



Cisco Borderless Mobility

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Borderless Networks

Mobility as a Business Imperative

Done Wrong...



- Loss of connectivity
- Inability to attract and retain the best employees
- Slow to respond to changing market dynamics
- Security risk

VS

Best Practices Deliver



- Access to information anywhere, anytime
- Real-time collaboration
- Improved work/life balance
- Secure mobility

Mobility as a Business Imperative



Best Practices Deliver



Access to information
anywhere, anytime

Real-time collaboration

Improved work/life
balance

Secure mobility

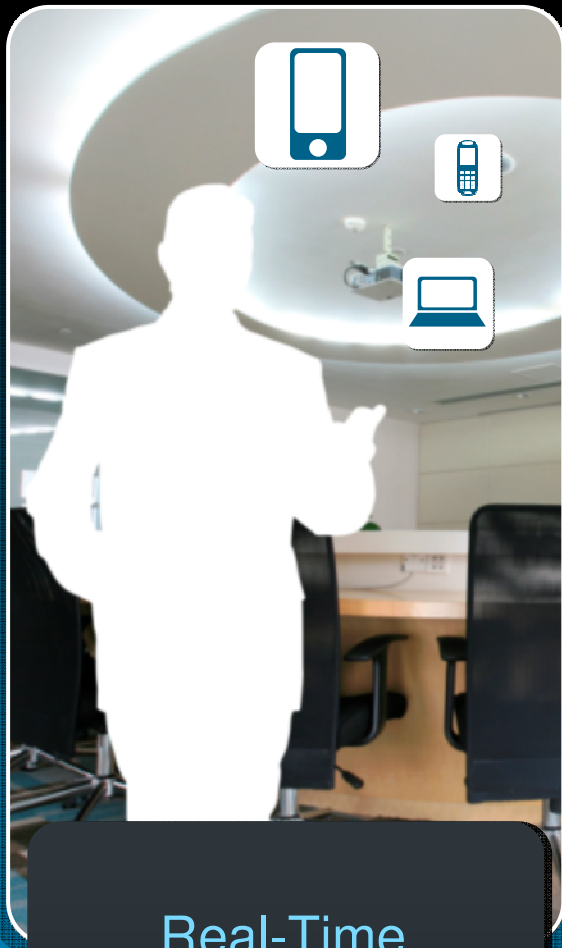


Secure end-to-end
to protect
information in any
environment

Reliable intelligent
networks that are
integrated for ease of
operations

Seamless delivery
of collaboration and
communication
applications

Future of Work: Work Is an Activity, Not a Place



Real-Time
Collaboration



Workforce
Flexibility



Anywhere
Productivity

Real-Time Collaboration

Borderless
Mobility
Delivers



PRIORITIZATION

LOW

PRIORITIZATION

HIGH

SCALE



Real-time video distribution

- Medianet prioritizes video
- VideoStream enables scalable delivery to wireless devices

Workforce Flexibility

Borderless
Mobility
Delivers




Mobile collaboration

- Unified Communications and WebEx to smart phone
- Corporate Wi-Fi in the home with OfficeExtend
- CleanAir mitigates interference

Anywhere Productivity

Borderless
Mobility
Delivers



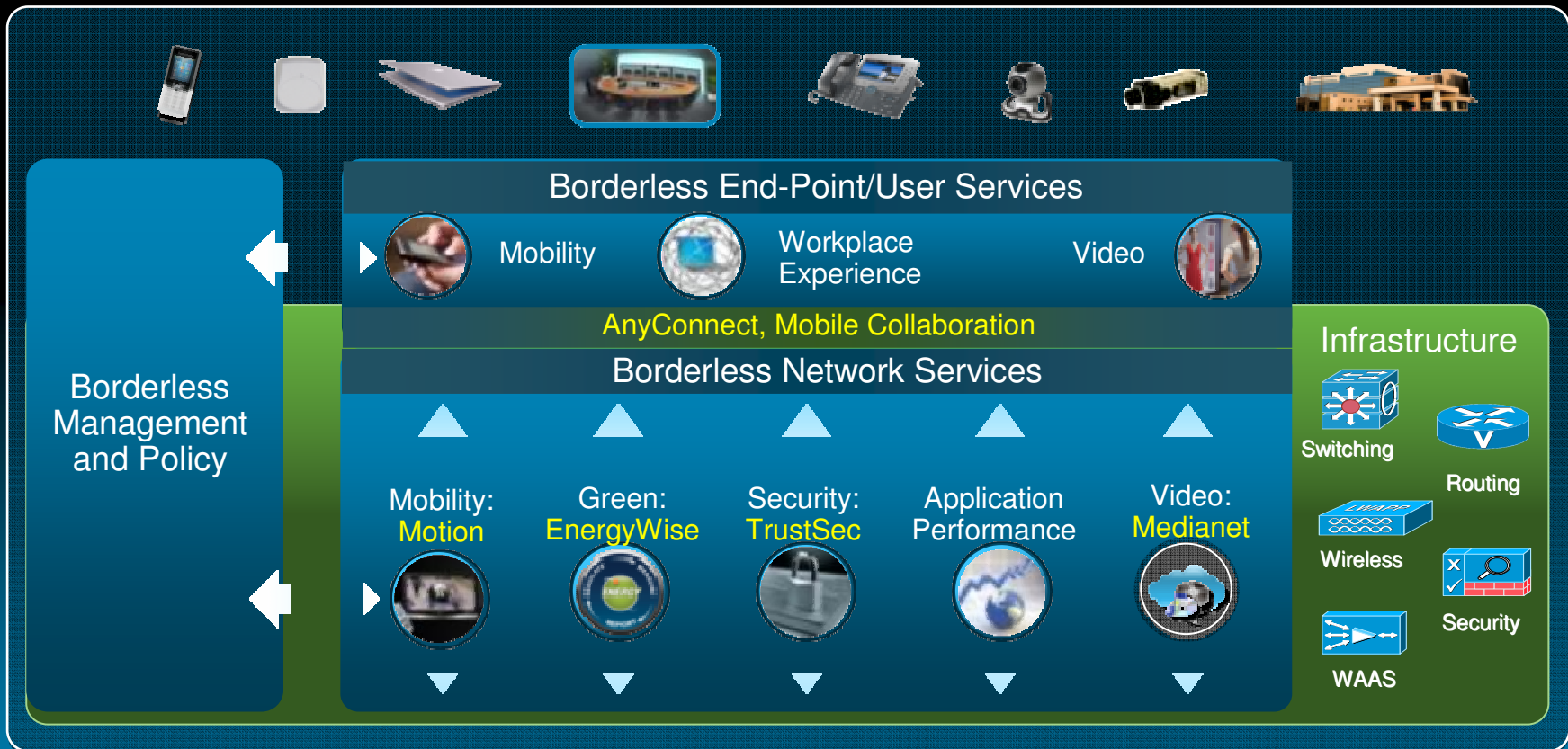
Your Order

Your Order Is Ready!

