Wireless Networks in Hospitals & Healthcare

Installation in Hospitals creates unique challenges, including mitigation of Airborne Infectious Disease, satisfying Infection Control Risk Assessment (ICRA) procedures and the TIA-1179 Healthcare Facility Telecommunications Infrastructure Standard, and HIPAA compliance

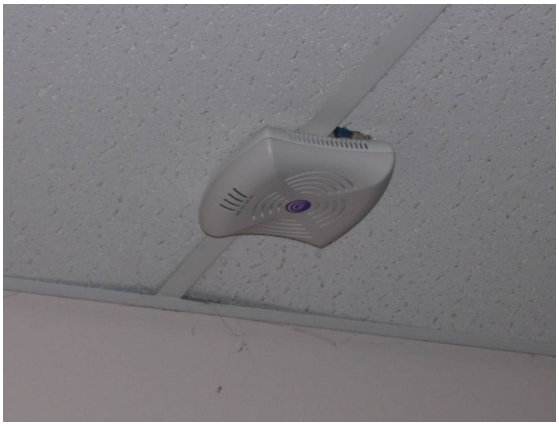
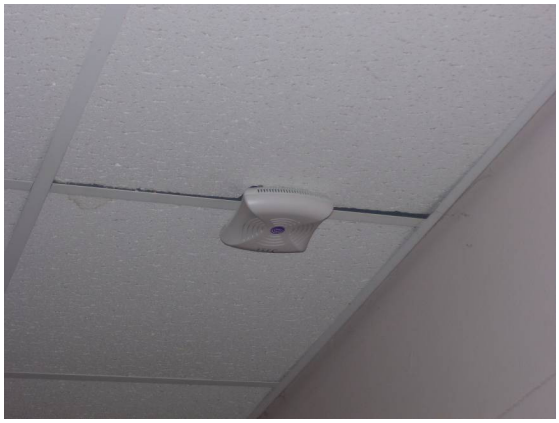
Airborne Infectious Diseases

According to The Center for Disease Control and Prevention (CDC), it is estimated that in 2002 there were 1.7 million *Hospital Acquired Infections (HAIs)* in the U.S. This resulted in an estimated nearly 99,000 deaths, costing up to $45 billion that year. It is estimated that the cost to treat each HAI is now $40,000 to $60,000, with the costs of treatment falling on the hospital or facility where the infection occurred. *Airborne Infectious Diseases* are contributors to HAIs. Certain Airborne Infectious Diseases are associated with the spread of dust and nuclei from the space above the ceiling, behind the wall, and from construction, renovation, and maintenance activities. These include the fungal spore *Aspergillus*, other mold spores, and airborne bacteria. These diseases can be fatal, particularly to patients with compromised immune systems. A comprehensive environmental plan to address HAIs must include controlling the source and spread of Airborne Infectious Disease.

In many facilities, it was a common practice to install the Wireless Access Point, or WAP, by clipping it onto the ceiling grid. The installer would then route the data cable into the space above the ceiling by either poking a "mouse-hole" through the ceiling tile or lifting the ceiling tile enough to push the cable through, leaving a gap in the ceiling system. There are several problems with this approach:

- The gap leaves an opening for the transmission of *Airborne Infectious Disease*
- The gap degrades the intentional and specified *differential air pressure* designed into hospital spaces
- The gap compromises the specified *Burn Rating* and smoke barrier of the ceiling system
- The gap is unsightly and leaves an unprofessional, unfinished look

Clipping APs onto ceiling tile grids is no longer an acceptable method for wireless access point installation in most healthcare facilities.

To mitigate the spread of Airborne Infectious Disease, it is important to eliminate the mouse holes and lifted ceiling tiles associated with the installation of WAPS

Infection Control Risk Assessment (ICRA) Procedures

The *Joint Commission* (the body that accredits healthcare facilities) has specified that facilities should establish *Infection Control Risk Assessment (ICRA)* procedures for mitigating the spread of infectious disease and agents. Recognizing that the space above a suspended ceiling (whether used as a plenum for air handling or not) may accumulate dust and generate mold spores, the ICRA procedures may restrict access to the space above suspended ceilings. If work is to be performed above the suspended ceiling, requiring that ceiling tiles are lifted or moved, it may be necessary to "tent-off" the work area using plastic sheets, or use a moveable Negative Air-Pressure Enclosure (NAPE). The tented area needs to ventilated and the air filtered by a HEPA filter. This process is time-consuming, and may be disruptive to work flow in the vicinity. Unfortunately, this space above, or in, the suspended ceiling is precisely where wireless access points are located, due to preferred wireless coverage from the ceiling location. Likewise, the supporting cabling for the wireless is located in this space above the ceiling tiles.

