DriveNets is a rapidly growing software company that builds networks like clouds. It offers communications service providers, hyperscalers, and cloud providers a radical new way to build networks and connectivity infrastructure, detaching network growth from network cost and increasing network profitability. DriveNets® Network Cloud™ is the leading open disaggregated networking solution based on cloud-native software running over standard white boxes.

Building networks like cloud is about adapting cloud architecture principles to network design. Thus, using standard white boxes, disaggregation of software and hardware, and distribution, which allows multiple white boxes to act as a single node or a single Ethernet entity. Network Cloud can run multiple applications over a shared pool of resources, simplifying the network’s operations while offering carrier-grade, telco-scale, and AIfabric level performance at a much lower cost.

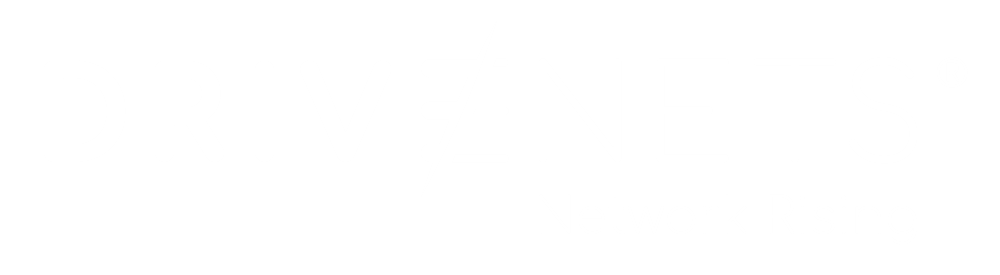
**NETWORK CLOUD** DriveNets Network Cloud introduces a radical, innovative, cost-effective way to build networks. To solve the challenges faced by telcos, hyperscalers, and cloud providers, DriveNets has adapted and enhanced cloud approaches to its Network Cloud solution, creating software-based virtualized and distributed connectivity infrastructure supporting any service on any port sharing a pool of networking resources, CPU processing power, and more.



NETWORK CLOUD

TM

DATASHEET



The cloud-native software also allows for additional services that run in separate software containers. Each networking function, which runs a Service Instance (SI) microservice in a cloud container, can be allocated with any hardware resources (physical interfaces, NPU, CPU, TCAM, QoS, etc.) of the underlying hardware-shared infrastructure.

|  |
| --- |
| **NETWORK CLOUD**  **ARCHITECTURE** |

DriveNets Network Cloud is a new networking model designed to address future networking needs. It is based on an ecosystem of leading silicon vendors, ODMs, and system integrators such as Broadcom, EdgeCore, UfiSpace, , Delta, and others, driving greater network innovation, scale, and efficiency. Together, we are building open, disaggregated networking platforms for future capacity and scale.

DriveNets Network Cloud architecture is based on a distributed model where the cloud-native software is disaggregated from the hardware on which it runs, supporting white boxes from multiple vendors based on an open design. This new distributed disaggregated platform can scale linearly from a single white box device of 4 Tbps to a cluster of hundreds of white boxes (up to 691Tb Tbps) acting as a single entity.

Graphical user interface, application

Description automatically generated

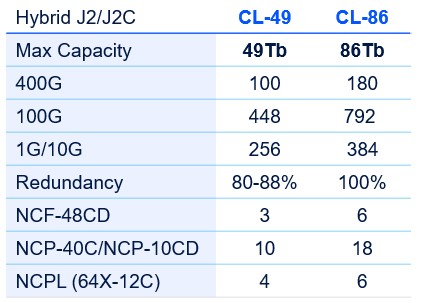
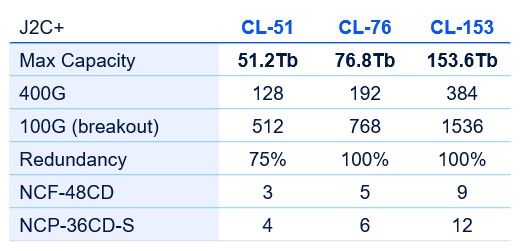
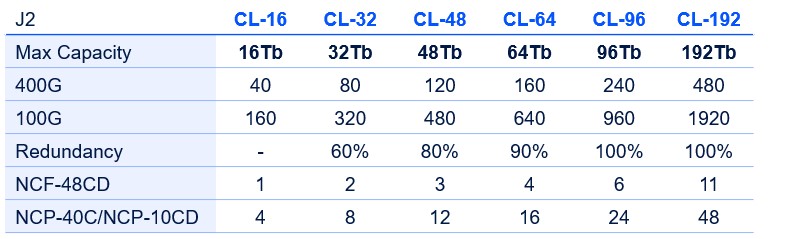
# KEY FUNCTIONS

