

# THE NEW NETWORK IS SIMPLIFIED

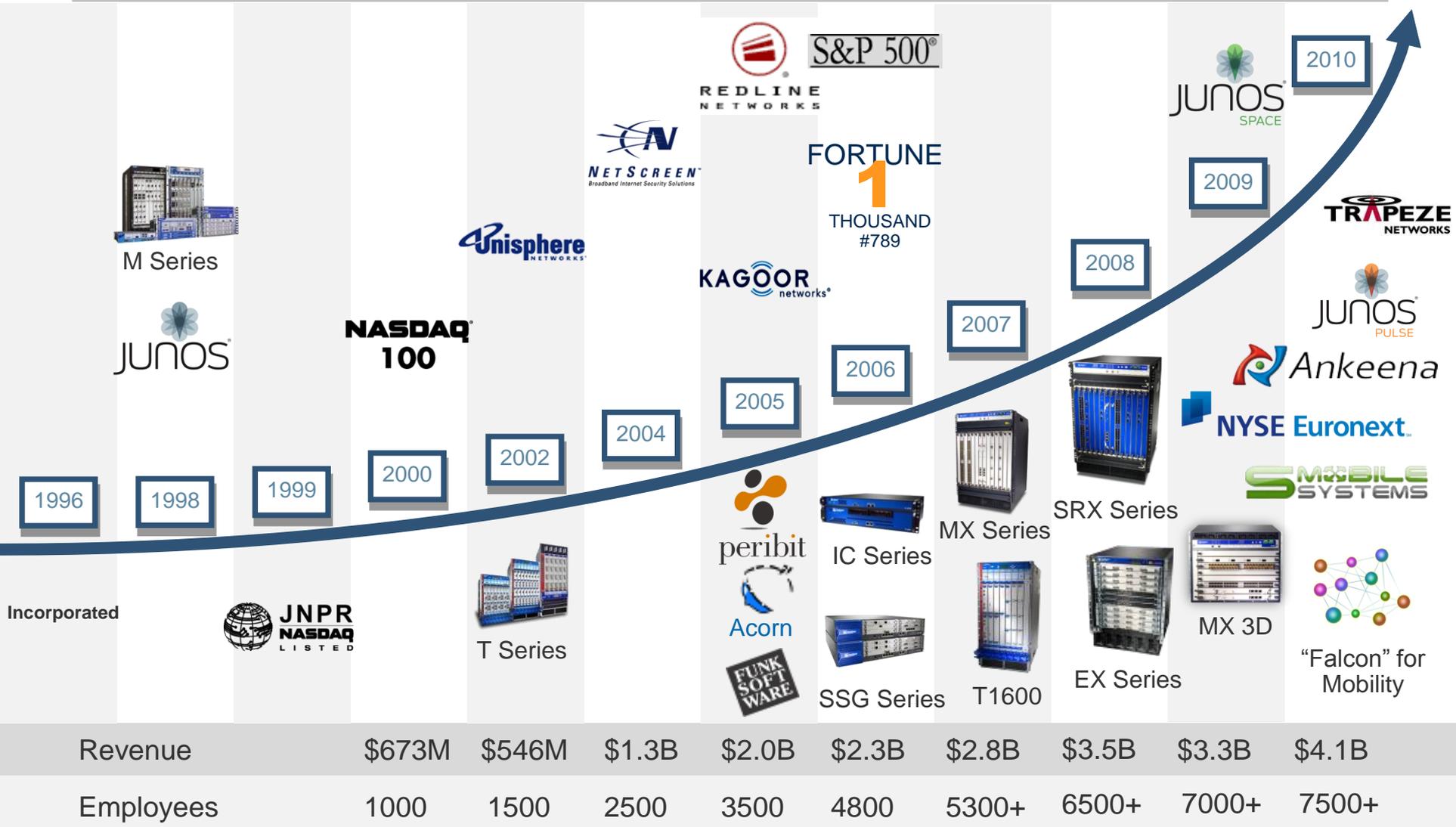
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IT security seminar “Stallion IOIII”, Tallinn

