Mounting Solutions for WiFi Access Points

Solution Partner

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.

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. Many end users, building owners, architects, and, frankly, installers, are demanding a more professional, secure, and aesthetic wireless AP installation.

Sometimes the end user will suggest the AP be mounted above the ceiling so it is not visible. Leading enterprise AP vendors Cisco and Aruba, however, recommend 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. It is also 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 the optimum 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, with 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 AP ceiling mounts for cloud and panel ceilings**
  - *New - **AP trims** now attach to mount with torsion spring, eliminating loose hardware and nuts.*
- **2' x 2' ceiling tile AP enclosures for suspended ceilings**
  - *New - **AP trims** now attach to mount with torsion spring, eliminating loose hardware and nuts.*
  - *New - **Interchangeable doors** for APs swap out without loose hardware or nuts.*
- **Recessed AP mounts for drywall panel ceilings**
  - *New - Improved **Model 1042** trims attach with torsion springs eliminating loose hardware and nuts.*
  - *New - **Model 1042-FL** has a low-profile ABS plastic cover for use where aesthetics are paramount.*
- **Open-ceiling AP mounting solutions**
  - *New - Hinged **Model 900-HC** pendant mount eliminates loose hardware and nuts.*
- **Right-angle AP wall mounts where ceiling mounting is not convenient**
  - *New - Improved **1006 Series** right-angle wall mount eliminates loose hardware and nuts.*
  - *New - Improved **1011 Series** universal right angle wall mount features lower profile mounting features.*
- **Indoor non-metallic AP surface mount enclosures**
  - *New - **Model 1016-ANT** is large enough for larger 802.11ac wave 2 enterprise APs and antennas.*
  - *New - **Speaker pole mounting solutions** offer temporary AP setup for conferences and seminars.*
  - *New - **Model 1020-RAB** is a polycarbonate enclosure and right-angle bracket.*
- **Indoor/outdoor public venue under-seat AP mounts**
  - *New - **Model 3010** is a thermoformed plastic under-seat antenna mount.*
  - *New - **Model 3015** is a thermoformed under-seat antenna and AP mount (non-metallic AP surface mount enclosures).*

RECESSED CEILING AP MOUNTS FOR CLOUD & PANEL CEILING MOUNTS

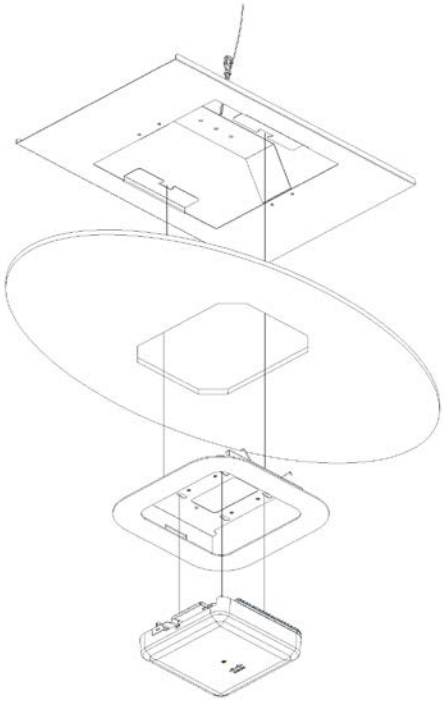
Oberon's economical **1040 and 1044 Series** recess ceiling AP mounts install like recessed lighting. A cutout is made in the ceiling panel or tile, and the AP is attached to an AP-specific trim which is then drawn flush with the ceiling by a torsion spring on the trim. Once installed, only the front face of the AP is visible, providing both ideal wireless performance and an aesthetic professional installation.

The economical **Model 1040** is ideal for mounting APs into cloud or open panel ceilings. It is comprised of a lightweight bridge and interchangeable AP trims. The bridge can be placed anywhere above the ceiling panel and keeps the panel from sagging under the weight of the AP. The 1040 includes a wire cord which can be fastened to the building structure for code compliance and to support the AP.