TIA-1179 Healthcare Facility Telecommunications Infrastructure Standard

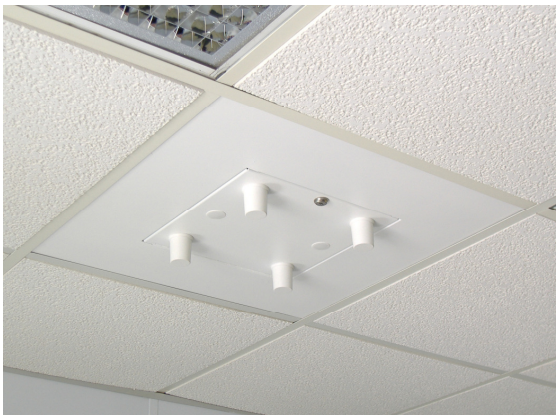
Recognizing this, the TIA-1179 Healthcare Facility Telecommunications Infrastructure Standard states that "*Adding or changing horizontal cabling could result in a net decrease in care being provided, jeopardizing infection control measures or compromising life safety measures".*

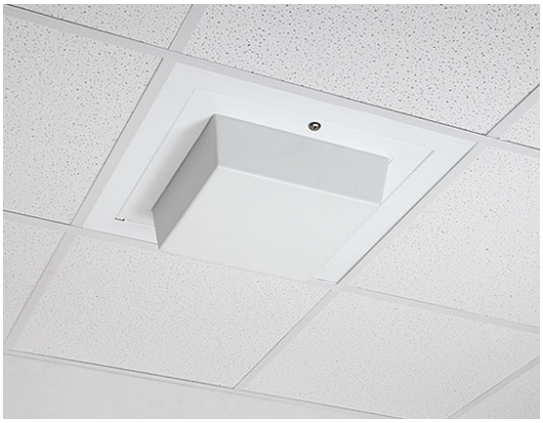
Furthermore TIA-1179 indicates that *"Infection control requirements (ICR) could have a serious impact on the times and conditions for cabling installation, moves, adds and changes, as well as restrictions to removing ceiling tiles, wall penetrations and access to unoccupied spaces" .*

Consideration of the expense of removing or even lifting ceiling tiles suggests that healthcare facilities management will carefully consider how wireless access points are installed, maintained, and secured in healthcare facilities. Securing WAPs in ceiling enclosures provides a clear path to reducing ceiling tile penetrations and simplified ICRA procedure compliance.

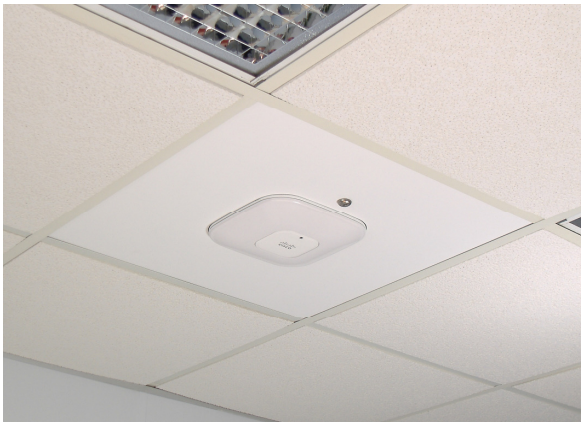
Plenum Rated Wireless Access Point Enclosures

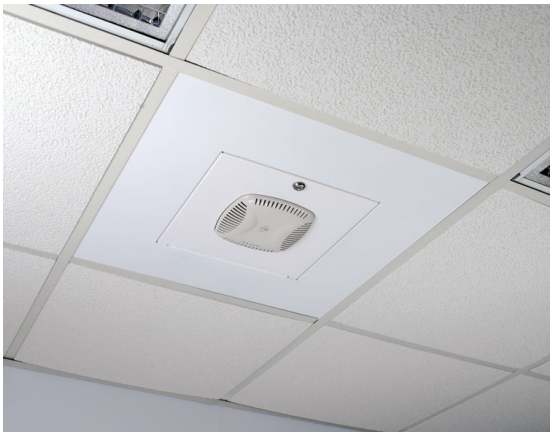
Wireless LAN access point ceiling mounted enclosures and mounting solutions offer a convenient means to install and secure the wireless infrastructure. Oberon's plenum rated, UL Listed enclosures have a "solid" back box, so they are an effective dust barrier. Data cables are pulled through an intumescent foam plug, retaining the dust resistance and fire rating of the ceiling. Once the enclosure is installed within the ceiling gridwork, access points can be conveniently serviced and/or replaced, simply by unlocking and opening the enclosure door. Since the space above the ceiling is not breached, there is no need to "tent-off" the work area. This is a reduction in maintenance costs, and lessening of the impact on care being provided, both of which are objectives high on the priority list of healthcare facilities managers.





Enclosures can simplify Infection Control Risk Assessment (ICRA) compliance. By moving the Wireless AP inside the enclosure, it can be accessed without breaching the space above the suspended ceiling. Left- Oberon model 1052-00 with 4 Oberon ZDUAL Wi-Fi antennas mounted on the door. Right-Oberon Model 1059-00, with impact resistant, UL ABS door.

