



BCNET
CONNECT
HIGHER ED & RESEARCH TECH SUMMIT

Optimizing Network Management in Higher Education with AI and Machine Learning to Drive Cost Efficiency

Operational
Costs

Student
Retention
And Experience

Service
Disruption

Expertise

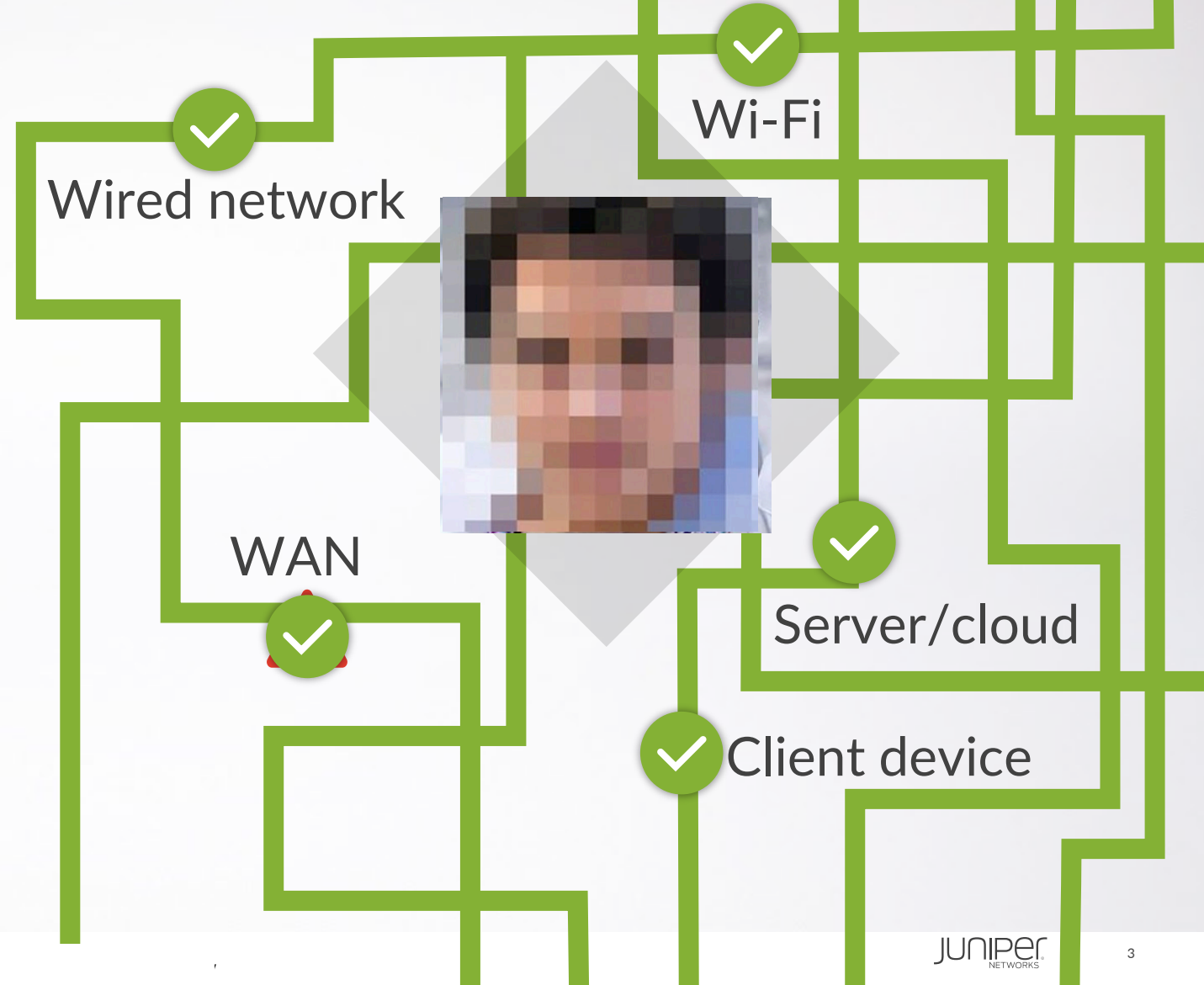
Security



Demand for
Applications



What was wrong with Bob's Zoom call with his class yesterday?