Jukka Piirainen

November 10, 2011

# JUNIPER NETWORKS – A DECADE OF INNOVATION



# PRODUCT PORTFOLIO POWERS THE NEW NETWORK

## SECURITY



SSG, ISG & SRX Series



SRC Series

SA Series & UAC

SBR Enterprise Series

## SWITCHES



EX & QFX Series

## WLAN



WL Series

## ROUTERS



E Series



T Series



J Series



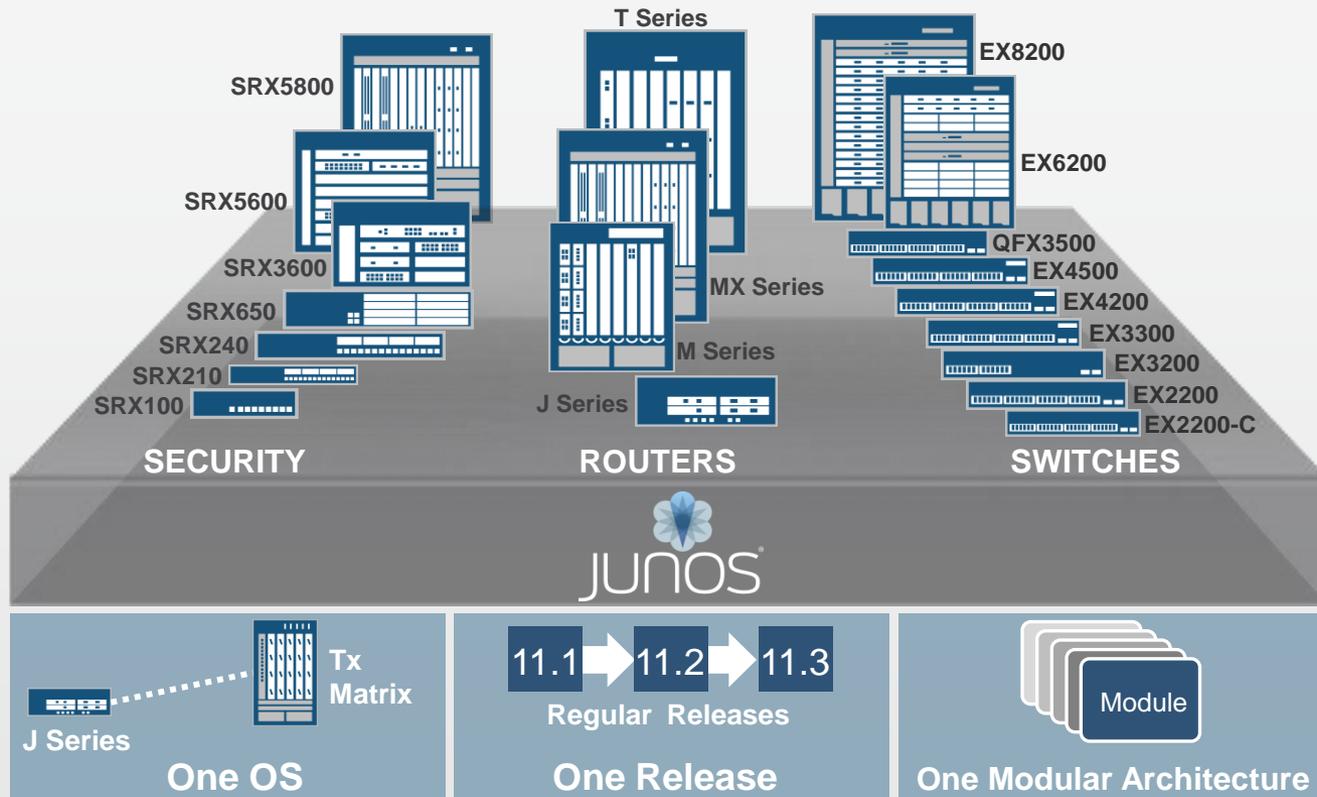
M Series



MX Series

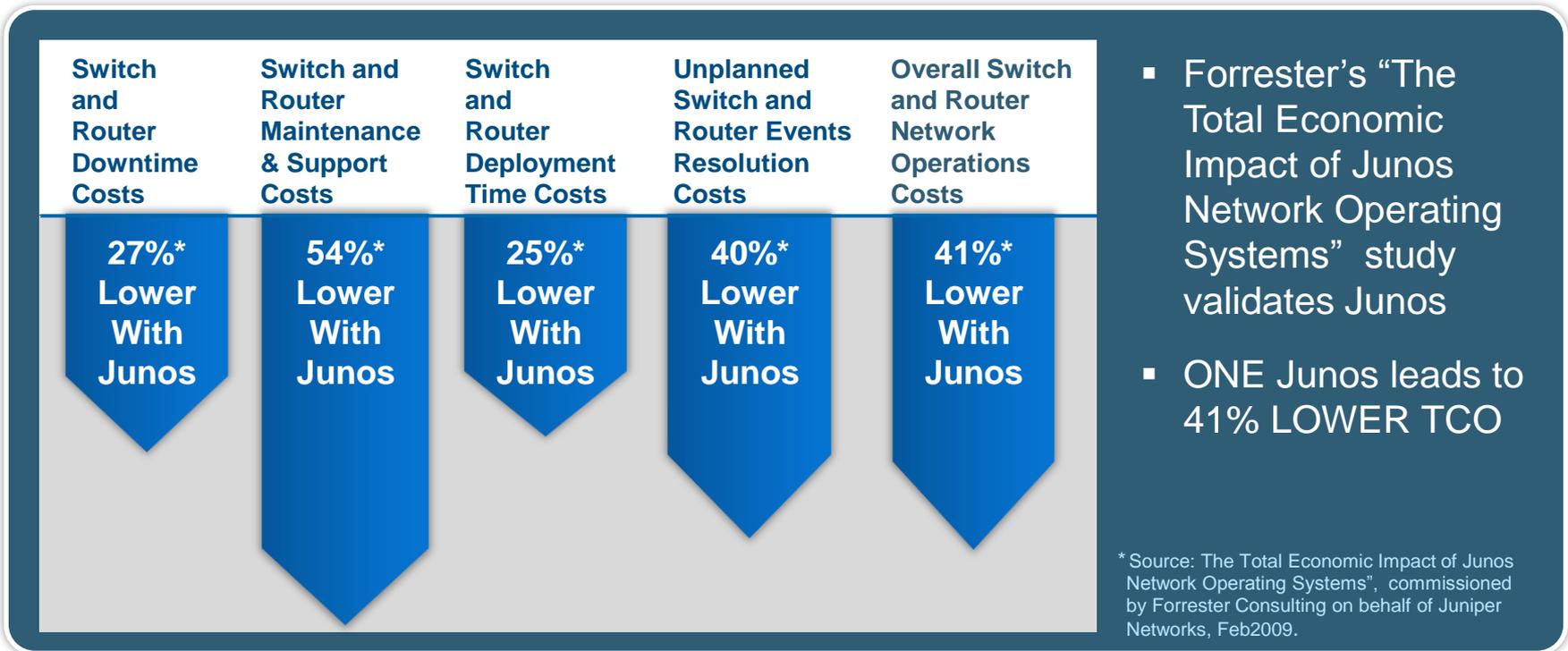
**JUNOS: ONE OPERATING SYSTEM**

# JUNOS: ONE OPERATING SYSTEM



Juniper enables single operating system that runs across all of the elements for the new network

