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Wireless Access Point and Telecommunications Enclosures for Enterprise *Wi-Fi* Deployments





Oberon's Mission:

Oberon is the preferred source for wireless LAN access point enclosures, installation and mounting solutions, antennas, and workspace telecom enclosures for cost effective, secure, code compliant, aesthetic enterprise Wi-Fi deployments. Oberon's products are designed by experts with exceptional in-the-field, wireless LAN industry experience.

Enterprise *Wi-Fi* Deployments

- Widely adopted, if not pervasive, in logistics, healthcare and higher education verticals
- Widely demanded in hospitality, retail, corporate and office environments
- Approved for use in Federal Government installations

Oberon *Wi-Fi* Access Point Enclosures

- Convenient mounting and access to wireless access points, antennas, and cabling from all manufacturers
- Physical security/ Environmental protection
- Simplified Moves, Adds, and Changes (MACs)
- Code/directive/regulation compliance (UL/NEC/TIA etc.)
- Clean, professional, aesthetic installation
- Enhanced Radio Frequency (RF) coverage







Oberon model 1052 with ZDUAL antennas

Physical Protection



Oberon model 1053 with Cisco antennas

Aesthetics and Convenience



Oberon model 1059

ICRA in Healthcare



Oberon model 1028 w ZDUAL Antennas

Code Compliance



Oberon model 1064 w Cisco 1140 AP

Aesthetics and Convenience



Oberon model 1022 w ZDUAL Antennas

Prevent obstruction or tampering



Oberon model 1030 w/ ceiling flange

Improve coverage and
preserve the site survey



Oberon model 38-1052-ADPDOOR-AP105

Certain verticals where Oberon Wireless AP Enclosures may be mandatory:

- Healthcare- Many hospitals enforce Infectious Control Risk Assessment (ICRA) procedures. These mitigate access to the space above ceiling tiles to restrict the spread of infectious diseases.
- Retail – The Payment Card Industry Data Security Standard (PCI-DSS) requirement 9.1.3 states that the operator must *“Restrict physical access to wireless access points, gateways, and handheld devices”*
- Government – Directive 8100.2 mandates FIPS 140-2 compliance wherein FIPS 140-2 paragraph 4.5 requires *“physical security mechanisms”* to be applied

Wireless Enclosures may be specified in the following:

- Many Authorities Having Jurisdiction (AHJs) will require NEC compliance and UL listing of installed components:
 - Oberon’s enclosures are designed to satisfy National Electric Code (NEC) paragraphs 300.22 and 300.23 for installation in the air-handling space.
 - Most of Oberon’s enclosure products are UL50 listed.
- Telecommunications Industry Association TIA 569-B – accepts use of telecommunications enclosures in the ceiling space to secure wireless access points and other networking appliances.

Types of enclosures:

- 1) "Plenum rated" ceiling enclosures: Aesthetic, secure, convenient access in facilities where suspended ceilings prevail
 - Most UL50 listed and Calif. OSHPD OPA number for code compliance
 - Designed to satisfy NEC Paragraphs 300-22,23 for use in the air handling space
 - Simple antenna mounts, improved Radio Frequency coverage
- 2) Wall Mount and Hard-lid Enclosures: indoor/outdoor installations where suspended ceilings do not prevail
 - Some UL50 listed, Some NEMA (weather resistant) rated
 - Physical security/ environmental protection
 - Simple antenna mounts, improved Radio Frequency coverage

Custom enclosure design services available

Types of enclosures:



Oberon Model 1059-00 Universal Ceiling Enclosure for wireless AP w/ non-detachable antennas

Types of enclosures:



Oberon Model 1052-00 Universal Ceiling Enclosure
for Wireless AP w/ detachable antennas
(Shown with Oberon ZDUAL antennas)

Types of enclosures:



Oberon Model 1053-00 Ceiling Enclosure for Wireless AP w/ vendor antennas on door

Types of enclosures:



Oberon Model 1064-00
Vendor Specific AP Ceiling Mounts

Types of enclosures:



Oberon Model 1030-00 Dual purpose wall and ceiling Universal AP enclosures

Types of enclosures:



Oberon model 1027 "Hard-Lid" ceilings
or wall mounted wireless AP enclosure

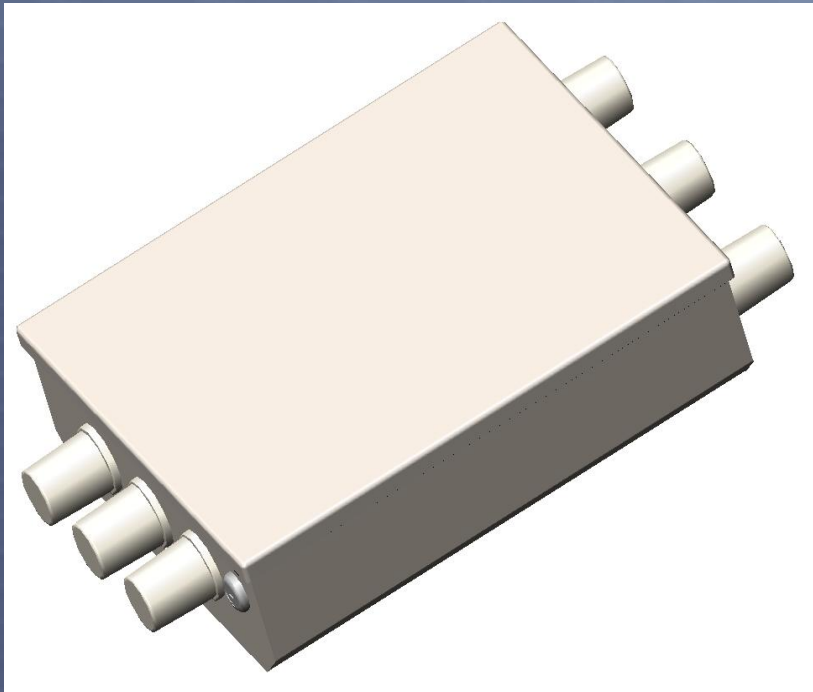
Types of enclosures:



Replacement doors for upgrading to new access points (38-1052-ADPDOOR-AP105)

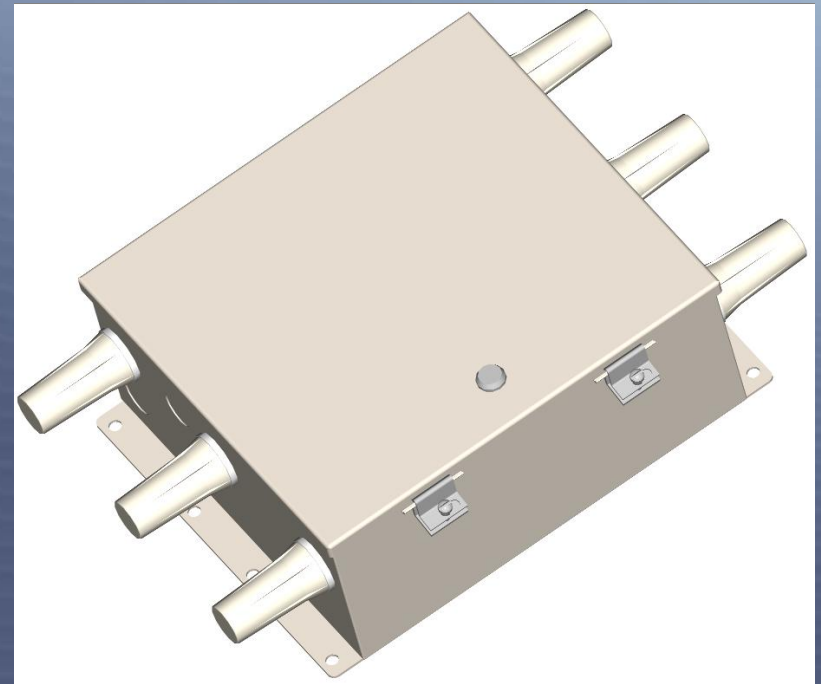
Types of enclosures:

