

Ease Broadband Rollouts with Outdoor Cabinets

Operating a communications network is an endless process of extending coverage, expanding capacity, and upgrading technology. Network operators have many options for services, service delivery equipment, and node configurations. Every decision impacts what type and size of stand-alone telecommunications cabinets to deploy.

Cabinets are necessary to keep network equipment protected and secure, and properly designed cabinets are key contributors to optimal network performance. Why?

Choosing the Right Broadband Architecture

Internet service providers (ISPs) and wireless Internet service providers (WISPs) continue building out their networks to improve wireless and wireline services and deliver those services to more people. Build-outs of digital subscriber line (DSL), cable, fixed wireless access (FWA), and fiber-optic networks planned for rural areas across the USA will provide consumers access to significantly improved broadband.

Each of these broadband architectures will require purpose-designed cabinets engineered by knowledgeable companies like Raycap, with manufacturing plants in the USA. The type of network architecture will be determined by what the provider believes will be the easiest to deploy while serving the greatest number of households and businesses.

This new network equipment will require cabinets to protect it from the weather, dust, and vandalism. These same cabinets are critical elements in the rollouts, requiring network planners to spend a vast amount of time and resources determining the type and manner of cabinet based on the chosen architecture.

The Right Cabinet Solutions will have Configuration Flexibility

Any given broadband site (e.g., fiber, cable, wireless) is apt to have a different equipment configuration based on a wide range of factors, including the service(s) and number of customers being supported, the coverage area, the density of customers within those areas, whether it needs to be powered to hold active equipment, etc.

Network designers require complete flexibility with cabinets and other enclosures. Meeting immediate requirements is paramount, but careful ISPs or WISPs know that future service expansions or equipment upgrades are always possible and will wisely plan accordingly.

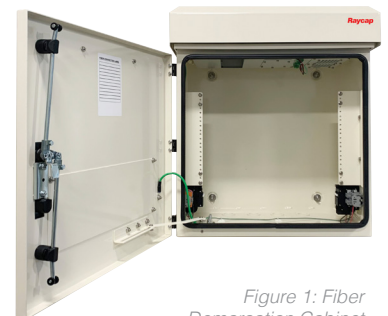


Figure 1: Fiber Demarcation Cabinet

**Managing Fiber Termination
in Network Nodes:**
Bridging the Gap Between Passive
and Active Infrastructure

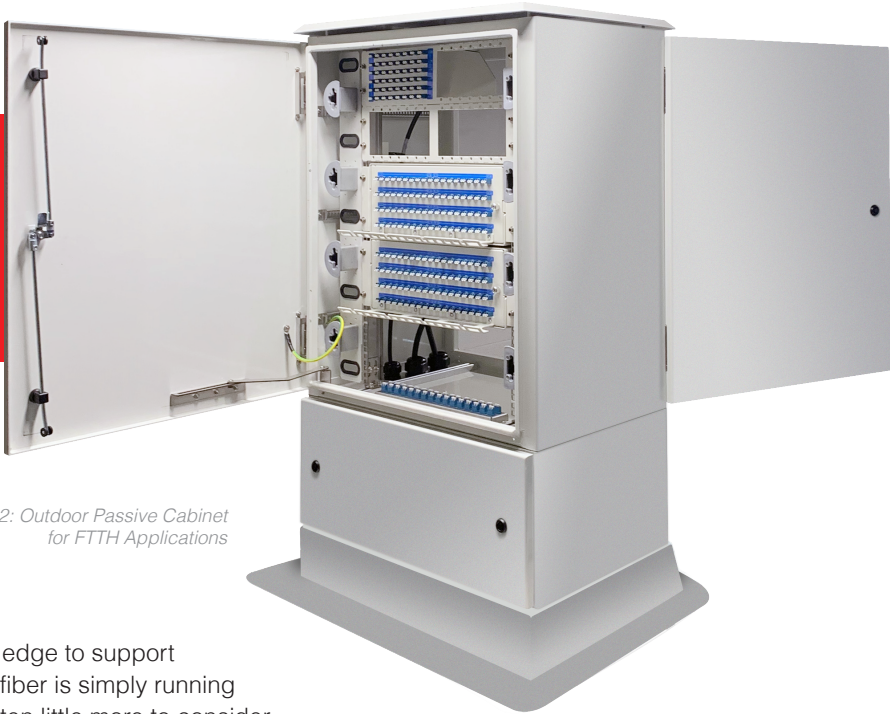


Figure 2: Outdoor Passive Cabinet for FTTH Applications

Fiber Termination

ISPs are extending fiber farther toward the network edge to support various services. Fiber optics are passive, so if the fiber is simply running through the node – through the cabinet – there is often little more to consider.

