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ACCESS ALL AREAS

MSOs: Deploying fibre to the home

Many Multi-Service Operators (MSOs)* around the world are exploring and trialling new technologies, and even rolling out new all-fibre networks, in order to boost their competitive position in traditional residential markets while also addressing new opportunities among business customers.



MSOs must evaluate multiple considerations in their quest for higher speeds and the new generation of services. For instance, the quality of the installed coaxial cable plant in the last mile; the operations and maintenance cost savings of passive outside plant versus the deployment of additional active solutions closer to the home; the back office equipment; the requirement for maximum reliability of that plant; and the scalable, flexible and rapid provisioning of any new services. All of these technical and economic considerations are vital, as is the market that is being addressed.

The development of fibre-to-the-home (FTTH) services using RF over glass (RfOG) technology is one strategy for these operators as they look to leverage their existing investment. This approach allows for the delivery of DOCSIS* based services over an RfOG architecture while using a completely passive network. The architecture also enables the operator to expand services to support xPON technologies, such as GPON and GEAPON, either in parallel with co-existence or as an upgrade path down the road. Doing this in conjunction with the latest DOCSIS 3.1 specification enables higher speeds and greater flexibility to tailor bandwidth to customer requirements.

However, our work in Europe has involved a number of projects where operators with hybrid-fibre-coax (HFC) networks are starting to deploy FTTH networks for new deployments or green-field developments, while others are migrating totally from an HFC network to FTTH. These particular operators found that the RfOG deployment is actually more expensive for them, mainly because the provisioning of the active equipment, such as optical line terminals (OLTs) and optical network terminals (ONTs), within their deployment scenarios are much more expensive than that used in a passive FTTH solution. Furthermore, migrating to an xPON FTTH network does not require any active equipment nodes in the outside plant, power management, or expensive street cabinet deployments. As such, cost savings can be achieved in energy reduction, lower outside plant maintenance costs, and lower deployment costs.

In some MSO communities, the deployment of FTTH architectures is driven by competition from FTTH providers. For instance, in North America some operators have chosen RfOG due to the lack of a production-level IPTV solution. In these cases the overwhelming deployments of RfOG have been focused on mid-rise buildings and apartment complexes, while the existing HFC network is maintained in other areas until new services can be delivered through FTTH. As such, an RfOG solution is being deployed as an interim step to an xPON FTTH deployment where it makes sense,

MSOs have long understood the investment model that requires the diligent high quality design and engineering of a critical asset – the network – in order to safeguard the long-term. Maintaining market share, avoiding churn, addressing subscribers' needs, and addressing growth opportunities all need a fast deployment solution. The network has to sustain the requirements of a rapidly constructed, low-cost, and low-skilled installation, yet deliver reliability and performance beyond its projected lifetime.

Therefore, a key aspect of the business case for today's FTTH deployments typically hinges on the ability to easily deploy optical fibre to the end user. Depending on the market being addressed, this might involve subscribers living in multiple-dwelling units (MDUs), single-family units (SFUs), high-rise buildings and office campuses, to name but a few. This presents a unique set of challenges for each type of location.

Whether an MSO that has decided to go all fibre chooses to use RFoG as an interim approach or migrate to a GPON FTTH design, modular pre-connectorised fibre solutions provide installers with a rapid, simple, and low-cost installation process for new fibre connectivity, particularly for the customer drop. A modular pre-connectorised system for the outside cable plant can reduce installation time by a factor of 50 percent or more per network access point. The modularity and simplicity of this type of fibre cabling distribution system provides best-in-class methods for accelerating customer coverage with a minimal capital investment. Specifically, it allows CAPEX deferral in relation to service take-up so that MSOs can adopt a "pay-as-you-grow" business model for service delivery.

For an indepth insight please view the article "MSOs: ["Taking the Path Towards Fibre-to-the-Home"](#) published in SCTE Broadband Journal".

Alternatively, take a look at the approach taken by Spanish operator Alma. [Download our case study.](#)

For further information please explore [Corning FTTH solutions.](#)

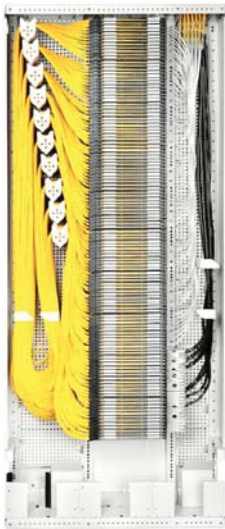
• DOCSIS - Data Over Cable Service Interface Specification

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PRODUCT NEWS The Centrix™ System is a modular fibre management solution for Multi-Service Providers (MSO) and is also known as Cable TV Operators (CATV).