Remote



On-Campus

Cost of Trouble Tickets in Legacy Architectures

User complains Wi-Fi is slow in Student Union

Check client status and status of the Student Union

- Is client configured correctly?
- What is the MAC address?
- Access points down?
- Any recent changes like construction?
- Any firmware updates to the controllers?
- Any client pushes or updates via GPO? (Group Policy object)

Check client wireless MAC address

- Check monitoring system for any possible issues
- Check client connect history
- Check what areas the device typically associates to
- Check radius logs

Check user ID

- How many devices is the user using on Wi-Fi?

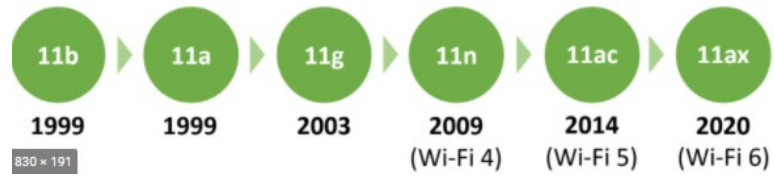
Call user - Questions to ask:

- What device?
- What driver?
- How often does the issue happen?
- Can you reproduce the issue?
- Does anyone else have the issue?
- Does any of your other devices perform in this same manner?
- When did this issue start happening (yesterday, last week, last month)?
- Is there a particular time of day the issue happens?
- Can you share exactly the location you are having the most problems in?
- Is there a particular app in use when you observe the slowness?
- Any recent changes to your device that you might think adds to the issue?
- What wireless network do you connect to?

Visit the Student Union

- Try and reproduce the issue on your device
- Observe the user while collecting debugs, logs and frame captures as needed.
- Speak to other users in the area specific to their experience
- Get an exact build of that device and test

Outdated and Complex Architectures are the “Anti-AI”

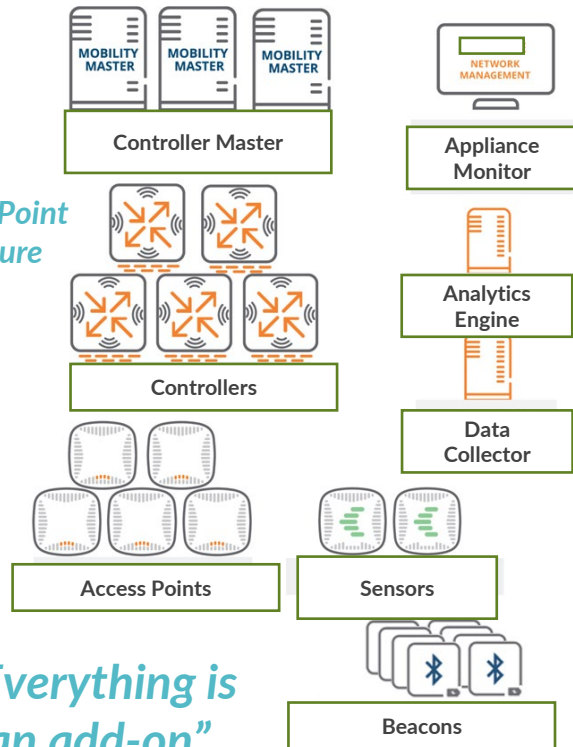


“Only incremental changes since 1999 - An architectural change is needed!”