* Software-driven networking infrastructure:
  + Any scale infrastructure – using OCP-compliant white boxes orchestrated by a single network operating system (NOS) instance
  + Distributed NOS – runs as a containerized microservice on all network cloud elements
  + Flexibly utilizing networking resources
  + Carrier-grade high-availability –hardware, connectivity, and routing protocols
  + AI-fabric grade performance – predictable, lossless interconnect for highest JCT performance and GPU utilization.
  + Abstracted infrastructure for optimal resource utilization
  + Simple scale-out architecture from a single-box router of 4 Tb/s to the world’s largest router of 691 Tb/s **-** Independent scaling of control and data planes
* Modular containerized software:
  + Individually containerized modules – promotes true distributed control and data planes with inherent n+n redundancy
  + Zero downtime and performance degradation – through independent operation, maintenance, and scaling of control and data planes
  + Individual module updates – with no impact on other active modules
* Multiple network services on shared infrastructure (“Any service, any port”):
  + Rich modular network service offering on shared infrastructure (core, aggregation/ peering, edge, access, data center interconnect (DCI), cable
  + AI-fabric use case, with a single Ethernet hop and optimal performance, at any scale.
  + Flexible architecture – runs any network function on any hardware element
  + One-time hardware certification for all network layers
  + Cloud-native routing protocols – reinvented to take full advantage of the disaggregated architecture **-** Containerized 3rd party VNF/CNF for telco edge/edge cloud
* Open networking ecosystem:
  + First to support the OCP-DDC model
  + Supports a rich and growing number of DDC-compliant hardware components

Runs on any standard COTS x86 server or virtual machine (VM)

* + Standard routing protocol stack for interoperability with legacy equipment
  + Standardized northbound interfaces (open APIs, Yang/Openconfig models, CLIs, SNMP)
  + Multi-vendor support driving innovation and vendor lock-in avoidance
* Built-in orchestration and management application:
  + Abstracted as a single router/switch entity
  + Enables unprecedented visibility into internal attributes of the distributed chassis for
  + advanced network troubleshooting
  + Zero-touch provisioning for fast, automatic cluster bring-up and repair
  + Automated system life cycle management (of hardware, software, and applications)
  + Automatic cluster extension
  + Smooth one-click firmware and software download and upgrade
  + Fault/performance monitoring with advanced analytics
  + Granular visibility with an intuitive centralized user interface (displaying hardware, software, and interconnections)

# SUPPORTED CLUSTERS



# SUPPORTED PLATFORMS

**Standalone**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Model ODM** | | **ODM Model** | **Chipset** | **Port Config** | **Ext. TCAM Size** | | |
| NCP-10CD UfiSpace | | S9700-23D | Broadcom Jericho2 (BCM88690) | 10x400G + 13x400G  (Fabric) |  |   2 RU | |
| Delta  Networks | | AGCXD40S | Broadcom Jericho2 (BCM88690) | 40x100G + 13x400G  (Fabric) |  |   2 RU | |
| NCP-40C UfiSpace | | S9700-53DX | Broadcom Jericho2 (BCM88690) | 40x100G + 13x400G  (Fabric) |  |   2 RU | |
| Edge-Core | | AS7926-40XKFB | Broadcom Jericho 2 (BCM88690) | 40 x 100G QSFP28 +  13 x 400G QSFP-DD |  |   2 RU | |
| NCP-36CD-S  UfiSpace | | S9700-76D | Broadcom Jericho 2C+ (BCM88850) | 32x400G + 40x400G  (Fabric) |  |  2 RU | |
| NCP-64X12C-S  UfiSpace | | S9701-82DC | Broadcom Jericho 2c (BCM88802) | 64x1/10/25G +  12x100G + 6x400G  (Fabric) |  |  2 RU | |
| **CLUSTERS (DDC MODEL)** | | |  |  |  | | |
| **Model** | **ODM** | **ODM Model** | **Chipset** | **Port Config** | **Ext. TCAM Size** | | |
| NCC | HPE | 867959-B21 (DL360  Intel Xeon  Gen10) | | 2x 100G NIC | 1 RU | | |
| 868703-B21 (DL380  Intel Xeon  Gen10) | | 2x 100G NIC | 2 RU | | |
| Dell | PowerEdge R640  Intel Xeon  XL Server | | 2x 100G NIC | 1 RU | | |
| PowerEdge R740  Intel Xeon  XL Server | | 4 x 100G (2xNIC) | 2 RU | | |
| NCF-48CD | UfiSpace | Broadcom Ramon  S9705-48D-4  (BCM88790) | | 48x400G (Fabric) | 2 RU | | |
| Delta  Networks | Broadcom Ramon  AGCC048  (BCM88790) | | 48x400G (Fabric) | 2 RU | | |
| NCM | Edge-Core | Broadcom Qumran-  5916-54XL-OT  MX (BCM88375) | | 48x1/10G + 6x40/100G | | | 1 RU |
| NCP-10CD | UfiSpace | Broadcom Jericho2  S9700-23D-J  (BCM88690) | | 10x400G (BO: 40x100)   + 13x400G (Fabric) | | | 2 RU |
| NCP-40C | Delta  Networks | Broadcom Jericho2  AGCXD40S  (BCM88690) | | 40x100G + 13x400G   (Fabric) | | | 2 RU |
| UfiSpace | Broadcom Jericho2  S9700-53DX-J  (BCM88690) | | 40x100G (BO: 80x10) +   13x400G (Fabric) | | | 2 RU |