- Ubiquitous Wi-Fi access
- Secure connections with AnyConnect
- Context and location for personalized services

Borderless Network Architecture

Enabling the Borderless Mobility Experience



PROFESSIONAL SERVICES:
Realize the value of Borderless Networks Faster

Borderless Network Architecture

Enabling the Borderless Mobility Experience

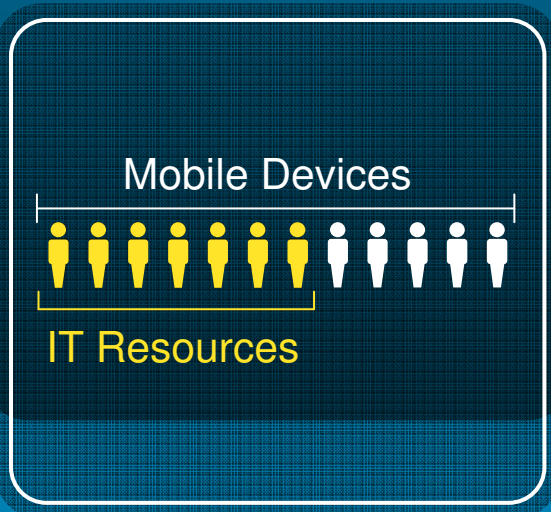


PROFESSIONAL SERVICES:
Realize the value of Borderless Networks Faster

Market Transitions

Mobility

1.3 Billion new Networked Mobile Devices in the Next Three Years



Workplace Experience

Blurring the Borders:
Consumer ↔ Workforce
Employee ↔ Partner

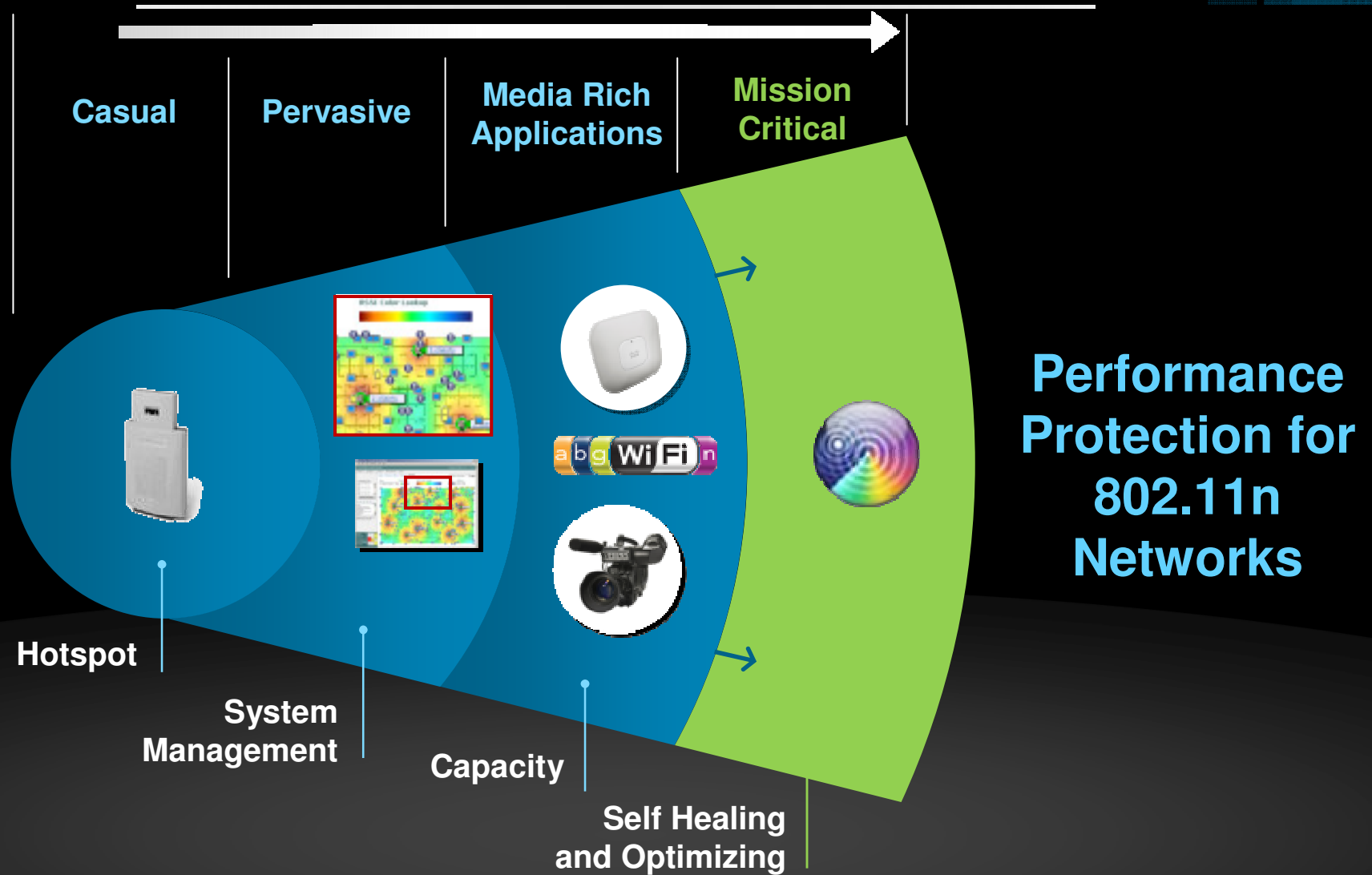


Video

50% of all Cisco Network Traffic Today Is Video



Enterprise Wireless Evolution From Best-Effort to Mission-Critical



802.11n Wireless

Capacity and Performance from Wireless

More Throughput



Faster
