The Infinite Network
Built on the Science of Simplicity
Everywhere. Always. Instantly.
A new generation of applications is coming to challenge your network.

While overall bandwidth demand continues to grow exponentially, driving the demand for fiber deployments deeper in the network, new 5G applications such as augmented and virtual reality (AR/VR) and autonomous vehicles bring new demands for low latency and real-time response, while the explosion of connected devices and the Internet of Things (IoT) drive new requirements for security and distributed intelligence.

How will your network rise to the challenge?

- New applications demand high performance, including ultra-low latency
- The distribution of compute resources and application mobility drive dynamic, unpredictable traffic patterns
- Increased bandwidth demand at the network edge drives demand for fiber deep deployments and metro-optimized optical solutions
- Increasingly unpredictable bandwidth demands in the network core require radical simplification and automation down to the optical layer
THE INFINITE NETWORK

Built on the Science of Simplicity

The Infinite Network is a disruptive, end-to-end network architecture that paves the way to instantly scalable, self-optimizing networks that dynamically adapt to the demands of users and applications. This architecture expands the power of Infinera’s unique vertically integrated Infinite Capacity Engine (ICE) and Instant Bandwidth operational model by introducing the newest generation of ICE technology, extending ICE and Instant Bandwidth to the network edge and integrating them into a comprehensive new framework of open, disaggregated, packet-optimized solutions with network automation and machine learning.

The Infinite Network consists of The Infinite Core, The Infinite Edge and Cognitive Networking, providing end-to-end intelligence and automation from edge to core.

THE INFINITE CORE
End-to-end solutions leveraging Infinera’s unique vertically integrated optical engine technology for industry-leading optical performance and instant scalability

THE INFINITE EDGE
Comprehensive solutions for fiber deep networks, including 5G and DAA, built on industry-leading open and disaggregated technologies with a disruptive vision for unparalleled scalability and efficiency

COGNITIVE NETWORKING
Advanced software applications enabling end-to-end, multi-layer, multi-vendor, application-aware network automation and leading toward real-time adaptive networks

Figure 2: Components of The Infinite Network
Core networks face relentless bandwidth growth and increasingly dynamic, unpredictable traffic flows. The Infinite Core delivers leading optical performance from metro to subsea, including 600 gigabits per second (Gb/s) per wavelength transmission, record-breaking capacity-reach performance and Infinera’s uniquely flexible, scalable software defined capacity on demand with Instant Bandwidth.

Building on these capabilities, the next generation of ICE, ICE6, delivers the next step in vertically integrated optical engine technology, engineered to deliver up to 800 Gb/s per wavelength and an expanded toolkit of advanced coherent technologies designed to extend Infinera’s heritage of industry-leading optical performance in the core. Coupled with key elements of Infinera’s Transcend Software Suite, the Infinite Core is becoming increasingly automated and self-optimizing, enabling network operators to scale simply and efficiently to meet the network challenges of today and tomorrow.

### VERTICAL INTEGRATION
- Full vertical integration including photonic Integrated Circuits (PICs) and FlexCoherent® digital signal processors (DSPs) enables high performance with a low total cost of ownership

### NYQUIST SUBCARRIERS
- Nyquist subcarriers enable increased fiber capacity and spectral efficiency by enhancing optical transmission tolerance to real-world impairments

### HIGH EFFICIENCY PCS
- 7nm DSP technology enables high performance constellation shaping for maximum capacity-reach benefit
Edge networks are experiencing a disruptive architectural shift driven by new services and cloud-based applications moving closer to the network edge. The Infinite Edge addresses this shift by delivering comprehensive solutions for fiber deep architectures, including 5G and DAA. These solutions span optical, Ethernet and IP/Multiprotocol Label Switching (MPLS), incorporate industry-leading technologies for operational efficiency and offer disruptive open disaggregated routing solutions that can accelerate innovation, automation and cost-efficiency.

The Infinite Edge vision also includes future extensions of ICE optical innovation and Instant Bandwidth to the edge, with a family of pluggable coherent optics and virtualized lasers. The pluggable optical modules, based on Infinera’s vertically integrated ICE technology, will deliver low-power, low-cost coherent optical transmission that can be deployed deep into edge networks. Traffic from multiple pluggable optical modules will also be aggregated using virtualized laser technology, a disruptive innovation that promises to dramatically reduce the cost and increase the flexibility of edge networks.
Cognitive Networking brings together The Infinite Edge and The Infinite Core by streamlining and automating the complexity of operating multi-layer, multi-vendor networks. Leveraging an innovative modular app-based approach to network automation with the Transcend Software Suite, Infinera is working to make advanced network automation as simple as visiting an app store.

The Cognitive Network couples a deep understanding of network conditions at multiple layers (Layers 0-3), including real-time application awareness, with simplified automation to provide a new level of network efficiency, including automated service activation, network restoration and resource optimization. Transcend continues to evolve to add increased levels of machine learning and artificial intelligence to learn network patterns and proactively optimize networks to address problems before they even occur.

Figure 6. The Infinera Transcend Software Suite Features an Innovative Modular App-based Approach to Network Automation
THE INFINITE NETWORK: MEETING YOUR CHALLENGE

The world wants infinite bandwidth and infinite flexibility to use the applications of the future, from streaming virtual reality to autonomous vehicles and IoT, and your network needs to rise to the challenge.

The time has come for The Infinite Network, a disruptive, end-to-end network architecture that paves the way to instantly scalable, self-optimizing networks that dynamically adapt to the demands of users and applications.

EVERYWHERE  ALWAYS  INSTANTLY