COR550-AS7926- Broadcom Jericho 2 40x100G (BO: TBD) + 

Edge-Core 2RU

40XKFB (BCM88690) 13x400G (Fabric)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| NCP-36CD-S 32x400G (BO:  Broadcom Jericho  UfiSpace S9700-76D 128x100) + 40x400G  2C+ (BCM88850)  (Fabric) | | | | | |  2 RU |
| NCP-64X12C-S 64x1/10/25G +  Broadcom Jericho 2c  UfiSpace S9701-82DC 12x100G + 6x400G  (BCM88802)  (Fabric) | | | | | |  2 RU |
| **CABLES**  **Data Rate** | | **Type** | **Reach/Length** | **NIF** | **Fabric IF** | **Ctrl IF** |
| 40G (4x10G) | | 4 to 1 Breakout | Up to 10km |  |  |  |
| 100G | | Breakout Cables | 500m |  |  |  |
| 400G (4x100G) | | 4 to 1 Breakout | Up to 10km |  |  |  |
| 100G | | DAC | Up to 2m |  |  |  |
| AOC | 7m |  |  |  |
| 400G | | DAC | Up to 1.5m |  |  |  |
| AEC | Up to 5m |  |  |  |
| AOC | Up to 100m |  |  |  |
| **OPTICAL TRANSCEIVERS Type Data Rate** | | | **Type** | **Reach/Length** | **NIF** | **Ctrl IF** |
| Optical  Transceivers | 1G | | 1000Base-T | 100m |  |  |
| 10G | | SR | 400m |  |  |
| LR | 10km |  |  |
| 40G (4x10G) | | LR | 10km |  |  |
| 100G | | SR4 | 100m |  |  |
| CWDM4 | 2km |  |  |
| LR4 | 10km |  | () |
| DR1 | 500m |  |  |
| ER4 | 40km |  |  |
| FR1 | 2km |  |  |
| ZR4 | 80km |  |  |
| 400G | | FR4 | 2km |  |  |
| LR4 | 10km |  |  |
| 400G (4x100) | | DR4 | 500m |  |  |

**Type Data Rate Type Reach/Length NIF Ctrl IF**

## DR4+ LR4

km

2



km

2





Coherent Optics 400G ZR+ Up to 600 km

|  |  |  |
| --- | --- | --- |
| **DNOSTM**  Configuration and  Management | **TECHNICAL SPECIFICATIONS**  DHCP  Dynamic NACM w/LDAP  Embedded Event Manager (EEM)  NETCONF / YANG  NTP  Open config  PCAP control plane capture  Rest API | SSHv2  Static NACM  Syslog  TACACS+/RADIUS AAA  Telnet  Zero-touch provisioning |
| Interfaces | 100G to 10G breakout (NCP-40C)  400G to 100G breakout (NCP-10CD)  400G to 100G breakout (NCP-36CD-S)  Carrier-delay  Dampening | LFS\*RFS  Local Port-mirroring  Mix-bundle speed (100G/400G)  Mix-bundle speed (10G/100G)  Native 100/400G PHY  QinQ (L3 Interface) |
| Layer2 | EFM (Ethernet in the First Mile) IEEE 802.1q  Link Aggregation Control Protocol (LACP) | Link Layer Discovery Protocol (LLDP)  Load balancing based on L2-L4 |
| Life Cycle  Management | Modular ONIE replacement  Cluster Abstraction Layer (formerly Golden Image)  Modular BaseOS update | Modular Firmware update  Modular CAL (formerly GI) update |
| MPLS | BGP Labeled-Unicast IPv4 (BGP-LU)  BGP Labeled-Unicast IPv6 (6PE)  BGP Link-state (BGP-LS)  IS-IS SR-TE Microloop avoidance (Ipv4)  IS-IS TE w/ Multi-instance  LDP  OSPFv2 TE (Traffic Engineering)  OSPFv2 SR | PCEP (RSVP)  PCEP (SR)  RSVP Fast Reroute  RSVP-TE  RSVP-TE secondary path (backup)  Segment Routing MPLS (SR-MPLS)  Segment Routing TE (SR-TE) SR-TE Static ODN |
| Multicast | MoFRR MSDP |  |

