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G-Cloud 15

Managed Data center Network

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1. What is Managed Datacentre Network?

Atos Network Services delivers the connectivity required by successful modern enterprises, empowering them to differentiate in their industry. Atos offers a comprehensive Intelligent Network portfolio that combines best-in-class technologies and vendor solutions with our extensive UK sovereign and global delivery service capabilities.
Trusted by hundreds of customers worldwide, Network Services from Atos enable digital transformation through software-defined technologies and agile, scalable managed services. Atos' insight-led approach to analysis, design, delivery and managed networks helps customers optimise cost, simplify complexity and create actionable business intelligence, giving you the confidence to execute on your business ambitions."
Facilitating data centre transformation and cloud adoption with flexible network options for hybrid, IP fabric, app-centric, and intelligent data centre networks. Partnerships with major vendors offer standardised solutions, top infrastructure design, and documented deployment practices for diverse industries and regulatory sectors. This service is powered by Cisco ACI and Juniper Apstra.
There are 2 variants based on the customer choice :

- Application Centric Data Centre
- Intelligent Data Centre Fabric

Application Centric Data Centre

Application-Centric Data Centre technology offers a micro-segmentation solution that reduces the attack surface by minimising the potential for lateral traffic movement in the event of a security breach. This offering enables a new approach by offering greater flexibility and automation not possible with traditional network management and operations, making micro-segmentation a distinct benefit. This Network topology also offers the benefit of software-defined networking, managing the traffic generated by data centre applications across the network infrastructure using policy-based forwarding over logical network segments that provide low-latency access to other network resources, allowing faster processing of all network traffic.

Application Centric Data Centre covers the following:

- Cisco Nexus® 9000 Series Spine and Leaf Switch infrastructure
- Application-centric BGP VXLAN design specification
- Single Site – Single POD data centre
- Twinned Site – Multi POD data centres

Intelligent Data Centre Fabric

Intelligent Data Centre Fabric is based on Juniper® Apstra software, which represents a software-only, multivendor, intent-based networking solution, furnishing closed-loop automation and assurance for holistic fabric management. Apstra bridges the gap between business intent and technical objectives, translating them into essential policies and device-specific configurations. It

continuously validates and resolves issues to ensure compliance. Apstra manages the entire network lifecycle, enabling network expansion and scalability while extracting valuable device telemetry.

The Intelligent Data Centre Fabric Solution, based on Juniper Apstra Software, follows the following key principles in its design.

- Turnkey, multivendor automation solution for designing, building, deploying, and operating data centre networks.
- This solution allows for management from a single interface, providing a unified view into the relationships and interdependencies between millions of data centre elements.
- Employs intent-based networking to automate and validate the design, deployment, and operation of data centre networks across various vendor equipment, simplifying data centre operations and ensuring a secure, resilient network through continuous validation.
- Supports a multivendor environment (physical devices) subject to Juniper's Support Matrix

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2. What does it deliver?

Application-centric data centre technology enables customers to integrate logical application segments in a programmable fabric to build a multiservice data centre. The Atos Application Centric Data Centre consists of discrete components connected in a spine-and-leaf switch topology, provisioned and managed as a single entity.

Application Centric Data Centre technology delivers the following components:

Module / component	Mandatory / optional	Functional Requirements	Technical Impact
Single Site – Single-POD	Mandatory	▸ Data Center Accommodation ▸ Customer-dedicated hardware, software, and maintenance ▸ Cisco Nexus® 9000 Series Spine and Leaf Switches for Cisco ACI	
Single Site – Multi-POD	Optional	▸ Data Center Accommodation ▸ Customer-dedicated hardware, software, and maintenance ▸ Cisco Nexus® 9000 Series Spine and Leaf Switches for Cisco ACI	Allows for large data center networks or multiple machine hall layouts over an IPN
Twinned Site – Multi-POD	Optional	▸ Data Centre Accommodation ▸ Customer-dedicated hardware, software, and maintenance ▸ Cisco Nexus® 9000 Series Spine and Leaf Switches for Cisco ACI	Allows Two or more sites connected over an IPN

Customers may choose either the Cisco Application Centric Infrastructure (ACI)–based Application Centric Data Centre LAN or the Juniper Apstra–based Intelligent Data Centre Fabric; both options deliver the same high-level Managed DC Network outcomes.
The Cisco ACI option provides a purpose-built fabric with distributed routing and security (including micro-segmentation), VXLAN over EVPN overlays on a routed underlay, and controller-based configuration via Cisco APIC (GUI/CLI/API) to support day-0 through ongoing operations; a single ACI Fabric can act as a self-contained Availability Zone and supports single/twin-site and single/multiple POD topologies. The Juniper Apstra option delivers intent-based automation and continuous validation for L3 fabrics, vendor-neutral device support, built-in telemetry/analytics, Intent Time Voyager rollback, repeatable JVD blueprints, and integrated DCI

with VXLAN stitching, all driven from a centralised “single source of truth.”

