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# BYOD is Now Pervasive

## BYOD 2012+

Device



Over 2 billion mobile devices worldwide by 2015 \*

Network



70% of smartphone owners connect to Wi-Fi at some point \*

User



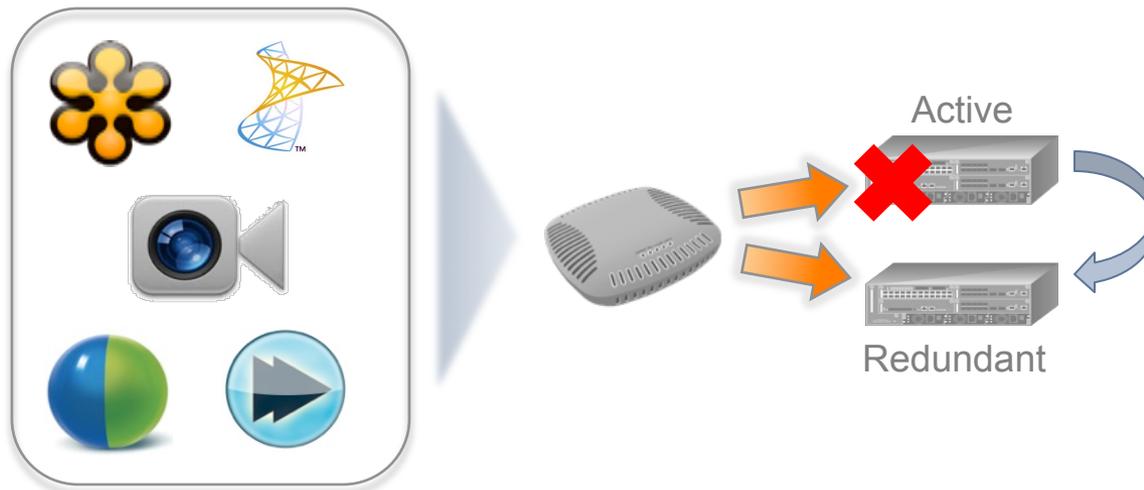
One for every 4<sup>th</sup> person worldwide will have a mobile device by 2015 \*

\* ABI Research

# As Wi-Fi Becomes Primary Access NW...



**How do you prevent Wi-Fi meltdown with increasing mobile device density?**

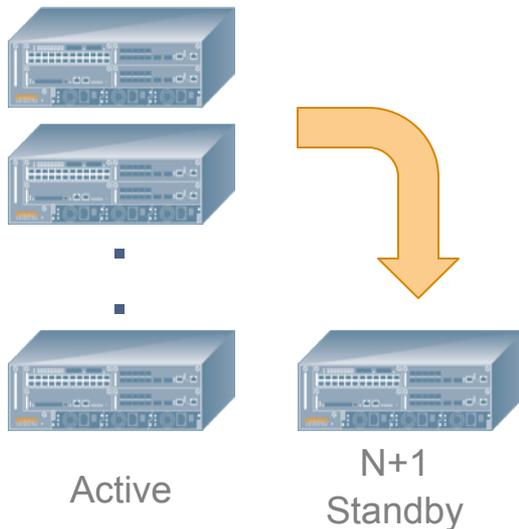


**How do you prevent dropped connections during WLAN controller failover?**

# New Requirements for Uninterrupted Wi-Fi



- ✓ Each mobile device receives fair share of the bandwidth
- ✓ Total bandwidth stays consistent regardless of density



- ✓ No clients drop Wi-Fi connections during failover
- ✓ Fast enough recovery for Lync calls to stay connected
- ✓ Reduced cost with N+1 redundancy design

# Memphis Regional Medical Center (The MED)



## Requirements

- High quality over Wi-Fi for real-time time Voice
- Always available access to clinical data
- High density of Wi-Fi devices



## Solution

- WLAN design for high-availability with redundant Aruba Mobility Controllers
- High client density and fast client roaming with Aruba AP-135 access points



## Result

- Resilient connectivity to bedside mobile workstations (BMWs)
- Reduction in network downtime and IT maintenance costs for WLAN