# LOWER TCO WITH JUNOS



# NETWORK INDUSTRY TRENDS

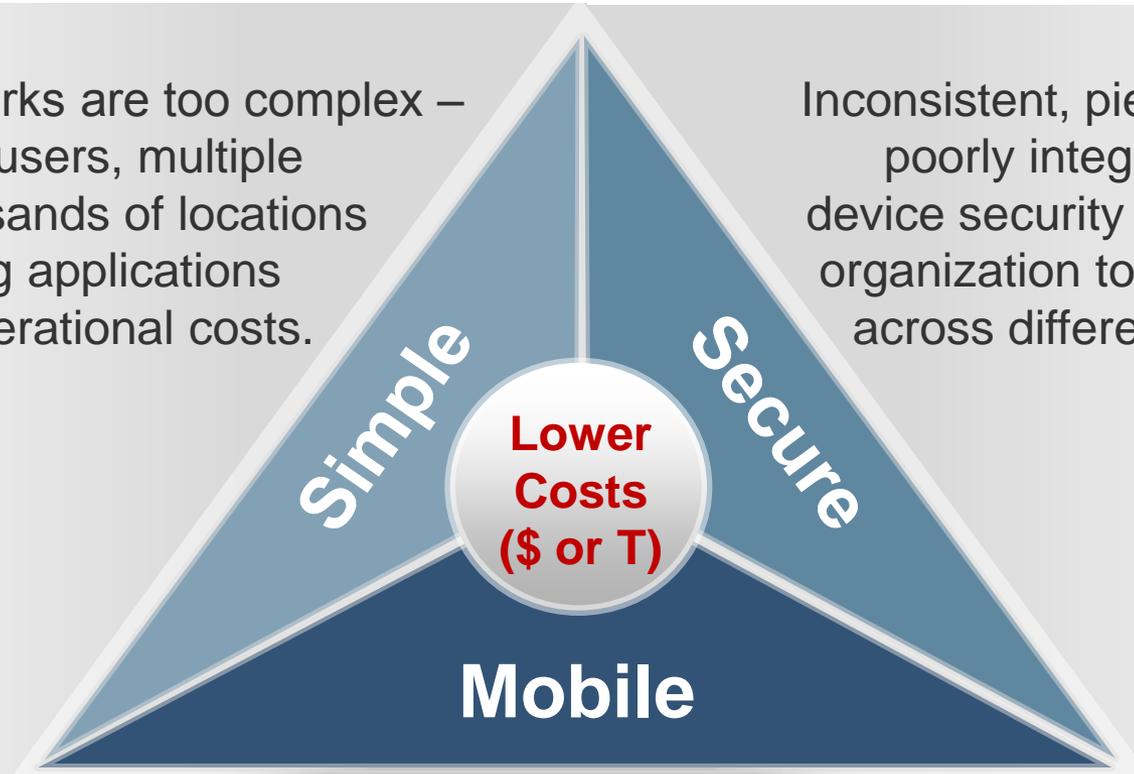
# MULTI-YEAR ENTERPRISE TRENDS



# CHALLENGES FOR ENTERPRISE NETWORKS

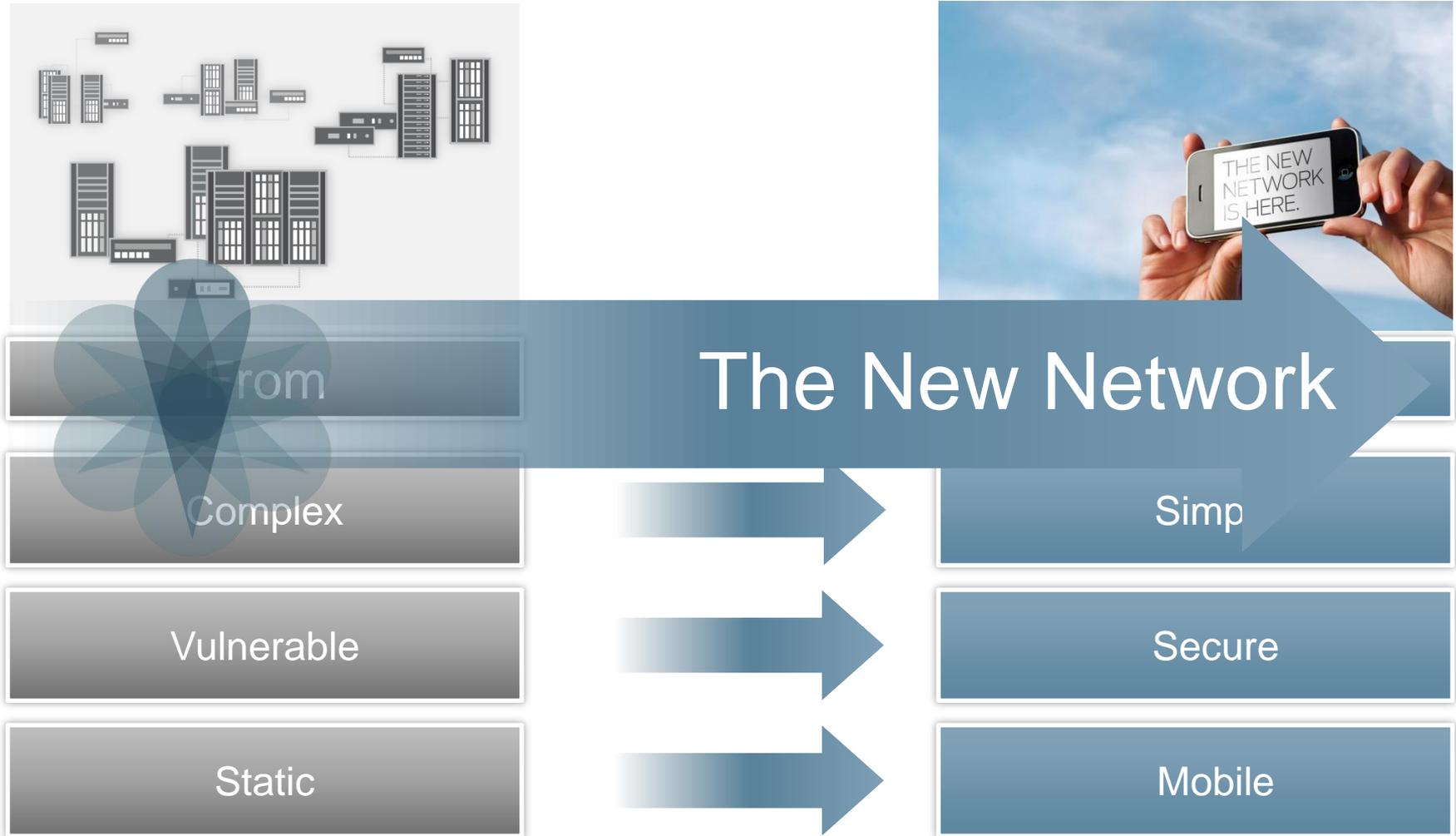
Today's networks are too complex – highly mobile users, multiple devices, thousands of locations and expanding applications mean high operational costs.

Inconsistent, piecemeal and poorly integrated mobile device security exposes the organization to new threats across different locations.



Users are depending on business critical applications using mobile devices and expect continuous availability.

# THE NEW NETWORK IS THE BREAKTHROUGH



**JUNIPER SWITCHES**  
**KEEPING *IT* SIMPLE**

# EX SERIES SWITCHES

## Deployed Extensively

- Over 3,000 customers, 7M ports
- Data center, campus, branch, SP
- Financials, healthcare, education
- #3 LAN switching vendor



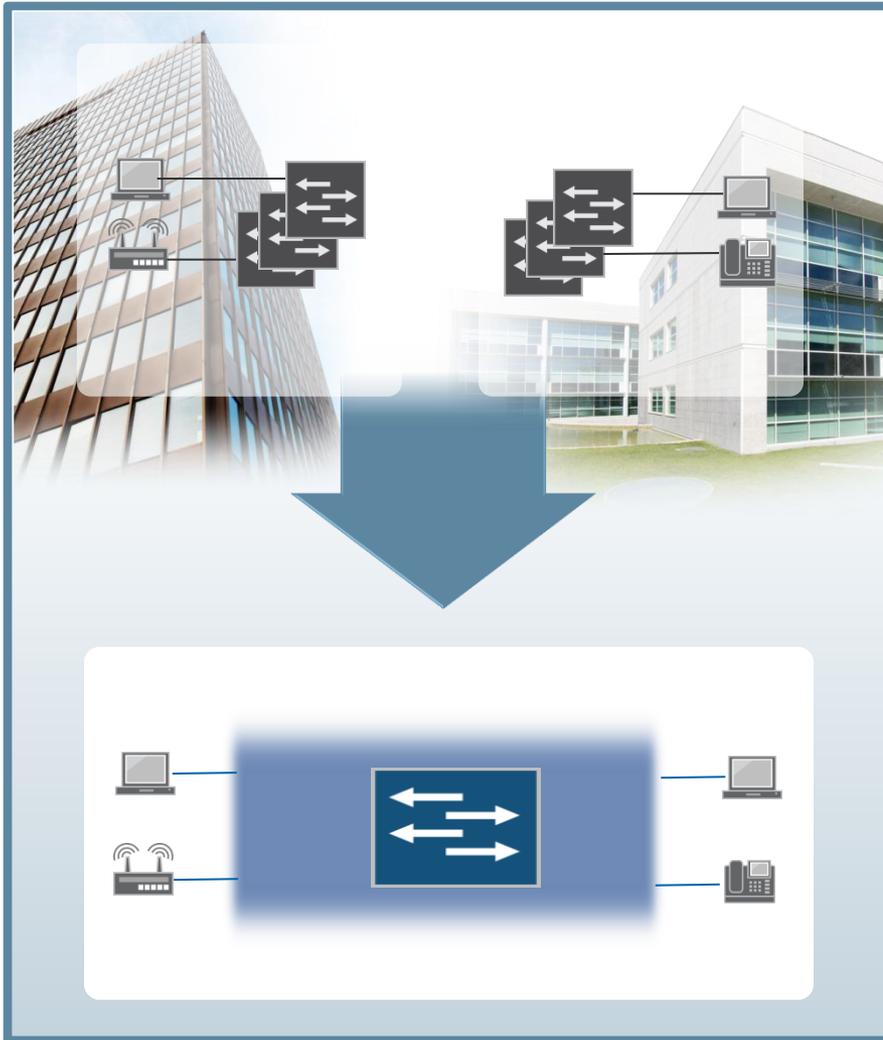
## Why We Win

- High performance
- Carrier-class resiliency
- Standards-based open architecture



# OPERATIONAL SIMPLICITY

# SIMPLIFYING THE NETWORK



## Virtual Chassis

**Multiple switches acting as a single, logical device**

**One switch to configure, one switch to manage**

**Improved resiliency and performance**

# INNOVATIONS WITH VIRTUAL CHASSIS TECHNOLOGY

10 switches in one configuration

Industry-only

Virtual Chassis over locations separated by 100km

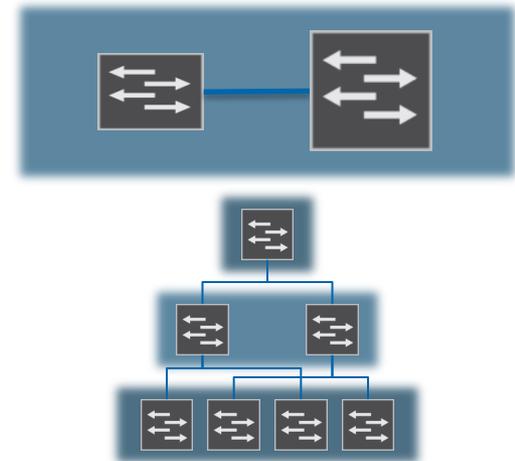
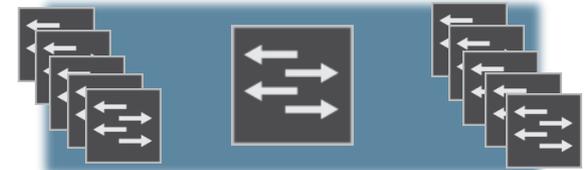
Industry-only

