# Oberon Professional WiFi Installation Solutions For Cisco Wireless Access Points

*WiFi Access Points are everywhere. Integrating them into building environments is a challenge for integrators and contractors*

Scott D. Thompson | February 2016

The default method for installing wireless access points (APs) is clipping them onto the ceiling grid or rail. Mounting the AP in the ceiling is ideal from a wireless coverage standpoint, but having the AP hanging off the grid is becoming less acceptable as it appears to be an "unfinished" installation in many locations. Many end users, building owners, architects, and, quite frankly, installers, are demanding a more professional, secure and aesthetic wireless AP installation.

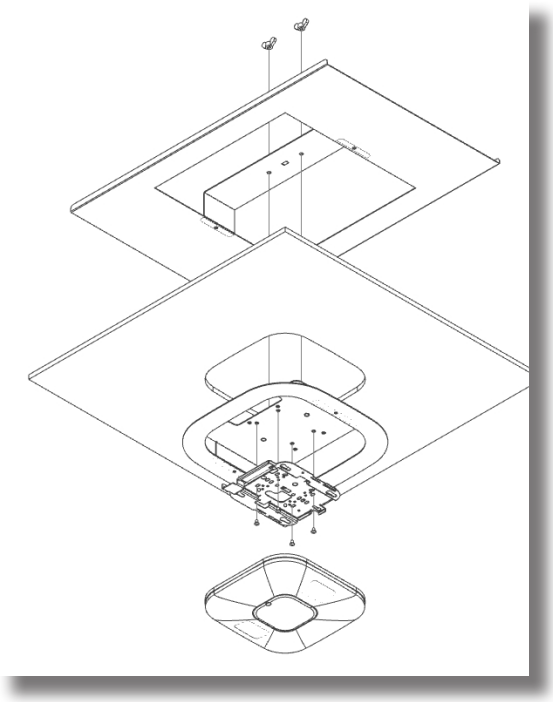
Sometimes the end user will suggest that the AP be mounted above the ceiling, so that it is not visible. Leading AP vendor Cisco Systems, however, recommends that the AP not be mounted above the ceiling as this will degrade signal performance and potentially lead to increased signal interference between APs above the ceiling. Wireless designers generally recommend against mounting APs above the ceiling for these performance reasons, and because it is more difficult to diagnose and service the access point when above the ceiling.

APs can also be mounted on the wall when ceilings are too high or not convenient. APs can be mounted directly on the wall, but since the AP's antennas are designed to be mounted in the ceiling in the "horizontal" orientation, the direct wall mount does not properly position the AP for wireless coverage.

In many cases the wireless designer and installer is tasked with incorporating WiFi in a venue comprised of many types of ceilings and walls- suspended ceiling tiles of different textures, colors, and ages, hard ceilings and walls, open ceilings, and challenging environments.

***How can the professional wireless designer and installer provide for the optimum wireless performance, physical security, access, and more importantly than ever, building aesthetics, in these disparate environments?***

Oberon has taken cues from the architectural lighting world, and designed products which install somewhat like recessed lighting (in ceilings) or attractive wall fixtures for surface mounting APs on walls. Oberon offers the widest selection of professional AP installation solutions for virtually any venue



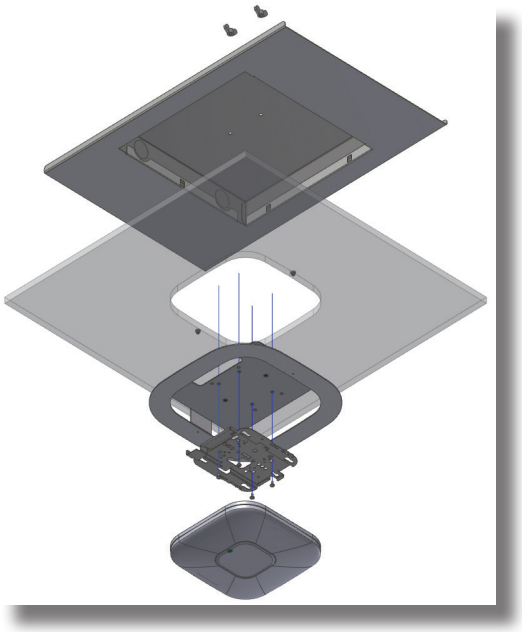
- Recessed ceiling mounts for cloud and panel ceilings
- Recessed ceiling mounts for suspended ceilings
- Open ceiling mounting solutions
- Right angle brackets and mounts where ceiling mounting is not convenient
- Indoor/ outdoor non-metallic surface mount enclosures for challenging environments
- AP and antenna paintable vanity covers