# About The MED

- Level 1 Trauma Facility Serving a 150 mile radius covering 5 states
- Centers of Excellence
  - Trauma
  - Burn
  - Neonatal Intensive Care
  - High Risk Obstetrics
- Primary and Specialty care services through 35 Outpatient Clinics
- Academic Medical Center for University of Tennessee
- Over 50% of the UT physicians go through The MED

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# Challenges that Needed To Be Addressed

- Lack of Wi-Fi Coverage in Critical Areas like the Emergency Department
  - Poor Wi-Fi Performance impacts patients stay in ED
  - ED has limited space for wired desktops
  - New wireless needed to be reliable for sustained patient throughput
- Interpreters unable to use electronic process
  - Poor Wi-Fi performance forced interpreters to paper process
  - New system had to provide sustained coverage walking to & from all buildings (6)
- Future Medhost system used by ED required redesigned wireless
  - Multicast design required high speed, high reliability for system stability
  - Real time updates on patients movement between the system
  - Go-Live December 2011
- Wi-Fi interference
- Clinicians wouldn't trust wireless devices
- Unable to deploy additional mobile devices when customers request it
- Complex legacy system required too much of IT's time

# Goals of New Design

- Blanket organization with strong and high performing Wi-Fi
  - Use Airwave tool as method to strategically place AP's for optimal coverage
- Support triple the number of wireless devices for future Health Information System going live October 2012.
  - Providers will go from paper to paperless with CPOE
- Improve IT's management tools
- Implement a scalable solution as institution grows
  - Facility Growth (new buildings, renovations etc..)
  - Facilitate a growing number of mobile devices for both clinical and non clinical employees and guests
- Provide easy to use “Guest Access” for Patients and Family Members so they can get online as quickly as possible
- Limit downtime of wireless system
- *Implement reliable system that customers trust!*

# Implementation and Hardware/Software Design

## Implementation

- Implementation took 4 months to complete
- Replaced 250 legacy Access Points
- Added an additional 250 Aruba Access Points
- Dual mode configuration of Cisco/Aruba during implementation period

## Hardware & Software Design

- 700 Devices Controlling the Edge Network
  - 200 Switches
  - 500 Aruba AP-135 Access Points
  - 2 Wireless LAN Controllers (6,000 series)
- Aruba ClearPass
  - ClearPass Guest
  - ClearPass Policy Manager
- Aruba Airwave

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# Evaluation & Testing in MED Surg and Radiology

## Test Environment

- Aruba Controller and Airwave Server
- ClearPass Guest Server
- 14 Aruba Access Points
- Legacy equipment was removed

## Test process

- Worked with Managers in each unit to discuss customers reaction and satisfaction
- IT performed intensive bandwidth and latency tests in each unit
- IT used Airwave to assist in managing environment
- Internal testing of ClearPass Guest

## Results

- Managers extremely happy with results. Users on these units were able to use BMW's without dropped connections
- Customer satisfaction increased!

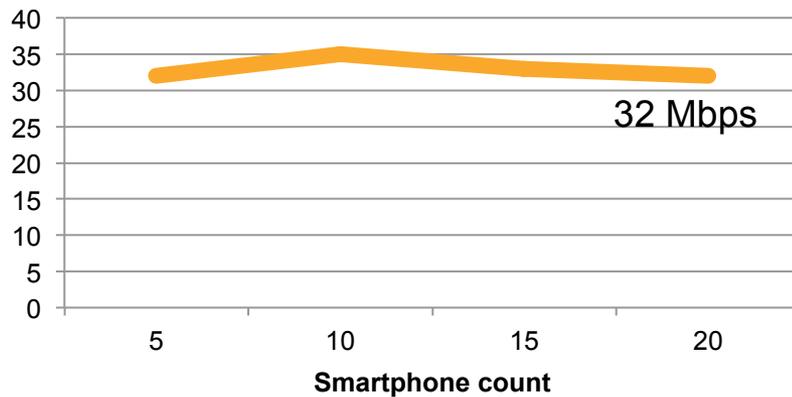
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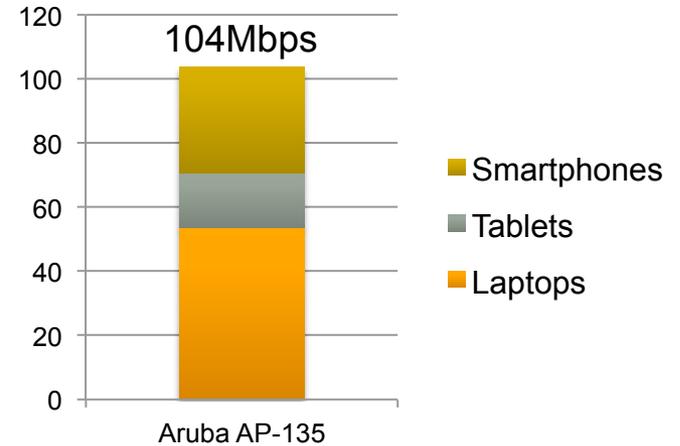
# Benchmark Test Results