Centrix™ System

At the heart of every local distribution network there is the need to house, organise, and manage an ever-increasing amount of fibre to cope with exploding bandwidth demand and the rollout of new high-speed broadband services to customers. Sophisticated fibre management solutions, which support both granular and high growth expansion, are needed to optimise network capabilities during construction and operation.



Our Centrix system is a fibre management solution that provides industry-leading density with innovative patch cord routing. It can be deployed in the local switching centre or at the cable headend for FTTH applications.

The Centrix system simplifies the design and deployment of your fibre network for higher density and quicker installation at the lowest total cost of ownership. It allows you to defer investment and build system capacity as you grow.

Features and benefits include:

- Supports ultra-high-density deployments in a compact footprint, increasing utilisation of space by up to 50 percent and allowing more ports to be deployed per square foot or square metre.
- Supports up to 4,320 LC or 2,880 SC connector ports per standard 7-ft (2200 mm) frame. Provides easy expansion to a dual and quad frame deployment to increase capacities to 8,640 and 17,280 LC ports respectively using a single patch cord length. Groups of quad systems can be combined in rows for larger capacity systems.
- The innovative multiple-path jumper routing system reduces the risk of patch cord entanglement while providing 20 percent more patch cord space, and also decreases installation time for adds, moves, and changes. A single 4-metre jumper length for in-frame cross-connects reduces jumper inventory.
- A cassette system enables growth in smaller increments of 12, 24, and 36 fibres,

supporting splitter, splicing, and patching applications.

For further information download our [Centrix solution overview.](#)

Building Access Terminal (BAT) Case Studies

When it comes to delivering FTTH services to residential and business customers in multi-dwelling units (MDUs), incumbent operators and MSOs face a number of deployment challenges, ranging from the various building sizes and architectures, to installation restrictions and preferences.



Corning's building access terminal (BAT) is designed to address these challenges and provide highly flexible and customised solutions for your MDU deployments.

To help demonstrate the benefits of using the BAT in fibre deployment scenarios, we have introduced a series of five case studies. The first case study, "Clearly Defined by Design," [can be viewed here](#).

The BAT is a wall-mountable housing that provides a fibre termination point for the outside plant (OSP) access cable and a building distribution point in one unit.

- It avoids the need to install separate housings for OSP termination and building distribution.

- It ensures a clear separation between outside plant cable, optical devices, and building distribution cables.

- It provides a great level of flexibility for cable termination, and is available in various sizes for different capacities.

FOCUS ON

- It enables safe and easy access to internal components during installation, moves, adds and changes.

...FTTH rollout

Watch out for the next case study, "Customisation to Achieve Network Design Goals," in issue 2, 2016.

Highlights from the FTTH European Conference

For additional information on the BAT, [please visit our website](#).

2015 saw continued growth in the fibre-based service rollout throughout Europe, according to the latest market figures released at the recent FTTH Council Conference in Luxembourg.

Spain experienced a 65 percent growth rate over the nine months ending September 2015, reaching 2.6 million subscribers for fibre to the home or fibre to the building (FTTH/B), while provision in France grew 31 percent to 2.4 million subscribers. The year also saw Croatia, Germany, and Poland enter the Council's rankings due to initiatives led by both private operators and policy makers.

In terms of FTTH/B penetration, Lithuania remains number one in the ranking with a penetration rate of 36.8 percent, while Latvia (36.2 percent) and Sweden (35.2 percent) have made impressive progress during the year. In absolute figures Russia is the largest European market with some 15 million subscribers.

Corning was a key participant at the conference, where we launched the new ClearCurve® invisible drop cable and celebrated 10 years of the OptiTap® connector.

Introducing ClearCurve® Invisible Drop Cable

ClearCurve® invisible drop cable is an innovative transparent micro drop solution that allows service providers to bring FTTH service to existing homes and offices in a faster and more unobtrusive way than traditional products. Built on a foundation of Corning's ClearCurve ultra bend-insensitive fibre, it can be attached to walls or ceilings and bent around tight corners or moldings while preserving critical loss budgets. A simple Installation kit with clips and epoxy enables fast and easy installation along walls, while a tough nylon jacket limits damage in an open-space environment.