Transactions

Larger Scale



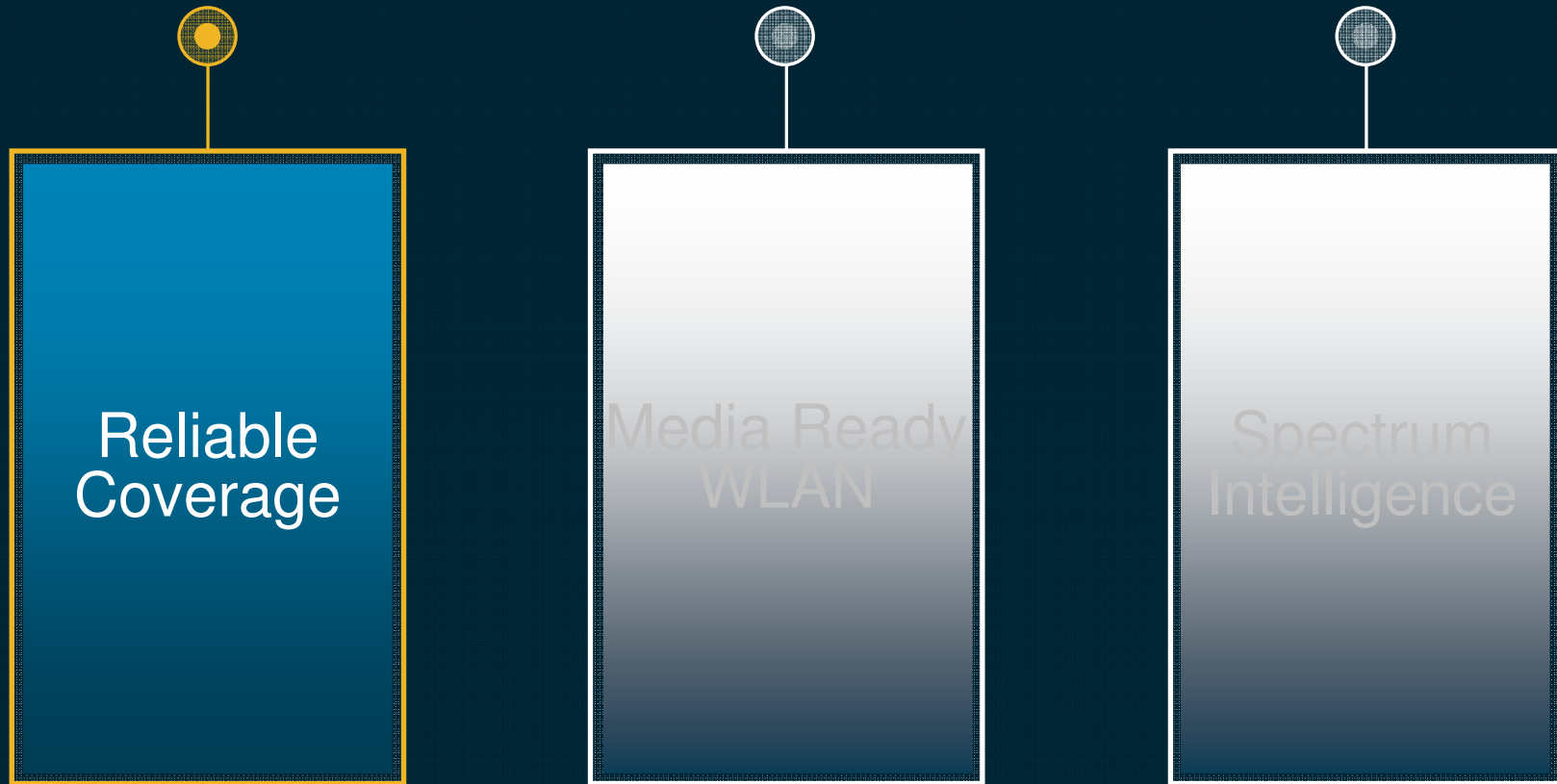
More Simultaneous
Devices

Better Reliability



Consistent Application
Experience Anywhere

Performance Protection for 802.11n



Reliable Wireless Coverage Optimizes Process for Cost Savings



Higher User Density

- ⦿ Create collaborative workspace
- ⦿ Save up to 35% on real estate costs



Support Mixed Client Environment

- ⦿ Cisco ClientLink improves 802.11 a/g device performance by up to 65%
- ⦿ Migrate devices at your own pace



Support New Mobile Devices

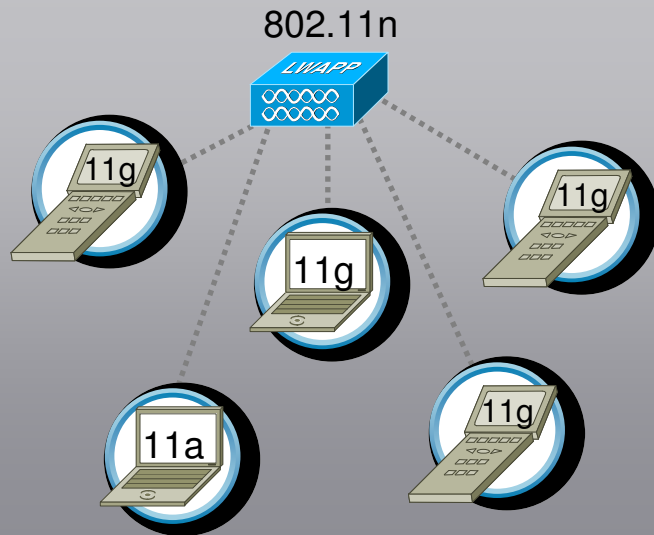
- ⦿ Use new mobile devices for improved customer interaction
- ⦿ Improve task accuracy by up to 50%

Design wireless coverage to meet all device types
and application requirements

Deliver True Airtime Fairness for Devices

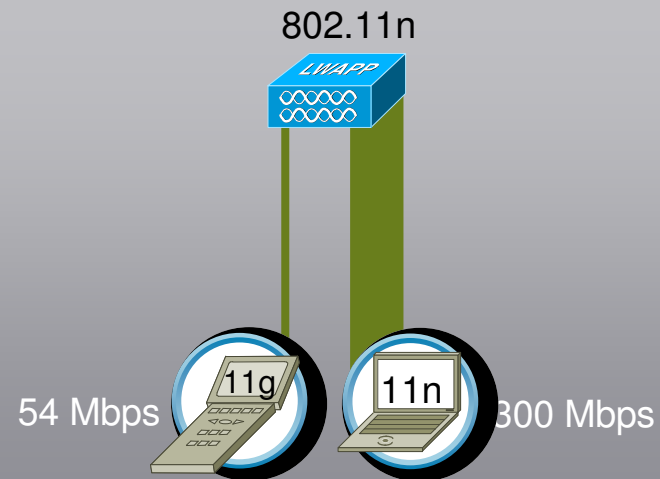
Protecting the Investment in Existing 11a/g Devices