**RECESSED CEILING MOUNTS FOR CLOUD AND PANEL CEILING MOUNTS**

Oberon's economical 1040 and 1044 series recess ceiling mounts are something like recessed lighting. A back box is placed above the ceiling, and a cutout is made for the AP in the ceiling panel or tile. The AP is attached to an AP specific trim piece and bracket which is then drawn into the back box and flush against the ceiling. Once installed, only the front face of the AP is visible, providing ideal wireless performance and added physical security.

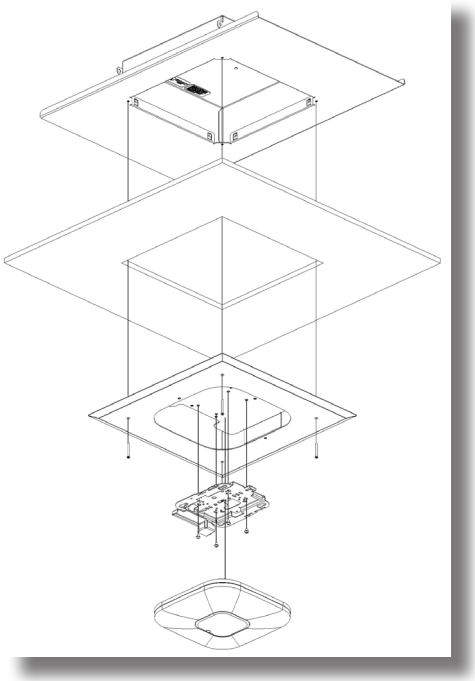
The Model 1040 is for open ceiling environments. The Model 1044 has a solid, firestopped, back box for suspended ceilings with a fire rating. Trim pieces are available for leading enterprise AP vendors. Access point specific trim is included with the product. For different vendor's access points, specify the trim required. Note: the trim is interchangeable after installation. Please contact your Oberon representative for additional trim options.

*Model 1040 Series Recess AP Installation Kit for Suspended Ceiling Panels*



*Model 1044 Series Recess AP Installation Kit for 2' x 2' Suspended Ceiling Tiles*

A second version of the 1044 is available for use in hospitals, where there is a concern about lifting ceiling tiles and tightening the trim piece from the rear of the box (above the ceiling). The 1044-XX-F series has a larger front attached. With the 1044-XX-F series, once the back box is installed, the trim piece with access point can be attached to the back box from the front, rather than tightened in from the rear of the back box. This will simplify access point swap out and maintenance in a hospital environment with ICRA procedures.
For hospital environments, please specify the front attach trim.



*Model 1044-F Series Recess AP Installation Kit for Suspended Ceiling Tiles with Front Attach Trim Piece for Hospital Environments*