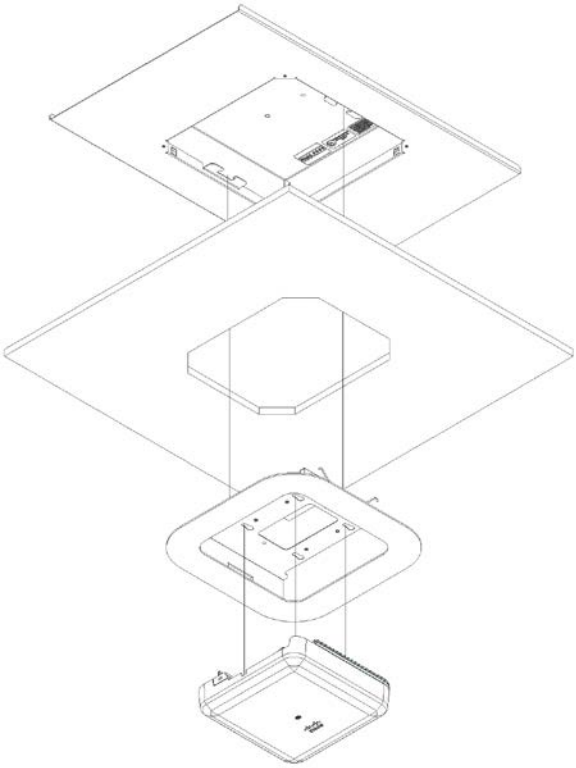
Model 1044 is designed for mounting APs in a suspended (drop) ceiling with a fire rating. It is comprised of a solid fire-stopped back-box, tile bridge, and interchangeable AP trim. The back-box/bridge assembly is placed over any 2' x 2' ceiling tile and keeps the tile from sagging under the weight of the AP. The UL Listed Model 1044 includes wire which can be fastened to the building structure for code compliance and to support the AP.

Both the **1040 and 1044 Series** wireless AP mounts use a torsion spring to secure the AP rim to the bridge, eliminating the need for loose hardware and nuts, and simplifying installation. The AP and trim can be conveniently removed from the mount without lifting ceiling tiles.

Note: To support migration to new APs, the trim is interchangeable after installation. Please contact your Oberon representative for additional trim options.



Model 1040-CCOAP3800 (left) and 1040-CCOAP (right) installed Recess AP Installation Kit for cloud or panel ceilings



Model 1044-CCOAP3800 Recess AP Installation Kit for 2' x 2' Suspended Ceiling Panel with Cisco 3800 Series AP

CEILING ENCLOSURES FOR STANDARD 2' x 2' SUSPENDED CEILING

Oberon's **1047 Series** suspended ceiling access point mounting solutions are designed for the economics of high-density WiFi AP installation. These products are designed for low-voltage, PoE-powered access points from leading vendors. The locking door provides an added degree of security. These products are designed to drop into standard 2' x 2' suspended ceilings.

Wireless Performance Benefits

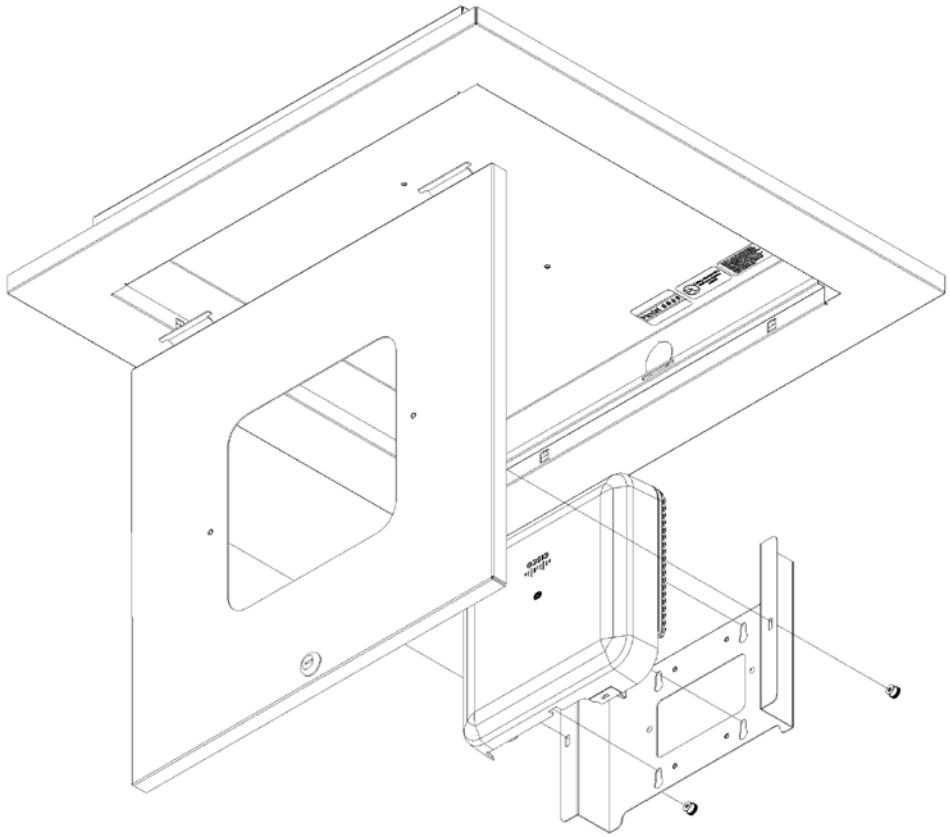
- Ceiling mount is ideal location for AP performance
- Only the antenna face of the AP is exposed, providing for an aesthetic, professional installation without compromising wireless performance
- Large enough for largest 802.11ac Wave 2 APs and antennas, including Cisco's hyper-location antenna and cellular module

