

## CASE STUDY

# ROLLING OUT EFFICIENT AND CONNECTED REMOTE SITES IN THE MOST CHALLENGING CONSTRUCTION ENVIRONMENTS



NCC is a Swedish construction business, one of the largest in the Nordics. It works on some of the region's most critical infrastructure projects, from roads and property to civil engineering.

Construction in the Nordics presents some unique challenges. Freezing winters means much of the work is restricted to between April and October and Sweden, Denmark, Norway and Finland also require businesses to meet some of the world's most demanding environmental standards. "We have to be as productive as possible to get the work done when conditions allow," says Anders Eklind, ICT manager, NCC. "That could involve setting up a new site in a day or moving resources from another site. We're in a constant state of change."

For Eklind, the challenge is to have new sites fully operational within hours. In the modern, increasingly digital construction sector, that means establishing the network access to support mobile devices and tools, data transfers, video conferencing and remote sensors. "We could be working from 600 sites in a year," he says.



## CREATING SOFTWARE-DEFINED BRANCH OFFICES

The Aruba Mobile First Architecture was designed and implemented by Aruba partners, Aranya, which also provides constant support and expertise for NCC. Aranya helped NCC adapt its design to ever-changing site specifications and requirements.

The architecture offers, in effect, a software-defined branch office. It features AirWave for overall network monitoring and visibility, and ClearPass for network access control and profiling of devices and users in order to authenticate and allow access to specific resources based on roles and policies. Aruba 7200 Series Mobility Controllers terminate all branch network VPNs and route traffic onto the internal network for offices and large sites for each country. For these large sites, Aruba 7005 Branch Controllers perform all the control plane functions and carry out all the data forwarding functions, providing full control and flexibility to

## REQUIREMENTS

- Create an effective remote working environment for employees
- Strengthen network security as sites welcome increasing mix of subcontractors
- Reduce time and expense of setting up remote offices
- Simplify secure network access for different users
- Establish the means to support new data points

## SOLUTIONS

- 802.11ac Aruba wireless indoor & outdoor APs for offices and large sites
- 802.11ac Aruba Instant APs and Remote APs for smaller sites
- Aruba 7200 Series Mobility Controllers
- Aruba 7005 Branch Controllers
- ArubaOS 8 and InstantOS
- Aruba 2530 and 2930F Access Switches
- Aruba ClearPass Policy Management and NAC
- Aruba AirWave Network Management
- Aruba Dynamic Segmentation and Colourless Ports
- Collaboration tools [Office 365 and screen sharing]
- Video conferencing
- CCTV for security

## OUTCOMES

- Establishes high-performance wireless coverage for workers across 600 worksites, often in the most challenging conditions
- Reduces network configuration time from hours to minutes
- Role-based access ensures security and consistent user experience
- Supports effective use of workplace collaboration tools, including video conferencing and live documents
- Creates a platform on which to add IoT, supporting its digital transformation agenda

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ANDERS EKLIND  
ICT MANAGER, NCC

create a feature rich and secure branch. All wired and wireless clients are profiled and authenticated and placed in an appropriate VLAN based on the roles defined and managed by ClearPass. Aruba 2530 and 2930F Access Switches provide the POE-enabled connectivity for all devices, including for Aruba controller-based and Instant APs and Remote APs alike. All users and devices, wired and wireless, get a role in the branch controller to control access and routing.

ClearPass manages a separate guest and contractor network for internet access, as well as the policy driven corporate network with rigorous authentication in place. There is a separate network for IoT-based devices, including automated scales, construction tools and utilities and sensors which are used increasingly in the construction space.

One of the key benefits of the Aruba branch is the Dynamic Segmentation of the network and the ability to provide Colourless Ports. This means that any devices or users can be connected to any port and be profiled and authenticated and be provided with all the resources they need. This offers seamless access to corporate resources for staff and to shared printers, meeting room resources or on-site internet access for contractors or suppliers.

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### Mobile office networks configured in minutes

The NCC team are now able to deploy new offices (and dismantle old ones) quickly, effectively and efficiently. The environment is now flexible enough to support larger sites, with up to 30 portacabins connected to the network, or smaller jobs with just one or two staff.

Eklind says new sites can be on the network within 15 minutes, with network access in offices and some outdoor areas. As the business pursues its own digital transformation, this is time saved that can be spent on more valuable projects. Furthermore, there are considerable cost savings. Cabling was costing an average of \$2,600 a site plus the cost for physical ports and sockets. "When you're talking about 600 sites a year, you can see the savings," says Eklind. "Everyone expects wireless now."

### EFFECTIVE MOBILE WORKING EVEN IN THE MOST CHALLENGING CONDITIONS

For NCC, this means effective remote working, even in the most challenging environmental conditions. Staff on-site have access to every application they need, from the full suite of Office 365 tools to data-heavy CAD files to printers.

Modern construction sites, explains Eklind, are no different to standard office environments. Staff make video calls, they collaborate with colleagues off-site, they order supplies through a central procurement system, they submit digital invoices, and they share and update live documents throughout the day.

NCC can also manage network access for a host of other applications. On-site security cameras are connected to the network, as are alarms. Eklind says one site even experimented with an Aruba network which was set up during a tunnel building project: "We once built a critical network inside a tunnel, which we were drilling, and placed a ruggedised Aruba AP-275 on the drill itself, to capture live data from the moving machine. We could then livestream the data and examine efficiencies in real-time. We can do some really cool things with the Aruba solution."

### Managed guest access creates a secure environment

NCC corporate data is now more secure, Eklind says. NCC employees work alongside numerous subcontractors, consultants and suppliers. Some of them are long term while others may only be on-site for the day. The Aruba utilities including ClearPass, provide for more efficient means to network access control and management. While corporate resources need to be secured for staff usage, in some cases, such as accessing shared project folders or allowing the use of office printers for visitors, the network is now able to recognise, profile and authenticate users and devices appropriately and access is provided automatically.

"It used to be that our sites included 95% NCC staff. Today, it's nearer 60%," says Eklind. "You save a lot of cost, but also a lot of data security issues just by getting rid of the network cables. But you need a wireless infrastructure that is as secure, if not more, and that is what we now have. The Aruba Mobile First Architecture makes it easier for us to manage access. We can now control our wired and wireless environment with the same level of effectiveness. ClearPass is vital for authentication, and AirWave shows us exactly what is happening on the network."

### Leading the digital transformation of the construction industry

Eklind says construction sites are only going to become more connected and more digital. Project managers will want to find insight in more data points, and there will be more third parties looking to collect, share and optimise the use of live and historical data. "As a company we need to be leading this innovation," concludes Eklind. "Wireless, and our Aruba solution, will be a major part of our digital future."