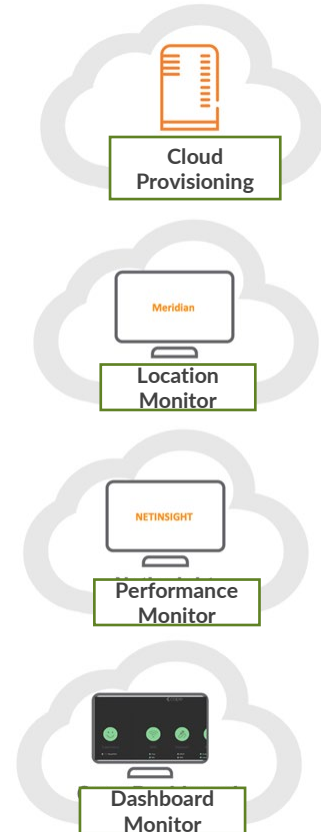
On Premise Boxes

Different Clouds

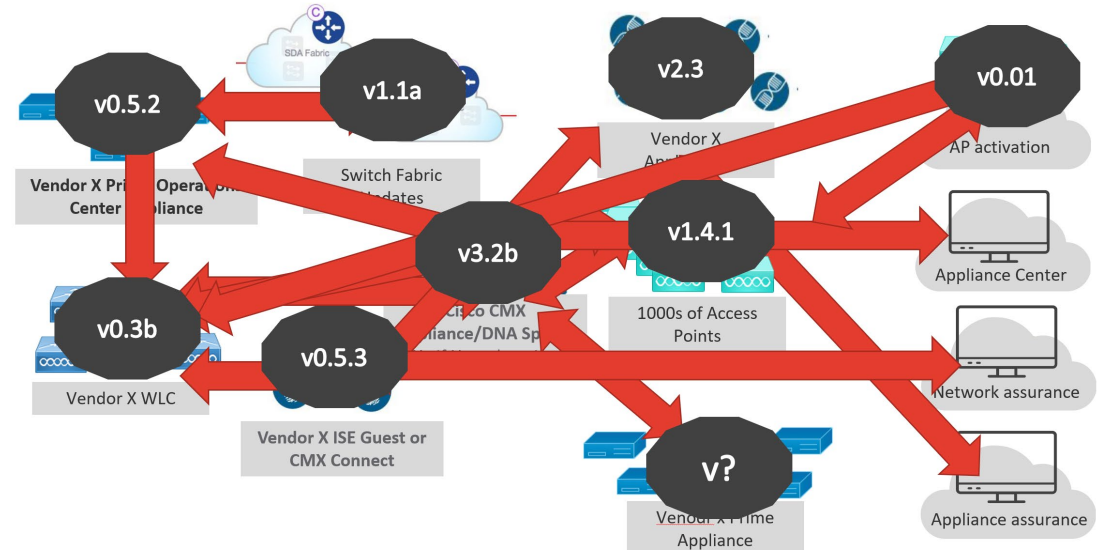
Central Point of Failure



“Everything is an add-on”



Too Many Dependencies and a single point of failure



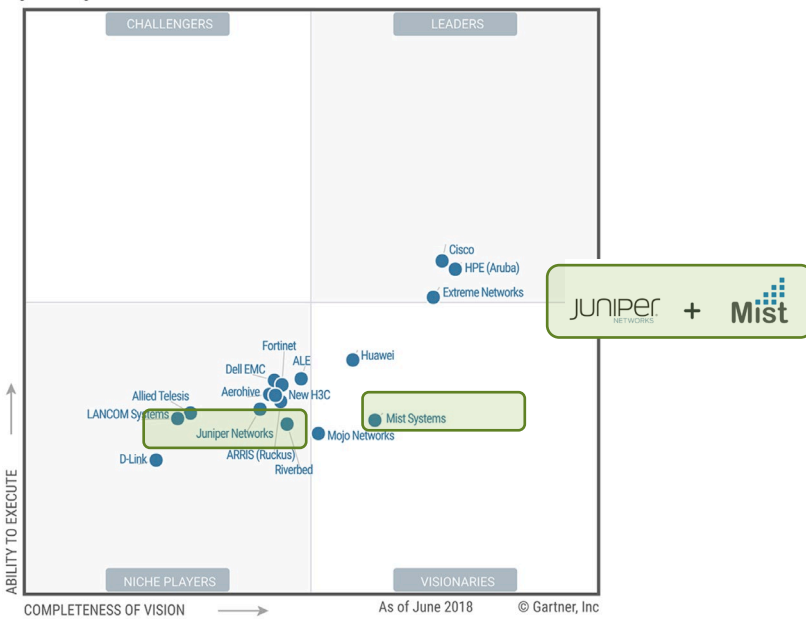
Definition – when a discipline abandons one view of the world for another; a revolution; a drastic conceptual restructuring

Cloud Computing can be defined as a computing paradigm shift where computing is moved away from personal computers or an individual application server to a “cloud” of computers.



Juniper's evolution in the MQ

2018 Magic Quadrant



...And Still Number One in 2022!