Wall Mount/Hard Lid



Oberon model 1022
w/ ZDUAL antennas

Outdoor/NEMA



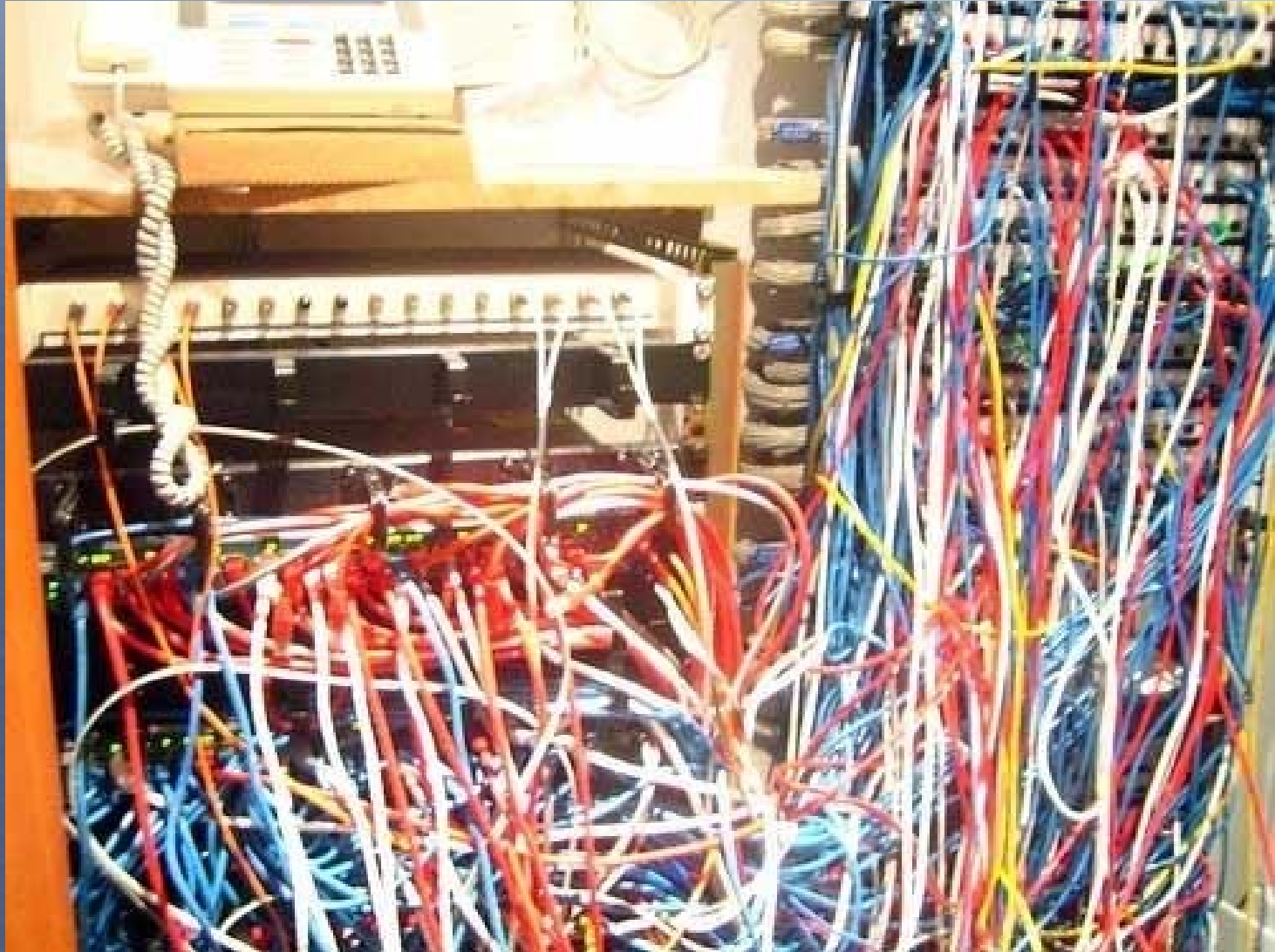
Oberon model 1024
w/ 34-BMANT24 antennas

