cost considerations that had to be factored into the initial design of the system:

1. Since the central security control location would need to be located in the centre of the site, this meant that the distance from the closest video surveillance cameras/wireless points and the control centre would be less than 30 metres, which posed technical challenges in wireless broadband systems;

2. The layout of the port, with four distinct zones (making up the different port terminals) meant the need for a combination of Point-to-Point and Point-to-Multipoint wireless solutions would be required;

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Solution

- InfiMAN R5000 series base stations for Point-to-Multipoint applications;

- 3 x InfiLINK R5000-S integrated antenna CPE;

- 13 x InfiMAN 2x2 R5000-Smc 35 Mbps net throughput integrated antenna CPE;

- 1 x InfiMAN R5000 –O dual radio 54 Mbps base station;

- 1x InfiMAN 2x2 R5000-Om MIMO high capacity base station.

Summary: Business Benefits

- Cost effective, high bandwidth link with unrivalled price-performance ratio;

- High reliability and throughput across difficult non-line-of sight terrain and in difficult climatic conditions;

- Increased security and safety awareness for employees, guests and cargo across the facility;

- Rapid deployment: less than 1 working week including mast erection with no effect on the day-to-day running of the facility.

3. Height and obstruction from the containers were also key factors, since the maximum elevation that a camera location could be affixed was to a height of 16m, therefore potentially causing significant challenges in the provision of line-of-sight radio links;

4. As the port was a 24 hour, 365 days operation, the solution would need to be of the highest reliability and availability, and in addition the difficult climatic conditions of the location would also challenge the reliability of any equipment deployed.

Implementing the Wireless Solution

INEXO, a systems integrator specialising in wireless and networking solutions and part of the Ceron group, was approached by DP World and their local technology solutions partner in Senegal to design and integrate the networked wireless video surveillance solution.

Their architectural solution was to design three distinct point-to-multipoint wireless zones, with a 340 degree coverage of the whole site, all converging on a single mast at the security and surveillance centre at the core of the facility. For the wireless transport part of the solution, INEXO chose InfiNet Wireless's InfiMAN 2x2 series devices, a cost effective point-to-multipoint solution with advanced MIMO technology and known across the industry for its reliability and robustness in harsh climatic conditions. InfiNet's products allowed the solution to support difficult non-line-of-sight applications proved particularly useful in order to accommodate changes in the constantly-shifting site profile.

INEXO specified InfiNet's R5000-S and R5000-Sc InfiMan 2x2 products to support the majority of the pre-installed camera locations, where the throughput and distance support of the systems proved more than adequate for video transport, even when line-of-sight paths were partially obstructed. InfiNet's R5000-O and R5000-Om products were deployed as Base-station masters for the site.

For the zone immediately adjacent to the security centre, where the link length was less than 30m, InfiNet's R5000-Smc product was deployed to overcome the short-distance issues that are a common challenge with broadband wireless solutions.

The low latency of the InfiNet wireless solution also proved a deciding factor for the deployment, since the surveillance was based on PTZ (remote-controlled) IP Video Cameras, which require low-latency transmission in order that the cameras can be quickly manoeuvred into their surveillance positions from the control centre.

Overall, the installation and commissioning of the networking part of the solution from start to finish took less than 1 working week. DP World considers the installation a complete success, with a rapid deployment made within the allocated budget, and is set to further extend the solution to other areas of the port in the next phase of rollout.

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