Different platforms in a single Virtual Chassis configuration

Industry-only

Available in core, aggregation and access layers of the network

Industry-only



# VIRTUAL CHASSIS TECHNOLOGY BENEFITS



- Network simplification with fewer managed devices
- Reduce TCO



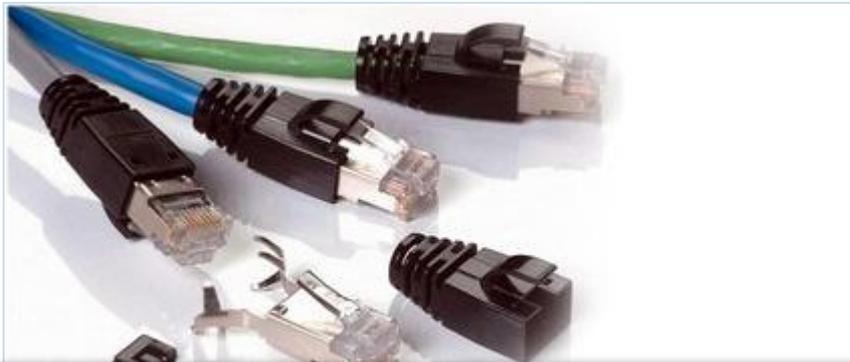
- Improve resiliency and minimize risk with Junos
- Carrier-class reliability with no single point of failure



- Innovative and flexible, open system architecture
- Designed for modern data center and campus

# **JUNIPER SWITCHES CAMPUS OVERVIEW**

# DRIVERS IN CAMPUS NETWORKS



More Bandwidth



Powered Devices

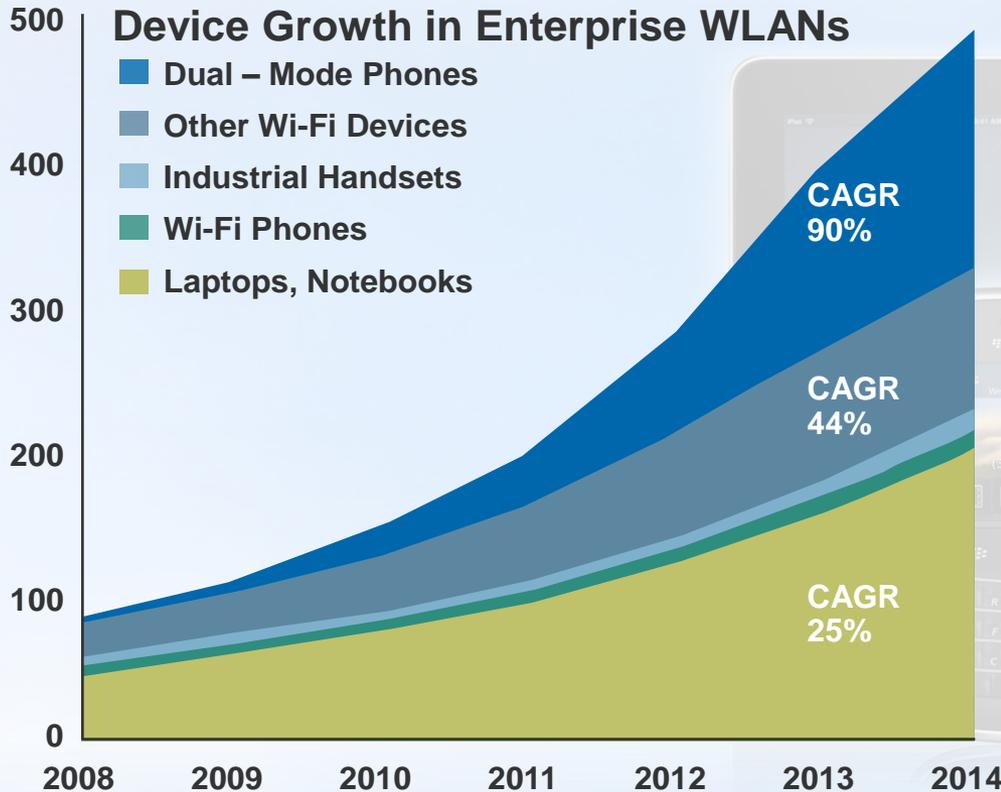
Integrated Security



More Applications

# THE GAME CHANGERS: MOBILITY

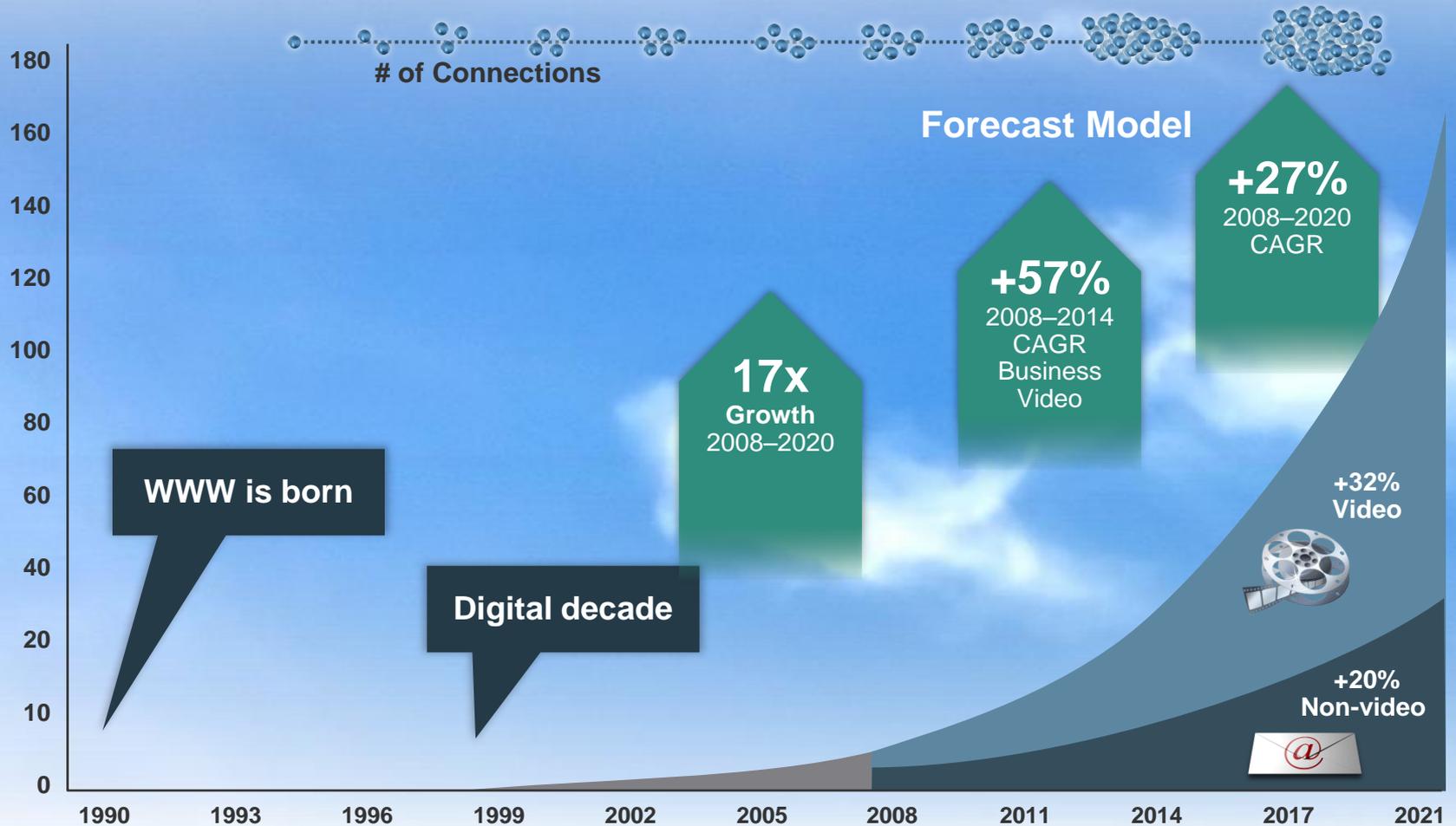
## Rapid Device Proliferation (Smart phones and other clients)



