





DORMITORY WIRELESS IS A SNAP

LEVERAGE EXISTING CAT 5 CABLE FOR COST EFFECTIVE 802.11N UPGRADE

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MOTOROLA HELPS PEOPLE BE THEIR BEST IN THE MOMENTS THAT MATTER



DELIVERING SOLUTIONS FOR THE MOMENTS THAT MATTER IN EDUCATION



CHALLENGES		SOLUTIONS		ROI
Internal, local, national, and nature-based events lead to student harm	➔	Enhance Security & Security	➔	50% reduction in response time to campus risks
Driving student results and enhancing skills for 21 st century	➔	Deliver an Always-On Learning Environment	➔	300% increase in student applications to college
Decreasing operating budgets with increasing learning demands	➔	Streamline Operational Efficiency	➔	\$900k in annual energy and materials savings for large campuses

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INCREASINGLY HIGH EXPECTATIONS FOR TECH



63%

Current College & University Students

93%

Current Secondary School Students

How important was/is technology on campus in your decision-making process?

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TOP PRIORITY FOR WIRELESS SOLUTIONS



77%

#1 priority for current college students

More important than:

- remote access,
- course management system,
- digital content,
- or multimedia content streaming

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Next Generation of College Students



- **Mobile**
 - 70%+ have laptops
 - Average 3- 4 devices each
 - Connect @ 10 different locations
- **Online**
 - 80% are wireless internet users
 - 72% of young adults use social media
- **Multimedia Consumers**
 - 92% stream videos



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STUDENTS DEMAND FOR PERVASIVE 802.11n on CAMPUS AND IN DORMS



3-4 Wi-Fi Devices
per Student

Students only
know Wi-Fi

From CAT5 in dorm
rooms to 802.11n

Support for time
sensitive apps,
voice and video

Support for dense
user environments

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SAMPLE OF APPLICATIONS IN DORMS



FaceTime



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CHALLENGES FOR IT DEPARTMENTS



- **Dense Wi-Fi™ clients (laptops, tablets, smartphones)**
- **Dorm rooms already cabled with CAT5/6**
 - Adding wireless without losing wired connections
 - Need wired connections for printers, gaming stations
- **IT budgets are tight, additional cabling is:**
 - Time consuming, disruptive and costly
 - Requires project management
- **Designing Access Points in hallways requires:**
 - Extensive RF survey to ensure dorm room coverage
 - New Ethernet PoE switch ports
 - New CAT6 cable runs
 - Dealing with physical constraints, e.g. plenums, asbestos in older buildings
 - Protection from damage
 - CAT5/6 to hallway locations does not leverage cables in rooms

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WLAN DESIGN CONSIDERATIONS



- **How many students per room?**
- **How many devices per student?**
- **How many devices per AP?**
- **Signal range - wall attenuation**
- **Installing APs and cables where you need them**
- **Physical protection/security of Access Points**
- **Network scalability**
- **Network Manageability**



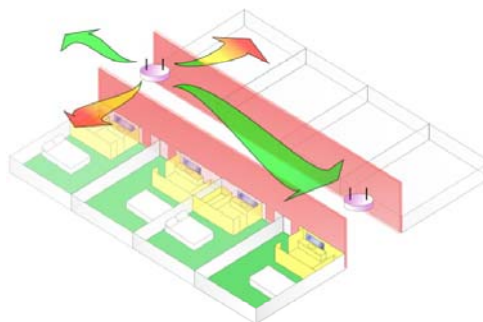
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DORM DEPLOYMENT TRADITIONAL THINKING



- Determine the optimal placement and coverage with the minimum number of access points
- Push the RF power through firewalls, fire doors, glass, etc..
- Site survey to plan for RF attenuation factors and ensure adequate coverage within the room
- Is there plenum space to run cables?
- What about co-channel interference between APs installed in the hallway?