Extending Useful Life of 11a/g Devices



11a/g devices reaching max. performance but too costly to upgrade

True Fairness for Mixed Device Networks

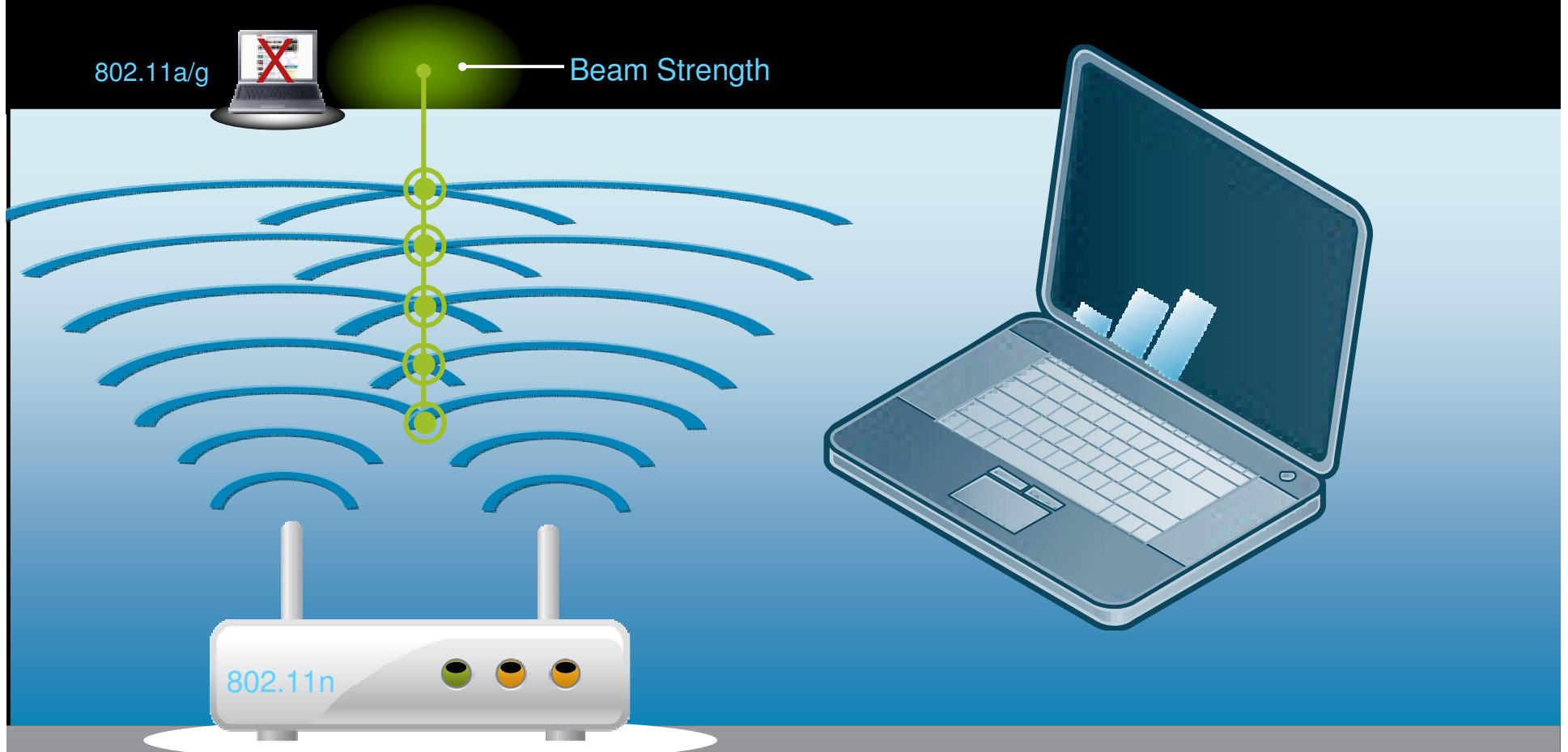


11a/g devices consume valuable "airtime", reducing the performance of 11n devices

1. Provides consistently higher throughput per 11a/g device
2. Increases overall system capacity for both 11a/g and 11n devices
3. Reduces coverage holes in challenging RF environments