Source: Gartner 04/2010

# THE GAME CHANGERS: VIDEO

Worldwide Internet Traffic, 1990-2020, EB/Month



Source: Juniper, Cisco, MINTS

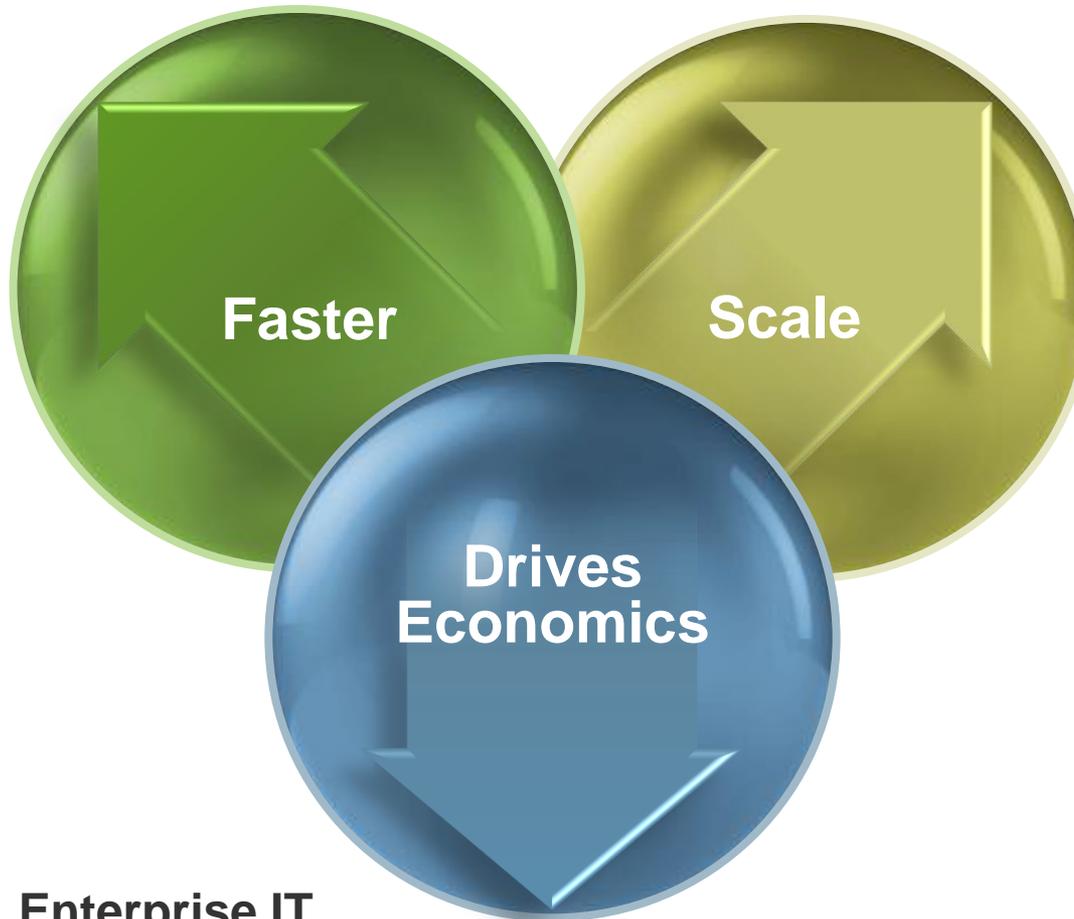
# **JUNIPER SWITCHES DATA CENTER OVERVIEW**

# TYPES OF DATA CENTERS

## High Performance

- Low latency
- Low jitter

Financial Services  
HPC



## Cloud Providers

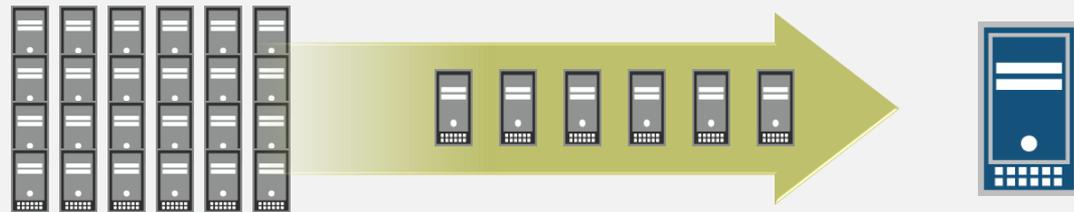
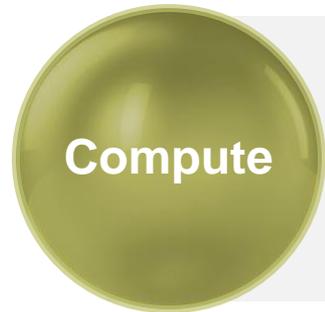
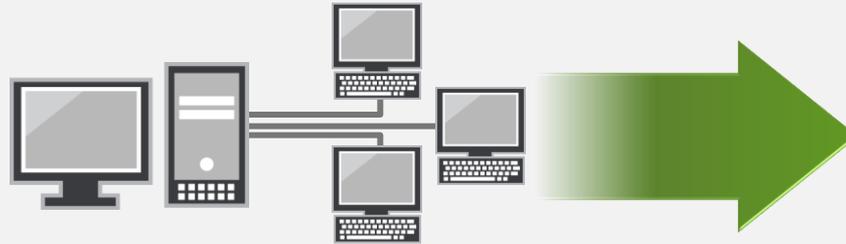
- Massive scale
- At the right price

