When your core is strong, everything follows
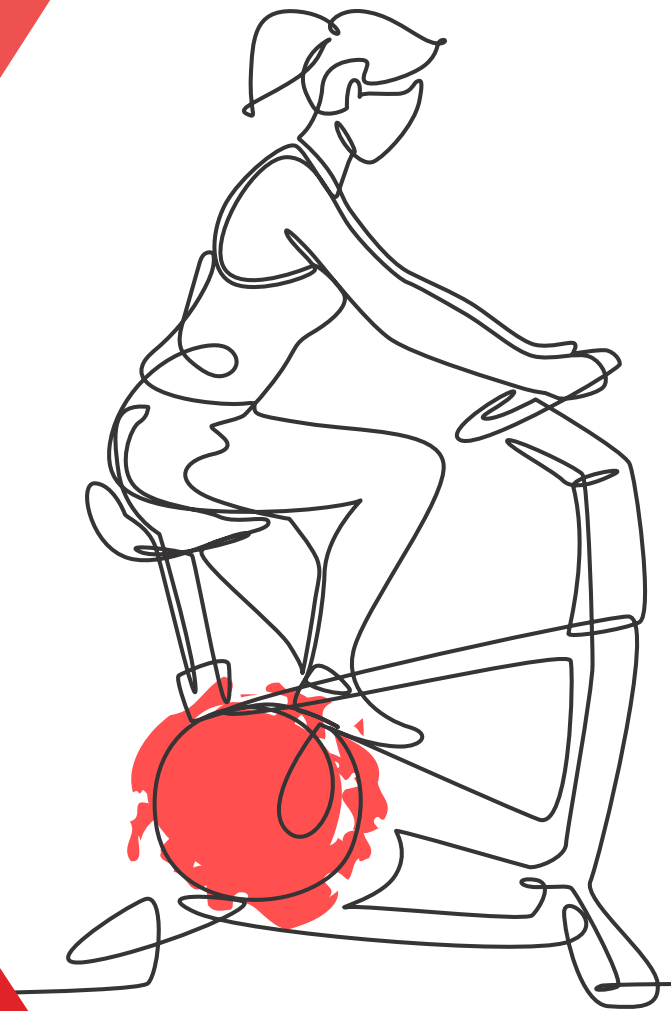
A Juniper-powered Block network gets you in shape to perform at your personal best.

BLOCK | JUNIPER
NETWORKS

Digital transformation enables higher performance all round, opening the door to potential everywhere. For higher education especially, investing in a robust and reliable core infrastructure unlocks benefits across campuses.

Seeing as network infrastructure is the one platform that binds everything together, the key to enabling this latent potential is robust, reliable network performance.

Day by day, an increasingly dynamic and distributed set of users and devices, with increasingly dispersed applications and workloads, make this ever more mission-critical to both staff and students.

There really is no viable alternative to giving it the attention – and investment – it demands.

BLOCK

The future has been here for a while

Higher Education has been on the path to digital transformation for decades – just like the rest of the world, but with far higher stakes. Just as most have adopted modern expectations of connectivity in our private and social lives, across campuses there's effectively no digital divide – it's already a core aspect of everything. This is both a huge, transformative blessing and potentially devastating curse.

Across Block's work with higher education, we see the same challenges time and again.

Dependency

Reliance on digital has given rise to the need for 'always-on' infrastructure – an outage now can effect multiple campuses across a university.

Regulatory Compliance

Universities must comply with various regulations concerning data privacy, accessibility and academic integrity, adding another layer of complexity to IT management.

Complexity

ICT systems are complex, with more interdependency than ever before. The exponential growth of technologies, applications and devices has led to more interaction points making it difficult to stay in control.

Risk

A lack of investment in IT infrastructure and supporting services has introduced substantial risk to the operating environment, and in many cases is leading to missed opportunities for digital transformation.

IT Skills Shortage

Attracting and retaining IT talent with the expertise to manage these complex systems can be challenging, especially when competing with the private sector for tech professionals.