Maintenance Benefits

- Interchangeable doors for APs swap out without loose hardware or nuts
- Redesigned AP mount attaches AP to door in seconds with minimal hardware
- Service or remove AP with lifting ceiling tiles, simplifying ICRA procedure compliance in hospitals

Cabling Benefits

- Includes firestop grommet for cable egress for up to two Cat6A cables
- Knock-outs for keystone jack modules in back-box side wall
- Horizontal cable can be terminated inside the enclosure and attached to a biscuit jack, protecting the termination from dust prevalent in the above ceiling space
- Excessive horizontal cable can be coiled inside the enclosure if desired
- A non-plenum rated patch cord can be used inside the enclosure

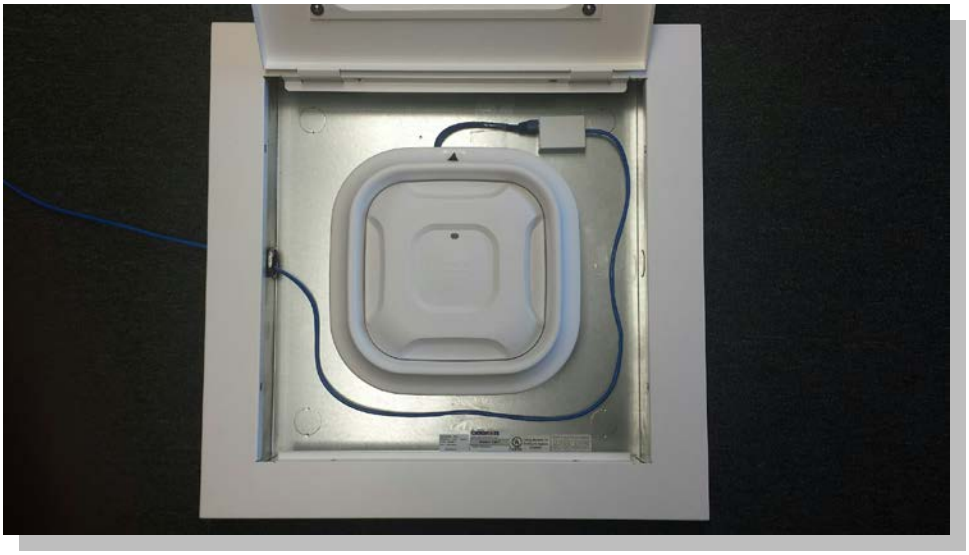


Oberon Model 1047-CCOAP3800 - Quick-release door detaches without loose hardware or tools.

Model 1047-HLA is shown with Cisco AP and Hyperlocation antenna mounted in the door.

Model 1047-CCOAP3800 (left) - The Cisco 2800/3800 Series AP mounts in interchangeable door.

Oberon's ceiling enclosures include a firestop grommet (below) large enough for the egress of two Cat 6A cables. This firestop grommet seals the back-box, preserving the fire and smoke barrier of the ceiling.



Horizontal cable can be conveniently terminated and stowed in enclosure box.

