


CASE STUDY

Liverpool City Council

Working with Maintel and Cisco, LCC upgraded its data centre network to improve connectivity, bandwidth, and resilience.





The governing body for the city of Liverpool and the largest local authority in the Merseyside city region. With a workforce of approximately 9,000 serving a population of around 500,000 citizens, LCC aims to provide a connected and accessible city utilising a reliable and efficient infrastructure.

At a glance

The issue

The LCC ICT team has continually strived to meet the comprehensive needs of a large and diverse user community, ensuring that its network can support the transformation of the workforce whilst supporting more agile and efficient remote working. The LCC IT team therefore recognised that their existing network system required modernisation.

The project

Working closely with the Maintel account team and Cisco, LCC invested in a new, easier to administer data centre network system that would help improve connectivity and network bandwidth, whilst also ensuring greater resilience across their estate.

The outcome

A highly accessible ACI topology, delivered over two Data Centre's providing for improved connectivity and network bandwidth creating a truly self-sufficient network that has helped reduce routine IT administration significantly. The project has ultimately transformed the way LCC does business by providing for a more agile way of working, through leveraging cloud applications such as supporting Office365, Virtual Desktop Infrastructure (VDI) and new telephony advancements, better enabling LCC to serve its stakeholders and staff.

Their Background

Maintel assisted LCC to optimise and transform their network, protect business, enabling remote working and accelerate the path to a multi-cloud environment. To ensure we were able to support LCC at every step of their digital transformation journey, Maintel:

- **Helped refine the High Level Design (HLD) and jointly agreed the Low Level Design (LLD)**
- **Completed pre-build and initial configuration working with the LCC**
- **Migrated and updated more in-depth configurations, including legacy information**
- **Built configuration to deploy new services**
- **Engaged full saturation and fall over testing**
- **Went live with a robust roll back planservice transition, fast.**

The Challenge

To transform how LCC does business digitally, delivering a more agile, resilient way of working.

Liverpool City Council (LCC) needed a more powerful and flexible network to enable access to all IT services for their employees, regardless of their location. The new network core had to be robust, and future proofed to support more agile ways of working.

LCC were developing new business applications to deliver to the workforce, including the deployment of a new virtual desktop solution (VDI) which could not be supported by the existing infrastructure as this was based on first generation Cisco Nexus equipment which was approaching its End of Support.

LCC were looking for a partner who would work with them throughout the deployment from pre-build to project handover so that they would benefit from information sharing and knowledge transfer, making them as self-sufficient as possible when supporting and administering the new network.

The Solution

Migrating LCC to a solution based on Cisco's Application Centric Infrastructure (ACI) built on Nexus 9000 series switches, leveraging software defined networking, was the natural choice when considering a replacement.

The Cisco ACI Solution:

Maintel deployed the Nexus 9k series switches which utilise the ACI fabric for policy creation, implementation, and management. By deploying a "spine and leaf" architecture to their data center network topology, we created a reliable, highly available high-speed network from which users can easily control all aspects of troubleshooting and configuration.

The traditional data centre network design is usually a three-tiered approach, with all the edge and perimeter devices connected to an aggregation layer, and this aggregation layer connected to the core. However, this approach has its limitations and brings its own problems to resolve.

In a spine and leaf architecture, every lower tier switch is connected to each of the top-tier switches in a full mesh topology (see above). With a spine and leaf architecture, no matter which leaf switch a server is connected to, its traffic always has to cross the same number of devices to get to another server (unless the other server is located on the same leaf).

This approach keeps latency at a predictable level as a payload only has to hop to a spine switch and another leaf switch to reach its destination. Delivering applications to LCC's users in the most efficient way possible.

The intelligence behind the ACI network is the Application Policy Infrastructure Controller, or APIC, which utilises a cluster of 3 or more servers to manage, enforce policy and monitor the health of the network.

What are the benefits?

By utilising Cisco's ACI, the LCC data centre benefits from operational simplicity, high availability, both internally and across multiple sites, central network management and greater visibility of network performance.

The way Maintel have deployed the new LCC network, increases agility with future expansion easily achieved just by plugging in new leafs or spines where required, as the architecture recognises new additions to the network and extends policy and management to these new additions with minimal effort.

The key benefits experienced include:

- Increased agility, enabling LCC to meet the needs of their users, including the significant increase in remote workers as a result of the Covid-19 pandemic
- Positioned LCC to take advantage of Cloud applications such as Office 365 & new telephony advancements
- Better understanding of network problems and more comprehensive troubleshooting
- Increased the efficiency of the internal IT Team
- Improving network reliability
- Removed legacy equipment from the network
- Removed repetitive tasks through automation
- Increased resilience and availability by having the equipment installed across two geographically diverse data centres



“Faced with the challenge of an end of life infrastructure and business demands for increased resilience, flexibility and agility, Liverpool City Council ICT identified the need for an overhaul of the network core infrastructure and selected Maintel as its partner for this initiative. Working closely with LCC ICT staff, Maintel provided subject matter expertise in design and engineering to implement a solution based on Cisco Nexus 9000 switches utilising an ACI fabric in a fully redundant, dual site configuration.

Maintel's proactive and responsive engagement in this project was a critical success factor, ensuring a flawless migration to a new solution that not only performed to specification on commissioning, but also one that will scale to meet the needs of the business for years to come – an underpinning infrastructure that ensures high availability and security with reduced overheads, while facilitating greater B2B collaboration, agile working and increased use of public cloud.”

Doug Goodman, Head of ICT Operations, Liverpool City Council



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We consult on the design, deploy and manage network infrastructures, platforms and software, including our own, that keep ongoing operations running smoothly and dependably, protecting business as usual, at the same time being flexible enough to adapt.

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Contact us

0344 871 1122
info@maintel.co.uk

maintel.co.uk