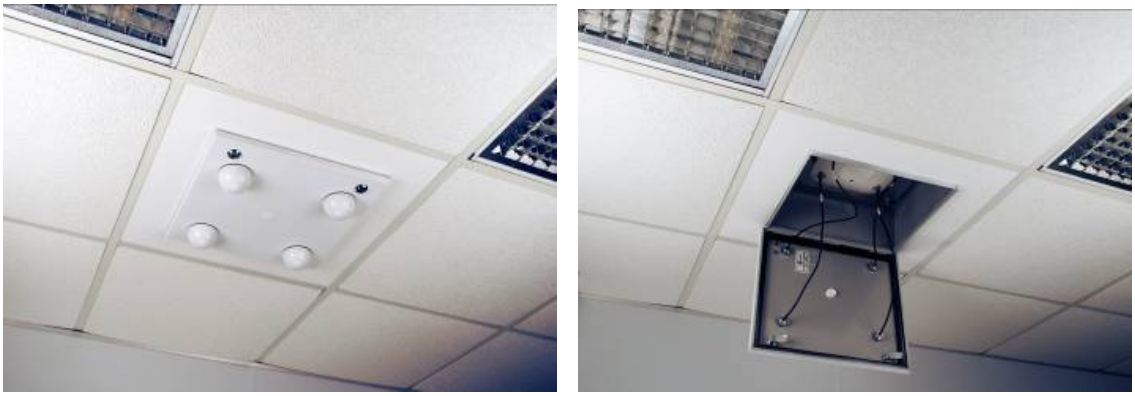




Secure, convenient, and aesthetic mounting solutions for virtually every vendors wireless access points. Interchangeable doors permit simple migration to new WAPs, antennas and technologies. Left- Oberon model 1064-00 with Cisco AP. Right-Oberon model 1052-AP135 with Aruba Networks AP

NEMA 4 Ceiling and Recessed Wall Enclosures

Operating Rooms (ORs), Protective Environments (PEs), Airborne Infection Isolation (AII) rooms, pharmacies and labs may have special requirements to maintain the *differential air pressure envelope,* or provide for washdown. Oberon offers a line of suspended ceiling, hard lid ceiling, and recessed wall mounted NEMA 4 (waterproof) enclosures for wireless equipment. These enclosures can also be used to protect critical public safety wireless gear.



Oberon Model 1058-08 NEMA 4 Ceiling Enclosure and Antennas for Wireless Gear

Other TIA-1179 Considerations

TIA 1179 also states that "*Telecommunications Enclosures (TEs) providing support for life and safety networks should incorporate additional security measures to restrict unauthorized access to the space". W*orkspace TEs and access point enclosures should be lockable, providing that additional security measure specified.

Additionally, this standard recognizes *'that many healthcare installations make use of a number of wireless applications. It is recommended that the wireless environment be characterized and understood prior to the design, choice, and installation of cabling to ensure satisfactory performance".* Indicating that a site survey should be performed as part of the design, and interference sources should be identified. In order to preserve the integrity of the site survey, access points and antennas should be secured so that they are not accidentally or intentionally moved or disconnected.

HIPPA COMPLIANCE

The *Health Insurance Portability and Accountability Act* (HIPAA) is intended to protect confidential patient information, and includes this paragraph (below) on physical safeguards to protect electronic information systems.

§ 164.310 Physical safeguards. A covered entity must, in accordance with 164.306: (a)(1) Standard: Facility access controls. Implement policies and procedures to limit physical access to its electronic information systems and the facility or facilities in which they are housed, while ensuring that properly authorized access is allowed.

Wireless access points are an extension of the information systems equipment which is normally locked and secured in a telecommunications room. WAPs are commonly exposed in public areas, and must be locked and secured to limit physical access.

AESTHETICS

Many hospitals are community centerpieces and, as such, are designed to a high architectural standard. The ceilings in the hospital are important aesthetically, and are intended to be visually appealing. WAPs clipped onto ceiling tile grids, or exposed on high walls, is not acceptable in many cases. Architects and designers will commonly specify that the presence of the WAP should be minimized.

SUMMARY

Oberon's line of wireless access point enclosures and mounting solutions provide the following benefits:

- With the WAP mounted in the enclosure, mouse holes and ceiling tile gaps are eliminated, mitigating the spread of mold spores and bacteria from the above ceiling (plenum) space
- The WAP can be accessed for moves, adds, and changes, without breaching the above ceiling (plenum) space, simplifying ICRA compliance
- Oberon's products are UL listed and designed for installation in the space above the suspended ceiling. The back box is solid (not ventilated), thereby preserving the integrity of the ceiling system. This provide for unambiguous National Electric Code compliance
- Oberon's ceiling and wall enclosures are lockable, providing clear-cut, indisputable compliance with HIPAA
- The enclosures use a common key, simplifying key and access management
- Oberon's line offers a solution for securing most vendors WAPs, including those with internal and external antennas
- The doors on Oberon's enclosures are interchangeable, permitting upgrades and migrations to new WAPs, antennas, and technologies, again, without opening the above ceiling space.
- Oberon uses an attractive textured powder coat to emulate the appearance of commercial ceiling tiles. Custom colors to match ceiling tiles are available
- Oberon offers enclosures with a tegular flange. This exclusive feature emulates the shallow bevel found in ceiling tiles used in popular recessed grid ceilings, for superior aesthetics

For more information please visit:

http://www.oberonwireless.com/faq-resources.php