## CEILING ENCLOSURES FOR STANDARD 2' x 2' SUSPENDED CEILING

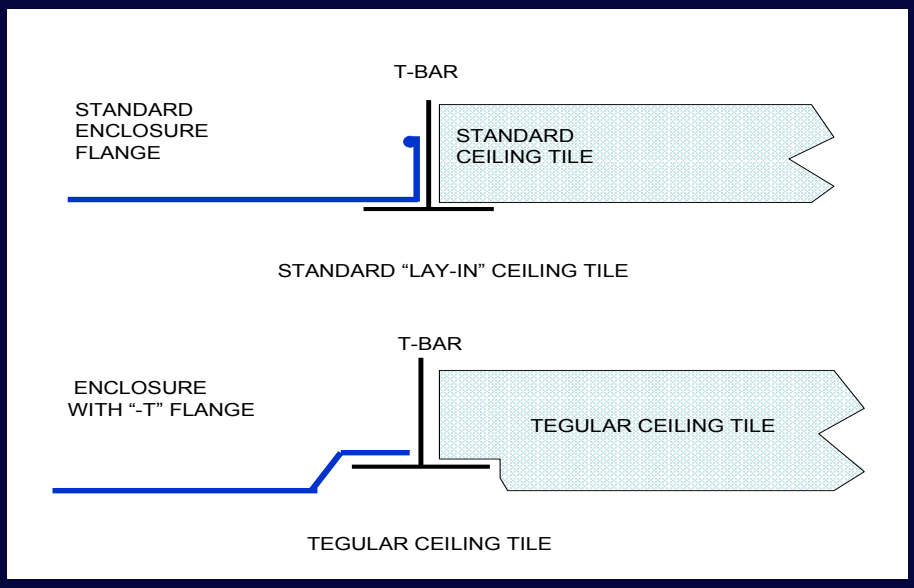
Oberon's 1046 and 1047 series suspended ceiling access point mounting solutions are designed for the economics of high density WiFi AP installation. These products are designed specifically for low voltage, PoE powered access points from leading vendors. These products are designed to drop into standard 2' x 2' suspended ceilings. . The locking door provides an added degree of security. The easily interchangeable doors allow for simple migration to new access points simply by swapping out doors.

## IMPROVING APPEARANCE IN RECESSED GRID CEILINGS

Most new, modern ceiling systems are "recessed grid" ceilings systems. With recessed grid ceilings, the ceiling tile has a beveled step around the perimeter, so when the tile is laid in the grid, the grid is recessed behind the tile a little bit. Most people think these ceilings look better than standard lay-in ceiling tiles because gaps between the tile and grid are concealed better.

The ceiling tiles with the beveled perimeter are called "Tegular" ceiling tiles, and are more common than standard lay-in ceiling tiles in newer ceilings. To better match the appearance of these recessed grid ceilings with tegular tiles, Oberon's ceiling tile enclosures can be ordered as "-T" (for tegular) ceiling tile. Be sure to specify "-T' Oberon AP ceiling tile mounting solutions when installation is in a recessed grid ceiling. The –T version looks great in a recessed ceiling grid environment!

*Model 1046-CCOAP-T 2' x 2' Ceiling Tile Enclosure with interchangeable doors and -T "tegular" flange to match recessed grid ceiling tiles*

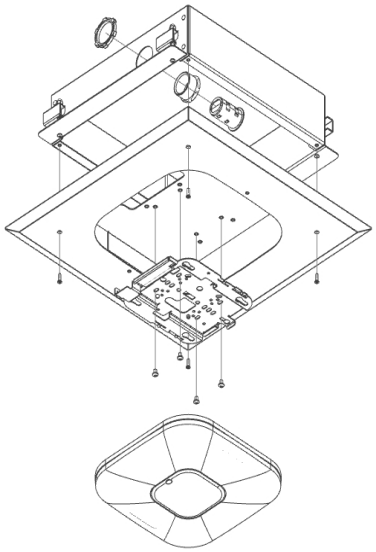



*Recessed grid ceiling tiles have a beveled step around the perimeter. These are called tegular ceiling tiles. Be sure to specify "-T" (for tegular) AP ceiling tile enclosure solutions when installed in a recessed grid ceiling.*

## HARD CEILINGS

Oberon's economical 1042 and 1043 series recess ceiling mounts are designed something like recessed lighting for hard lid areas. A cutout is made in the ceiling, and the back box is recessed and fastened into the ceiling. The AP is attached to an AP specific trim piece and bracket, which is then fastened to the installed back box, and flush against the ceiling. Once installed, only the front face of the AP and trim is visible, providing ideal wireless performance and added physical security.

Model 1042 is for old construction or remodeling environments. The Model 1043 includes installation hardware for new construction environments. Both have a solid, firestopped, back box for ceilings with a fire rating. Trim pieces are available for leading enterprise AP vendors. Access point specific trim is included with the product. For different vendor's access points, specify the trim required. Note: the trim is interchangeable after installation. Please contact your Oberon representative for additional trim options



*Model 1042 Recessed AP Installation Kit for Hard Ceiling Areas*

## RIGHT ANGLE BRACKETS FOR WALL MOUNTING APs

Leading AP vendors have designed their enterprise access points such that the antenna provides a pattern of coverage optimized by the AP being mounted in a "horizontal" orientation in the ceiling. The antennas integrated within the access point are designed to approximate the pattern of a vertically oriented dipole
antenna, creating a donut shaped wireless coverage pattern around the access point. When mounted "horizontally" in the ceiling, the AP antenna pattern has the most gain through the room space the AP is in, and less gain above and below the AP, say, to adjacent floors of the building. This antenna pattern can help wireless designers provide effective coverage within the room, and minimize interference on adjacent floors.
In fact, leading AP vendor Cisco Systems recommend that their APs be mounted in the "horizontal" orientation . Of course the APs, will function electronically in any orientation, but the antennas are designed to provide best coverage when in the horizontal orientation.