Aging Infrastructure

Many institutions have legacy IT systems and infrastructure, making it difficult to integrate modern technologies and adapt to new trends in IT. Upgrading legacy systems often comes with budgetary and logistical hurdles.

There is a better way.

A network that's in proper shape is fit for the future, whatever form it takes. In-built adaptability is the key. That's what you get with a Juniper powered network from Block. Infrastructure designed to tame complexity, empower staff and promote effective and safe services for students – all for the common good.

BLOCK

A step-change in campus network

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Juniper's Mist AI™ engine was built from the ground up to provide the optimal way of deploying, operating and monitoring campus networks. The great leap forward is to bring the physical and wireless network under the same dashboard, putting more data in reach of IT teams. Coupled with a robust hardware portfolio, the power of Mist AI™ is to streamline network operations and improve user experiences automatically - enabling IT teams to focus on strategic initiatives.

Juniper's AI-driven campus is composed of the following:

▶ A modern, microservices cloud AIOps platform

▶ AI-powered Wi-Fi and wired switching

▶ Campus fabrics running EVPN-VXLAN

▶ Cloud-ready campus Ethernet switches

▶ Enterprise-grade access points with Wi-Fi, Bluetooth LE, and IoT

▶ Juniper Connected Security and network segmentation

▶ Junos® operating system

▶ Junos telemetry

The Juniper Network portfolio extends across the WAN, LAN, Wi-Fi, and security domains, while supporting open standards like Ethernet VPN-Virtual Extensible LAN (EVPN-VXLAN) to deliver architectural simplicity, scale and reliably superior performance.

BLOCK

Tangible benefits of Juniper's AI-driven campus

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Putting smart AI at the heart of things brings to life a level of real-world operational upgrades that once belonged to the realm of fantasy.

Agility

It's altogether more agile, and doing everything in the cloud takes so much less time. When orchestration and infrastructure are configured as code, networks can grow and integrate organically. That means accelerated release and deployment cycles, immediate policy changes across the enterprise and a vastly lower chance of change failure.

Security

Imagine being able to protect essential data with granular control of network traffic across devices, user groups or servers. Even IoT devices and operational tech could be monitored and managed on the network.

This extra layer of cyber-resilience protects critical data, reduces the attack surface and reduces the risk of any attack pervading the environment.

Mobility

When people and devices can move freely across your campus with no fear, the whole mood changes.

Your Wi-Fi should work as an always-on backstop, ensuring uptime and availability of critical service and enabling a consistent experience for staff and students during network upgrades and component failure.

Visibility

When analytics and network telemetry are centrally aligned, everyone knows the exact state of play at all times.

Seeing at a glance which systems are up or down gives a richly contextual view of performance and usage, while faster troubleshooting reduces incident resolution times by as much as 70%.

**BLOCK**

Altogether, simpler.

A Juniper-powered Block network allows previously complex changes to be configured across the entire network from a single viewpoint - regardless of the number of devices.

End-to-end configuration and monitoring of both wired and wireless networking gives network teams a single, cloud-based dashboard – all thanks to Juniper Mist.

Some Juniper clients deploy thousands of Access Points (APs) every day, thanks to physical implementation that's already simple by design and a smartphone app that makes the provisioning of switches and APs at scale a breeze.

Switches and APs can be templated before they are physically deployed. Then when the device is discovered by the Juniper Mist Cloud via Zero-Touch Provisioning (ZTP), the templates are automatically assigned based on site or device profile.

▶ The Mist App can be used to view and manage a site's device inventory.

▶ New devices can be claimed to a site by the installing engineer, simply by scanning the QR code on the back of the unit.

▶ The AP or switch can be assigned to a site, edited and a photo of its mounting location uploaded to the dashboard from here.

▶ Here we can site a device on the building plans. If it is an AP we need to take care to give height and alignment for location accuracy.