Content and Infrastructure Providers

## Enterprise IT

- CAPEX and OPEX optimized
- Support virtualized, converged data centers

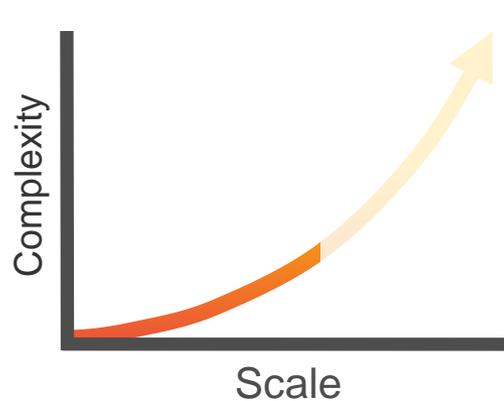
# EVOLVING TRENDS



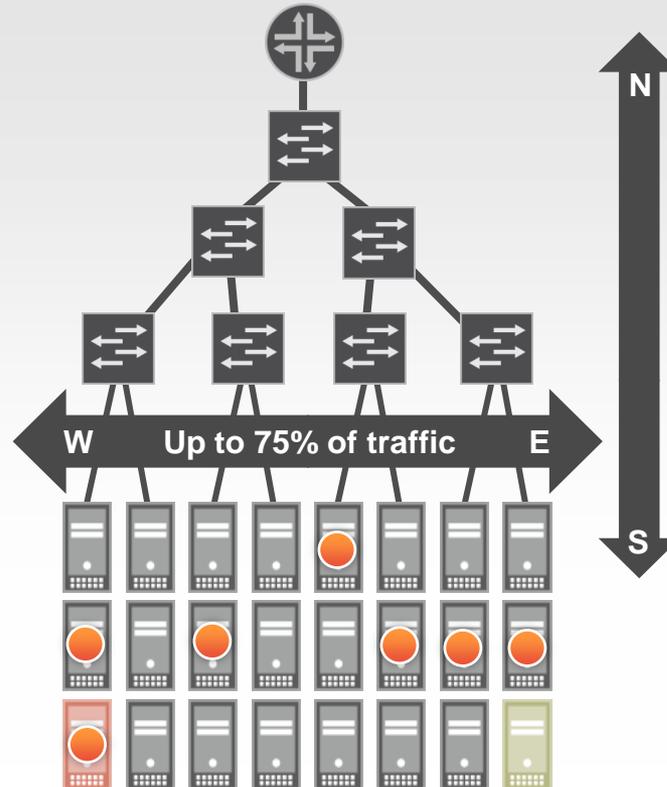
# THE NETWORK HAS NOT YET EVOLVED

## The challenges

- Too slow
- Too expensive
- Too complex



## Multi-tier legacy network

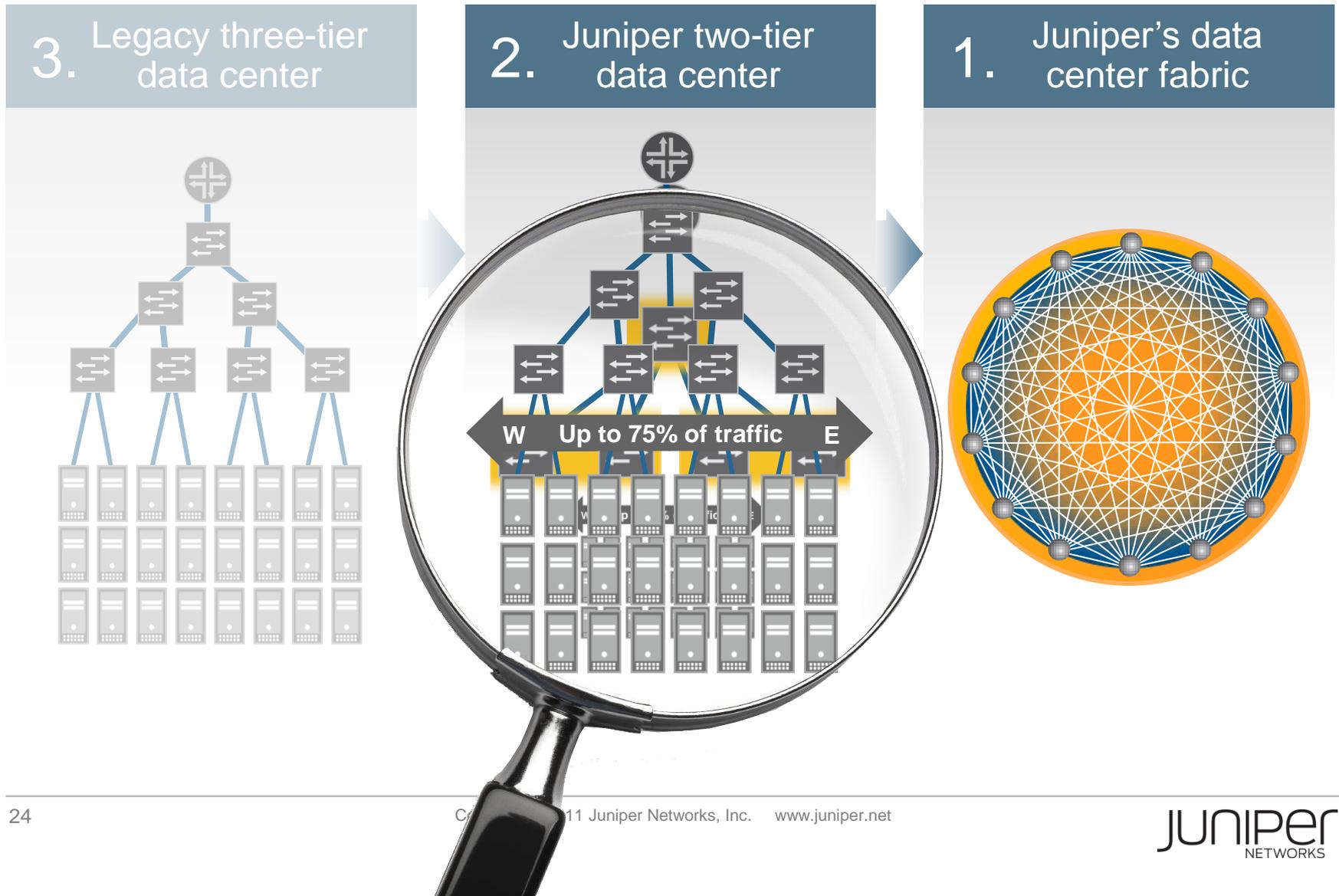


Unnecessary layers add hops and latency

Up to 50% of the ports interconnect switches, not servers or storage

Spanning Tree disables up to 50% of bandwidth

# JUNIPER SOLUTION: 3-2-1



# **JUNIPER EX SERIES SWITCHES**

# EX SERIES FIXED PLATFORMS

 <ul style="list-style-type: none"> <li>12 port 10/100/1000BASE-T</li> <li>PoE/PoE+</li> <li>Fan-less</li> </ul>	 <ul style="list-style-type: none"> <li>Fixed power supply and fans</li> <li>24/48 port 10/100/1000BASE-T</li> <li>4 SFP uplinks</li> <li>PoE/PoE+ model options</li> </ul>	 <ul style="list-style-type: none"> <li>Modular power and cooling</li> <li>Field replaceable power and fans</li> <li>4 port GbE SFP uplink</li> <li>2 port 10GbE XFP uplink</li> <li>External RPS option</li> <li>Full Class 3 PoE</li> <li>OSPF, IP multicast in base license</li> </ul>	 <ul style="list-style-type: none"> <li>24/48 10/100/1000BASE-T</li> <li>PoE/PoE+</li> <li>Data center air flow</li> <li>6 member Virtual Chassis</li> <li>Fixed power supply and fans</li> <li>MacSec</li> <li>External RPS option</li> <li>4 port SFP/SFP+ uplinks</li> </ul>	 <ul style="list-style-type: none"> <li>28/48 port wirespeed 10/100/1000BASE-T</li> <li>PoE/PoE+</li> <li>Flexible uplinks</li> <li>Data center air flow</li> <li>Field replaceable power and cooling</li> <li>4 port GbE SFP uplink</li> <li>2 port 10GbE XFP uplink</li> <li>10 member Virtual Chassis</li> <li>128 Gbps Virtual Chassis backplane</li> </ul>	 <ul style="list-style-type: none"> <li>40 10GbE fiber ports</li> <li>Redundant power and cooling</li> <li>Small form factor</li> <li>10 member Virtual Chassis</li> <li>Mixed Virtual Chassis with EX4200</li> <li>Line rate</li> </ul>
<p><b>EX2200-C</b></p>	<p><b>EX2200</b></p>	<p><b>EX3200</b></p>	<p><b>EX3300</b></p>	<p><b>EX4200</b></p>	<p><b>EX4500</b></p>

⌚ Roadmap

# EX SERIES MODULAR PLATFORMS



48x1G



48x1G-PoE

- 10 slot modular chassis
- Redundant SREs
- 64 Gbps per slot with redundant SREs
- 48 port 10/100/1000BASE-T line card
- 48 port 10/100/1000BASE-T PoE+ line card
- Redundant fans
- 6 power supplies

**EX6200**



48x1G-ES



8x10G



48x1G-Copper



40x10G



48x1G-Fiber



48x1G-POE



- 8/16 slot modular chassis
- Various line card options
- Virtual Chassis support with XRE200
- 320 Gbps per slot
- Fully redundant Routing Engines
- 100GbE ready
- 1.92 Bpps
- MPLS, IPv6

**EX8200**

# “ENHANCED” LIMITED LIFETIME WARRANTY FOR EX SERIES SWITCHES

## What is the enhancement to LLW?

1. Lifetime software updates
2. Advance shipment of spares (next business day) from central depots
3. 90-day 24x7 JTAC support

## Which Juniper products are covered?

1GbE fixed-configuration switches:

EX2200-C

EX2200

EX3200

EX3300

EX4200

EX6200

**JUNIPER WIRELESS**

# JUNIPER WIRELESS TODAY

Over 6,000 Customers

1 M+ AP installed base since 2005

- Healthcare
- Education (Higher Ed & K-12)
- Hospitality
- Presence in Fortune 500:  
Shell, Chevron, Alcoa, Audi, VW

Many Mission Critical Environments:

- University Minnesota
  - 9,500 AP, 300 Buildings, 1200 Acres
- Belfast Health & Social Care Trust
  - 2,220 AP, 7 hospitals, 22,000 Staff



# LARGEST WLAN PATENT PORTFOLIO TODAY

## Proven Technology Track Record:

- Simple, Secure, Mobile
- Real Time Location Aware
- 17 issued patents, 49 pending

## Differentiating WLAN Innovations:

- Seamless roaming
- Life Cycle Management
- Intelligent Switching
- Controller Virtualization
- Identity Based Networking
- Unified Mobility Services

