

MEEC Webinar – Daly and Aerohive

Considerations for High Density WLAN Deployments







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IDIQ Contract for Desktops / Portables, Storage, Servers, Network, Virtual Computing, Peripherals, and Related Service. Contract No.: UB-12-B-19-D1

Managing Agency - University of Baltimore on behalf of the Maryland Enterprise Educational Consortium (MEEC) and University System of Maryland (USM)

Daly was ranked #1 in all categories. As the top ranked contractor, Daly is designated as a Solutions Contractor specifically authorized to provide integrated solutions using technologies from across all categories of the contract. In this capacity, Maryland educational institutions can utilize Daly's engineering and architectural capabilities as well as a multitude of professional services to obtain the needed integrated systems.



Customer Focus - Education



ZXCVBNM

"The Aerohive wireless solution adds a key piece of technology that enables us to achieve our goals of 21st century learning." HOLLY AREA SCHOOL DISTRICT, U.S.

Key Considerations

Aerohive Advantage

Capacity	1:1 Programs Mixture of device types	No data bottlenecks SLA and Dynamic Airtime Scheduling
Security	Restrict network access Secure guest access	Integrated RADIUS, Firewall, WIPS Captive web portal with PPSK
Reliability	Downtime costs learning	No single point of failure Mesh support
Monogemen	Simple to use Visibility of clients	Simple GUI based management Client health score and TeacherView
Scalability	Cost effective solution Ability to scale	No feature licensing Linear scalability – start small and grow





- 1. Coverage does not guarantee adequate capacity
- 2. Place adequate focus on network planning and design
- 3. Identify client device capabilities
- 4. Understand application performance targets
- 5. Leverage 5Ghz band where possible
- 6. Adapt design to building construction to maximize channel reuse
- 7. Disable low data rates
- 8. Enable performance optimization features
 - Band steering
 - Airtime fairness
 - Rate limiting User Profiles



Coverage vs Capacity



- What is your design based on?
 - 5 GHz or 2.4 GHz?
- What RSSI Value?
 - -80 dBm Basic Connectivity
 - -70 dBm High Speed Data
 - -67 dBm VOIP
- AP Placement?
 - Using existing wiring?
 - Mesh?
 - Layer 8 and Layer 9 considerations?



Topology Review







Client Types and Capabilities



- Smart Phone
 - Channel Support 1-11
 - Channel Width 20 MHz only
 - Maximum Data Rate 65-72 Mbps
- Tablets
 - Channel Support 1-11, 36-48, 149-161
 - Channel Width 20 MHz only
 - Maximum Data Rate 65-72 Mbps
- High-End Laptop
 - Channel Support 1-11, 36-48, 52-64, 100-140, 149-161
 - Channel Width 20 MHz or 40 MHz
 - Maximum Data Rate 216-450 Mbps



Low Power Mobile Devices Demand an Even Better Wi-Fi Infrastructure



Gartner: "Without Proper Planning, Enterprises Deploying iPads Will Need 300% More Wi-Fi"



- The extra 5 dB sensitivity beyond a standard AP can even out coverage for various client types
- Better 5Ghz coverage enables 2.4GHz to be preserved for single band devices







Distribution by Client Device Type

Summary This report shows the distribution of client device types in the selected network segment. Use this information to understand the types of devices that are accessing your network, for example; iPhone, iPad, Android, Kindle Fire, etc.





Policy based on Context Identity, Device, Location, Time of Day





Application Performance Targets



Application Class	Required Throughput
Web-browsing/email	.5 - 1 Mbps
SD Video Streaming	1 - 1.5 Mbps
HD Video Streaming	2 - 5 Mbps
Apple TV Streaming	2.5 - 8 Mbps
Apple FaceTime	900 Kbps
YouTube Streaming	500 Kbps



Additional Considerations



- Leverage 5 GHz Band
 - Band Steering
- QoS/SLA Edge or Core?
 - Airtime fairness Dynamic Airtime Scheduling
 - Mapping to Ethernet 802.1p and DiffServ
 - WMM
 - Rate Limiting
 - Firewall
- AP Load Balancing
- Resiliency
 - Track IP
 - Mesh failover
 - 3G/4G
- Roaming L2 and L3



Enterprise Wi-Fi Features





Bonjour Gateway – Aerohive & Non Aerohive Aerohive Networks NETWORKS Router / L3 Switch AppleTV (AirPlay) 192.168.1.1 192.168.200.1 **Bonjour GW Feature ON** SSID Printer Server: SSID (AirPrint) "Subnet#2" (file sharing etc) "Subnet#1" iPad can AirPrint or AirPlay

Solution Scenarios: Network & Agent Based MDM Solutions



Embrace (Consumerization of IT)

Contain (BYOD)



Security and Authentication Features





Monitoring and Reporting Features







Customer Profile - Education



Rowan-Salisbury School System

Located in North Carolina, the sprawling Rowan-Salisbury School System is an educational force to be reckoned with. It's comprised of 35 schools, about 20,000 students, and about 3,000 employees. It's the largest employer in Rowan County

"It was probably not the most known product when I first started looking at it. But the more I looked, I thought: this is just a really neat product. And then when we started doing the tests, everything that they said the product would do, it did. It's just been a great experience for us."

> Phil Hardin Executive Director for Technology Rowan-Salisbury School System

Problem/Requirement

- Accommodate an influx of Apple iPAds, iPods and other Wi-Fi devices
- Enable students to use the same device in the classroom and at home
- A WLAN that was resilient,, centrally administered, easy to manage, secure and cost-effective.

Solution

- Aerohive's controller-less cooperative control Access Points deployed pervasively
- HiveManager used to monitor entire wireless network and all client activity
- Highly resilient WLAN network that both easy to manage and cost effective

Results

- Students and teachers making great strides in using Apple iPads and iPods for everything from data collection to video
- "Everything worked flawlessly. We knew then that product, in terms of providing us with the service and the bandwidth, was going to be there."

Daly Contact Information



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THANK YOU!