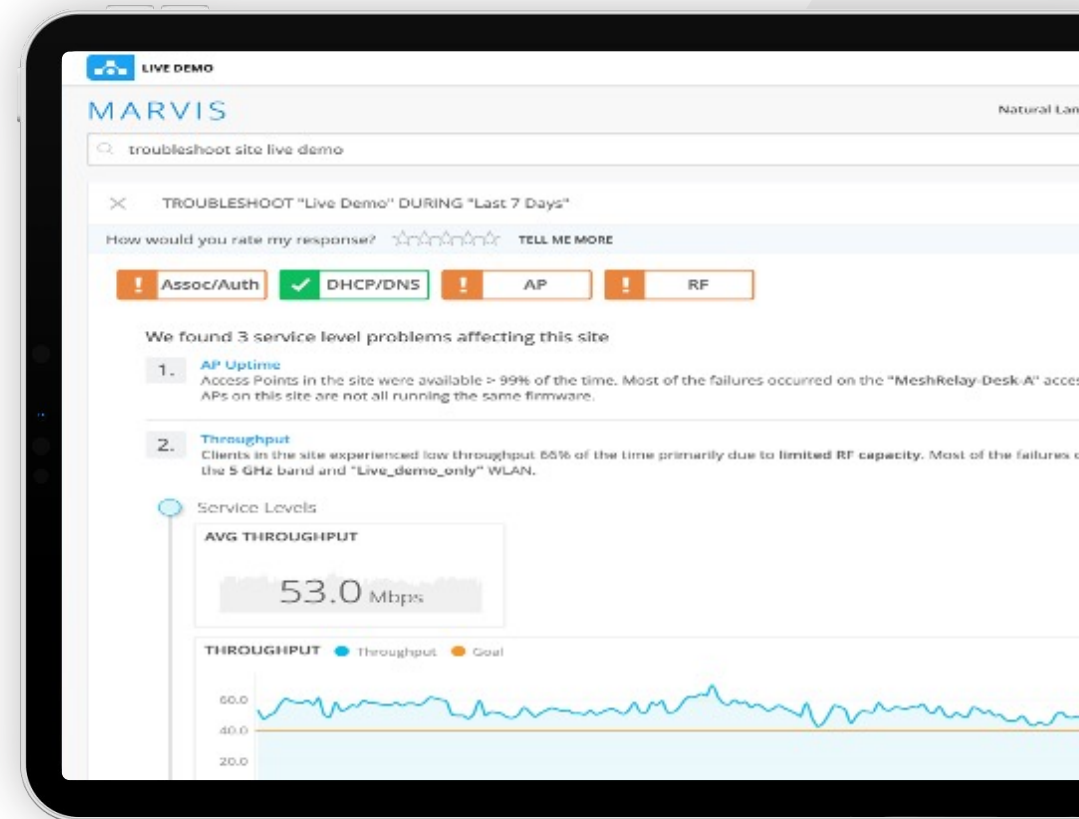**BLOCK**
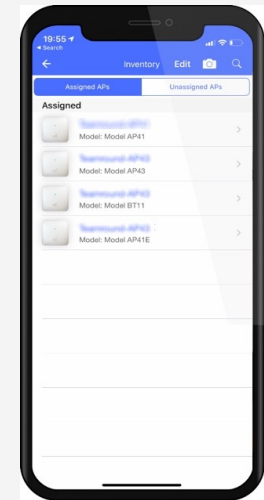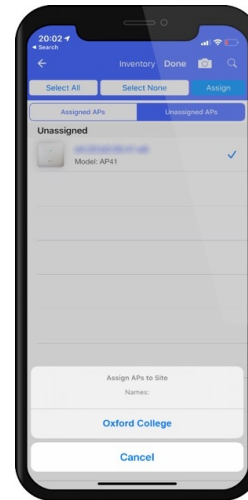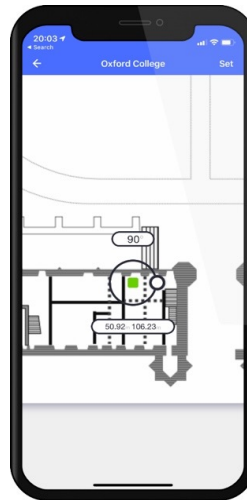
Smart AI upgrades your whole team

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Networking specialists can't always be on site, and junior operatives aren't always able to diagnose complex issues.