Figure 1: Magic Quadrant for Enterprise Wired and Wireless LAN Infrastructure



All Categories > Enterprise Wired and Wireless LAN Infrastructure > Juniper

Customers' Choice 2022

Juniper Reviews
in Enterprise Wired and Wireless LAN Infrastructure
4.9 ★★★★★ 469 Ratings

[Compare](#) [Write A Review](#) [Download PDF](#)

Products: EX Switches, Juniper Sky Enterprise, Mist BLE Asset Visibility Location Based Services (Legacy), Mist BLE Engagement Location Based Services (Legacy), Juniper Wireless Access Points and Edge, Juniper Mist Wi-Fi Assurance, Juniper Mist Cloud Services, Juniper Mist Wired Assurance

Overview | Reviews | Alternatives | Likes and Dislikes

Juniper Ratings Overview

4.9 ★★★★★ 469 Ratings (All Time)

Review weighting ⓘ Reviewed in Last 12 Months [Email Page](#)

95% Would Recommend

Rating Distribution

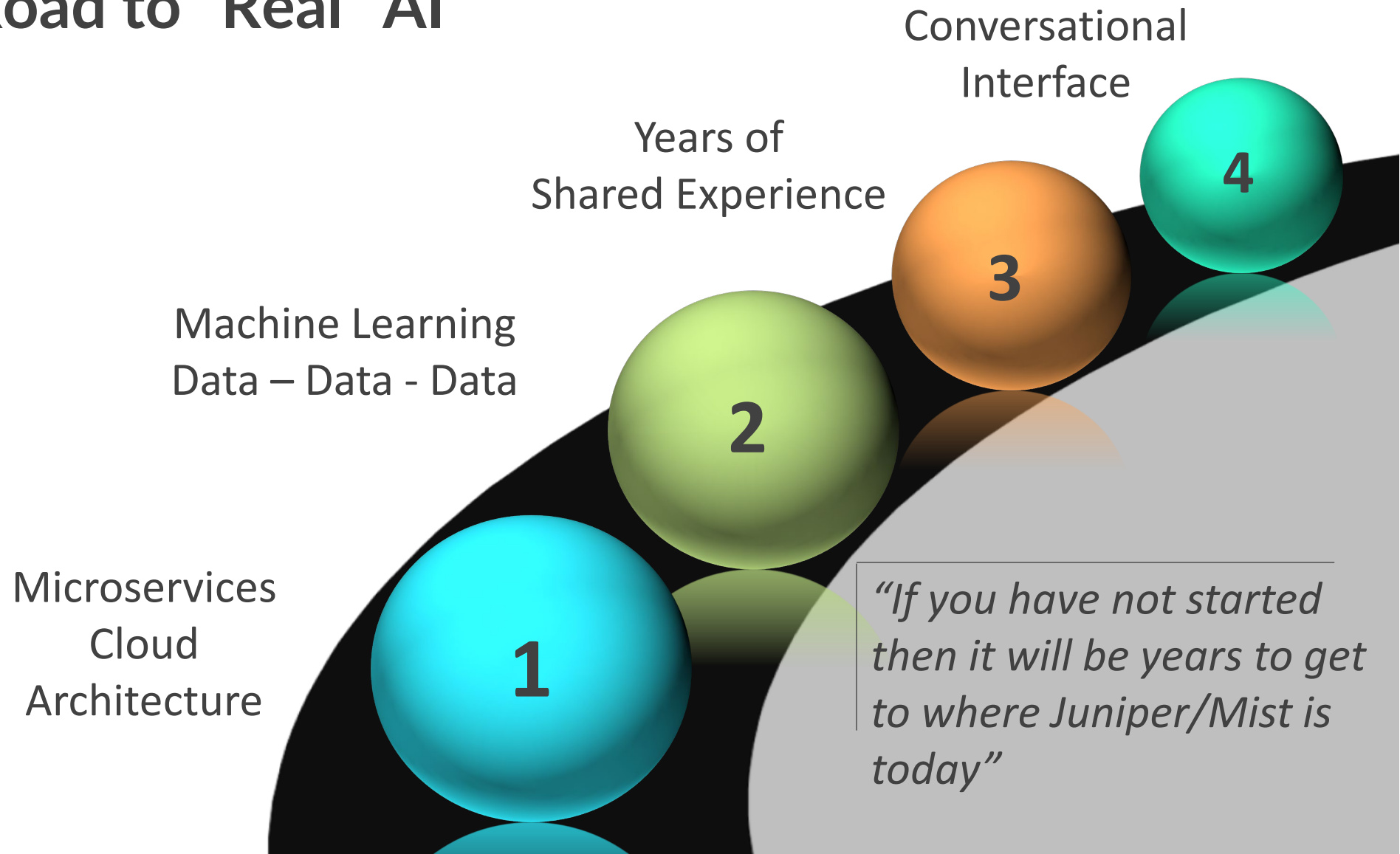
5 Star	85%
4 Star	14%
3 Star	1%
2 Star	0%
1 Star	0%