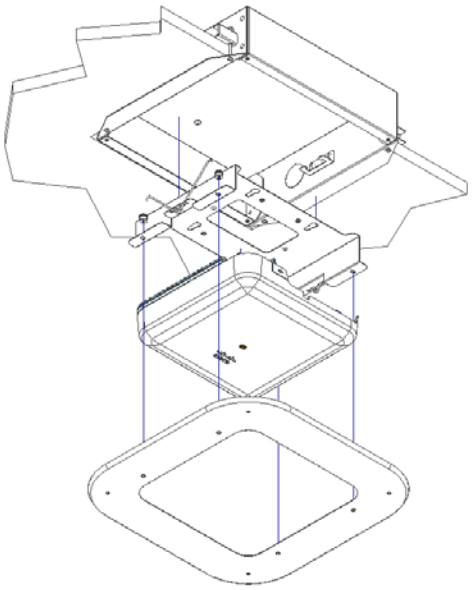
AESTHETIC AP MOUNTS FOR DRYWALL PANEL HARD CEILINGS

Oberon's economical **1042 and 1043 Series** recess ceiling mounts are designed like recessed lighting for hard lid drywall ceiling panel areas. With the **Model 1042** (for a pre-existing drywall/ sheetrock/gyp board ceiling) a cutout is made in the ceiling panel, and the back box is recessed and fastened into the ceiling with the boxes captured swivel fasteners. The AP is attached to an AP specific trim which is then drawn flush with the ceiling by a torsion spring on the trim. Once installed, only the front face of the AP and trim is visible, providing both ideal wireless performance and an aesthetic professional installation.

The **Model 1043** includes installation hardware for new construction environments, before ceiling panels are in place.

Both have a solid fire-stopped back-box for ceilings with a fire rating. Aesthetic trim pieces are available for leading enterprise AP vendors, and install without loose hardware or tools. Access-point-specific trim is included with the product. For different vendors' access points, specify the trim required.

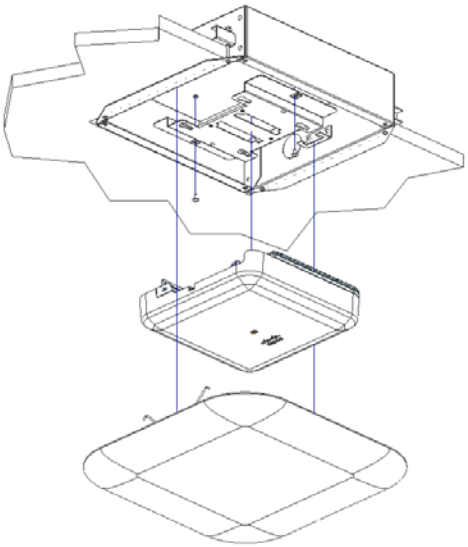
Note: the trim is interchangeable after installation. Please contact your Oberon representative for additional trim options.



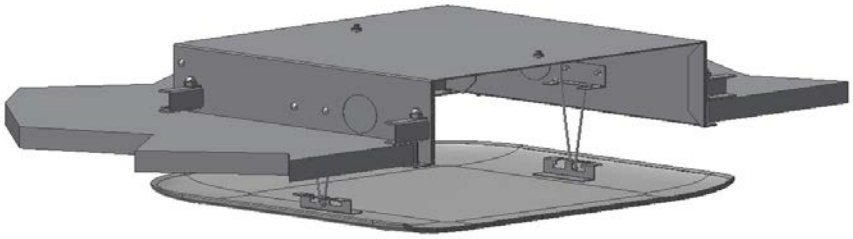
Model 1042-CCOAP3800 Recessed AP Installation Kit for drywall ceiling areas

AESTHETIC AP MOUNTS WITH LOW-PROFILE PLASTIC COVER FOR DRYWALL PANEL HARD CEILINGS

Oberon's **Model 1042-FL** is based on the 1042 design, but includes a low-profile, paintable ABS plastic cover. With the Model 1042-FL a cutout is made in the drywall/sheetrock/gypboard ceiling panel, and the back-box is recessed and fastened into the ceiling with the box's captured swivel fasteners. The AP is installed inside the back-box, and the low-profile ABS plastic cover is then drawn flush with the ceiling by torsion springs on the cover. The AP is entirely concealed by the low-profile cover, which can be painted over.



Model 1042-FL Recessed AP installation kit with paintable ABS plastic snap on cover



Model 1042-FL ABS plastic cover is retained with torsion springs shown in this view

OPEN CEILING PENDANT MOUNTS FOR APs

In open ceilings, where ductwork, plumbing, ceiling joists, etc. create a challenge for AP mounting, the AP can be mounted on a conduit such that the AP is down below the metal infrastructure and closer to the client devices to be served with the wireless signal. This is often called a pendant mount.