Marvis, Juniper's Virtual Network Assistant fixes this. It's programmed to monitor the network proactively, allowing IT teams to perform diagnostics that would previously have needed escalation to senior engineers.

Take Wi-Fi. With Marvis in post, any member of the IT team can open a chat window in the Mist AI dashboard and start a diagnostic session using simple commands such as 'troubleshoot user Chang, Marc'.

This query will correlate data from around the network and provide clear insights into client experience and recommended actions, such as increasing AP density, updating device drivers or updating device credentials.

Client troubleshooting can also be performed instantaneously, without the need to perform manual network diagnostics. Problems can be solved more quickly, freeing people to get on with making the difference only humans can.

**BLOCK**

'Where' is as crucial as 'what'

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State-of-the-art equipment tracking/mobility analysis is integrated into all Juniper-powered Block networks.

Traditional tracking required Wi-Fi-enabled tags to be attached to devices – expensive, and in need of regular (often daily) recharging. Juniper's Mist AI platform uses Bluetooth Low Energy (BLE) tags instead – bringing lower cost, longer battery life (years rather than hours) and far greater accuracy - to the nearest metre.

Juniper Mist is the only vendor with a patented virtual BLE radio, enabling pinpoint accuracy without the need for additional physical hardware or any manual intervention.

Juniper Mist also integrates out-of-the-box with specialist providers of asset tracking software such as Zebra and AiristaFlow.

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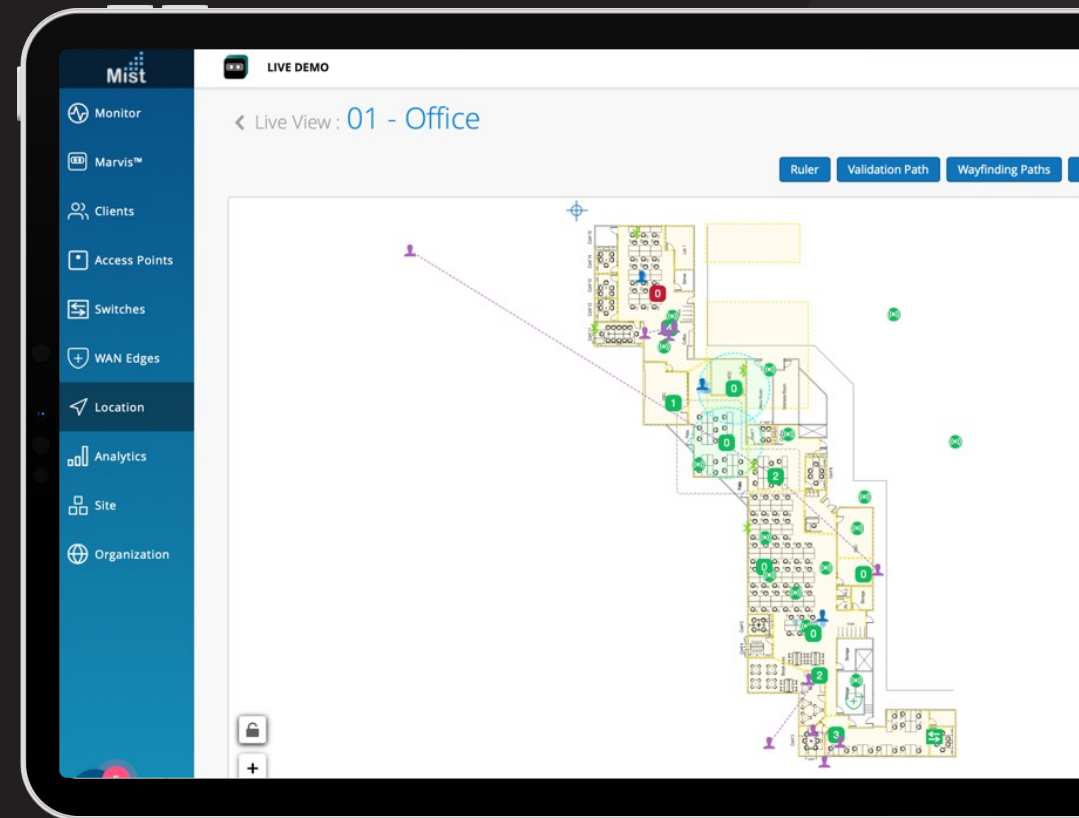
Mist AI makes everything around it smarter

