

Improved and Craft-Friendly: New Fiber Distribution Hubs

The discerning eye sees big improvements for once-mundane fiber “street furniture”

A BBP Staff Report

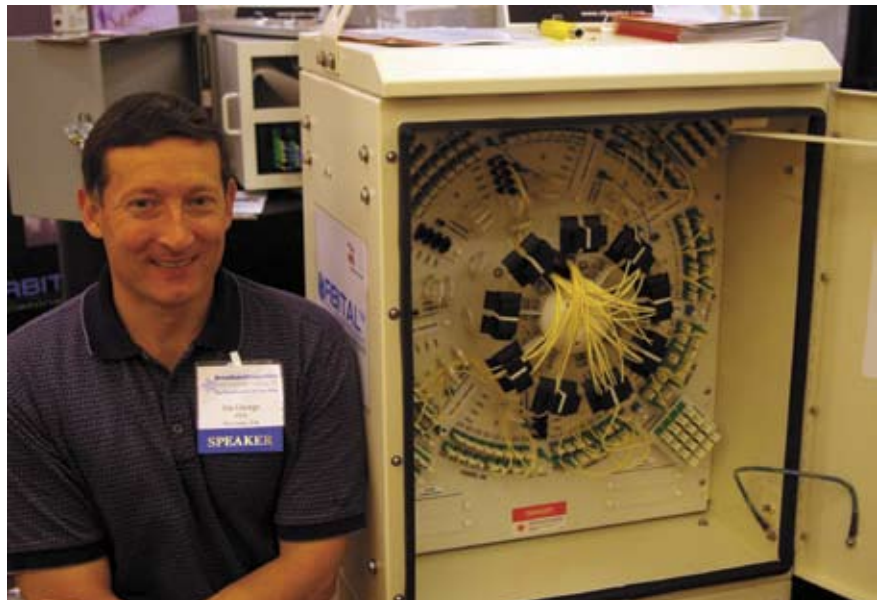
Fiber distribution hubs are perhaps the most obvious sign that fiber is coming to a neighborhood. The boxes, usually pole- or pad-mounted, may serve anywhere from a few households to more than 800. Because the FDH boxes in a passive optical network have no electronics inside, they can be put almost anywhere.

The idea is basically simple. Fiber cabling comes into the FDH box from the central office. In the FDH, passive optical splitters typically turn one fiber’s signal from the CO into 32, and the fiber “drop cables” then exit the box to bring broadband to nearby homes and apartments.

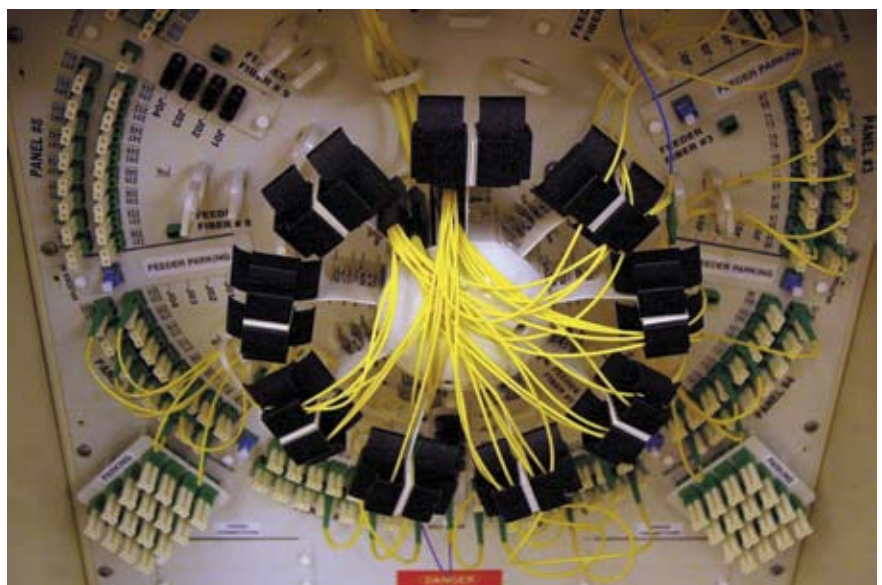
But how do technicians get to all the connections? What about storage of spare (unlit) drop cables awaiting customers? What about test points, repairs, and keeping track of all the stuff? And what about keeping fiber bend radius to a minimum to reduce signal losses, while protecting the slack cable from snags and breaks?

From the beginning of mass fiber-to-the-home deployments, it was obvious that these cabinets were well thought out – much more robustly designed than the typical wireline copper cabinet for phone lines. But new models released this year have incremental – and more than incremental – improvements that clearly move the technology to a new level. Even rather lightly trained technicians will be using these boxes, and the vendors know it.

We’ve noted great units from Corning Cable Systems and Charles Industries in the past. And we saw a bunch



Fiber pioneer John George of OFS shows off the FDH at BBP Summit in Dallas.



Details of OFS “orbital” FDH. The novel arrangement keeps tangle potential to a minimum. Steve Ross photos.



