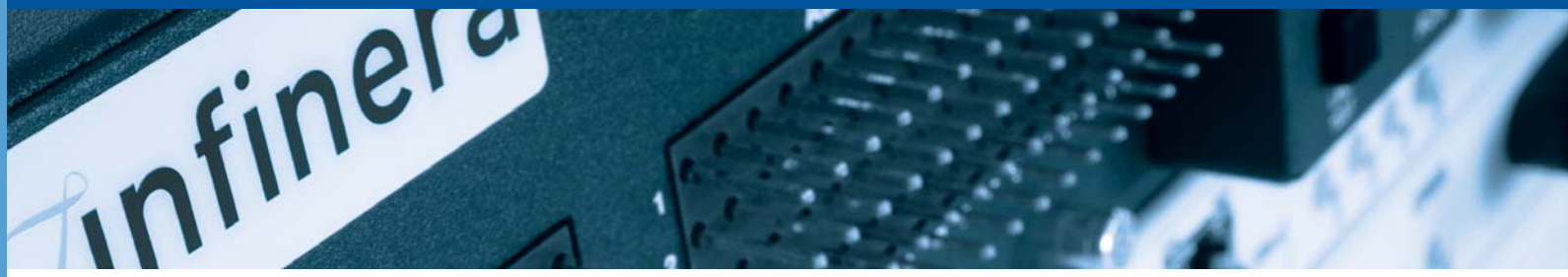
Infinera Case Study: The Carphone Warehouse



Carphone Warehouse Drives the Internet Revolution in Britain with Infinera

Nationwide Optical Network Deployed in Just Eight Weeks

In May 2009, Carphone Warehouse plc acquired Tiscali to become Britain's largest Internet service provider with more than four million customers and a market share of more than 25%. Carphone Warehouse, through its ISP division known as Talk Talk, has revolutionized Britain's residential broadband market by combining good value with the latest technology to offer consumers higher bandwidth, greater capacity, and advanced services. The Infinera optical network at the heart of the Carphone Warehouse network has played an important role in the company's growth through its speed, scalability, and ease of use.

In 2007, Carphone Warehouse Networks made the decision to deploy and operate its own core optical network. The network was needed to enable the company to respond to explosive growth in its subscriber base, growth in bandwidth demand per subscriber, and add new products and services to the network, all the while holding backhaul costs in check. CPW Networks decided to deploy an Infinera optical network.

The complete core network extends over more than 2200 fiber-kilometers, with 37 points of presence across England and Scotland. The first phase was deployed in eight weeks in the summer of 2008. Carphone Networks Head of Transmission Paul Jackson was surprised by the simplicity with which an Infinera system could be installed. "We were very impressed with the speed of deployment of the Infinera network," he says. "You just take the system off the pallet, put it on the rack, connect the power and the fiber, change an IP address, and away you go."

> ***"Infinera has definitely helped take the complexity out of optical networks."***

An Infinera network can be deployed in a fraction of the time required by a traditional DWDM network. Several key aspects of the design of the system make this possible. The first is the photonic integrated circuit (PIC) itself, the breakthrough technology at the heart of the Infinera system. PIC technology integrates ten 10 Gigabit/second (Gb/s) wavelengths onto a single pair of chips which are housed in an Infinera line card, known as a Digital Line Module (DLM). A traditional DWDM system would require ten separate 10 Gb/s transponder cards to provide equivalent functionality. Infinera uses a Band Multiplexing Module (BMM) card to multiplex the groups of ten 10 Gb/s channels together onto a single fiber. For a system with capacity of 800 Gb/s, for

THE Carphone Warehouse networks

Customer
The Carphone Warehouse plc

Application
Nationwide backbone network to support voice and Internet services to 4 million residential customers

Benefits

- Reduced network costs
- Ease of installation and provisioning
- Faster speed of reaction to network needs and opportunities
- New business opportunities

example, a traditional DWDM system would require up to eighty modules and more than eighty related cable interconnections to multiple interleaver or multiplexing modules . The Infinera DTN can interconnect 800 Gb/s of capacity using only nine modules and nine total fiber jumpers .