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Juniper's Mist AI publishes a Software Development Kit (SDK) that effectively upgrades connected Smart Devices 'on the fly'. It can improve battery performance, accuracy and the user interface itself - allowing staff and students engage others in a ever more useful ways. **Some examples:**

Indoor wayfinding: by integrating an app with timetabling and campus mapping, users can find their way to their next activity more easily - even with last-minute venue changes.

Employee security: the safety of staff and users is always among the top considerations for a Smart City / Smart Campus setup. Staff, visitors and students can all benefit from the ability to monitor lack of movement, or send alarms, remotely.

Engagement analytics and space optimisation: a major benefit of integrated connectivity is the constant flow of information about what's working and what needs a tweak.

Guest Access

When it comes to authentication options, the Juniper-powered Block network is infinitely flexible. Passphrase, codes sent via Email or SMS, Sponsored Guest Access and sign-in via Google, Facebook, Amazon, Microsoft and Azure – it's all possible.

Administrators may also specify the time period guests stay authorised, and redirect to a web page customised to suit the organisation - in appearance, logo, form fields and disclaimers.

BLOCK

The all-seeing AI

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A Juniper-powered Block network can be as hands-on or off as you programme it to be. Statistics are collected into a central management platform so IT Teams can analyse service levels, who's connecting, busiest periods and anything else that helps enhance performance.

PACE gets to the heart of things, fast

Data Science and Machine Learning help us understand and improve the actual end-user experience.

PACE stands for Mist AI Predictive Analytics and Correlation Engine. It can monitor user experience at a speed appropriate to its name.

In addition to the PACE engine highlighting important usage patterns, traditional usage graphs and metrics are also provided.

Mist AI Service Level Expectation (SLE) framework quantifies the end-user experience as Wi-Fi Assurance and Wired Assurance at any given point.