Distribution based on 469 ratings ⓘ

Customer Experience

Evaluation & Contracting	4.8
Integration & Deployment	4.8
Service & Support	4.8
Product Capabilities	4.8

The Road to “Real” AI



The Microservices Cloud is the Key to “Real AI”

Artificial Intelligence



Data



Data Science



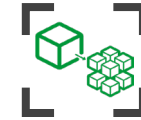
Marvis VNA



Domain Expertise



Modern Cloud Architecture



Microservices



100% Programmable



Distributed Architecture



Infinite Scalability

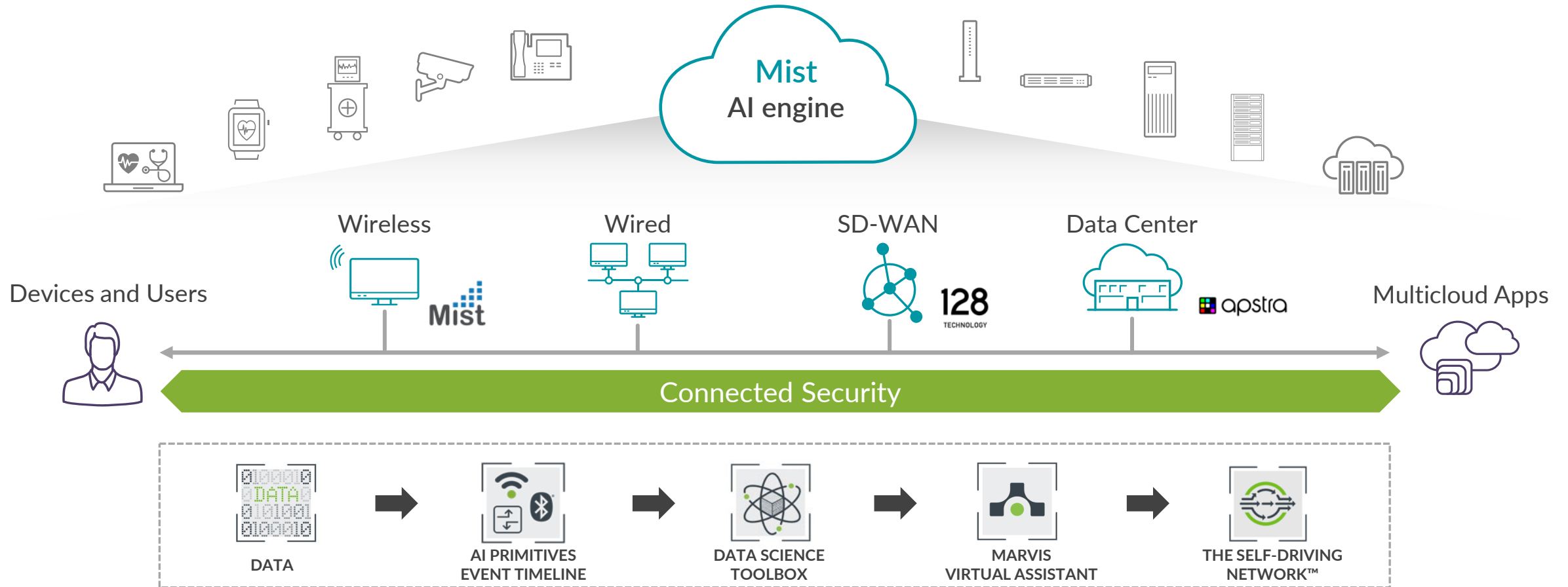


Highly Resilient

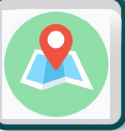





“You can’t have AI “overnight”. It requires huge amounts of data analyzed over years of time”