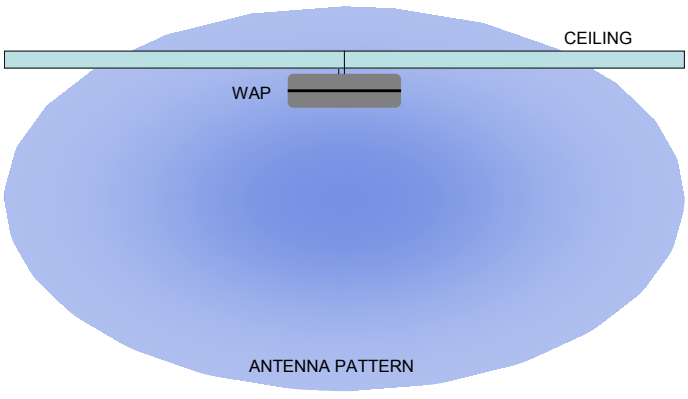
Mounting the access point in the ceiling can be achieved in many ways if the ceiling is accessible and appropriate, but the following should be considered when deciding to mount in the ceiling or on the wall.

1. **Performance**: Typical APs with internal antennas are designed to be in a typical commercial suspended ceiling 8'- 12' above the floor. If the APs are higher than this, the scenario is created wherein APs are closer to each other than to the mobile devices they are serving. Use right angle wall brackets, mounted at the appropriate height, where ceilings are high.

2. **Accessibility**: Consider how difficult it will be to service the AP if it is more than 15' above the floor
3. Data Connection: Plenum rated data cabling needs to be available from above the ceiling, If not, a wall mount may be more appropriate

4. **Aesthetics**: in many venues such as auditoriums and ballrooms, it will not be permissible to mount the AP in the ceiling due to aesthetics

5. **Healthcare Environments**: in a hospital, access to ceiling panels may be restricted by ICRA (Infection Control Risk Assessment) procedures.




*Most commercial APs with internal antennas are designed to provide the optimal coverage when mounted in a horizontal orientation in a ceiling, 8'-12' above the floor*

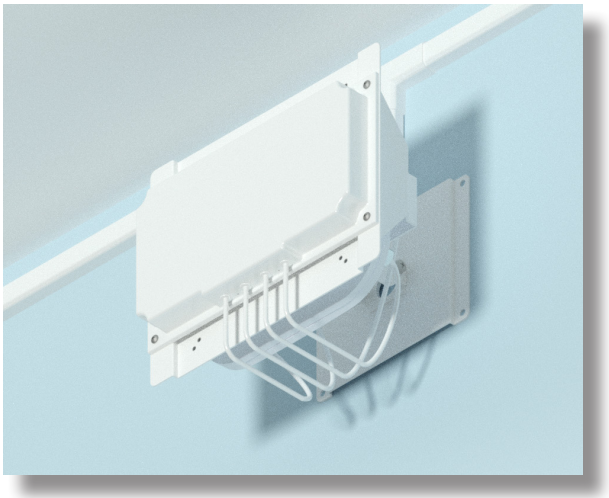
*Oberon right angle wall mount brackets can be used to mount the AP in the preferred horizontal orientation in auditoriums and large classrooms*

Oberon offers a variety of right angle wall brackets for all leading enterprise AP vendors. These wall brackets are designed to simplify installation, optimize wireless performance and provide the aesthetics demanded in new wireless installations.