Deployed with Juniper wired access switches, Mist AI unique AI-driven operations and service assurance takes Juno's switch telemetry into the Mist AI micro-services cloud and AI engine. That all translates to simpler operations, shorter repair times and far better visibility into end-user experiences.
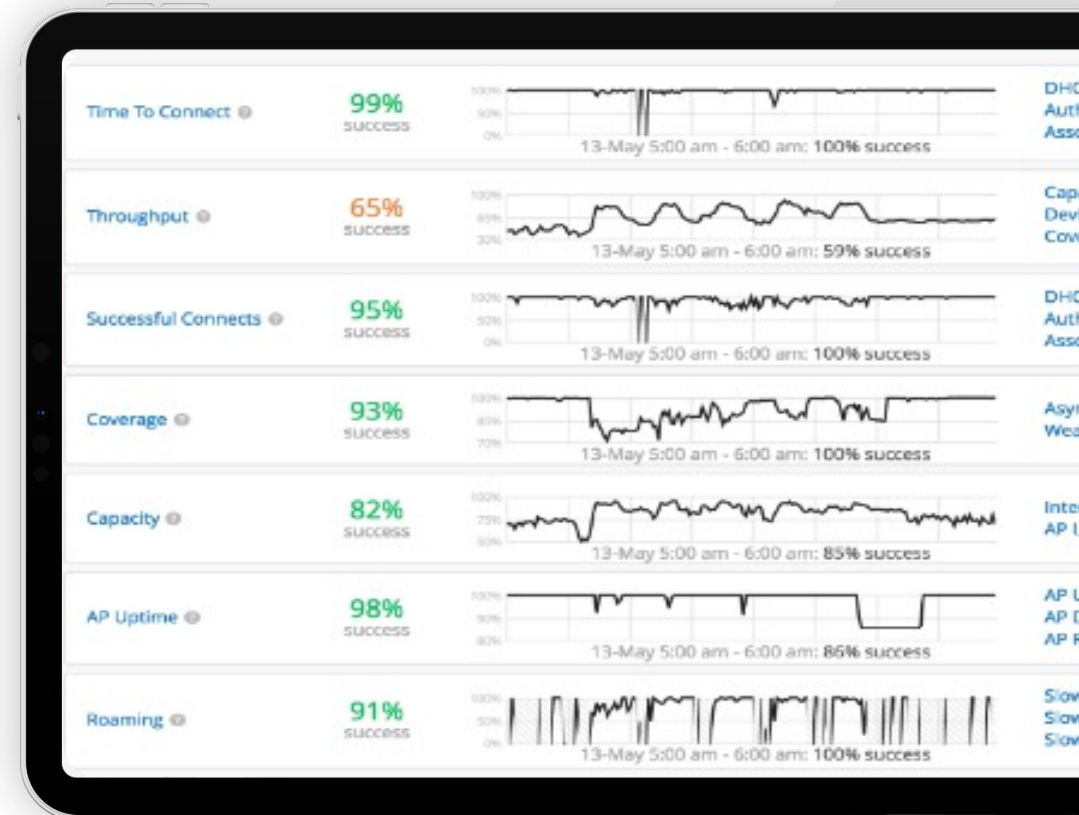
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A robust network fosters an optimal learning environment

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The Juniper Mist dashboard is fully integrated with Block's service management processes, sending rich analytics data straight into our Digital Services Centre (BOC). The Mist AI dashboard provides hugely helpful insight into errors, failures and service degradation, collating this in an incredibly easy-to-understand way.

The dashboard sends alerts either to an IT email or directly into Block, via API. SLEs can be configured to ensure the performance of the wireless network never drops below an agreed threshold. If it does, a series of automated events can be triggered to make sure the IT team has all the actionable insight it needs to resolve the problem quickly.

Meet Marvis

Marvis is the Juniper Virtual Network Assistant, providing organisations with the additional extra capability to perform on-demand analytics within their own IT teams. This effectively puts the skills of a wired and wireless network engineer in your hands, enabling both proactive and on-demand network investigations.

Juniper Mist uses a combination of machine learning algorithms and neural networks. This enables remote diagnosis and mitigation of issues such as:

