Infinera®

Infinera Transcend Software Suite

Enabling the Evolution to Disaggregated, Virtualized, and Software-driven Hyperscale Networks

As network operators adopt data center principles to address the challenge of traffic growth driven by internet video, cloud, and data center interconnect, and to prepare for new applications such as IoT, augmented reality, and the tactile internet, a new approach to network software is required. The Infinera Transcend Software Suite addresses the need for automation, speeds the introduction of new services, and supports disaggregated network architectures, including white boxes and open line systems, enabling the evolution to hyperscale carrier networks.
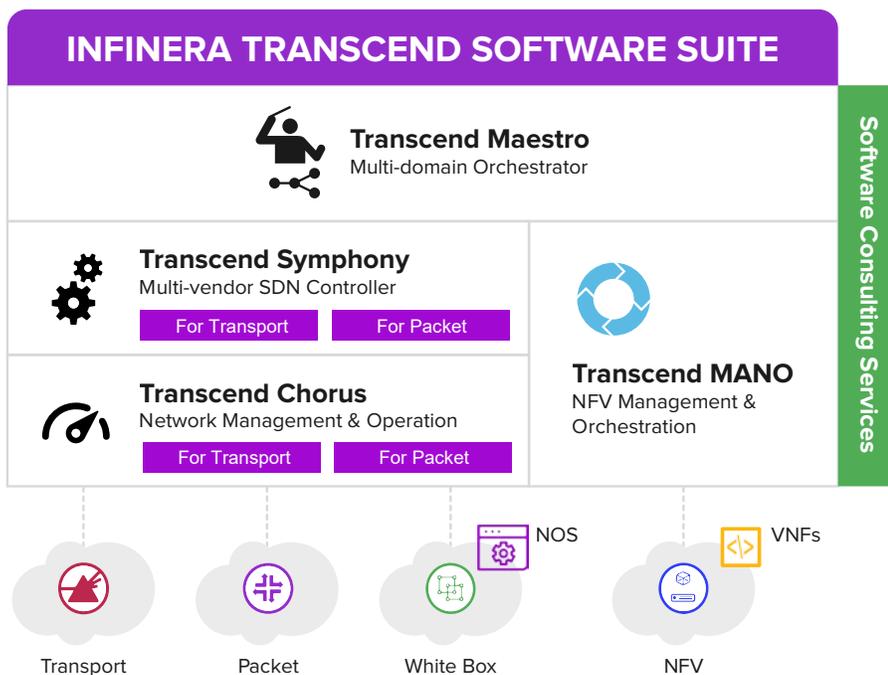
INFINERA TRANSCEND SOFTWARE SUITE

Transcend Maestro
Multi-domain Orchestrator

Transcend Symphony
Multi-vendor SDN Controller

For Transport | For Packet

Transcend Chorus
Network Management & Operation

For Transport | For Packet

Transcend MANO
NFV Management & Orchestration

Software Consulting Services

NOS   VNFs

Transport   Packet   White Box   NFV

Figure 1 - Infinera Transcend Software Suite

REDUCING OPERATIONAL COSTS AND SPEEDING SERVICE DELIVERY WITH END-TO-END AUTOMATION

The Infinera Transcend Software Suite automates end-to-end service provisioning across multiple layers to speed service delivery and bring revenues forward. Optimal paths are calculated based on dynamic network conditions including utilization, latency, packet loss, and optical margin. Monitoring end-to-end service performance and faults, the Infinera Transcend Software Suite is able to take proactive steps to assure SLA compliance and to optimize the network as conditions change. Automation also extends to network operations tasks such as service activation testing and platform management tasks including commissioning, software upgrades, and configuration backups.