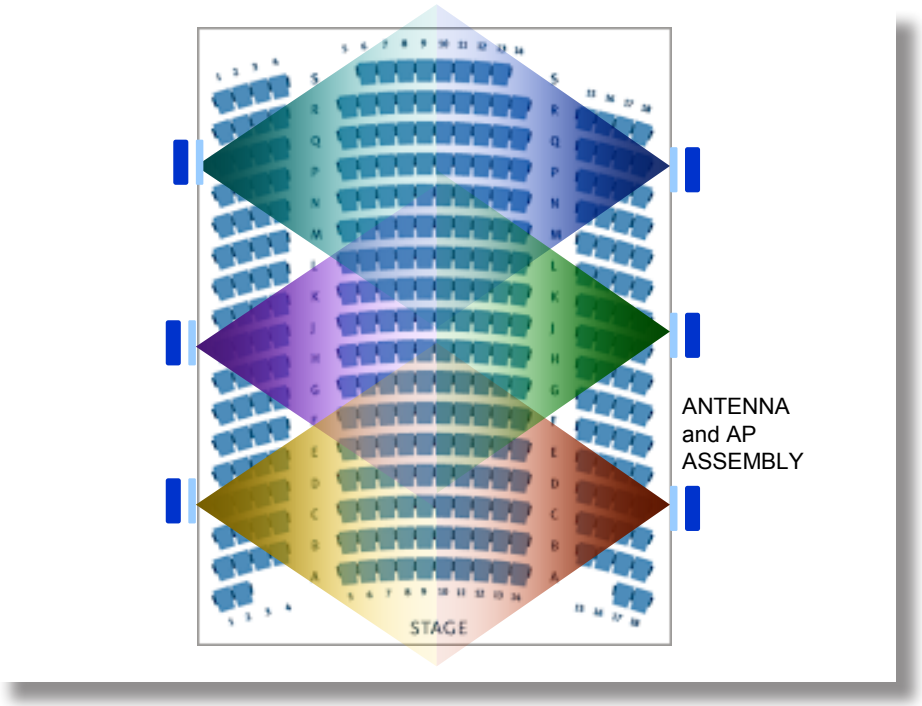
*Model 1006-CCOAP (left) Right angle brackets are designed to mount leading vendors' APs in the preferred orientation. Model 1008 (Right) right angle bracket includes a paintable vanity cover to conceal APs in open "red iron" ceilings*

## ARTICULATING WALL MOUNTS FOR ANTENNAS AND APs

Oberon offers articulating wall mounts for antennas and APs so that zones of coverage can be created with directional patch antennas. High density WiFi designs in auditoriums and classrooms will challenge any wireless designer. Concealing the antenna and AP, or at least minimizing the appearance, is important. Oberon offers solutions that can simplify the wireless designer's task, while offering options to paint or otherwise conceal the antenna and AP assembly.



*Model 1013 (left) two axis articulating wall mount for antennas and APs, permits the antenna to be pointed in the desired direction. Model 1013-COVER (Right) has a paintable vanity cover*

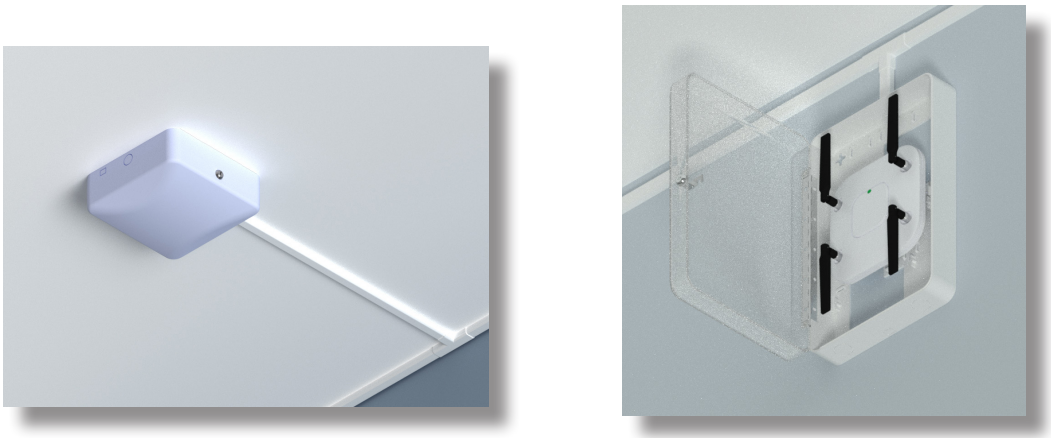



*Wireless designers need solutions for mounting Antennas and APs in high density environments such as auditoriums. The mounting solution should allow the antenna to be pointed as required, and should be aesthetic so as to blend in with the environment*