Implementation details and tooling will be vendor-specific, but the managed deliverables — resilient L2/L3 overlay fabric, controller-driven automation, fabric-level routing and security, DCI, centralised monitoring/analytics, and consistent operational models and service levels across single- and multi-site deployments — will be equivalent.

Service provides managed Server connectivity, complying with requirements for availability, Security, and Contingency Planning, delivered using the Supplier's shared Infrastructure in the Supplier's data centres. The concept is also known as Virtual Data Centre (VDC). This Service provides the following VDC Network Services:

- VDC shared LAN Service
- VDC Interconnectivity Service
- VDC Transport Service
- VDC Isolation LAN Service
- VDC WAN connectivity Service

The DC FABRIC and DC: LAN Service provides infrastructure management through a set of monitoring, operations, and supervision components applied to relevant LAN items.

DCaaS consists of the following

- Virtual Local Area Networks (VLANs) — Virtual Networks that interconnect groups of DC FABRIC ports. They are used to form data centre LANs, Server LANs, isolation LANs, DMZ LANs, and other LANs needed to create a data centre design.
- DC FABRIC Service dedicated — The DC FABRIC Service dedicated is a management Service for ports that are located on dedicated Hardware.
- Local Area Networks (LANs) are the enterprise IT Infrastructure backbone and the foundation for Internet Protocol (IP)-based applications.
- Using IP Fabric connectivity, Data Centre Devices (Physical Servers, Virtual Hosts, Load Balancers, Firewalls, wireless LAN controllers, WAN routers, Voice over Internet Protocol (VoIP) infrastructure, Internet Proxy Servers, or other application servers) are linked with the enterprise IT Infrastructure.
- Provides the management of the Data Centre network through a set of monitoring, operation, and supervision service components applied to the IP Fabric components
- In the event of a failure, manages faults through to resolution
- Identifies potential Problem areas through regular reports and recommends measures to remedy any such issues before they impact the Service

The use of the DC FABRIC and DC LAN Service relies on the implementation of the following general IT Services, as described in the “Cross Functional” section:

- Incident Management
- Problem Management
- Change Management
- Security Management

Services include the following components:

- Production Support
- Hardware and Software Provision
- Service set-up
- Connectivity — Redundant LAN connection

- Connectivity — VLANs
- Connectivity — Ethernet port data rates 10/100/1000/10000
- Connectivity — VLAN trunking
- Connectivity — Link aggregation
- Connectivity—Twinning and Disaster Recovery provisions
- Availability Management
- Capacity Management
- Performance Management
- Configuration Management
- Vendor Management — Hardware and Software maintenance
- Software installation — Release update
- Patch management
- LAN Connectivity
- On-Site Services

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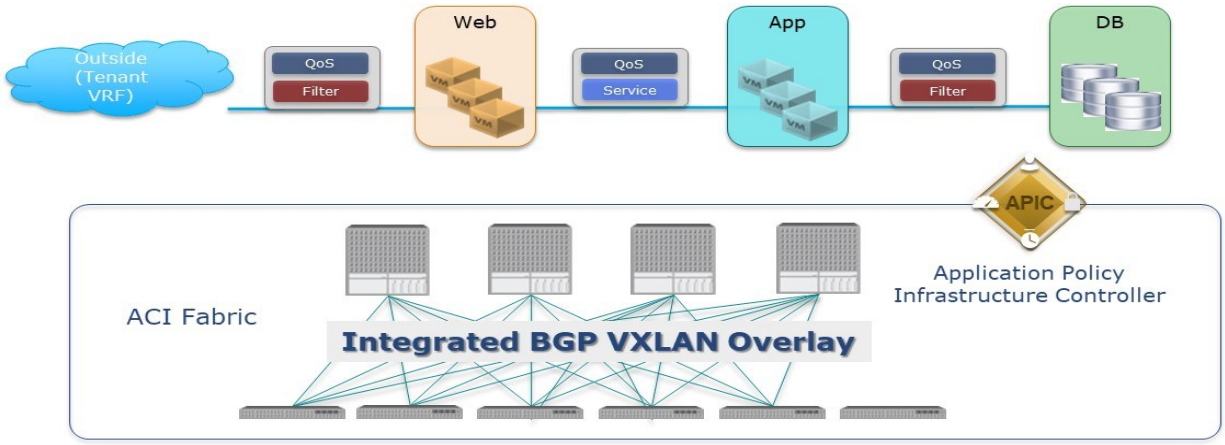
What technology does it use?