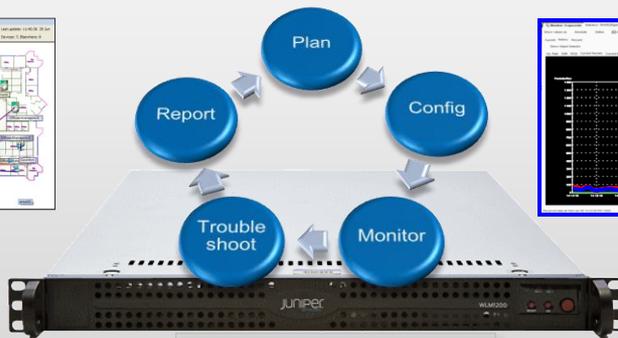


# JUNIPER WIRELESS - COMPLETE WLAN SOLUTION

## WLM – Management and Access Control



RingMaster



WLM - Appliance



SmartPass

## Simple - Secure - Mobile

### WLA – Access Points



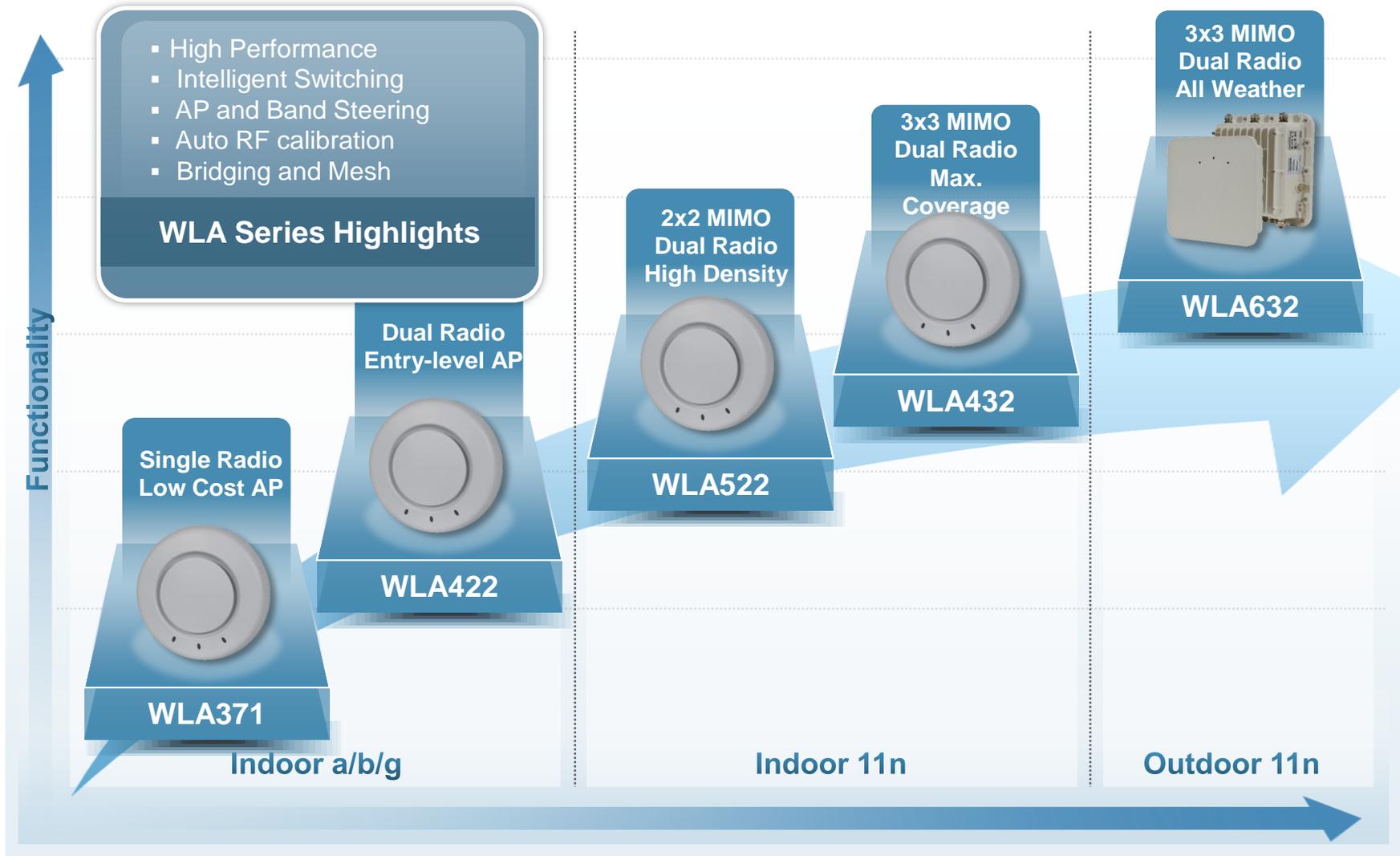
### WLC – Controllers



# JUNIPER WIRELESS WLC CONTROLLER FAMILY

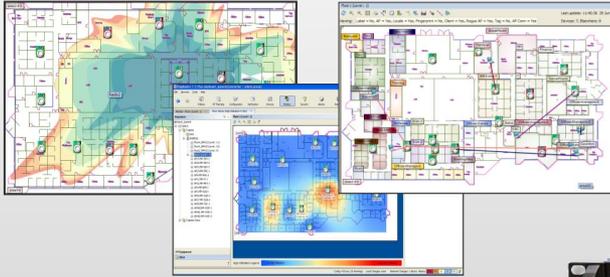


# JUNIPER WIRELESS WLA ACCESS POINT FAMILY



# WIRELESS MANAGEMENT & ACCESS CONTROL

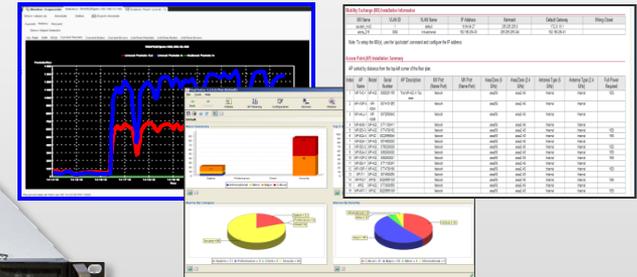
## WLM – Management and Access Control



RingMaster



WLM - Appliance



SmartPass

## Plan - Configure - Monitor - Troubleshoot - Report

**WLM – RMTS**

**Software Licenses**

**5 – 1,000 APs**

**WLM1200 – RMTS**

**Optimized Linux Server Platform**

**250 – 5,000 APs**

**WLM – SP**

**Software Licenses**

**WLAN Access Control  
Guest Provisioning**

# BEST IN CLASS WLAN LIFE CYCLE MANAGEMENT

## RingMaster

### Planning and Deployment

- 3D predictive planning tool
- Indoor and Outdoor network plan

### Configuration and Verification

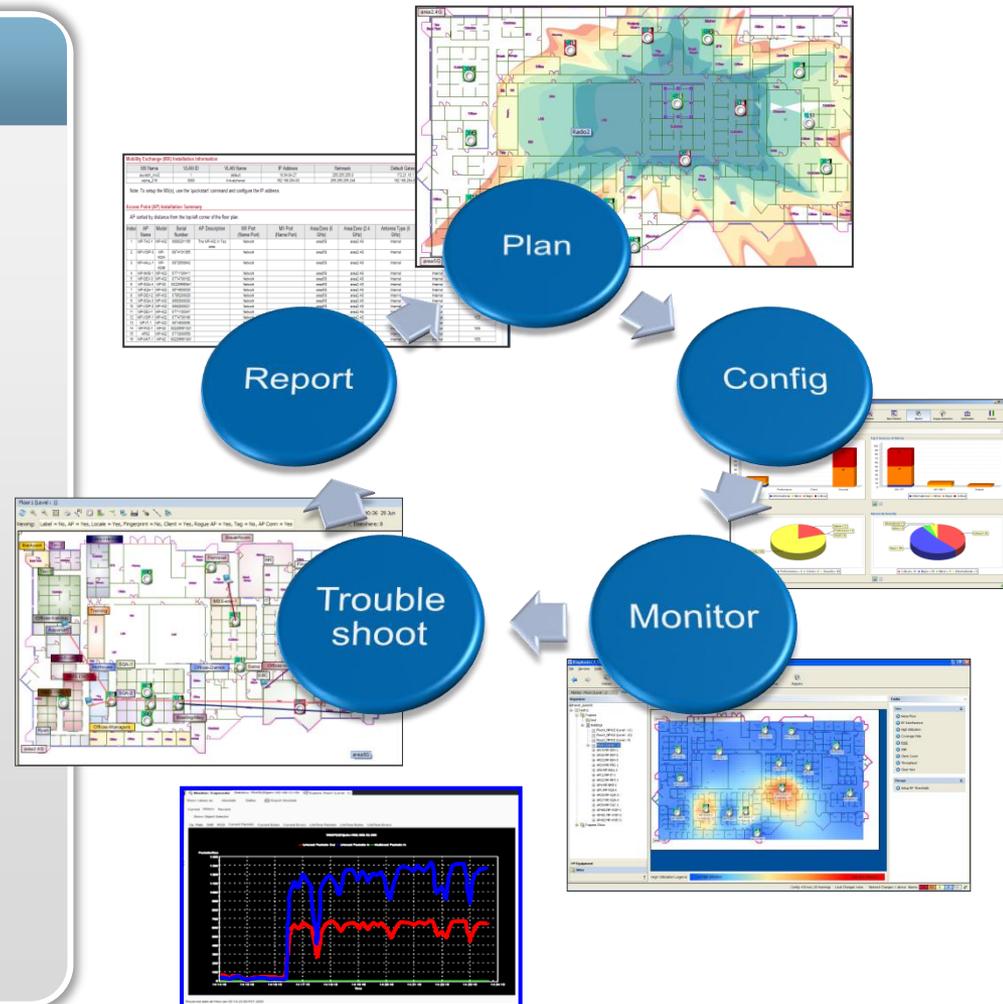
- Complete offline configuration
- System and service wizards
- Pushes configuration to WLCs

### Monitoring and Reporting

- By user, radio, AP, WLC, SSID
- 30 day history aids compliance
- WIDS/WIPS integration

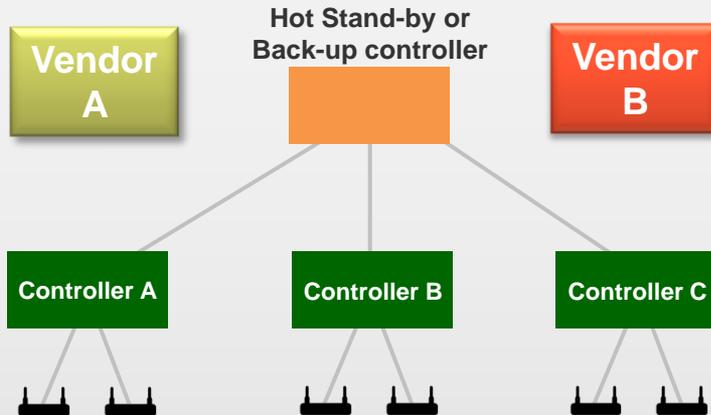
### Location Aware

- Search by Location
- Roaming History
- Geo Fencing



# CORE DIFFERENTIATOR: CONTROLLER CLUSTERING

## Competitors Complex Approach



Discrete controllers operate independently for AP redundancy configuration

**Harder** to scale since adding capacity is cumbersome

**Limited resiliency** – APs mapped directly to controller & resets upon network/device failure

**Limited reliability** – N+1 (limited to number of designated back-up switches)

**Difficult to manage**, highest cost of ownership

## Juniper's Simplified Approach



Clustered controllers– act collectively as single virtual controller for wireless configuration