## Wi-Fi Performance with High Density

### Total AP Throughput



### Total AP Throughput



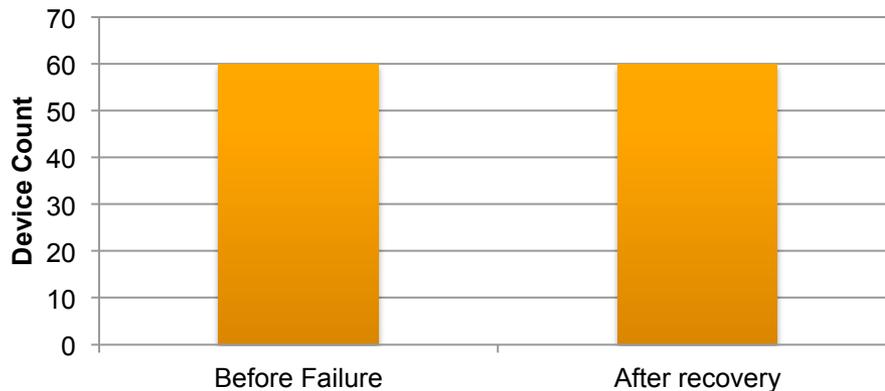
- **Adaptive Radio Management™ (ARM)** ensures equal access for all clients, regardless of type, capability or operating system.
- **Consistent** total performance in spite of increasing device density

- No client is starved while every client is ensured best throughput possible, even with 60 clients