Managed Data Centre Network as a Service (DCNaaS) delivers a fully managed, policy-driven networking fabric for cloud and on-premises data centres, letting organisations outsource day-to-day operations, automation and lifecycle management while retaining predictable performance, security segmentation and rapid service delivery.

Application Centric Networking is based on associations between servers, applications, and the network resources relevant to handling that traffic.



This diagram shows how, in a functional manner, a digital data centre routes traffic through a flexible, policy-driven topology.

Moreover, modern data centre switch hardware adds policy-driven application optimisation techniques to improve availability, performance, security and ease of maintenance and support. With these features deployed, they are typically referred to as software-defined networking. A software-defined network (SDN) solution for data centres enables network infrastructure to be defined by network policies, simplifying, optimising, and accelerating the application deployment lifecycle.

In Atos's Managed Network Service, this capability is built on Cisco's Application Centric Infrastructure: the Cisco Application Policy Infrastructure Controller (APIC) provides the centralised policy and orchestration plane — defining intent, pushing application policies, automating provisioning and exposing APIs for integration with higher-level orchestration and monitoring tools. The Cisco Nexus 9000 switches form the high-performance leaf/spine hardware fabric that implements those policies in the data plane: they provide low-latency, high-throughput forwarding, VXLAN-based overlay/underlay services, rich telemetry and programmability required

for large-scale multi-tenant environments. Together, APIC and Nexus 9000 enable a software-defined, scalable, and secure data centre network that Atos can manage end-to-end, accelerating deployments and simplifying ongoing operations.

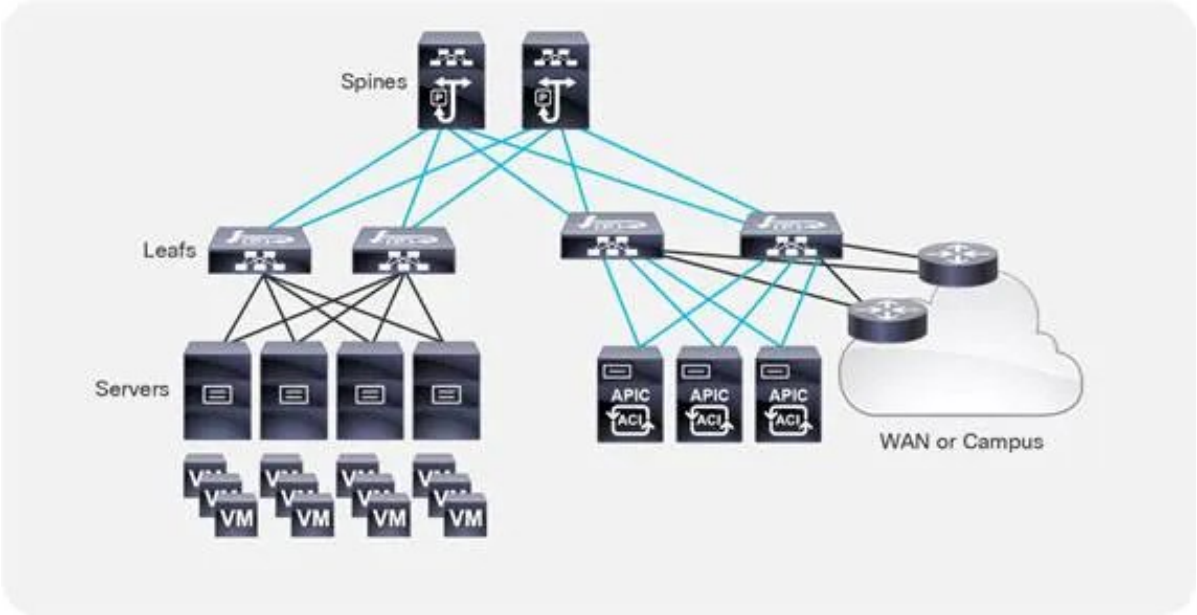
An Application Centric Data Centre environment is built with two main components:

- Cisco Application Policy Infrastructure Controller (APIC): APIC is the SDN controller for Cisco ACI. It creates the policies that define the data centre's network infrastructure
- Cisco Nexus 9000 Switches: Nexus 9000 switches use the ACI Fabric OS to communicate with APIC and create infrastructure based on policies. They can be either Spine (distribution) or Leaf (access) switches.