Oberon's **Model 900-HC** provides a convenient way to mount wireless APs from most vendors on the hanging conduit. The Model 900-HC is hinged so that the 900-HC can be attached to the hanging conduit, data cabling suitably terminated at the end of the conduit, the AP attached to the hinged cover, and the assembly closed. The Model 900-HC minimizes loose hardware and tools required for installation.

Model 900-HC Pendant or "Hanging Conduit" mount is a larger box than a standard junction box, permitting convenient concealment of cable termination and patch cord.

RIGHT ANGLE BRACKETS FOR WALL MOUNTING APs

Leading AP vendors have designed their enterprise access points such that the antenna pattern provides coverage optimized by 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 recommends APs be mounted in the "horizontal" orientation[1]. Of course, the APs will function electronically in any orientation, but the antennas are designed to provide best coverage when in the horizontal orientation[2]. 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. Otherwise, a wall mount may be more appropriate.

4. ***Aesthetics:*** **I**n 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.

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

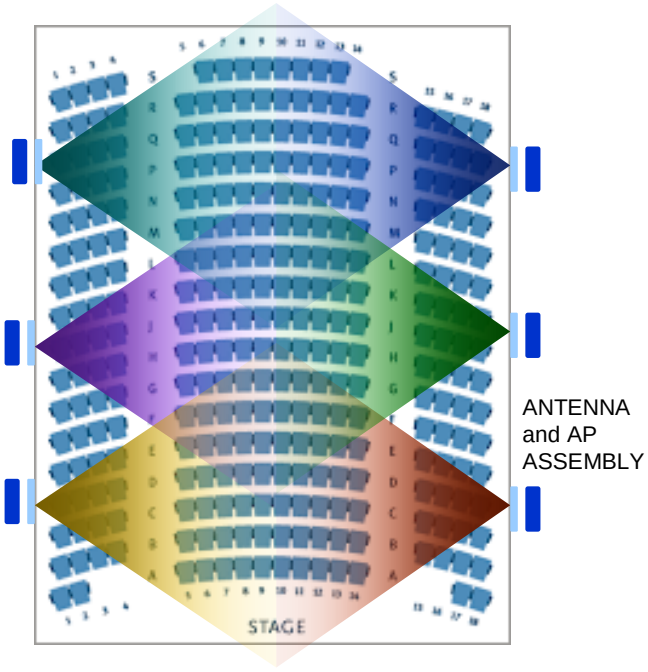
Model 1006-CCOAP3800 (left) right-angle brackets designed to Cisco 2800/3800 series APs in the preferred orientation. Model 1008 (right) right-angle bracket includes a paintable vanity cover to conceal APs in open ceilings.

[1] http://www.cisco.com/c/en/us/products/collateral/wireless/aironet-1250-series/design_guide_c07-693245.html#wp9001287

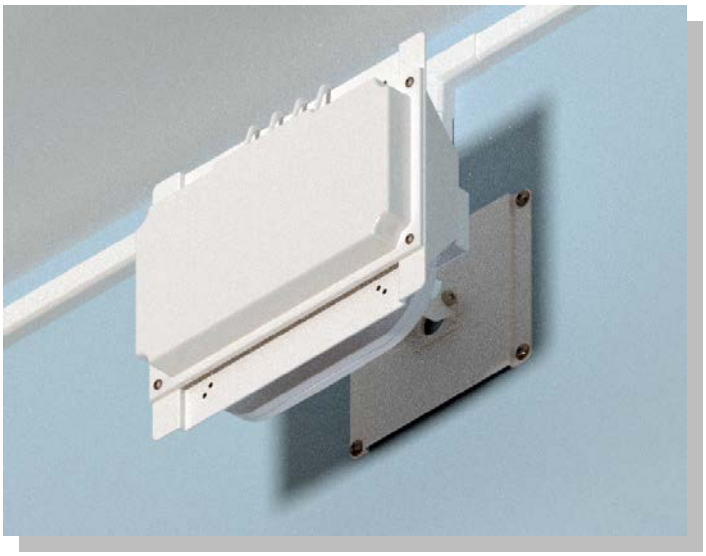
Model 1011-00 - Universal right-angle wall mount designed to mount leading vendors' APs in the preferred orientation.
The 1011 has a cover to conceal the telecommunications outlet and cable.
The 1011 has been revised to improve the appearance with the Cisco 2800/3800 series APs.