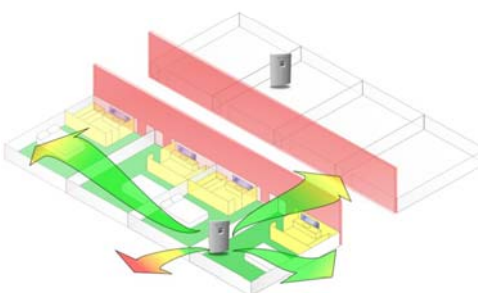
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DORM DEPLOYMENT NEW THINKING



- Focus on proper RF planning, not physical installation
- Install the access point inside the dorm room, leveraging existing CAT5/6.
- Installation density is easy to control and installation location is easy to change
- Co-channel interference is greatly reduced (walls)
- Pre-installation site surveys can now focus on the RF capacity planning
- Results in a reliable and predictable deployment model



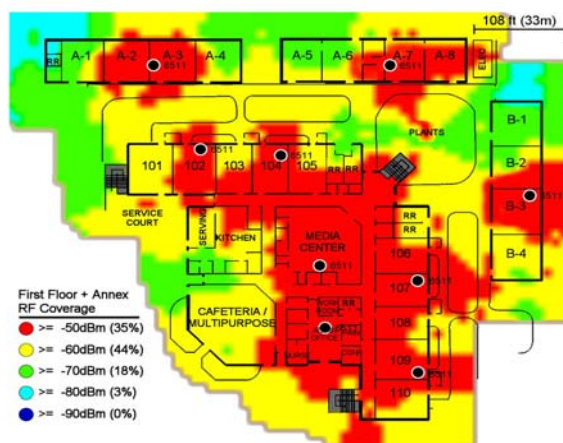
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DESIGNING FROM THE INSIDE OUT PUT THE RF WHERE IT IS NEEDED



- The AP's performance is concentrated inside the room rather than in the hall.
- Coverage planning and performance is predictable
- With the AP installed in the room, co-channel interference is reduced



Heat map of a deployment using Motorola's AP 6511

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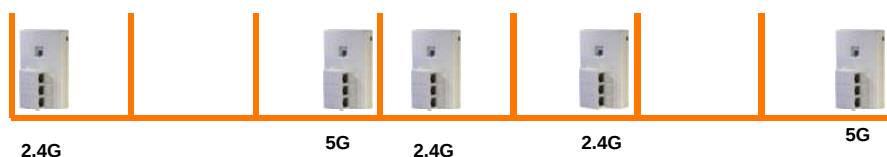
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SCALING CAPACITY AS NEEDS GROW



Supporting device density and scaling to meet future needs is the #1 challenge for IT network engineers

1. Scale via AP density: 1:5 rooms, 1:4 rooms, etc
2. Scale via Spectrum: Adding 5G



**ADDS, MOVES AND CHANGES ARE EASY WITH
WALLPLATE ACCESS POINTS**

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DORMITORY WIRELESS IS A SNAP WITH THE AP 6511



- Single radio, 2x2 MIMO
- 2.4 GHz or 5 GHz
- 26 dBm
- Super low-cost installation
 - Fits onto existing wall plates
 - Uses existing cabling
- Optional switch ports retains wired ports in the room
- Thick, Thin or Adaptive modes
- Configure up to 24 with no controller