Existing 802.11n Solutions

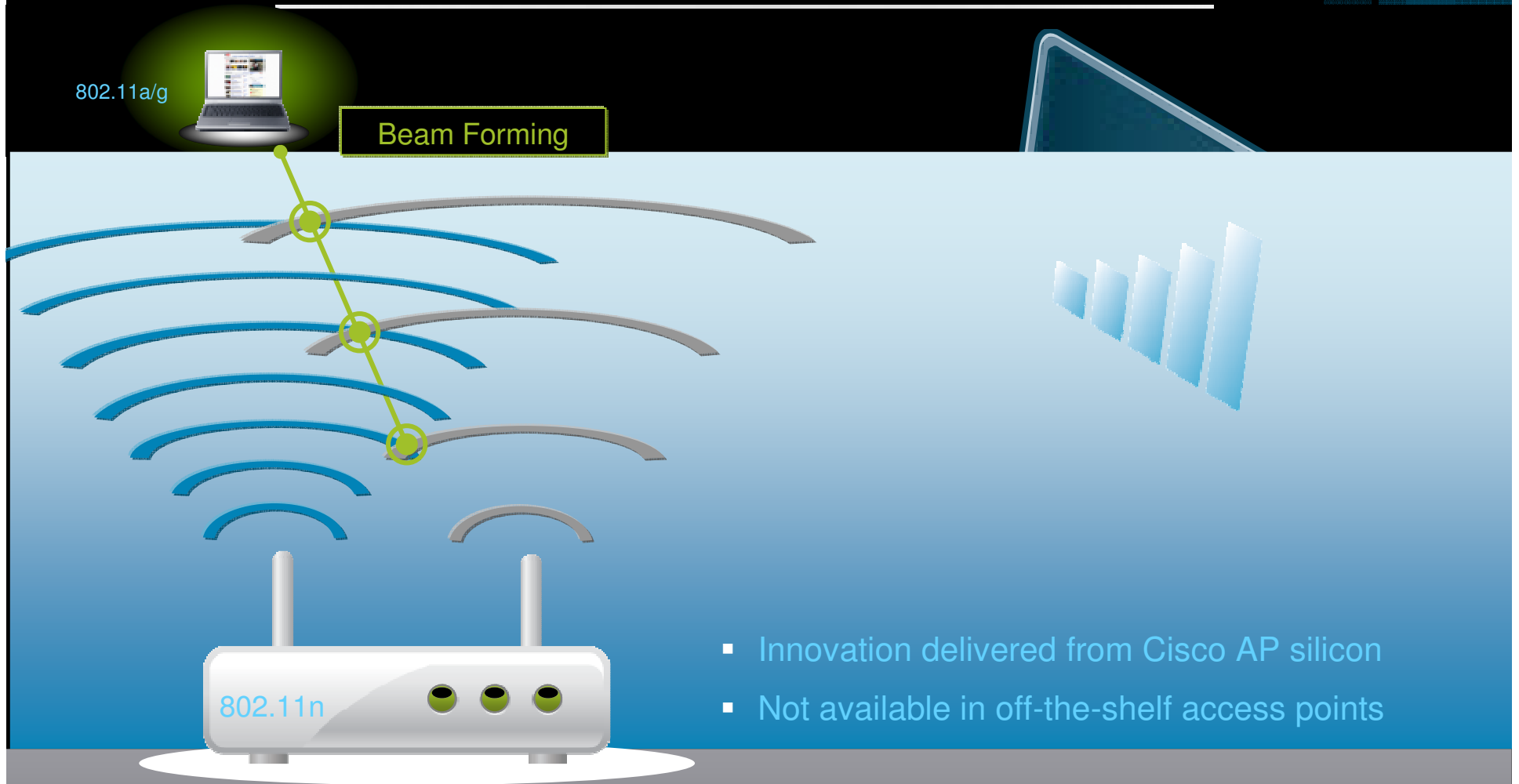
Beam Strength Not Directed to Client



802.11 a/g Client Connection Not Optimized,
Creates Coverage Hole

Beamforming Improves Throughput

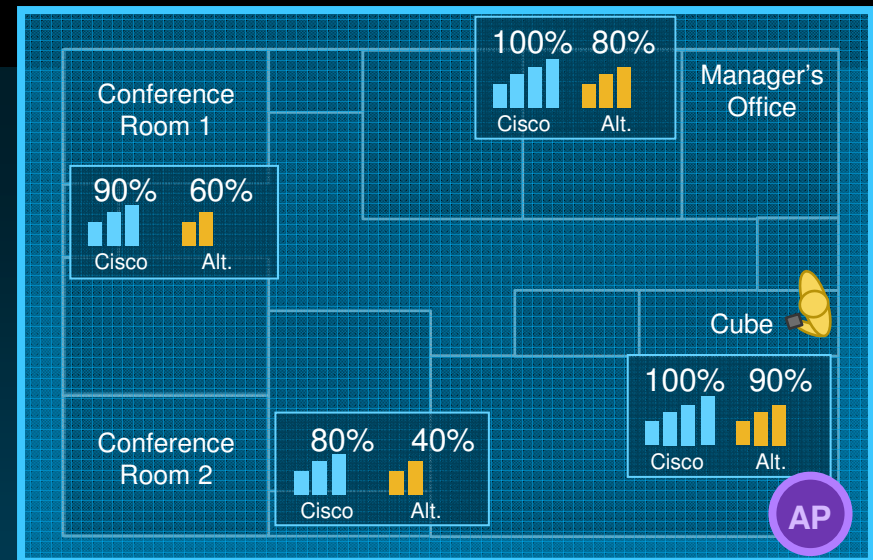
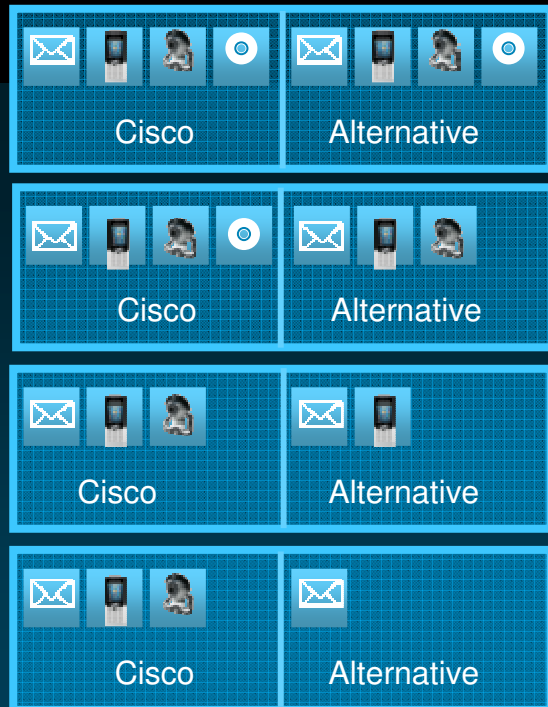
Cisco Innovation: ClientLink



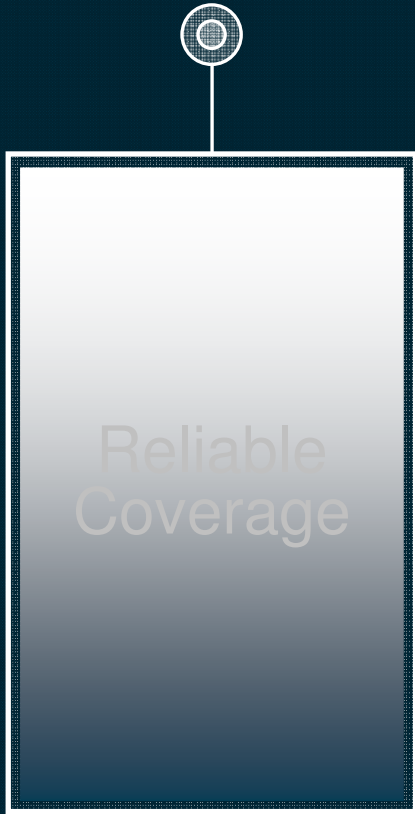
ClientLink uses Beam Forming to Direct Signal to Improve Performance and Coverage for 802.11a/g Devices