|  |  |  |
| --- | --- | --- |
| OAM and SLA Management | BFD  Micro-BFD | MPLS OAM TWAMP |
| Quality of Service | Classification  Egress Hierarchical shaping  Ingress Hierarchical policer (Port+Subinterface) | Multi Queue Schedulers Per-port / VLAN shaping  Uniform QOS Multicast/Unicast |
| Resiliency and High Availability | BGP Alternate-Path (fast-reroute)  BGP NSR & Graceful Restart  BGP PIC Core/Edge  Fast Reroute (FRR)  IS-IS - Graceful Restart  IS-IS LFA (fast-reroute)  IS-IS NSR  IS-IS SR LFA | LDP Graceful Restart  LDP NSR  OSPF Graceful Restart  OSPFv2 LFA (IP-FRR)  Multicast PIM Graceful Restart  Multicast PIM NSR  Redundant Controller NCC (Hotstandby)  RSVP NSR |
| Routing Stack | BGP (IPv4/IPv6)  BGP Route Reflector  BGP RPKI  BGP RT-C (Route-Constraints)  ECMP 32 paths | IS-IS  IS-IS Level-1  OSPFv2, OSPFv3  RIB Groups  Static Routing |
| Security | Access lists (L3/L4)  BGP Flowspec IPv4/IPv6  Control Plane ACL  Control Plane Rate Limit | Control Protocol Authentication (md5)  Routing policies uRPF |
| Services | L3VPN BGP MPLS  L3VPN PE-CE BGP  L3VPN PE-CE Static Route  Layer2 Local Cross Connect | VPWS Flow-Aware Transport (FAT)  VPWS using LDP (Martini) |
| Telemetry | BGP BMP  Flow Monitoring | gRPC SNMP v2/v3 |
| Timing | SyncE on NCP3 Standalone |  |

# DNOR® TECHNICAL SPECIFICATIONS

|  |  |
| --- | --- |
|  | TACACS+/RADIUS AAA |
| **Network CloudTM Orchestration** |  |

**DNOR Supported Features**

Configuration and Management

NETCONF / YANG

REST API

Syslog

Resiliency and High Availability

Automatic Data Backups

Automatic Server Failure Detection

Redundant Server (Hot

-

standby)

Security

HTTPS

Automatic and graceful Scale-up/down

Element Configuration Management

Life Cycle Management One-Touch Firmware Upgrade for White boxes

One-Touch Software Upgrade for containers & Base-OS

Zero

-

Touch Provisioning

Multi

-

layer Topology view for Hardware, Software and

Connectivity

Scheduled Task Manager

Alarm Management

Network Cloud Operations Alarm & Fault Correlation

Automatic Root Cause Analysis

Live/History Statistics & Counters Dashboards

Online Debug & Trace Workspace

Dashboard for CxO with Live/History Statistics & Counters

Network KPI and Analytics Alarm Management

|  |  |
| --- | --- |
|  | Online Debug & Trace Workspace |

## ABOUT DRIVENETS®

DriveNets helps Communications Service Providers (CSPs) take advantage of the greatest demand surge in Telco history, substantially growing their profitability by changing their technological and economic models. DriveNets' solution - Network CloudTM changes the traditional networking architecture that has been in place for the past twenty years by adapting the architectural model of hyperscalers to Telco-grade networking. Network Cloud is a cloud-native software that runs over standard white boxes, radic ally simplifying the network's operational model, and offering Telco- scale performance at a much lower cost. For more infomation, visit us a[t www.drivenets.com](http://www.drivenets.com/)



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