ARTICULATING WALL MOUNTS FOR ANTENNAS & APs

Oberon offers articulating wall mounts for antennas and APs so 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 to simplify the wireless designer's task, while offering options to paint or otherwise conceal the antenna and AP assembly.



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.



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.
Model 1013 was recently updated to accommodate the larger Cisco AIR-ANT2566D4M antenna.

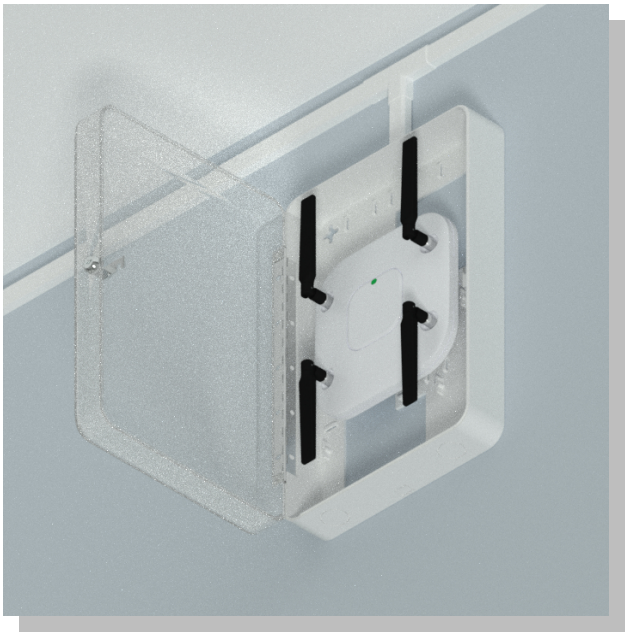
SURFACE MOUNT ENCLOSURES FOR APs

Access points are everywhere, and commonly the installer does not have a ceiling or high wall to install the access points. In public venues, sports venues, malls, hotels, and other commercial spaces, it may be desirable to protect the access point by securing and concealing 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.

Oberon's new Model 1016- ANTPLATE polycarbonate enclosure is large enough for Cisco APs and AIR-ANT 2566 antennas. The antenna is mounted on an articulating bracket and be down-tilted the desired amount.

Oberon offers multiple sizes of non-metallic enclosures for different venues. The **Model 1016** is large enough for both large enterprise access points and directional or omni- directional dipole antennas. The Model 1016 allows the installer to conceal the antennas, antenna cabling and data cabling inside the box for a more professional installation. The new **39-1016-SPKRMNT** accessory allows the 1016 to be mounted on a portable speaker stand, facilitating professional, rapid deployment of a wireless network for conferences and other transient events.

The M**odel 1020-RAB** is a rugged right angle bracket mated to the model 1020 compact NEMA4 enclosure for access points. This is ideal for installation in gymnasiums, courtyards, parking garages, parks, pools and other environments where the AP and associated cabling can be exposed to a challenging environment.

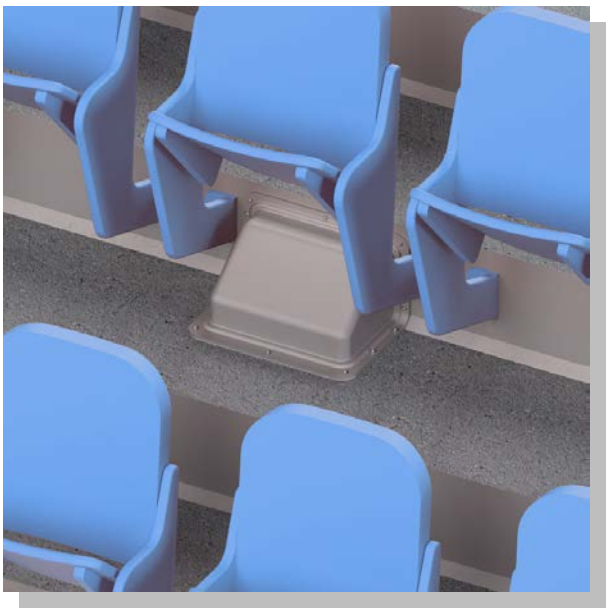


Model 1016-C (left) surface mount lock-box for APs with external antennas.
Shown with 39-1016-SPKRMNT (right) accessory for mounting AP and antennas on portable speaker stand for events.