Don't Compromise on the Experience

Application Performance Consistency Anywhere



Design to Ensure a Reliable and Consistent
Wireless Coverage Pattern



Enterprise Video Applications

Understanding Diverse Application Models

Streaming

Live Digital Media

- Company All Hands
- Recorded Playbacks
- Video Surveillance

Higher quality video requirements driving higher bandwidth

Interactive

Desktop Collaboration

- Video Conferencing

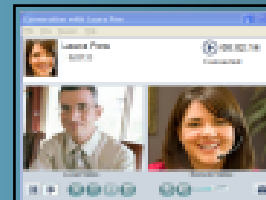
Collaboration across geographies

VoD

Video on Demand

- Recorded Training Session

Tremendous increase in applications driving more streams

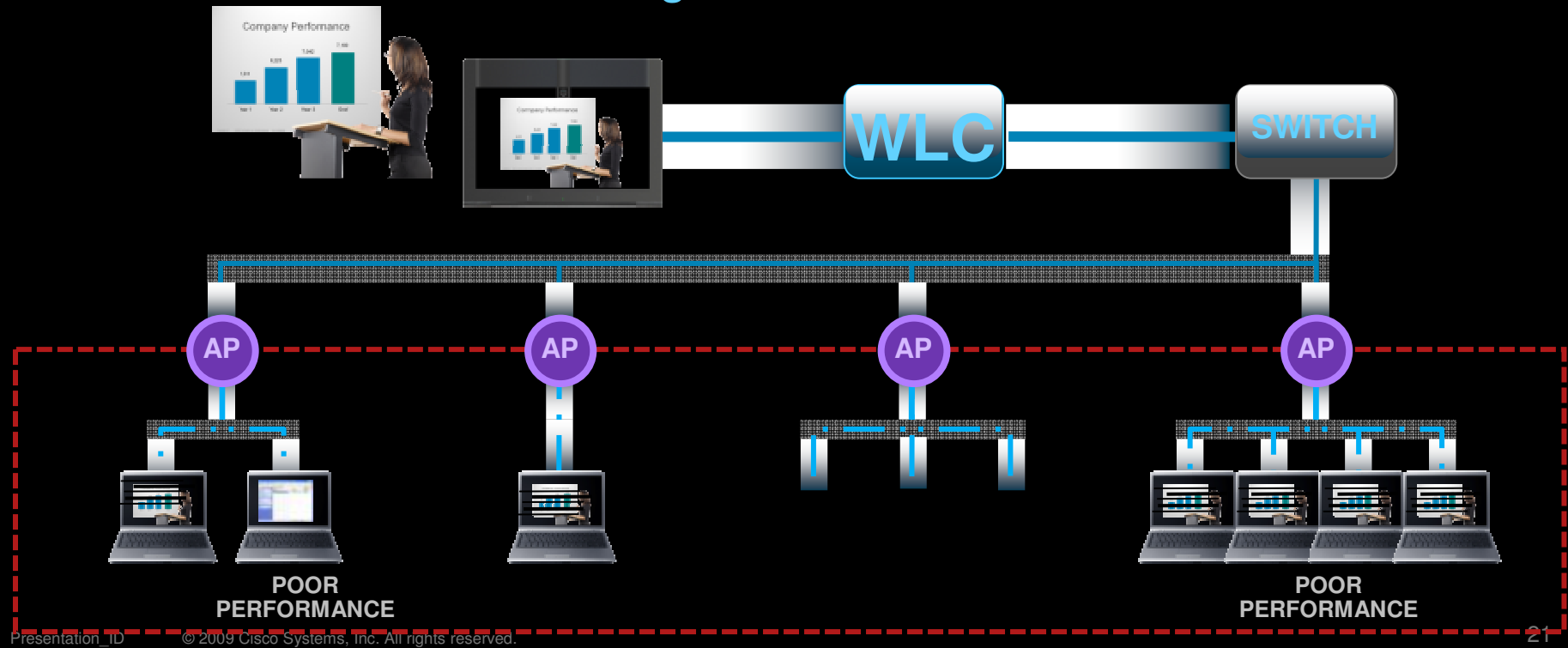


Streaming Video Challenges

Radio Frequency Limitations

- Can't deliver multicast video over RF at scale
- Video overloads network and degrades other application performance
- Unable to deliver business quality video

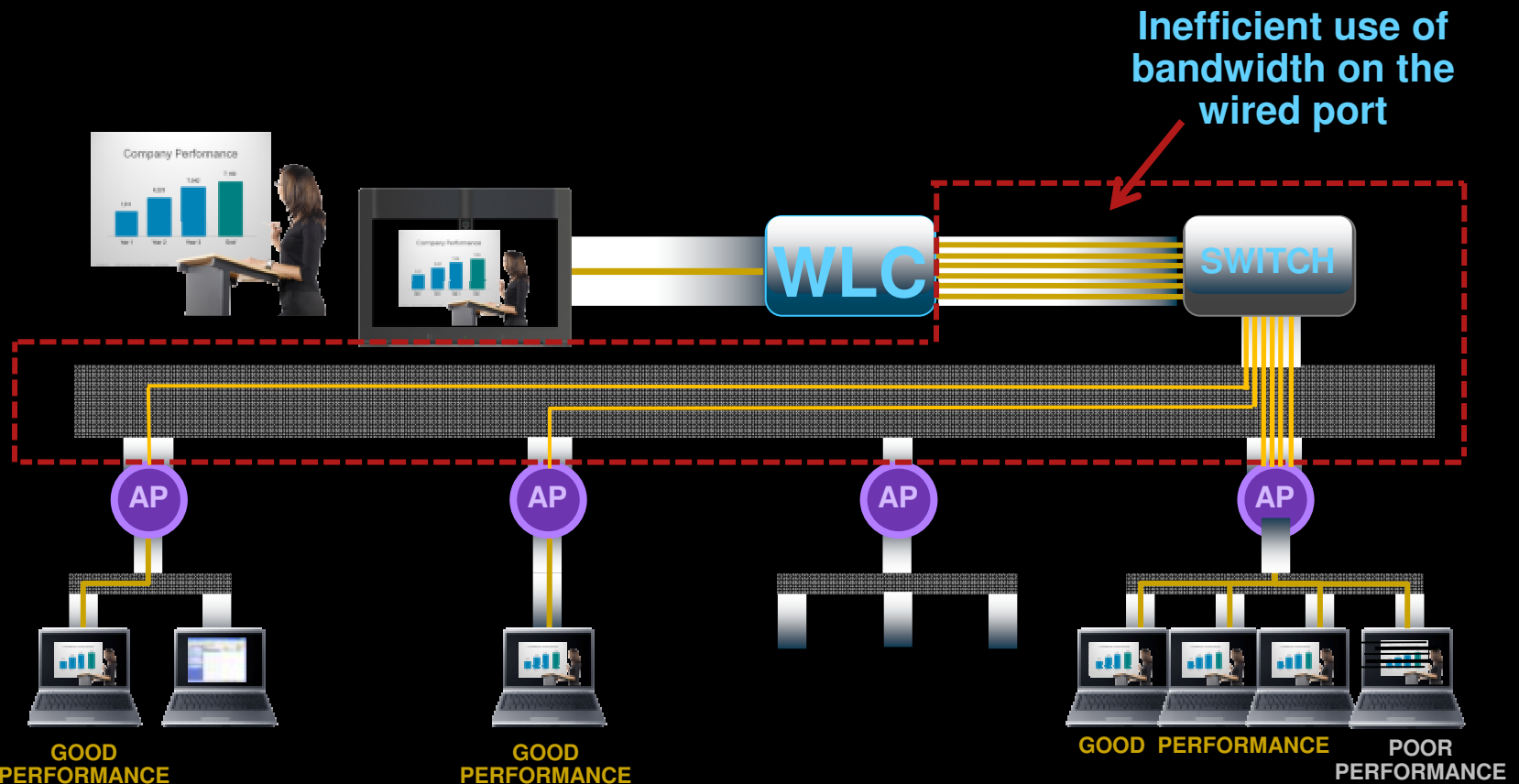
Video Streaming Without Reliable Multicast