▶ Bad cables

▶ Missing VLANs

▶ Negotiation mismatches, typical with lower end IoT devices

▶ Spanning Tree misconfigurations.
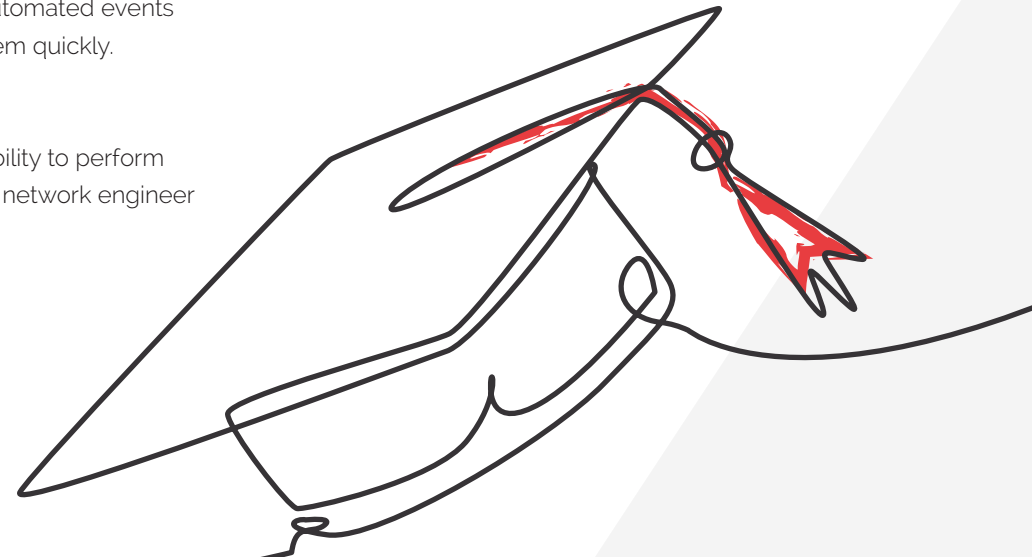
BLOCK

Go the distance

A Juniper-powered Block network monitors and protects every component of the architecture, so wireless services remain online during planned maintenance and even unplanned outages.

Juniper APs are deployed based on an accurate site design/survey, so the failure of an AP still allows for secondary coverage from neighbouring APs to provide seamless roaming. For RF redundancy, Mist Radio Resource Management (RRM) provides self-healing neighbour recovery in a multi-cell site.

Coverage holes caused by AP or switch port outages/interferences are automatically remediated by neighbour recovery and auto-adjustment of channels or power on the APs, ensuring 24/7 site operations.

The Mist Event Correlation and SLE framework offers real-time visibility into anomalies resulting from such outages, and allows network administrators to assess the efficacy of RRM changes.

The Juniper Mist solution is based on a purpose-built modern cloud that allows scalability and reliability while eliminating single points of failure. Components of the Mist cloud can provide 24/7 availability, with multiple Availability Zones within the same region for geographic redundancy and failover.

Keeping things tight

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The rapid adoption of digital technologies is leading to an explosion of different use cases and device types across networks. With an old-world set-up, securing this diverse range has been a complex and time-consuming challenge that's never confidently met.

A Juniper-powered Block network can provide unified Network Access Control (NAC) for the wired and wireless network, with the ability to provision multiple macro-segments (VRFs) within the infrastructure. It can separate major use cases, or allow extremely vulnerable devices (such as Medical or Operational Technology IoT assets) to be isolated.

This approach allows higher education establishments to implement flexible access controls in line with security requirements. The macro-segmentation controls of the environment also allow universities to handle multi-tenancy.

Juniper's Mist Edge appliance allows us to fully segment unauthorised wireless devices from an organisation's internal network. This is done by tunnelling all unauthorised client data into a secure part of the network, such as the DMZ, where it can be firewalled.

Mist AI supports Role-Based Access Controls (RBAC) to control access to the Mist AI portal, including roles for Super User, Network Admin, Observer, Installer and Help desk. Each of these roles can be allocated based on sites or site group membership, so an administrator can be restricted to view a specific site or site group rather than the entire organisation.

