



Inphi's Solutions for Networking and Communications

Over the past several years, there has been an explosion in bandwidth growth led by consumer demand for video and other high-bandwidth content. For example, YouTube alone uses as much bandwidth as the entire Internet did in 2000, and video is expected to account for half of all IP traffic by 2012.

In order to meet this demand and to deliver computing power that is scalable, energy efficient, and cost effective, the industry is adopting a cloud-based computing infrastructure. In this new cloud computing model, computing power resides in large data centers, while users around the globe drive the ever-increasing demand for network bandwidth and computing capacity.

40G and 100G Networks Require Technical Innovations

To support the emerging cloud computing build-outs, carriers and data centers need to scale their core networks to the next level by moving from 10G networks to 40G and 100G networks. A single strand of optical fiber, which can transport 1 terabit per second today, will soon be able to transport 10 terabits per second.

Such a 10x leap in data rates puts severe demands on the underlying technologies in the transceivers and line cards of next generation networks. At both short and long distances, there are technical challenges in maintaining signal integrity to ensure error-free data transport.

On one end of the scale, network equipment designers need to reduce the size of the system and to increase bandwidth. They also need to use components with standardized and modular form factors, to leverage economies of scale. This creates very severe signal integrity challenges, as large numbers of signals at up to 40+ Gbps need to be routed through signal "channels" that are hundreds of millimeters long, over circuit boards and connectors. In order to cope with the many imperfections in such channels, innovations in analog and mixed signal design are required, including high frequency characterization and modeling, analog and mixed signal circuit design, and high frequency package design.

On the other end of the scale, supporting metro and long haul optical links that extend from several hundred to many thousands of kilometers requires advanced encoding of the data on the optical fiber, to overcome the limitations imposed by non-idealities in the optical fiber. The most important of these encoding schemes, or "modulation schemes," include 100G Coherent for long haul networks and 40G Differential Quadrature Phase Shift Keying (DQPSK) for metro networks. Some of the key innovations in broadband analog technology that enable these modulation schemes include specialized high

frequency amplifier components that can amplify signals to large voltage swings or that can detect very weak signals with high fidelity.

Inphi's Solutions Optimized for High-Speed Networks

Inphi provides high-speed analog connectivity components for the cloud computing infrastructure; addressing performance, capacity, power, and signal integrity issues faced by telecommunications carrier and data center networks. Inphi's high-speed analog components enable carriers and data centers to increase their network capacity by four to ten times.

Inphi leads the market in 40G and 100G solutions, offering a comprehensive line of high-bandwidth, low-power ICs that enable high-speed data to be sent over long distances with unparalleled signal integrity. Inphi's products for networking and communications include drivers, transimpedance amplifiers (TIAs), physical layer (PHY) components, and logic gates for fiber optical systems. Inphi also offers products for broadband instrumentation and automated test equipment, such as Gigahertz logic gates and analog and mixed-signal devices.

These products offer exceptional performance, low power consumption, and multiple packaging options. Inphi has achieved leadership positions with a number of its high-speed analog products, including:

- Market leadership in high-sensitivity TIAs (used in receivers)
- Market leadership in large-output drive amplifiers (used in transmitters)
- First to market with:
 - 25 GHz IC in plastics
 - 43 Gbps modulator driver
 - 43 Gbps TIA IC
 - 50 Gbps MUX IC
 - 40G differential modulator driver in surface-mount technology (SMT)
 - Highest sensitivity linear TIA for 40G DQPSK applications
 - OIF-compliant 100G coherent TIA

For more information on Inphi's networking and communications products and products for instrumentation and automated test equipment, visit www.inphi.com

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