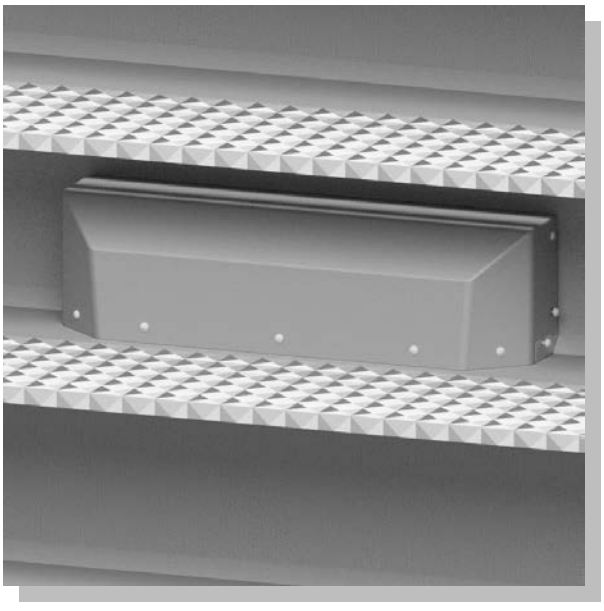
The Model 1020-RAB is a rugged right angle bracket mated to the
Model 1020 compact NEMA4 enclosure for access points.

PROFESSIONAL MOUNTING SOLUTIONS FOR HIGH DENSITY ENVIRONMENTS LIKE AUDITORIUMS and SPORTS VENUES

In high-density environments like auditoriums, concert halls, sports venues, etc., the wireless designer needs every tool available to provide effective wireless coverage. Since there is a very high ceiling, or no ceiling, and few walls in these environments, leading wireless vendors recommend mounting the AP beneath the seat. This is the best location to mount the AP as it is close to the devices that need service. APs and cabling mounted beneath the seat must be protected from the rigors of being kicked or stepped on, spray washed or mopped, subjected to spilled drinks, and, in outdoor environments, the weather. Oberon offers a variety of products designed to protect wireless access points in these environments, whether under the seat or under the mezzanine. Oberon's products have been used in dozens of venues throughout the United States.



Oberon Model 3010 under-seat AP enclosure with durable, paintable thermoformed ABS plastic cover.



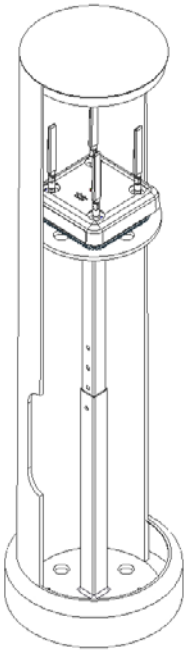
Oberon Model 3015 under seat AP and Antenna enclosure with durable, paintable thermoformed ABS plastic cover. Large enough for AP and antenna side by side.

WIFI BOLLARD: CONVENIENT SOLUTION FOR PUTTING WIFI EVERYWHERE ELSE!

Reliable WiFi is desired just about everywhere: parks, swimming pools, courtyards, lobbies, parking lots, etc. These locations are difficult for installing WiFi access points because there are neither ceilings nor walls to mount the APs. Sometimes APs are mounted on light or utility poles, but the coverage from these locations is often not what is desired. Exterior walls of buildings are often off-limits for WiFi due to architectural concerns. Oberon's **WiFi bollard** is a rugged, standalone mount for indoor- or outdoor-rated access points. The bollard is comprised of a durable weatherproof fiberglass shaft and adjustable interior equipment stand that allows the installer to place and conceal the AP, dipole and panel antennas, power supplies, media converters, cables, and connectors where desired.

The WiFi bollard can be either mounted on a prepared pedestal or anchor base (Model 3030-AB) or directly embedded into the ground (Model 3030-DE). The internal equipment stand permits the AP and antennas to be mounted at the desired height. The fiberglass shaft is virtually transparent to wireless signals.

The WiFi bollard places the AP and the antenna at an acceptable height above the ground without being conspicuous. The bollard protects the equipment from the weather and is in a form factor acceptable to many landscape and building architects and property owners. The bollard color is in the fiberglass resin, so it wont scratch or chip. The bollard can be painted.



Oberon Model 3030 Wi-Fi Bollard permits installer to enclose indoor or outdoor APs, antennas, power supplies, cables, connectors, transceivers, etc. in a rugged fiberglass enclosure. Well-suited for architecturally sensitive parks, courtyards, lawns, etc.