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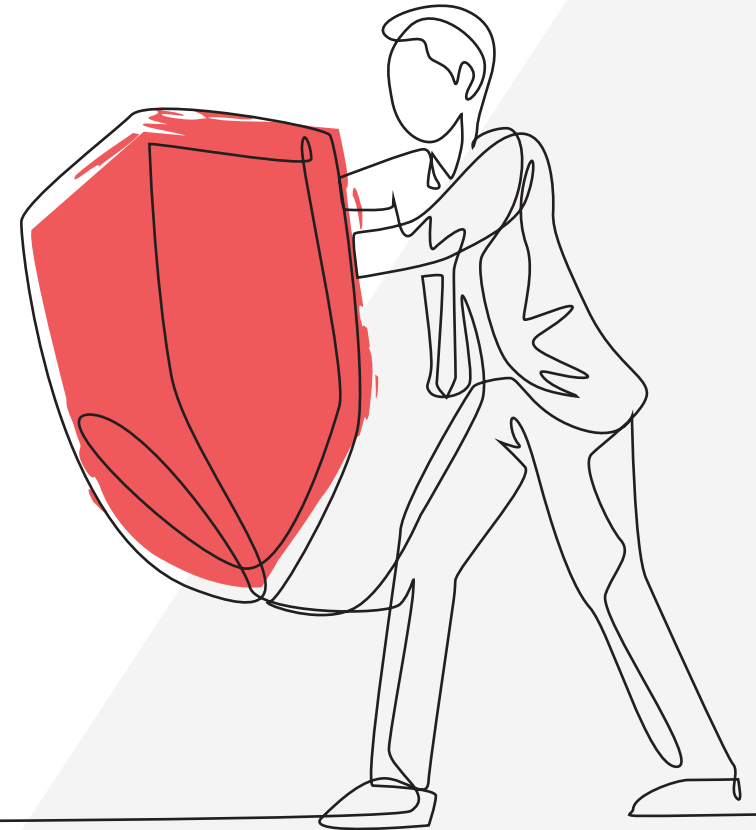
With Juniper Mist, upgrades come as standard

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Juniper is taking the lead when it comes to keeping everything up-to-the-minute.

That means users of Juniper's Mist AI technology will see a significant improvement in the pace at which software upgrades can be rolled out across the estate. The Juniper-powered Block network dramatically simplifies the process, by providing a mechanism to allow the cores to be upgraded independently.

Switch upgrades are applied to access layer switch stacks on a rolling basis, one switch at a time, as opposed to having to bring down the entire switch stack. There's also a road-mapped feature of in-service software upgrades, with no impact to the access switch.

This Juniper-specific capability allows network teams to deploy new switch features and functionality more quickly, whilst staying in control of recommended switch software versions without the headache of disruptive downtime.

BLOCK

People are still the most critical part of any AI-driven system

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Block has developed a formalised approach to ensure that our clients stay abreast of new features and capabilities as they're introduced. This ensures maximum value from your network investment.

▶ **Executive updates (annual):** these sessions focus on understanding your organisation's transformational journey, and aligning technology with these aims.

▶ **Technology briefings (biannual):** after the release of new products or capabilities, Block will deliver a summary session that will be a combination of presentations and live demonstrations (where applicable). We will make these events as interactive as possible, encouraging white-boarding and open discussions to put the knowledge into context.

▶ **Learning and development (ongoing):** we've invested in a Learning and Development Platform to provide clients with education and relevant content over a product's lifecycle rather than just at the start of the project. The content includes a blend of in-house recorded material and specialist third-party training.

The **Juniper All-Access Training Pass** also provides access to Juniper training, upfront and ongoing, helping improve skills and achieve business objectives. The Pass includes every Juniper-facilitated course, the entire catalogue of on-demand courses and JNCIE self-study bundles.

This gives the flexibility to learn new skills on an ongoing basis rather than all at once in a classroom setting. Instead, users choose the training format that best meets their individual or group learning needs and preferences.

BLOCK

Digital Futures.
Delivered Together.

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Juniper strives to deliver network experiences that transform how people connect, work and live – for the benefit of everyone.

By challenging the complexity inherent in the 5G and cloud era, Juniper solutions power the connections that matter most to populations, from education to healthcare to local government.

Juniper's commitment to improving real outcomes for network teams - and every citizen they serve - makes them an ideal partner for Block. Our shared values and vision for the future mean that we can work together to deliver true transformation.

Block brings experience, energy and creative thinking to everything we do, helping our clients to realise what's possible.

Juniper's relentless focus on putting customers – the network architects, builders and operators – at the centre of all that they do, combined with Block's deep vertical insight and proven technical expertise, mean that together we can deliver impactful, measurable and sustainable change across all kinds of organisations – with the specific landscape of higher education very much a priority.

block.co.uk