Streaming Video Challenges

Poor Wired to Wireless Network Integration

- Reliability at WLC improves quality but NOT overall scale
- No identification of respective priority
- Inefficient use of overall network



VideoStream Technology

Cisco VideoStream Technology enables reliable and consistent delivery of quality video over the wireless network

Reliable Multicast



Stream Prioritization



Resource Reservation Control

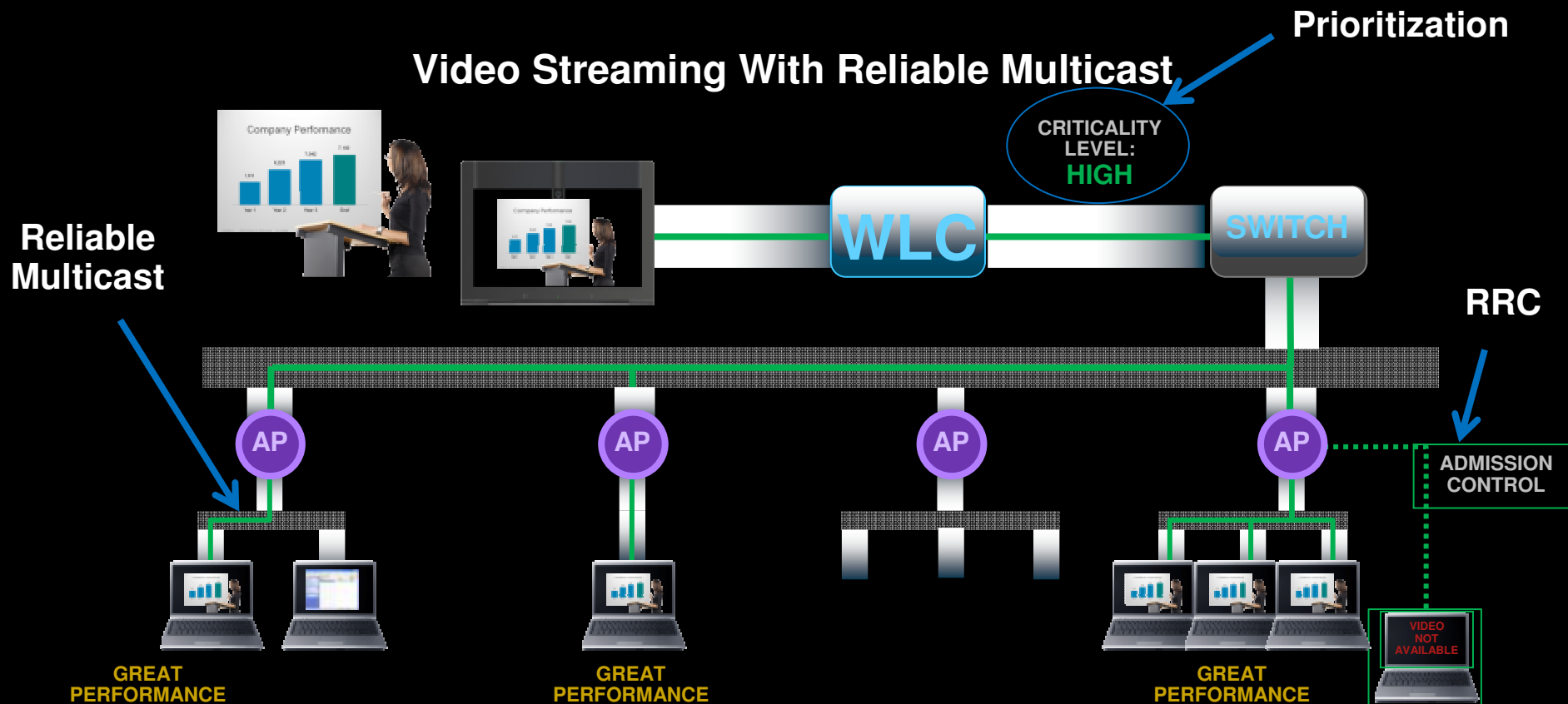


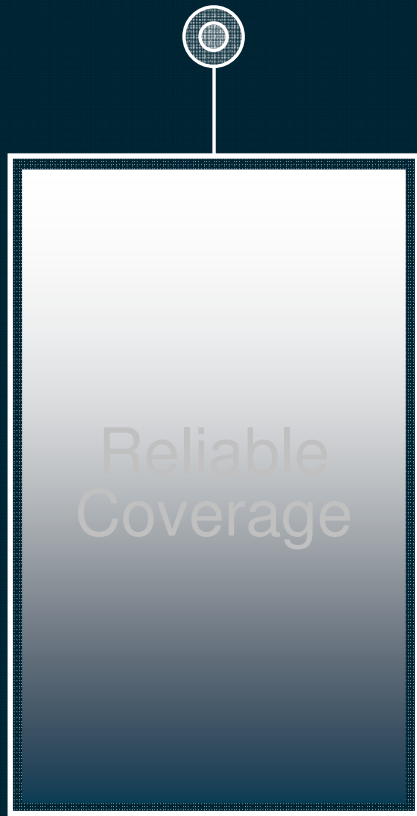
Media Ready WLAN with VideoStream

Wireless Investment Optimized for Video


Improves quality and scale of streaming content :

- Solved challenges associated with RF and wired / wireless integration
- Brings wired video quality to wireless
- Stream prioritization protects important content precedence






Expectation for Mission Critical Wireless



“I can't do my job without wireless. It has to work.”



“Wireless is best-effort. I can't support a level 1 SLA.”