All endpoints, including APICs, connect to the network via Leaf switches. These Leaf switches are connected to each other via Spine switches in the backend. Using these components, the SDN can be deployed under a variety of different models. This includes support for on-site, cloud-based (public, private, and hybrid), and SD-WAN edge environments. This enables organisations to use policy-based network management throughout their corporate WANs.

The design described in the diagram below is based on the following reference fabric:

- Two spine switches interconnected to several leaf switches
- Top-of-Rack (ToR) leaf switches for server connectivity, with a mix of front-panel port speeds: 1/10/25/40/50/100-Gbps
- Physical and virtualised servers dual-connected to the leaf switches
- A pair of border leaf switches connected to the rest of the network with a configuration that Cisco ACI calls a Layer 3 Outside (L3Out) connection
- A minimum cluster of three Cisco Application Policy Infrastructure Controllers (APICs) dual-attached to leaf switches across the fabric. The Number of APICs is governed by the size of the network. Larger Data Centers will require more APICs.



The network fabric in this design provides the following main services:

- Connectivity for physical and virtual workloads
- Partitioning of the fabric into multiple tenants, which may represent departments or hosted customers
- The ability to create shared-services partitions (tenant) to host servers or virtual machines whose computing workloads provide infrastructure services such as Network File System (NFS) and Microsoft Active Directory to the other tenants
- Capability to provide dedicated or shared Layer 3 routed connections to the tenants present in the fabric.

In Juniper's data centre services, Juniper Apstra is a software solution developed by Juniper Networks that focuses on the automation and monitoring of Layer 3 (L3) fabric networks. It leverages the principles of Intent-Based Networking (IBN) to enable users to simply input their network requirements. Apstra then automatically generates the configuration settings and deploys them across network devices. This system automates network design, deployment, and ongoing operational monitoring, providing a single source of truth based on user inputs. As a result, Apstra facilitates a significant reduction in manual workload associated with network management, providing centralised, GUI-based network administration.

Building Block Styles

Data Centre Core

• Juniper® Apstra

• Juniper Network® QFX Series Switches

  – 2 spines (QFX5210-64C-AFO2)

  – 2 leafs (QFX5120-48Y-AFO2)

  – 2 border leaves (QFX10002-36Q)