# Benchmark Test Results

## High Availability for Clients & Applications

### Wi-Fi Connections During Failover



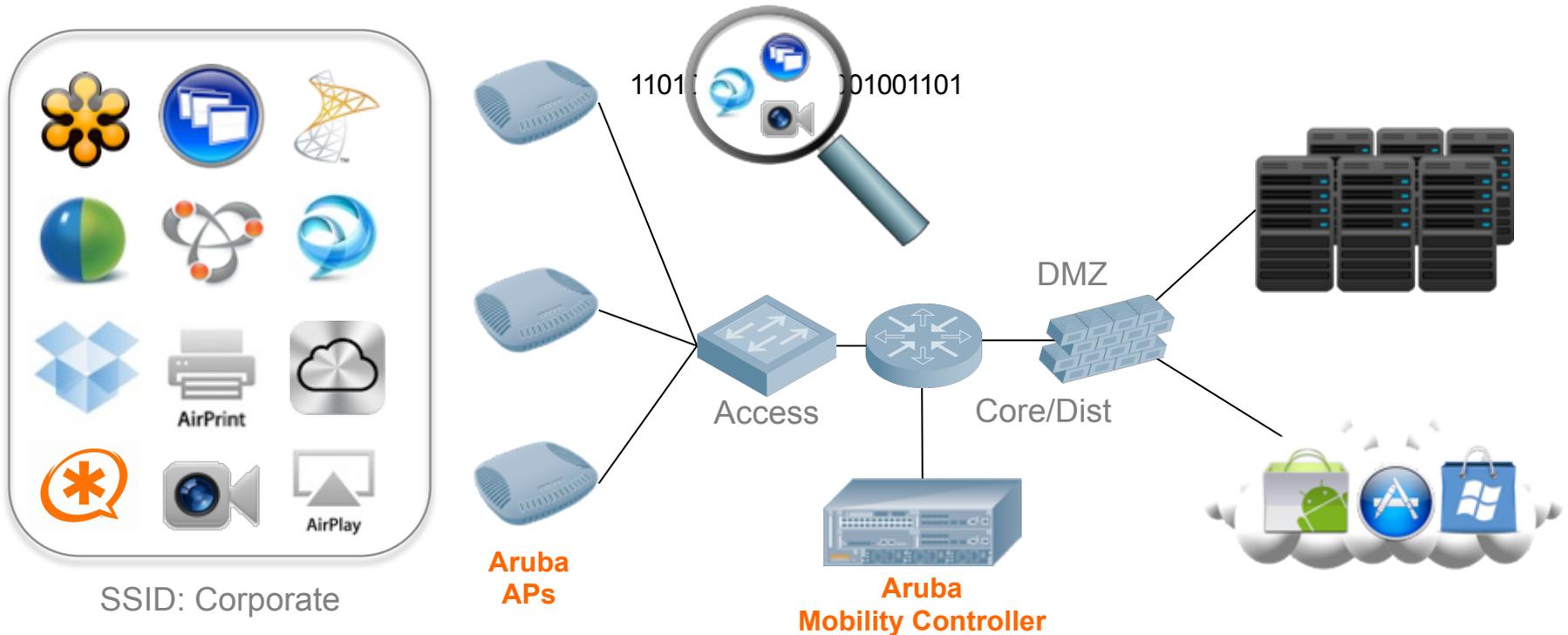
			
Aruba	✓	✓	✓

Real-time application survivability during controller failover

- **Zero** dropped Wi-Fi connections during failover, out of 60
- **Fast** recovery for WLAN controller and APs

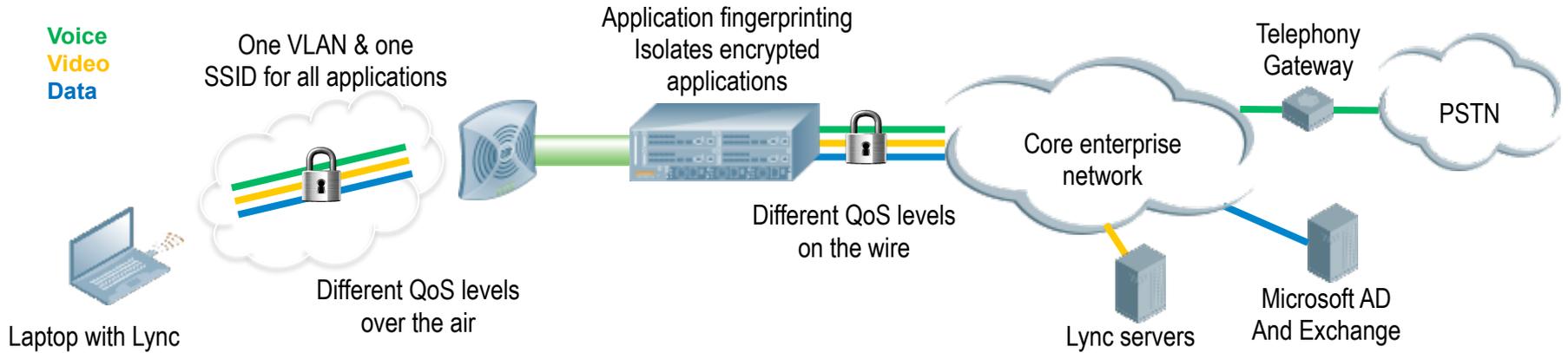
- **Zero** dropped real-time applications: Microsoft Lync, Apple FaceTime, and video streaming

# Mobile Apps on Aruba Wi-Fi



- ✓ Single SSID Wi-Fi network
- ✓ QoS management per app
- ✓ Optimized Wi-Fi per app

# Example: Microsoft Lync



- Web, Audio, Video Conferencing
- Encrypted streams



- Application Fingerprinting
- QoS without VLAN segregation

# Aruba Wi-Fi Benefits

## Ready for Highest Density

No group of mobile devices monopolize shared Wi-Fi resources at expense of others.



## Ready for Mission Critical Networks

Mobility controllers recover fast enough for high density of clients and mobile apps to stay connected.

## Ready for UC & Collaboration Tools

Voice & video streams are automatically prioritized over the air and protected during controller failover.





For more information, go to  
<http://www.arubanetworks.com/performance>