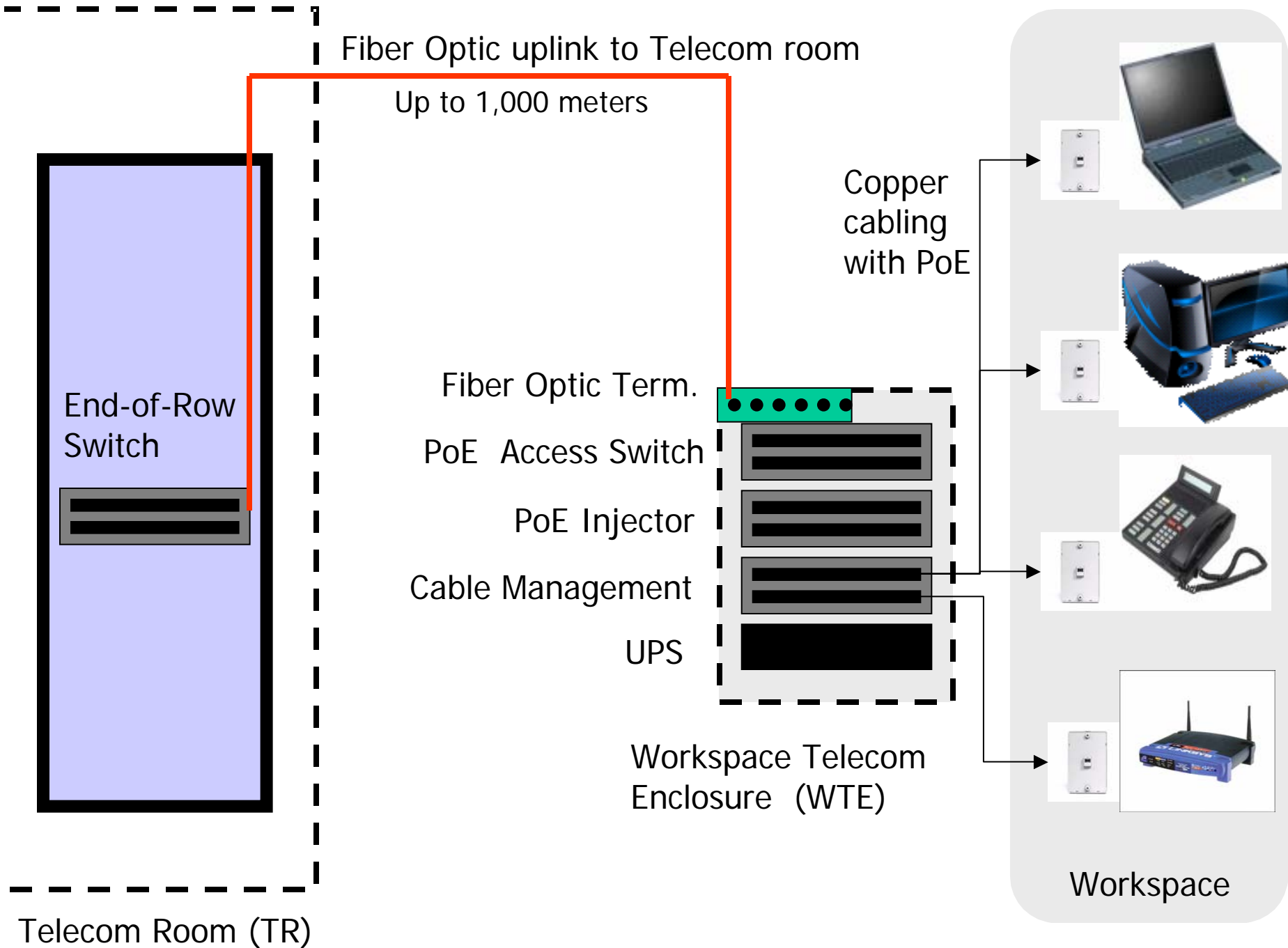


General purpose ceiling Workspace Telecommunications Enclosure for workgroup switch or A/V equipment



Workspace Telecommunications Enclosure for
Fiber to the Enclosure (FTTE) structured cabling





INSTALLING IN THE “PLENUM” vs. THE AIR HANDLING SPACE

- Ideal location for access point is in the ceiling, but.....

National Electric Code (NEC) regarding the plenum used for environmental air.....

- Article 100 defines plenum as *“A compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system”*.
- Article 300.22(b) *“Equipment and devices shall be permitted within such ducts or plenum chambers only if necessary for their direct action upon, or sensing of, the contained air”*
- Article 300.22(c) *“The space over a hung ceiling used for environmental air-handling purposes is an example of the type of other space to which this section applies”, (Air-handling space as opposed to a plenum space)*

NEC COMPLIANCE

- Article 300.22(C)(2) “*Electrical equipment with a metal enclosure, (or otherwise listed) shall be permitted to be installed in such other space unless prohibited elsewhere in this Code*”.



- Article 300.23 “*cables, race-ways and equipment installed behind panels, including suspended ceiling tiles, shall be arranged and secured so as to allow removal of panels and access to the equipment.*”

TSB-162 TIA Telecommunications Cabling Guidelines for Wireless Access Points

TSB-162 states that cabling should be installed and performance tested per existing 568-B.2 standards.