Carphone Warehouse initially deployed the 80 channel system. Today's Infinera systems scale up to 160 channels, and future systems will scale up to 8 Terabits/second of capacity. As channel count and capacity increase, the benefit from fewer parts and fiber connections increases.

Intelligent Software

The benefits of large scalable optical capacity are enhanced by Infinera's intelligent software. Infinera's IQ™ network operating system uses a GMPLS control plane to automatically discover and inventory network assets. When a link is commissioned, the DLMs automatically bring up all ten channels, and automatically balance the optical power over the channels, typically within four minutes. Built-in remote PRBS and loop-back tests eliminate the need to physically roll out test equipment, and provide autonomous span testing during span acceptance.

Beyond network installation and deployment, Infinera's GMPLS software can also automatically provision circuits. The operating system is controlled with the Infinera Management Suite, a package of easy-to-use software that relies on graphical user interfaces. Paul Jackson points out that Infinera's software is more advanced, and goes further towards delivering the simplicity and control of an IP network to the optical layer, than competitor systems. "Other optical systems do not have a GMPLS capability anywhere near as advanced as Infinera," he says. "Other vendors may talk about their GMPLS capabilities, but you often find the software is not released yet, or you may have to pay extra for it."

Carphone Warehouse was impressed with the training program run by Infinera's customer service. All Carphone Warehouse Networks engineers took a three-day training course, at the end of which they were able to install and commission Infinera systems. Paul Jackson has installed several Infinera nodes himself. "I enjoy it," he says. "Infinera has definitely helped take the complexity out of optical networks."

"For the first time in living memory, peace has broken out between IP and transmission."

Benefits of the Infinera Deployment

As of July 2008, CPW Networks had lit 95 10 Gbps circuits on its Infinera network. Jackson puts the benefits of the Infinera deployment into three main categories:

- **Financial savings.** CPW is saving millions of pounds by using its Infinera network instead of capacity leased from other providers. When the network is complete, savings will be in the tens of millions of pounds.
- **Speed and agility.** By offering new, unique service propositions, the TalkTalk business has radically changed the face of voice and broadband markets in Britain. Internet usage per household has been rising about 67% on a year-on-year basis, driven in part by tremendous popularity of the BBC iPlayer, which allows any Internet user to download or stream many popular BBC television programmes for free. With the Infinera network, the CPW transmission team can meet demand for new circuits very quickly. "Before, we were only as quick as our service providers," Jackson explains. "Now, our reaction time is almost instantaneous."
- **Better coordination between the IP and transmission divisions at CPW Networks.** An important bonus of the increased speed and responsiveness of the transmission team is better relations with the IP team, Jackson says: "For the first time in living memory, peace has broken out between IP and transmission."
- **New business opportunities.** With the ease of lighting new circuits on a large and growing network, CPW Networks has a competitive advantage over other operators. The wholesale telecom business in the UK is worth more than $1 billion a year. With its Infinera network, Carphone Warehouse has a lower cost base than many of its potential competitors. Entering the wholesale market by selling services to other operators is a business opportunity Carphone Warehouse Networks is studying.

infinera®

Infinera Global Headquarters
169 Java Drive
Sunnyvale, CA 94089
USA
Tel: +1.408.572.5200
Fax: +1.408.572.5454
www.infinera.com

Sales Contacts:
Americas
sales-am@infinera.com

Asia and Pacific Rim
Infinera Asia Limited
391B Orchard Road
#23-01 Ngee Ann City Tower B
Singapore 238874
Tel: +65.6832.8099
sales-apac@infinera.com

Europe, Middle East, and Africa
CityPoint
1 Ropemaker Street
London, EC2Y 9HT
UK
Tel: +44.207.153.1086
sales-emea@infinera.com

Customer Service and Technical Support
Within North America
Tel: 1.877.INF.5288
Outside North America
Tel: +1.408.572.5288
techsupport@infinera.com