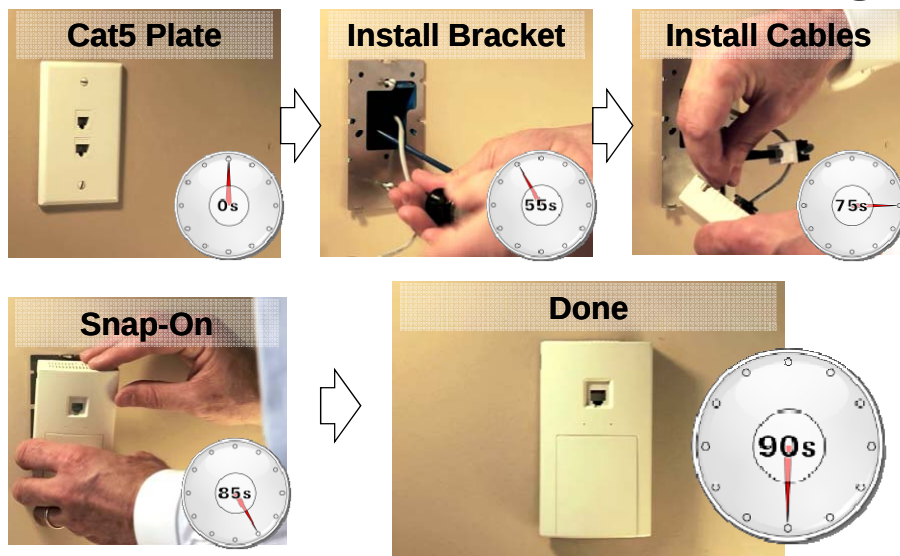


**ADD 802.11n wireless to the dorm room and
KEEP THE WIRED PORTS!**

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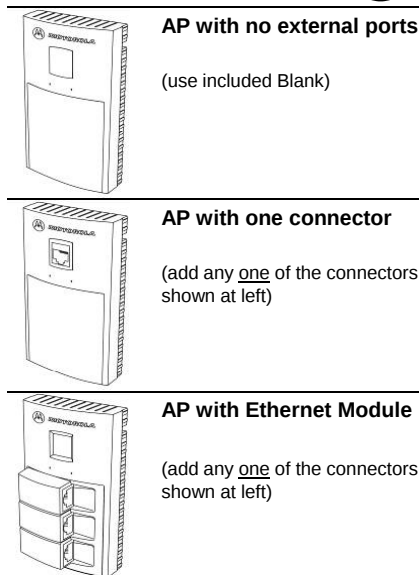
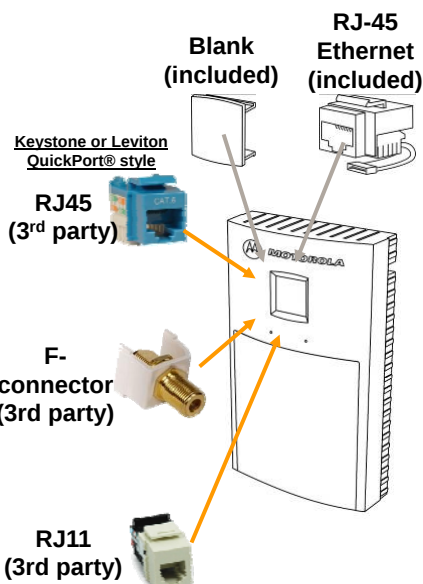
AP 6511 INSTALLATION



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AP6511 MODULAR DESIGN



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ADDITIONAL WALLPLATE BENEFITS



- Preserves wireless capacity by utilizing wired in the dorm room for printers, games consoles, etc.
- AP is not exposed in open, public areas
 - Protected in students rooms
- AP is secured to wall plate with special Torx screw
- Uses existing CAT5/6 cabling and avoids issues when there is hazardous materials, e.g. asbestos
- Leverages existing Ethernet switch ports
 - Use industry standard 802.3af PoE injectors
- Each room is covered by at least two other Access Points (RF redundancy)
- Smart RF provides load balancing between APs

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SUMMARY



- **Wallplate APs in rooms address difficult challenges:**

1. Creates a predictable and repeatable deployment model
2. Simplifies RF coverage and capacity planning
3. Puts the RF where it is needed
4. Quicker deployments, uses existing switches and cables
5. Secures the AP under the student's 'watch'



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RIGHT NOW 
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HELPING
 **PEOPLE BE** 
THEIR  **BEST IN** 
THE  **MOMENTS**
 **THAT MATTER**



MOTOROLA SOLUTIONS