Determination of exact cell size and placement of the AP is outside the scope of the TSB (perform a site survey or simulation)

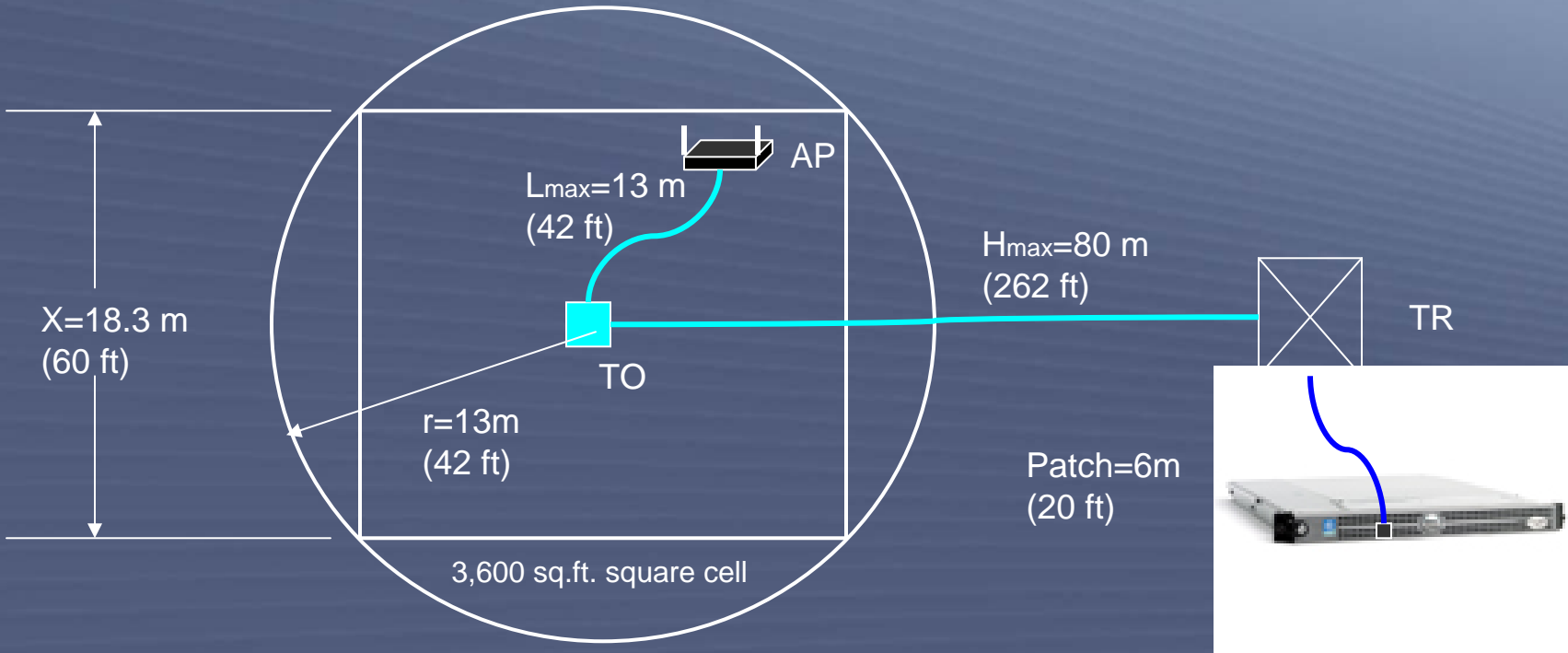
TSB-162 include wall-mount above the drop ceiling, wall-mount below the drop ceiling, and in-grid ceiling mount.

Telecommunications Enclosures (TEs) may be mounted in a ceiling panel to provide locked security or aesthetics for APs

TSB-162 CELL SIZE

The TSB includes an example of a 60-foot by 60-foot square cell structure

This agrees reasonably well with vendor recommendations for 3,000 sq. ft. "cell" sizes to support wireless voice over IP



TIA 569-B Telecommunications Pathways

The use of suspended ceiling space for horizontal connection points may be acceptable, provided that the space is accessible without moving building fixtures, equipment or heavy furniture

Access to the TE shall be controlled against unauthorized access

Cables that enter the TE shall be protected from sheath abrasion and conductor deformation by means of grommets, bushings and suitable cable management hardware

A TE should serve an area not greater than 3,600 sq. ft.

A minimum of 3" clear vertical space shall be available above the ceiling tiles for horizontal cabling and pathway

PREPARING FOR THE FUTURE

- Plan for wired and wireless infrastructure to co-exist
- Plan Gigabit Ethernet to the AP for 802.11n
- In Healthcare, the Joint Commission has established rules for mitigating the spread of infectious disease and contaminants- limiting access to the air-handling space.
- TIA 1179 addresses Healthcare Facility Telecommunications Cabling Standards
- Department of defense installations, & other government agencies may require access point to be locked up
- Consider convergence of other RF services such as DAS, 4G, RFID, asset location, etc.
- RF cables- 802.11n has provisions for up to 8 antennas!



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