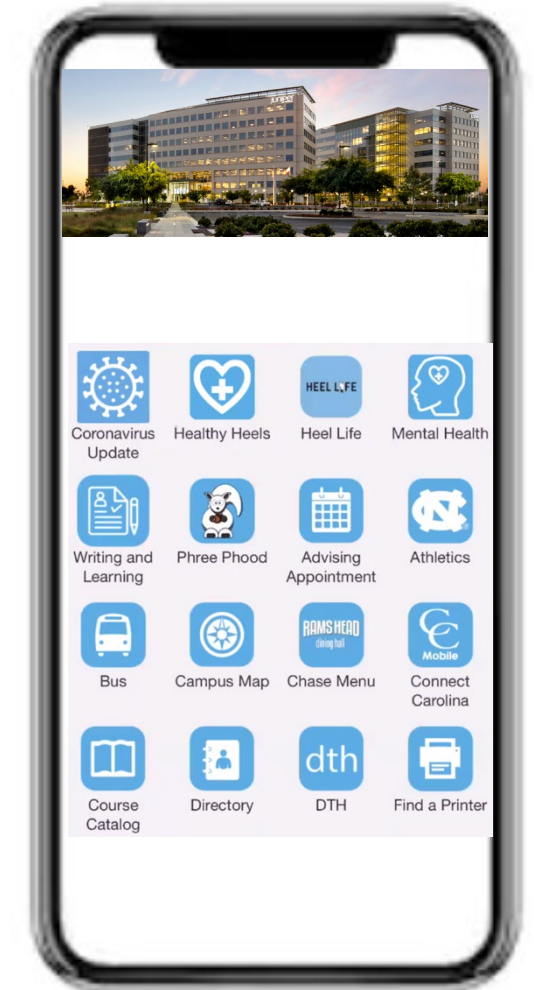
“A controller in the cloud is Not the same....”

Delivering Insight, Automation, and Action



Applications Enabled by the Right Architecture

-  **Wayfinding** Campus directions, guided tours, instructor locator
-  **Tracing** Proximity notifications, contact tracing support
-  **Faculty** Roll call, Integration with LMS, Parent Updates
-  **Wellness** Student involvement, Tutoring activity
-  **Safety** Weather, Active Shooter, Student Locator
-  **Analytics** Asset Tracking, Library usage, Facility access



Transform Wi-Fi from a commodity to a strategic university asset!

Dartmouth College



<https://www.juniper.net/us/en/customers/dartmouth-case-study.html>

- 7,000 students and 27,000 devices all managed by a limited IT staff.
- Installed 2,000 access points in < 48 hours.
- Uses the Juniper QFX in the core to enable an EVPN-VXLAN architecture substantially increasing security zones on the campus. East-West traffic can now be inspected instead of just at the border.
- Network operations are simplified, freeing up IT for more strategic projects. Unprecedented visibility to track Wi-Fi and application usage. Support staff can solve connectivity issues on their own vs. escalating.

“We are trying to create the best customer experience we can. Mist allows us, through its analytics, to find out where our problems are, even if only two percent are having a problem, and resolve it on the fly. With Mist, we can create that experience for the customer.” –
Mitch Davis, CIO Dartmouth

University at Oxford



- 25,000 students. Renowned university and the oldest center of learning, teaching, and research in the English-speaking world.
- Wanted to quickly identify and resolve transient and hidden problems in the network.
- AI-driven Wi-Fi to support central administration, libraries, colleges and departments.
- Provide a home-like experience for students. Enable secure BYOD for laptops, gaming consoles, and tablets using Pre-Shared Keys.

“With Juniper and Mist AI, we have given ourselves the visibility to see what is happening with a client device and the tools to resolve issues quickly. The insight proved by Mist AI is phenomenal.” – Robert Jones, Manager of Network Services University Administration and Services, Oxford.

<https://www.juniper.net/us/en/customers/university-of-oxford-case-study.html>

University of Massachusetts Amherst



<https://www.juniper.net/us/en/customers/the-university-of-massachusetts-amherst-case-study.html>

- 32,000 students and 6,400 faculty/staff
- Provide a digital foundation for student success, health and safety, and smarter campus operations.
- The old campus Wi-Fi was far from steady with more than five Wi-Fi complaints EVERY DAY that were reported.
- Cloud-based microservices architecture freed UMass Amherst from managing old-school wireless LAN controllers.

“A university is a special environment with it comes to Wi-Fi. Every hour, tens of thousands of people move from building to building. That can cause chaos in a wireless network. With Juniper, we have better visibility into the student experience, and Mist AI and analytics make it easier to diagnose network problems.” – Jim Mileski, CTO, The University of Massachusetts, Amherst.



Thank you

JUNIPER
NETWORKS

Driven by
Experience™