

# Datagroup uses Cisco DWDM Backbone to run Optical Fibre Network

**Ukrainian service provider is implementing a highly-available, country-wide optical network using Cisco's state-of-the-art solutions**

## EXECUTIVE SUMMARY

### Customer Name

Datagroup

### Industry

Service provider

### Business Challenge

- Offer enterprise customers 'next-generation' network (NGN) services
- Provide the fastest possible speeds, uninterrupted service, and low Total Cost of Ownership (TCO)
- Be ready to go live in just four months, ahead of competitors

### Network Solution

- Dense Wavelength Division Multiplexing (DWDM) backbone delivers a range of high-speed Ethernet connectivity and carrier interconnect, as well as managed Storage Area Network (SAN) extension services
- The Cisco ONS 15454 platform's Reconfigurable Optical Add/Drop Multiplexer (ROADM) capabilities help to deliver uninterrupted high-speed, high-capacity services

### Business Results

- New optical infrastructure supports NGN services at highly competitive prices
- Brand new level of Internet in the Ukraine reduces the need to maintain multiple wide area networks
- Cisco ONS 15454 has also helped Datagroup lower its optical infrastructure's operating costs and easily provision new services

## Business Challenge

Three-year-old Datagroup is the leading provider of integrated telecommunications services in the Ukraine. It runs three complementary businesses: Datacom, a wireline data service provider; Datasat, a satellite communications unit; and Crocus Telecom, a provider of voice communications.

In 2001, through companies that are now formally members of the Group, Datagroup started providing Frame Relay and Internet services to banks and other enterprise customers. This was followed by wireless and satellite services, aimed first at the Group's traditional enterprise market, and then residential customers with high-speed broadband.

Following a flurry of merger and acquisition activity between 2003 and 2004 – when Datacom, Datasat, and Crocus Telecom became Datagroup companies – the Group found itself equipped with a broad portfolio of services and a strong presence in many of the country's regions. Already a Top 100 company, the organisation realised it could become one of the largest service providers in the Ukraine, if it could only invest money in a country-wide network and build it the right way.

Hitherto, Datagroup's expansion potential had been limited because the country's incumbent telecom, UkrTelecom, still operated a monopoly over the kinds of services that competing operators offer. Datagroup had to run separate services individually over the incumbent's leased lines; as a result, it could not provide the quality of service and speeds that its customers were demanding.

Limited to 2Mbps channels, rather than being able to offer gigabit speeds, Datagroup decided the only way to satisfy such demand and prepare for future Next Generation Network (NGN) services would be to construct a new network that could transport multiple services uninterrupted, at high speed and over long distance to regions across the Ukraine.

“A year ago, it was not possible to buy a lot of capacity from one city to another. Now, by deploying DWDM, Datagroup could provide next-generation services much more flexibly, with higher speeds, all over the Ukraine,” says Alexander Atamanenko, Datagroup’s Fibre Optic Network Deployment Project Manager. “Thanks to this new network, Datagroup would also gain access to other international fibre optic backbones. This would help to create a brand new level of Internet in the Ukraine.”

Developing a business plan for a nationwide optical backbone network, Datagroup then set out to build an infrastructure based on NGN solutions to provide voice, data, and video services for any client – business or residential – nationally.

### Network Solution

Talks between Cisco® and Datagroup about building a separate country-wide network started at the end of 2004. It was important to Datagroup that, being the first of Ukraine’s ‘independent’ operators to invest in such a network, it should spend time thoroughly evaluating the kinds of technologies that could support such services effectively.

Datagroup installed dark fibre and started developing its optical network, having decided to use DWDM technology to make the best use of the fibre’s limited capacity. Around the same time, Cisco took part in an evaluation process where its ONS 15454 platform proved to be a more flexible technology, and ultimately recorded a lower Total Cost of Ownership (TCO) than competitors’ alternatives.

“Cisco’s optical networking solution could cover more towns and over greater distances because Cisco launched an enhanced booster by the time the network was ready for deployment. We calculated that the TCO of any amplified point on the network was quite high, which was why it was important for Cisco to have long-distance DWDM equipment, without many regeneration points,” says Atamanenko.

However, Cisco went one step further by providing network design consulting services and presenting a more comprehensive and compelling case for how Cisco’s DWDM technology could support Datagroup’s business networking requirements. The speed at which Cisco responded and the quality of the advice it delivered further tipped the balance in Cisco’s favour.