Further information [can be found on the webpage](#) and in the [family spec sheet](#).

Celebrating 10 Years of the OptiTap® Connector

Designed for use in the access and drop-cable portions of a pre-connectorised network, the OptiTap connector revolutionised FTTH deployment, making installations faster, easier, and less costly. The OptiTap connector has replaced the traditional method of splicing fibres in the field, helping service providers connect premises at least 50 percent faster. Over 10 years, that's about a thousand years in field-based engineering time we've saved with this solution.

The OptiTap connector is the most widely used externally-hardened connector for FTTH networks. Since its introduction, more than 27 million OptiTap connectors have been installed providing proven durability and reliability in the field.

Take a closer look at our updated [OptiTap brochure](#).

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Three-Minute Interview

...with Kevin Bourg, Corning Optical Communications Optical Network Architect

For this issue of the three-minute interview we caught up with Kevin Bourg, Corning Optical Communications Optical Network Architect to understand what is driving the network innovation across MSOs. Kevin has a global role, analysing customer requirements for developing markets, identifying technical network solutions and planning product roadmaps to address MSO needs.



Why do MSOs have to innovate their networks?

There are multiple factors at play in the MSO market dynamic that are driving the need to evaluate new technologies for the cable network. Firstly, the unquenchable thirst of customers for high-bandwidth applications and real time interactivity, such as 4K TV, video streaming services and high speed broadband is putting stress on HFC networks. In some localities there is a need to boost their competitive position in residential markets where incumbent operators have started to deploy FTTH. For others, it also opens up new opportunities to deliver advanced services to business customers.

What do you see as the key networking issue facing MSOs?

The traditional HFC networks of MSOs have been constantly upgraded over the years to deliver more services with increased bandwidth and two-way communications. The increasing demand for high bandwidth is unending, it's a constant challenge for many MSOs, but now they have come to a fork in the road – a transition point. They need to better understand the technology and economic factors in determining the best path to take in order to address the bandwidth, performance and operational concerns and deliver the higher-speeds and more advanced services to the markets they serve. Do they go down a DOCSIS 3.1 path driving fibre deeper to the customer or do they take the xPON FTTH route, or in some cases take both routes in parallel addressing different business, demographic or locality needs

What other factors are you seeing that impact technology direction?

The existing distribution systems for video and TV services has a bearing on networking technology investment decisions. As such, we are seeing some operators chose a DOCSIS 3.1 Fibre Deep or RFoG FTTH approach due to the lack of production level IPTV solution and the high investment needed to implement such a large scale solution in the short term. Here the network strategy involves continued migrations towards FTTH thereby maintaining market share, avoiding churn, addressing subscribers' needs and ensuring service parity with those services delivered through competitive FTTH services.

How is Corning addressing these MSO challenges and opportunities?

We have an outstanding cabling and RF product portfolio to support the outside cable plant and headend needs of the MSO community. The Corning brand is well received providing access to many of the key decision maker's responsible for the migration towards FTTH. Through Corning's experience in the deployment of FTTH networks the MSO's look to us to help define solutions, which are aligned with the network transformation from HFC to Fibre Deep to FTTH. We are committed to deliver solutions that help them with this network transformation, that are cost effective, quick and easy to deploy, whichever technology path they chose to take.

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CONNECTED CONTINENTS

Fibre news snippets from across EMEA

PORTUGAL

Portugal Telecom (PT) plans to be copper-free by 2020, CTO Alexandre Fonseca stated at a recent industry event: "We are killing all the legacy technologies... (In 2017) we will start taking out the copper." PT had already passed 2.5 million homes at the end of last year and is currently passing premises with fibre at a rate of 60,000 per month.

<http://www.totaltele.com/view.aspx?ID=493077>

SENEGAL

Plans are underway to open Senegal's first internet exchange point (IXP) by the middle of 2016. The West African state is home to a burgeoning digital economy and receives three international marine communications cables to its shores. A group of over 23 ICT companies is driving the development of the IXP, including telecom operators, ISPs, the post office, and the government's own IT agency.