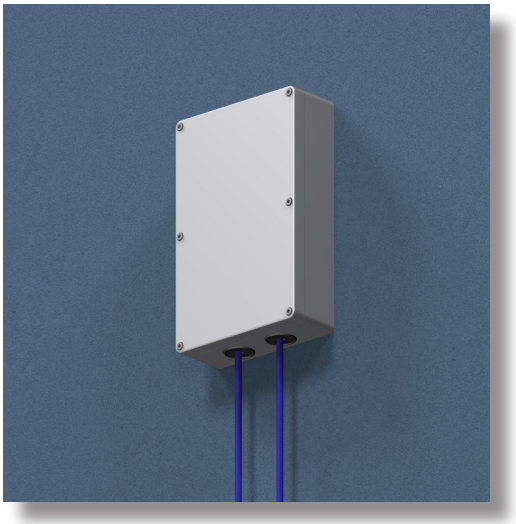
**SURFACE MOUNT ENCLOSURES FOR APs**

Access points are everywhere, and commonly the installer does not have a ceiling or high wall to install the access points. In residence halls, hotels, and other commercial spaces it may be desirable to protect the access point by securing it in a non-metallic enclosure. Oberon offers a wide variety of surface mount enclosures for all leading vendors' access points. These enclosures are injection molded, durable plastic materials which are virtually transparent to the wireless signal, so they have no impact on wireless coverage.

Mounting the AP in the surface mount enclosure physically protects the access point, and simplifies cable termination and attachment at the AP.



*Model 1015 (left) surface mount lock box for APs with integral antennas, and Model 1016 (right) surface mount lock box for APs with external antennas. Both have a hinged, locking door*



*Model 1018 (left) surface mount AP enclosure with screw on cover. This enclosure is NEMA 4 (weather proof) and looks like a light fixture. Model 1017 (right) is designed for smaller, wall mount access points. It has a screw on cover with tamper resistant screws*

**SOLUTIONS FOR MOUNTING CISCO'S HLA ANTENNA**

Cisco's hyperlocation antenna provides advanced location based service. This antenna requires particular attention to detail in how it is mounted. Oberon offers ceiling mounts designed specifically for the HLA antenna and access point. The Model 1047-HLA is designed so that the antenna and AP may be mounted in any compass direction, so that the antennas may all be mounted in a common compass direction in a facility.

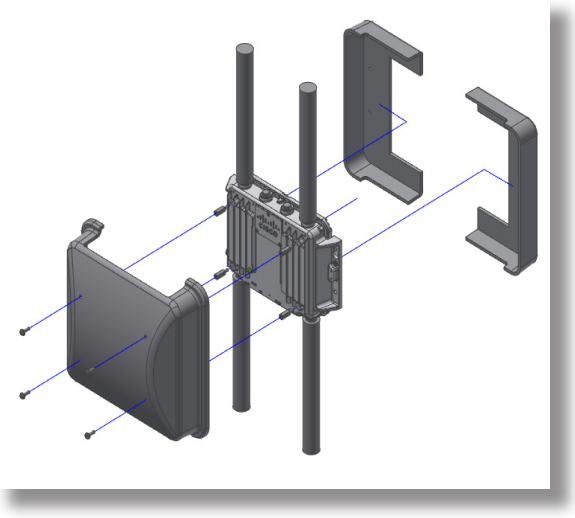
In many venues, the ceiling is not convenient for mounting the access point and antenna. Oberon's model 1006-HLA right angle wall bracket is designed specifically to mount the Cisco AP and hyperlocation antenna on the wall, in the preferred horizontal orientation.