**“We recognised that the flexible reconfigurable nature of the Cisco ONS 15454 would help us to considerably lower the operational costs.”**

**–Alexander Atamanenko, Project Manager, Fibre Optic Network Deployment, Datagroup**

Cisco brought in business and product development experts from its U.S. and European optical teams, and worked closely with Cisco Ukraine to educate the customer and identify a number of potential revenue streams.

Cisco won the business to supply its DWDM solutions to Datagroup in May 2005. By August, Datagroup had opened the first 1800 km section of its US\$30 million-plus fibre optic network, serving eight regions and establishing high-speed, uninterrupted links between Kiev and major financial markets in Frankfurt, Germany. New kinds of services (currently being developed) can be implemented quickly, and the optical network's backbone capacity increased without interrupting services already running over the network.

"Completed in July 2006, the network now presents an opportunity to provide up-to-date telecommunications services to communications operators, Internet providers, and corporate clients," says Alexander Atamanenko.

The new infrastructure deployment will form a key part of Datagroup's overall IP Next-Generation Network architecture (IP NGN) – aimed at protecting data, recovering applications rapidly, and maintaining user access. Such functionality is critical for business continuance, which now demands a highly available network infrastructure.

Datagroup aims to not only use the new optical infrastructure to sell metro Ethernet services in most of the cities in the Ukraine, but also to offer service providers back-up connectivity services. The new portfolio of services will range from high-speed Ethernet connectivity and carrier interconnect services for the Ukrainian and pan-European market, through to managed Storage Area Network (SAN) extension services.

As part of the service portfolio, the Ukrainian service provider also aims to move beyond data transport to offer customers, particularly in the financial services sector, data centre interconnect services to support data replication and mirroring between remote locations.

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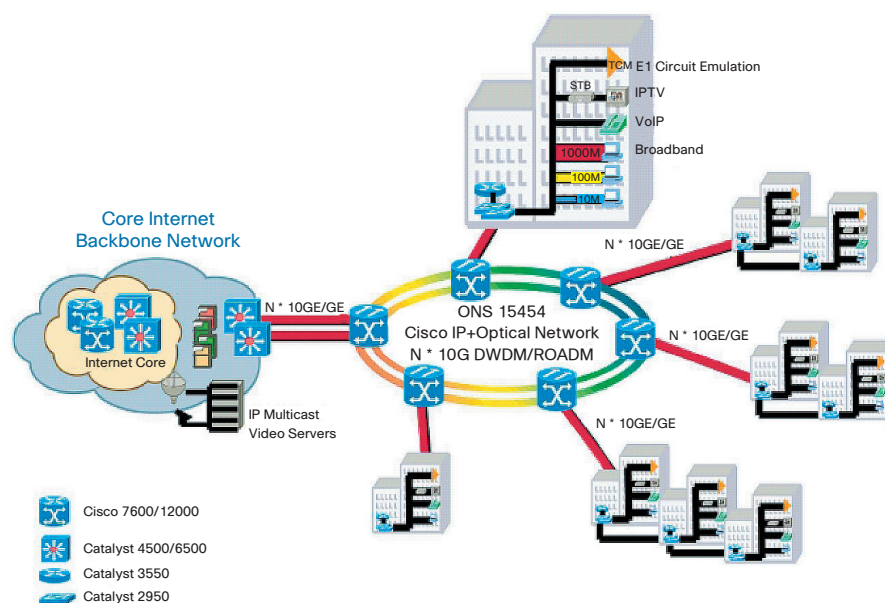
**–Alexander Atamanenko, Project Manager, Fibre Optic Network Deployment, Datagroup**

## Business Results

Optical solutions provide the manageability, efficiency, and scalability required to minimise capital and operational costs, and to meet business continuance objectives. They are also the ideal storage networking technology for overcoming distance limitations.

"In evaluating the Cisco portfolio, we recognised that the flexible, reconfigurable nature of the Cisco ONS 15454 would help us to considerably lower operational costs associated with running our optical infrastructure by allowing us to easily provision new services," says Datagroup's Alexander Atamanenko. "In a geographically diverse area such as the Ukraine, the ability to reduce total cost of ownership by modifying our network configuration remotely with limited manual intervention or service interruption, was one of the major factors in our choice of Cisco equipment."

Datagroup wanted the whole DWDM solution deployed in just four months, because it was aware that competing service providers were going to start similar projects. Thanks to a close working relationship between Cisco and Datagroup, the first segment of Datagroup's network between Kiev and Frankfurt was up and running in just two months, using a DWDM core to transport SDH, Frame Relay, and Ethernet services.