Continued Growth and Reliance on Wi-Fi Devices

VS

IT Lacks RF Resources and Expertise

Challenges with Spectrum

Limited Spectrum

Performance

Support Cost

\$

\$

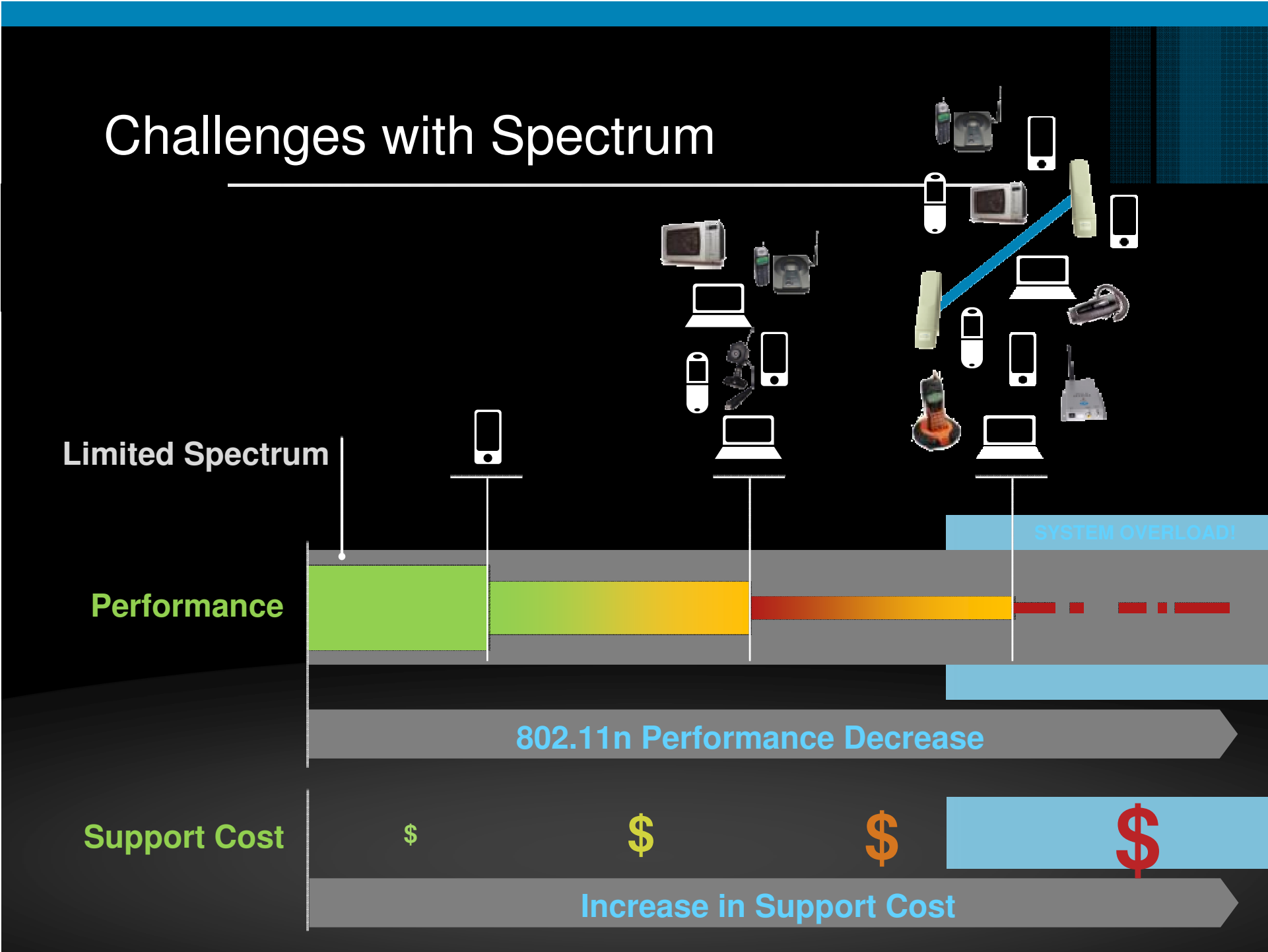
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802.11n Performance Decrease

Increase in Support Cost

SYSTEM OVERLOAD!



Wireless Network Business Challenges

**Influx of RF
Devices**

**Mission
Critical**

**Wireless interference
caused performance
problems for 54% of
companies**

**Lack of IT
Resources/
Expertise**

**78% of companies
consider wireless
mission critical**

Introducing CleanAir Technology

Understand Your Air Quality and Automatically Optimize



Best Practices for Interference Avoidance

Detect & Classify

CleanAir Radio
ASIC – Hardware
based visibility



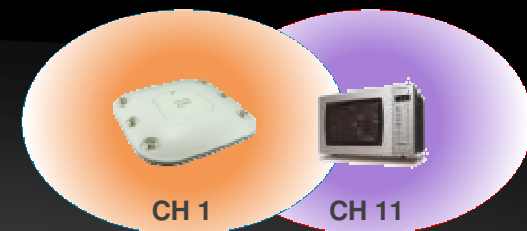
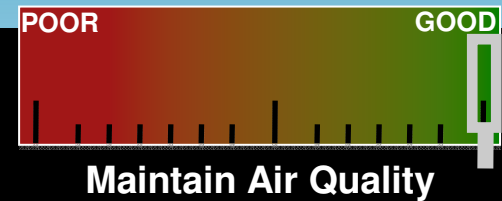
Locate

Understand where in
your facility
interference is an
issue





Mitigate

Avoid interference
with network
intelligence



The Value of ASIC Based Intelligence

| Troubleshooting Workflow | Response A: CleanAir Technology | Response B: Software-only Solution |
|---|--|---|
| Event: SpyCam and Microwave causing strong interference |  |  |
| Detect presence of interference | Two unique sources detected by all APs | Energy detected by all APs |
| Classify source of interference | Spycam and microwave uniquely identified | Inability to differentiate between multiple sources of interference |
| Correlate interference events across APs | Interference correlated across all APs as two events | None – seen as unique event by each AP |
| Assess impact to AP and network | Severity and impact of each interferer measured | Total Interference measured only |
| Alert to IT | Intelligent alert on sources and impact | One alert per AP on “interference detect” |
| Physically locate SpyCam and Microwave | Interferers precisely located on floor map | Unable to locate automatically, manual search for both |
| Mitigate impact of interference | Intelligent and automatic channel change | Manual changes based on limited data |
| Air Quality Report | Network-wide view of Wi-Fi health by AP | None |

Cisco Wireless

Performance Protection for 802.11n

ClientLink

More Bars Everywhere

Beam forming improves throughput for 11a/g devices

VideoStream

Scalable video delivery over wireless

Reliable multicast for wireless, prioritization and resource reservation

CleanAir

Interference Mitigation

Detect, Classify, Locate and Mitigate

Cisco 802.11n

- First enterprise-class Wi-Fi certified product
- 65% market share
- Comprehensive product portfolio