BENEFITS OF THE INFINERA TRANSCEND SOFTWARE SUITE

- **Speed** time to revenue with automated end-to-end service provisioning and activation testing

- **Reduce** CapEx with optimized multi-layer path computation based on real-time network conditions

- **Maximize** service availability and SLA compliance with service-aware fault management, automated SLA assurance, and virtualized multi-layer protection and restoration

- **Accelerate** innovation with the ability to quickly add new platforms and technologies through open APIs, and by disaggregation into best-in-class hardware and software functional blocks

- **Offer** new services leveraging DevOps-style programmability, virtual network functions, self-service portals, and network slicing

- **Simplify** operations with a multi-domain and multi-vendor solution

ENABLING EASY CUSTOMIZATION WITH DevOps-STYLE PROGRAMMABILITY AND MACHINE-TO-MACHINE COMMUNICATIONS WITH OPEN APIs

The Infinera Transcend Software Suite supports a DevOps-style approach to customization with a feature-rich programming language for automation and GUI customization and with a comprehensive SDK tool kit including an information reference model, sample program generation, service model and script management tools, and a scheduling center for launching programs and scripts. REST and RESTCONF interfaces enable machine-to-machine communications for third-party applications, SDN orchestrators and SDN controllers with support for OIF/ONF (Transport -API), IETF, and MEF Lifecycle Service Orchestration (LSO) standards. Southbound interfaces include SNMP, TL1, and NETCONF enabling support for both Infinera and third-party network elements.

PROVIDING A MULTI-LAYER, MULTI-DOMAIN, AND MULTI-VENDOR SOLUTION

The Infinera Transcend Software Suite supports multi-layer automation for Layer 0 (WDM), Layer 1 (OTN, SONET/SDH), Layer 2 (Carrier Ethernet), Layer 2.5 (MPLS-TP), and Layer 3 (IP). Benefits of this multi-layer approach include reduced costs, lower latency, and higher availability. The Infinera Transcend Software Suite can also span domains, including multiple metro, regional, and long haul/core domains. Third-party network elements can be supported either directly or via third-party SDN controllers.

TRANSCEND MAESTRO: MULTI-DOMAIN ORCHESTRATOR

Transcend Maestro is designed to enable automation and end-to-end services to span technology layers from Layer 0 through Layer 3, and to span multiple domains with support for third-party SDN controllers via open, standards based interfaces. Maestro is able to minimize cost and latency by offloading traffic to lower layers where possible with multi-layer visualization significantly aiding users' ability to understand traffic flows across multiple layers. Maestro cost effectively maximizes service availability with disjoint routes, efficient multi-layer protection and restoration, and by assuring end-to-end SLA compliance.

TRANSCEND SYMPHONY: MULTI-VENDOR SDN CONTROLLER

Transcend Symphony is designed to enable the end-to-end provisioning and monitoring of services within a single technology domain with support for both Infinera and third-party network elements. Path computation can be based on dynamic network attributes. For the IP layer, these attributes include interface utilization, packet loss, measured latency, and CPU utilization. For the optical layer, Symphony leverages Infinera Aware Technology to provide accurate optical path computation based on real-time network state including span loss and the residual margin of each wavelength. Infinera vASON technology provides it with a virtualized solution for multi-layer protection and restoration. Symphony can be easily programmed with a feature-rich object-oriented programming language and comprehensive SDK tool kit. Open northbound interfaces include REST and RESTCONF with support for OIF, ONF, IETF, and MEF standards. Symphony also supports network slicing and provides a self-service portal, which enables new services including Network as a Service and Bandwidth on Demand.

TRANSCEND CHORUS: NETWORK MANAGEMENT AND OPERATIONS

Transcend Chorus is designed to automate end-to-end network operations including service activation testing leveraging network element features such as PRBS test and loopback, RFC 2544, Y.1564, and TWAMP. In addition to discovering network inventory, links, and physical topology, Chorus provides both service and network element fault management including alarm management, event correlation, and root cause analysis. In addition to real-time and historical performance monitoring with visualization capabilities including network heat maps, it offers advanced performance monitoring capabilities such as OTDR and optical power monitoring. Chorus also automates platform management functions including commissioning, software upgrades, configuration backup, and user/security management.

INFINERA SOFTWARE CONSULTING SERVICES

Complementing the Infinera Transcend Software Suite, Infinera software consulting services include SDN design and installation. They include integration with OSS/BSS systems, third-party orchestrators, third-party controllers, and third-party network elements. Customization services for portals, dashboard analytics, and the workflow and rule engine are also available.

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