

## Integrated Infinera ATN/DTN Networks

### OVERVIEW

Carriers, MSOs, Internet Content Providers, and government agencies have widely deployed the Infinera DTN digital ROADM platform for core optical network applications as a class leading transport solution to lower the cost of deploying and maintaining their networks. Integrated bandwidth management, digital network simplicity and industry leading ease of use and operation are all key benefits enabled by Photonic Integrated Circuit (PIC) technology unique to the Infinera DTN solution. These features along with integrated GMPLS control plane and advanced network management lower the cost of deploying and maintaining networks and maximize delivery of high availability services to end users.

Metro optical networks extend connectivity from the core network to the edge and provide aggregation for a wide range of end user services within cities, but also in rural applications in support of broadband deployments to smaller cities and communities. The Infinera ATN metro edge system provides state of the art metro WDM transport in a compact flexible chassis with a wide range of Service Interface Modules (SIMs) for efficient adaptation of services to transport wavelengths. In conjunction with the Infinera DTN platform, the Infinera ATN provides a compelling solution for combination metro core and edge network applications. Deploying networks with a combination of Infinera DTN and ATN provides operators with unique end-to-end solution benefits that optimize network connectivity with benefits of the Infinera digital optical network.

### APPLICATION

Figure 1 shows an end-to-end network implemented with both Infinera ATN and DTN platforms. In this example, services are aggregated and adapted to wavelengths at the edge of the network with the ATN. These wavelengths (CWDM or DWDM) are aggregated and transported to a hub node for interconnection to core DTN hub nodes which provides transport across a metro core, regional or long haul network. A second remote hub serves as a gateway to another Infinera ATN edge network which provides remote metro connectivity. The combination provides an optimized and integrated end-to-end network that scales equipment deployment to the unique demands of each network segment, thus conserving capital costs as well as space and power. ATN/DTN networks offer unique benefits including equipment reduction, end-to-end OAM and integrated network management to simplify operations and accelerate service delivery.

Specific network applications for the integrated network solution include:

- Tier 1 carrier / PTT Inter-Office (IOF) transport with integrated edge extension for broadband and wireless backhaul, private managed networks and commercial services delivery.
- Tier 2 carrier transport with integrated edge extension for broadband and wireless backhaul, wholesale services and commercial services delivery.
- MSO primary ring / secondary ring transport with integrated broadband and wireless backhaul and commercial services delivery
- Internet Content Provider backbone with data center connectivity and extension

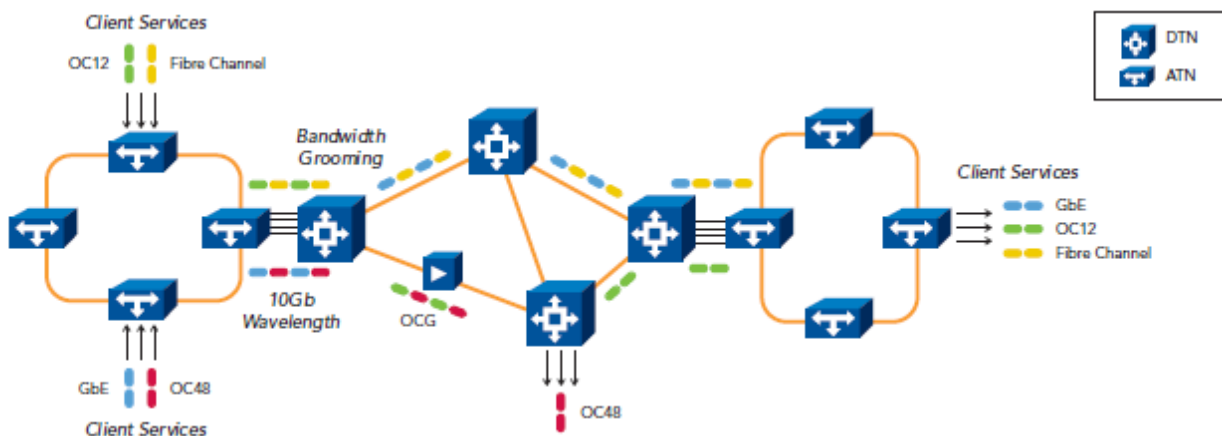


Figure 1. End-to-end integrated Infinera ATN/DTN digital network.

Infinera ATN and DTN networks utilize the same wavelength-level optical interfaces, as well as aggregation and framing protocols, and share a common management system. Designed for interoperability from the start, the ATN and DTN platforms deliver key advantages for the integrated solution when compared with deploying separate standalone solutions.

- Removal of back to back transponders at hub locations due to the integration of CWDM and DWDM optical interfaces directly on the tributary interfaces of the DTN system. Cost savings from reduction in transponder count.
- Identical network design rules for standalone ATN networks or integrated with DTN nodes simplifies network planning and deployment.
- Flexible, multi-service aggregation and transport. Common sub-wavelength aggregation and framing protocols enable multipoint service termination across the integrated ATN/DTN network (see Figure 1).
- End-to-end path and section level digital OAM for simplified maintenance and troubleshooting.
- Control plane auto-discovery of Infinera ATN/DTN wavelength connections simplifies deployment, reduces configuration errors, and accelerates service delivery.
- End-to-end service provisioning via common Infinera DNA network management system.

### INFINERA ATN

The Infinera ATN shown in Figure 2 is a new metro-optimized CWDM and DWDM platform designed for cost-effective WDM transport and multi-service aggregation in metro networks. The ATN extends Infinera's digital optical networking benefits into the metro environment by providing a small form-factor, cost-efficient wavelength-granular add/drop system that interoperates with Infinera DTN. It is designed to support up to 40 DWDM wavelengths or up to 8 CWDM wavelengths and support a range of add/drop services ranging from 100Mb/s up to 10Gb/s. The ATN can be managed through an ATN Graphical Node Manager (GNM) and the Infinera Digital Network Administrator (DNA) to provide consistent, simple operations with other Infinera products with end-to-end service provisioning.



Figure 2. Infinera ATN Metro Edge Platform.

### ABOUT INFINERA

Infinera provides Digital Optical Networking systems to network operators worldwide. Infinera's systems are unique in their use of a breakthrough semiconductor technology: the photonic integrated circuit (PIC). Infinera's systems and PIC technology are designed to provide customers with simpler and more flexible engineering and operations, faster time-to-service, lower latency, and the ability to rapidly deliver differentiated services without reengineering their optical infrastructure. For more information, please visit <http://www.infinera.com/>.