*Model 1047-HLA (left) Ceiling tile enclosure mount for Cisco hyper location antenna and AP. Antenna may be positioned in any compass direction. Model 1006-HLA is designed specifically to mount the access point and hyperlocation antenna in the preferred horizontal orientation*

**PAINTABLE VANITY COVERS FOR APs and ANTENNAs**

Ideally, one could paint their APs and Antennas to have them blend into their specific building environment. However, painting the AP or Antenna will void the manufacturer's warranty, and may very well impact the antenna pattern and thermal dissipation of the product. Consider the time required to paint a large number of APs and antennas, and this becomes an undesirable prospect. Oberon offers a wide variety of snap on vanity covers for most vendors APs and antennas. The vanity covers are paintable without surface treatment, and leave a gap between the AP/antenna and the vanity cover for air flow.

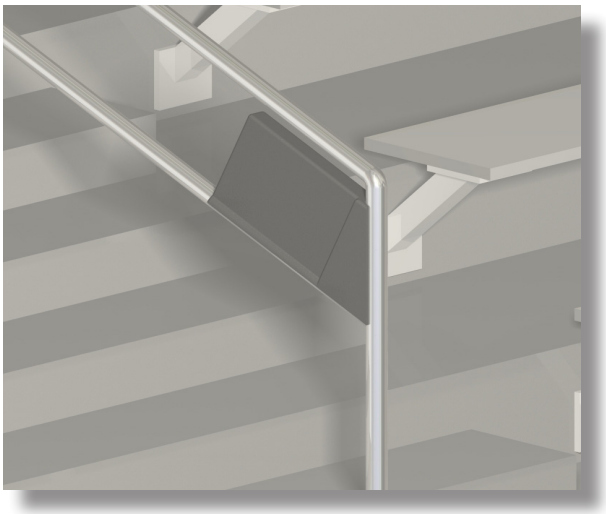
*33-WAP-COVER (Left) – Paintable vanity cover for most leading vendor's access points.*
*33-ANT-COVER (Right) – Paintable vanity cover for most leading vendor's AP and antennas.*



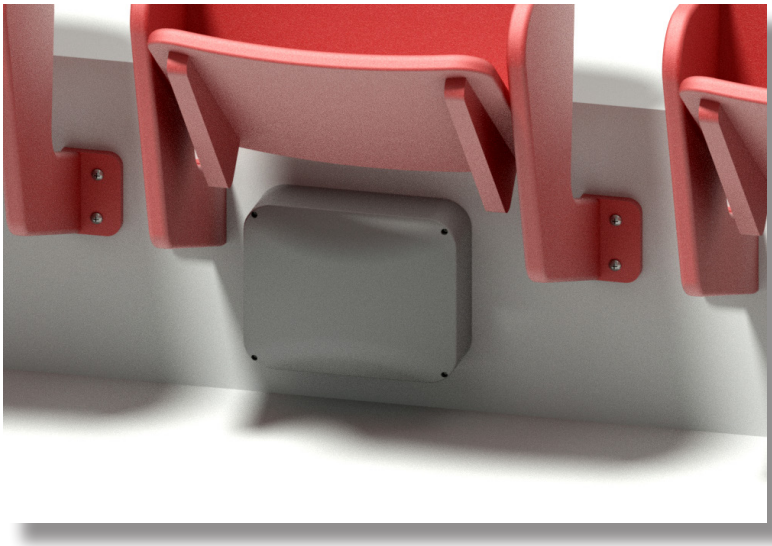
*Paintable outdoor vanity cover for Cisco IW3700 Outdoor AP*

## OUTDOOR AND STADIUM VENUES

Stadiums and auditorium owners are demanding high density WiFi in their facilities, greatly challenging wireless designers to provide the AP density and capacity. In many cases the only option is to provide for antennas and APs under the seats and on the handrails. The APs and antennas must be protected from damage and the environment, and must be largely "invisible" to the guest. Oberon offers a variety of weather and spill resistant enclosures for stadium installs. Oberon uses both injection molded plastic and thermoformed plastic to create the proper shape and solution.



*Left- Thermoformed plastic handrail AP and antenna enclosure.*
*Right- Thermoformed plastic underseat compact AP and antenna enclosure*



*Injection molded plastic compact NEMA4 AP enclosure*

**PROFESSIONAL MOUNTING SOLUTIONS FOR CISCO APs and ANTENNAs**

Oberon engineers leverage many years of wireless design experience into each product design. With WiFi access points showing up everywhere, look to Oberon to provide secure, convenient and aesthetic mounting solutions for all leading AP vendors.

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