Source: Cisco 2005

Cisco's ONS 15454 platform units now provide hybrid functionality, using DWDM optical and Synchronous Digital Hierarchy (SDH) modules. They also provide intelligent DWDM capability for metro and regional networks. By supporting distances greater than 600 km, the Cisco ONS 15454 provides Datagroup with an ideal solution for secondary data centres, as well as for back-up sites. Many of its banking customers' main data centres are based on the new network's hub in Kiev.

**“Our customers associate the Cisco brand with quality. Cisco has certainly met their technical expectations, and local Cisco offices have provided invaluable support.”**

–Alexander Atamanenko, Project Manager, Fibre Optic Network Deployment, Datagroup

As enterprise customers recognise the benefits of convergence in their own network infrastructure, Datagroup will deliver a converged transport solution that can reduce the need to maintain multiple wide area networks. Working with Cisco’s service creation teams, Datagroup has been able to put together a revenue-generating service portfolio that will minimise its own operational costs, while customers are expected to buy speeds several times higher than those that were available from Datagroup’s former leased line network.

“Our customers also associate the Cisco brand with quality. Cisco has certainly met their technical expectations, and local Cisco offices have provided invaluable support. Together, this has played a part in helping to deliver the project on time and with the appropriate functionality,” says Alexander Atamanenko.

### Technical Implementation

Datagroup’s 6500 km optical fibre network has been built in three stages to stretch across the Ukraine. The new backbone uses Cisco Dense Wavelength Division Multiplexing (DWDM) to transmit multiple signals simultaneously down a single optical fibre by transmitting each one on a different wavelength. In this way, Datagroup will be able to aggregate multiple traffic types on to a single wavelength and transmit them, uninterrupted, over long distances to deliver a range of Ethernet-based services to its 30 regional centres (nodes) throughout the Ukraine.

Basic services provide connections to remote company locations all over the country, but also abroad. More advanced services include network monitoring and infrastructure consulting. A range of multimedia services support videoconferencing, distance learning, and telemedicine, among others.

The service provider’s new portfolio of high-capacity services will be based on the Cisco ONS 15454 platform, which takes advantage of Cisco’s Reconfigurable Optical Add/Drop Multiplexer (ROADM) capabilities to speed service delivery to customers on meshed/multi-ring networks.

Each of the ROADMs is used to remotely reconfigure, add, and drop capacity at each node on the network. This enables Datagroup to add capacity wherever and whenever it needs it, knowing that the underlying network will automatically compensate for the added traffic. It also eliminates the need for wholesale upgrades, or manual tuning – which might increase the risk of disrupting revenue-bearing services. The resulting violation of Service Level Agreements (SLAs) might lead to fines or create an unacceptable level of customer dissatisfaction that would outweigh the extra cost of optical switching.

This is why ROADM functionality is particularly suited to service providers. Many existing WDM systems require attenuators to be installed manually to equalise the different signals passing through the network node. This can be an error-prone, labour-intensive effort that is very hard to troubleshoot.

Automating the optical layer also takes care of this complexity, and promises to provide more value in the future with:

- Fast shared optical layer protection. This may become a viable alternative to SONET/SDH ring protection, when switching will need to be performed in just a few milliseconds
- Bandwidth on demand. This requires an automated end-to-end network that assumes services are being set up and torn down daily, or even hourly
- Automated network optimisation. This will be required to mine more bandwidth out of existing network resources.

The Cisco optical networking portfolio is a part of the Cisco IP NGN, an architecture that enables telecom service providers to migrate and deliver services to IP-based networks. Migration to the IP next-generation network is underway – in homes, businesses, and the enterprise.

By adopting Cisco IP NGN, service providers can deliver innovative new services to their customers quickly. Service providers can also improve their operational and capital expenditure efficiencies, while advancing the network technology and service control that they and their customers need for long-term business success.



**Americas Headquarters**  
 Cisco Systems, Inc.  
 170 West Tasman Drive  
 San Jose, CA 95134-1706  
 USA  
[www.cisco.com](http://www.cisco.com)  
 Tel: 408 526-4000  
 800 553-NETS (6387)  
 Fax: 408 527-0883

**Asia Pacific Headquarters**  
 Cisco Systems, Inc.  
 168 Robinson Road  
 #28-01 Capital Tower  
 Singapore 068912  
[www.cisco.com](http://www.cisco.com)  
 Tel: +65 6317 7777  
 Fax: +65 6317 7799

**Europe Headquarters**  
 Cisco Systems International BV  
 Haarlerbergpark  
 Haarlerbergweg 13-19  
 1101 CH Amsterdam  
 The Netherlands  
[www-europe.cisco.com](http://www-europe.cisco.com)  
 Tel: +31 0800 020 0791  
 Fax: +31 020 357 1100

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