<http://www.telecompaper.com/news/senegal-plans-to-open-west-african-ixp-in-h1-2016--1113530>

SPAIN

Spain's communications regulator has completed more than a year of deliberations to rule that the incumbent operator must open up its FTTH network to competitors. The new regulation applies to around 65 percent of the country, larger than analysts anticipated. Spain had the largest number of new FTTH subscribers in Europe in 2015, according to the latest annual IDATE fibre penetration figures from the FTTH Council, growing to around 3 million in total.

<http://www.fibre-systems.com/news/story/ftth-subscribers-europe-reach-36-million>

IRELAND

Irish telco eir (formerly Eircom) is on track to extend its fibre footprint to 1.9 million premises by the end of 2020. The latest tranche of 100,000 homes and businesses plugging in over the next 12 months will enjoy speeds of up to 1 Gbps. Rival provider Virgin Media Ireland – which reaches 750,000 homes nationwide - announced it has boosted its top broadband speeds from 240 Mbps to 360 Mbps.

<https://www.telegeography.com/products/commsupdate/articles/2016/01/08/virgin-media-boosts-top-broadband-speeds-to-360mbps/index.html>

<https://www.telegeography.com/products/commsupdate/articles/2016/03/03/100000-irish-premises-to-receive-1gbps-broadband-by-march-2017/>

BELARUS

Yet another major operator focusing on fibre network targets for 2020 is Beltelecom, the state-owned fixed line and broadband operator in Belarus. The company already has 130,000 subscribers using GPON technology for FTTH in the capital city Minsk, and wants to migrate all subscribers from copper to fibre by the end of the decade.

<https://www.telegeography.com/products/commsupdate/articles/2016/02/26/belarus-round-up-beltelecom-lays-out-four-year-fibre-transformation-programme-atlant-telecom-introduces-budget-ethernet-home-network-launches-unlimited-tariff-plans/index.html>

QATAR

Ooredoo has tripled its fastest home fibre speeds to 300 Mbps with a free upgrade. The operator has also relaunched its IPTV offering to incorporate what it claims is the region's first commercially available 4K TV service. CEO Waleed al-Sayed has said Ooredoo Qatar has now invested over \$1 billion in its FTTH access network, 'Supernet' converged network and LTE-Advanced mobile network.

<http://www.gulf-times.com/story/479806/Ooredoo-s-300Mbps-fibre-speeds-now-available-in-Qa>

SOUTH AFRICA

Telkom South Africa is offering 11,000 ADSL subscribers the chance to switch over to FTTH in a free, no-obligation 'try-before-you-buy' trial. Existing customers of its 2, 4 and 8 Mbps DSL products will be moved over to new 'Boltspeed' 10 Mbps and 20 Mbps services within 7 to 10 days of ordering. The operator says that even if customers wish to switch back to the slower speeds after the two-month free trial period, they will remain permanently on the new fibre network.

<http://www.telkom.co.za/sites/aboutus/mediacentre/currentreleases/article1628>

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STAY INFORMED

Upcoming Events

Find Corning at the following events during quarter 2 2016:

[ANGACOM 2016](#), Cologne, Germany
7-9 June 2016

Come along and visit us at booth K31 in hall 10.2. Corning will present the latest solutions and products, from headend to subscriber premises that will help MSOs migrate to a fibre-deep network.

Talk to us about your challenges, needs and projects. We will help you evaluate your options and project deployment to prepare your infrastructure for the future today.

Updates on the Distributors

Carrier Networks Distribution Summit, Budapest, Hungary

50 guests, representing 33 distribution companies from 29 different countries across EMEA, attended our third annual Carrier Networks Distribution Summit held in March 2016.

Distributors were presented with the latest information on our new products and solutions, including the Centrix platform and the building access terminal (BAT); introduced to a number of market development initiatives for 2016; and received updates to the current EMEA Distributor Loyalty Programme. Guests took the opportunity to network and explore the stunning city of Budapest.

The event closed with a celebration of the achievements made in 2015, and we congratulated Net Plan (Portugal) as the winner of our Distributor of the Year Award for 2015.

We would like to thank all our distributors for a great 2015 and we look forward to working together for a successful 2016.

Corning Carrier Networks' Exclusive Distributor Programme

Be a part of it - commit to the future.

Specifically designed to allow distributors to have a closer co-operation with Corning, this exclusive programme enables companies to benefit by participating in regular training, developing joint sales plans and gaining the support of regional events.

Membership starts with a nomination by the Corning Carrier sales and marketing team and the nomination will also determine the current membership position you will hold – platinum, gold, silver and partner levels are available!

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