Manish Bhandari, Vice President and General Manager of Enterprise Systems and Outside Plant at Emerson, shows off FDH. Note unique corner design and generous area for slack fiber. It's hard to wind the fiber the wrong way on the spools.

bending light-loss. The Orbital Cabinet 288 routes all subscriber fibers from the splitter modules to a central hub, then to subscriber ports arranged in a circular array surrounding that central point.

Emerson Loses the Corner

Emerson Network Power's NetSpan FDH series of enclosures, even the largest, "park" unused leads from the 1X32 splitters in modules of eight, with each module on a separate path to reduce fiber congestion. The series comes in four standard sizes, 144, 288, 432, and 576 fibers each, with custom sizes also available.

All are available pre-terminated with a fiber stub for feeder and distribution cables, or non-stubbed for in-cabinet splicing. For fiber stubbed versions, all dielectric loose tube or ribbon and armored fiber cable are available, as well

of great examples at our own Broadband Summit in September, and at the FTTH Council Las Vegas show in October.

OFS Goes Into Orbit

The biggest departure from tradition comes from OFS, direct successor to the folks who invented the lasers that made fiber communications possible. It's especially well suited for overbuild situations, where new subscribers sign on for FTTH service in random order, and initial take rates might be quite low. The idea is to centralize optical splitters so operators can defer component costs.

Traditional "block matrix" splitter patching systems require fairly complex routing of many long jumpers in the confined space of the box. It can lead to a tangle due to the random nature of customer sign-ons. The new OFS Orbital Cabinet 288 untangles the routing with a "radial" approach.

There's also a new splitter module for the FDH, incorporating full spectrum, low loss PLC splitters and high performance LC and MPO connectors. OFS's MPO fan-out jumpers are easily connected from the splitter modules to the subscriber ports, and use OFS's bend-insensitive AllWave FLEX Zero Water Peak fiber (see *Broadband Properties* October Summit coverage) to minimize



Fiber pioneer Pat Sims shows off ADC FDH with angled splitter trays and error-resistant spools.

Vendor Spotlight:

ADC	www.adc.com/productsandservices/productsolutions/fttp/
Charles Industries	www.charlesindustries.com/main/te_fiber_ped.html
Corning	www.corningcablesystems.com/___8525696C005C03C6.nsf/0/E1BFDEB3834C04AB8525716E007D933E?Open
Emerson	www.emersonnetworkpower.com/energysystems/osp-netspan-fdh.asp
OFS	www.ofsoptics.com
Tyco	www.telecomosp.com/fiber/distcab.htm

as options for pole or pad-mount applications. A modular distribution panel assembly can be partially loaded in either 72-port or 144-port configurations, which can be populated in the field for a “grow as you go” implementation as service take rates increase.

In the picture, note the corner configuration for wide-open access – and the lack of a corner post. Note also the “one-sided” spools for slack fiber – particularly hard for a technician to bend a fiber around it the wrong way.

ADC Leverages Verizon Experience

The ADC ACE series of hubs comes in a wide range of sizes serving neighborhoods and housing developments from 32 to 864 homes. The smaller sizes, especially on pole mounts, are a common sight in FiOS aerial fiber builds.

ADC also uses the “parking lot” approach – All splitter connectors are preloaded into parking lots, for storage of up to 216 installer-ready connectors. Connectorized feeder input allows for

plugging the connectorized splitter input directly to the feeder input port. Doors open wide and retainers are removable, for easy cleaning of a single connector without disturbing adjacent circuits. The bulkhead panel is angled, for easy hand access to connectors and to avoid 90-degree bends on connector boots. The smaller cabinets in the series protrude only 48” from the ground, while pole mount versions protrude less than 16” from the pole.

ADC’s new OmniReach FDH 3000 series, aimed at independent telcos, was released in June. It supports low- and high-density applications, different network system designs and diverse installation environments. A centralized splitter approach maximizes space on OLT cards, too.

Tyco Goes Ultra-Modular

Tyco champions FDH models that have modular drawers for different kinds and combinations of splitters and other connections. The drawers are common



Note the modular drawers in Tyco’s design, and the fiber “parking areas” to the left.

across multiple models of the cabinets – a boon for inventory and for training. For instance, the FibrBoss DC504 can accommodate up to 7 FibrBoss drawer shelves and allows for a variety of flexible configurations including fiber-to-fiber splices (distribution points) and/or fiber terminations to pigtails with interconnect or cross-connects. **BBP**

Introducing the first annual

Killer App Conference and Expo

Emerging Applications for a Connected World

April 30 – May 2, 2007 Fort Wayne, Indiana

Hosted by Mayor Graham Richard

CO-PRESENTED BY: *Broadband Properties Magazine* and the City of Fort Wayne, IN

SPECIAL CONFERENCE CO-HOSTS

- National League of Cities • Indiana Association of Cities and Towns •**
- National Association of Counties • Fiber-to-the-Home Council •**
- One Economy Corporation • Public Technology Institute**

Agenda and registration information to come in the pages of Broadband Properties and online at KillerApp.com and KillerAppExpo.com in December 2006.

To inquire about exhibiting, call 877-588-1649.