**Easy** to scale – Capacity can be added in chunks, anywhere in the network

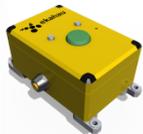
**Highest resiliency** – APs dynamically map to controllers– optimized, auto AP load balancing

**Always-on reliability** – many-to-many redundancy – all switches can serve as back-up

**Easiest to manage**, lowest cost of ownership

# STRATEGIC PARTNERSHIPS: LOCATION

## Partners



## Markets

### Healthcare



### Education



### Hospitality



## Features

**Enhances WLAN ROI with wireless workflow improvements:**

- Asset Tracking
  - Improve asset utilization
  - Lower excess inventory
  - Improve maintenance
- Process Visibility
  - Improve workflow
  - Eliminate bottlenecks
  - WIP visibility
- Safety & Security
  - Track in hazard areas
  - Man down motion alerts
  - Panic button alerts
- Compliance
  - Automatic Reporting
  - Heuristics
  - Evidence management

## Why Juniper

**Seamless integration with leading location services providers:**

- Juniper Wireless is Location Aware
- SmartPass expands these solutions with LBS access control
- WLM-1200 improves the solutions with centralized LBS information processing
- RingMaster simplifies these solutions with centralized LBS lifecycle management

# SUMMARY: JUNIPER WIRELESS VALUE PROPOSITION

**JUNIPER  
WIRELESS  
CUSTOMER  
EXPERIENCE**

**We empower our customers with  
nonstop wireless networking**

**JUNIPER  
WIRELESS  
VALUE  
PROPOSITION**

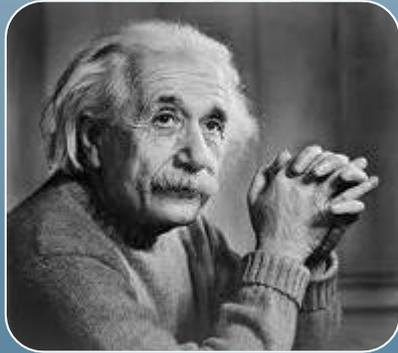
**Juniper Wireless  
=  
Simple – Secure – Mobile**



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## THE POWER OF SIMPLICITY

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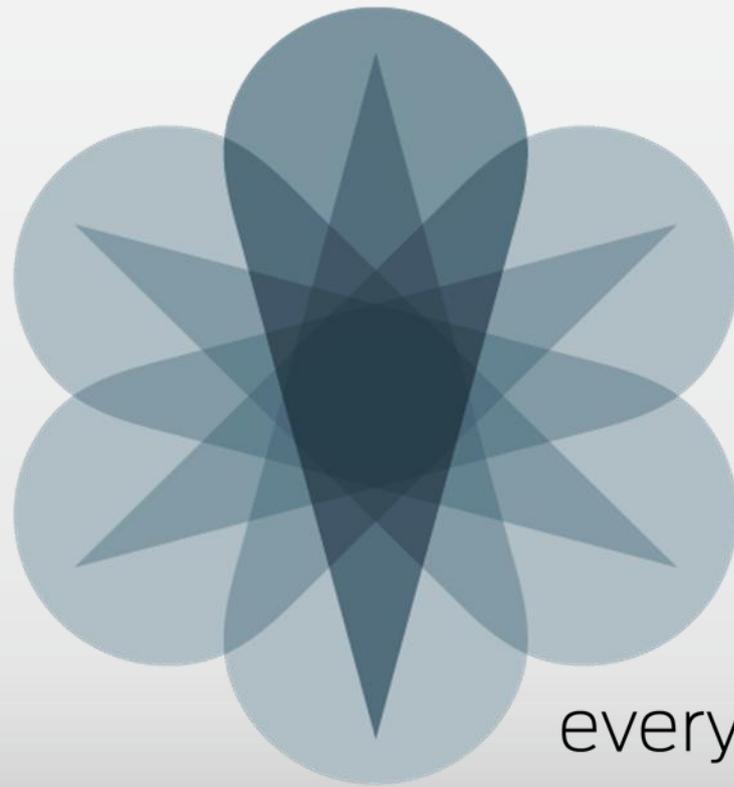
“All the great things are simple.”

- Albert Einstein



“It is far more difficult to be simple than to be complicated.”

- John Ruskin



everywhere