It is a different story if the node is a demarcation point, where the fiber run terminates in a cabinet. There will be a demarc if, for instance, the fiber connection serves as fronthaul and/or backhaul for base station equipment contained therein or if it is the last node in a fiber to the node (FTTN) broadband installation. In such cases, the fiber connection will demarcate active electronics used for last-mile transmission. In these cases, waste heat from the active electronics becomes a factor.

At the same time, intelligence lives at the network edge, and installing servers in network nodes is becoming common. That's yet another piece of equipment that might be added to a network node, contributing to the thermal budget in a ground-based cabinet.

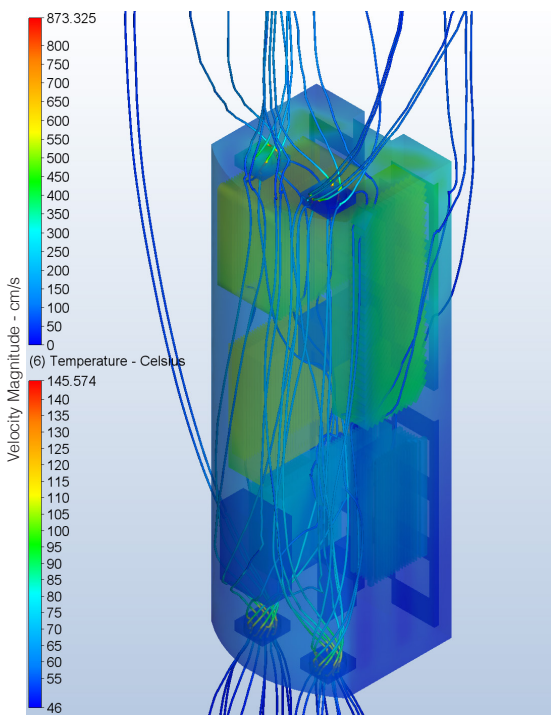


Figure 3: Heat Map Analysis Example

The Risk to Equipment from Excessive Heat

Well-designed and engineered cabinets will mitigate potential threats, including thermal problems. Since the performance of electronic systems is compromised by excessive heat, specifying the right enclosures ensures network equipment remains within rated temperatures and operates at desired performance.

With technological and environmental factors increasing temperatures in network nodes, risks from overheating include degraded equipment performance, shortened lifetimes, and, in extreme cases, system failure. Raycap's long-standing expertise with finite element analytical (FEA) tools for creating computational fluid dynamics (CFD) models allows us to calculate heat transfer due to conduction, convection, and radiation through solid and fluid bodies.

We can evaluate and determine the best thermal management design options, such as fan placement, vent geometry, or whether a heat exchanger or AC might be the most appropriate solution for a given node.



Figure 4: Outdoor Wireless Telecom Cabinet for Active Equipment

The Raycap Difference

Raycap has heavily invested in engineering capabilities, domestic manufacturing facilities, service deployment, and on-time delivery commitments to support our customers with whatever is needed, whenever it's needed.

We know street cabinets must remain active for decades, so we build them with strong, impact-resistant, highly sustainable, and readily recyclable materials such as aluminum. Our cabinets are easily washable, have a non-pitting, non-corroding surface that withstands UV rays, and provide a tough vandalism and rodent-resistant exterior. We also offer various burglar-resistant options, including a 3-point locking mechanism and optional electronic locking systems.

Raycap is a business partner that works with customers to design cabinets that make network build-outs and upgrades more effortless, with standard and custom cabinets that keep equipment safe, secure, and running at optimal performance.

Raycap Cabinets

For over 20 years, Raycap has been a leading provider of ground-based cabinets, shrouds, and enclosures for concealing and protecting delicate electronics in communications networks. Our high-quality cabinets are typically constructed with single or double-walled aluminum housings, and support active or passive infrastructure equipment.

Rugged construction protects customer equipment against vandalism and extreme weather conditions and supports network reliability. Raycap cabinets and enclosures are designed and manufactured at our three U.S.-based factories.

Cabinet designs can be adapted to meet any telecom architecture requirements, and services offered include equipment integration, cabling, and testing of all required equipment - from fiber panels to power supplies and cooling units - onsite at the factory. Delivering turnkey cabinet systems can minimize site installation costs for our customers.

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