Data Centre Leaf

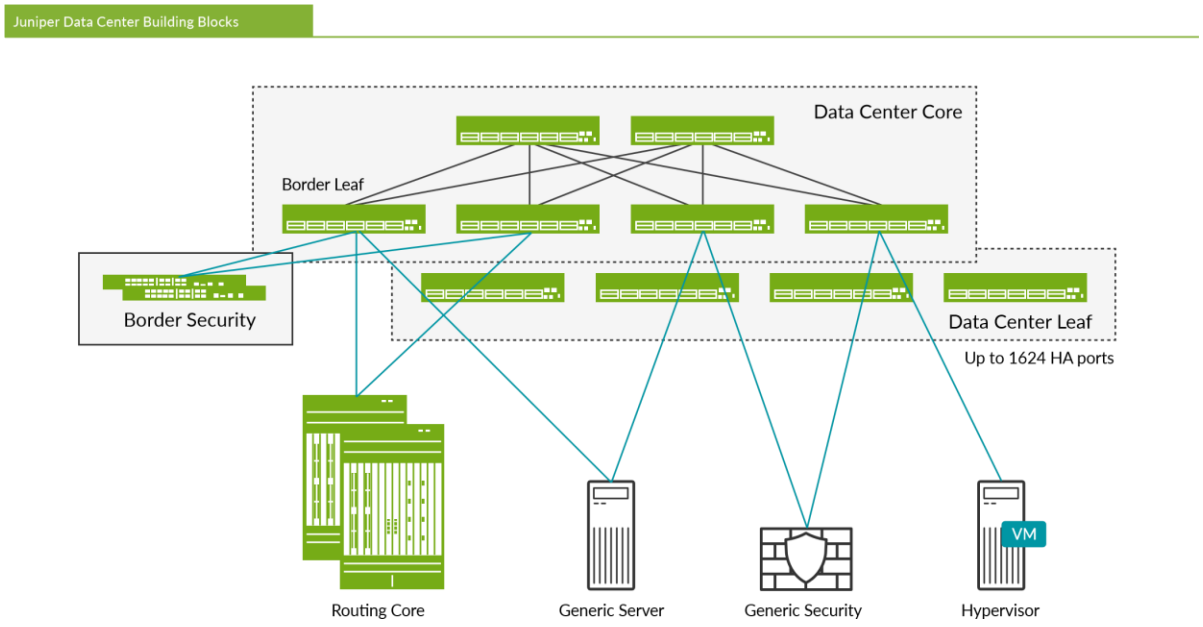
• Juniper Apstra

• 4 QFX Series leafs (QFX5210-64C-AFO2)

Border Security

• 2 Next-Generation Firewalls

• Advanced Security License



Intelligent Data Centre Fabric Solution components

- Juniper Networks QFX Series Switches lay the groundwork for a robust underlay, facilitating flexible and high-performance network fabrics.
- Juniper Apstra enhances data centre network design and operations through automation and validation, reducing complexity, vulnerabilities, and potential outages.
- Juniper Networks SRX Series Services Gateways ensure rapid, secure, and reliable operations for both data centres and enterprise edges, offering exceptional performance and scalability.

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3. What terms apply?

This section should confirm that general GC15 terms plus the Atos Supplier Terms will apply, but also set out any specific terms and constraints applicable to this product/service, covering things like service levels, client responsibilities, service hours, notice and termination, etc. This is not an SOW, so just the major items, if any.

General G-Cloud 15 terms and Atos Supplier Terms will apply.

In addition:

- ...
- ...
- ...
- ...

4. Termination

Termination shall be in accordance with:

- The G-Cloud Framework terms and conditions
- Any terms agreed within the Call-Off Contract under Part A Order Form (Termination), where the Crown Commercial Service guidance states: 'The notice period needed for Termination is at least 30 days from the date of written notice for termination without cause'
- Atos Supplier Terms for this Service are as listed on the Digital Marketplace
- For this specific service, by default, Atos ask for at least thirty (30) days' prior written notice of termination without cause.

Atos commits to continue to provide the service for the duration of the Call-Off Contract, subject to the terms and conditions of the G-Cloud Framework Agreement, the Call-Off Contract, the Atos Supplier Terms and the applicable Third-Party Agreements (as defined in the Atos Supplier Terms) related thereto.

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5. How do I order?

Please contact our team at: gcloud@atos.net

- We will prepare a quotation for your review, including any applicable volume discounts.
- Once the quotation is agreed, we will issue the necessary documentation (as required by the G-Cloud Framework) and request a purchase order from you.
- Upon receipt of your purchase order, we will configure the services in line with the agreed requirements. Where applicable, you will also receive access to our self-service portal to begin provisioning services.
- If you are a new customer, you may need to complete additional 'new supplier' forms.
- Invoices will be issued to you and to Crown Commercial Service (CCS), quoting the purchase order number, for the services procured.
- We will also submit the required monthly management information reports to Government Procurement.

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6. Glossary

Provide a glossary of all the acronyms and abbreviations used within the document.

Term	Definition

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7. Why Atos

Atos has been a trusted partner on every G-Cloud iteration since the framework began, helping public sector organisations modernise with confidence. We combine global expertise with deep UK experience, delivering secure, scalable cloud solutions that meet the highest government standards.

As Europe's leading provider of cloud and cybersecurity services, Atos offers end-to-end capabilities - from migration and hosting to SaaS and consultancy - supported by UK delivery centres and strategic partnerships with hyperscalers.

Our focus on innovation, sustainability, and social value ensures that customers not only achieve operational excellence but also contribute to a greener, fairer future. With Atos, you gain a proven partner committed to driving efficiency, resilience, and transformation across public service.

About Atos

Atos Group is a global leader in digital transformation with c. 67,000 employees and annual revenue of c. €10 billion, operating in 61 countries under two brands — Atos for services and Eviden for products. European number one in cybersecurity, cloud and high-performance computing, Atos Group is committed to a secure and decarbonized future and provides tailored AI-powered, end-to-end solutions for all industries. Atos Group is the brand under which Atos SE (Societas Europaea) operates. Atos SE is listed on Euronext Paris.

The purpose of Atos Group is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

Learn more at: atos.net

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