

Dell Telecom Infrastructure Blocks for Red Hat r4.0

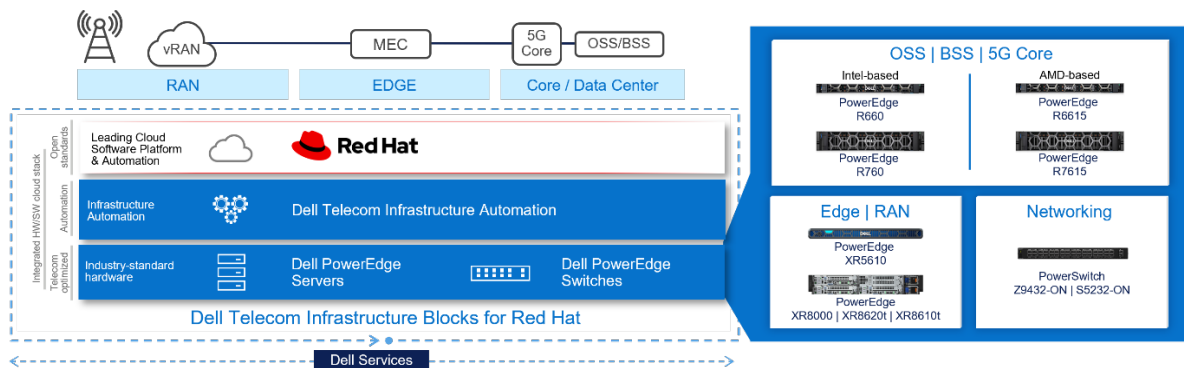
Featuring Red Hat® OpenShift® Container platform for cloud-native 5G core and RAN networks.

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The core and RAN are critical to 5G networks. Dell Technologies, in concert with Red Hat, has developed an integrated, validated, and automated solution that enables CSPs to transition seamlessly from a vertical proprietary architecture to a horizontal, unified cloud environment in their core and extend that architecture to RAN deployments for Red Hat® OpenShift® deployments. Dubbed Dell Telecom Infrastructure Blocks for Red Hat, these engineered systems deliver a complete hardware and software stack optimized for 5G OSS, BSS, core, edge and RAN workloads.

Telecom Infrastructure Blocks for Red Hat are pre-integrated, pre-validated, purpose-built engineered system of hardware and software designed to support the deployment and lifecycle management of Red Hat OpenShift management and workload clusters on bare metal running 5G core workloads in national and regional data centers. They also extend that management to RAN edge environments, enabling zero touch deployment and orchestration of bare-metal hardware. Dell Telecom Infrastructure Blocks for Red Hat represent the simplest, fastest, and safest way for communications service providers (CSPs) to build and expand their cloud native network from core to RAN.



What is in Telecom Infrastructure Blocks for Red Hat

In a the 5G telco cloud, Red Hat OpenShift core, distributed core and RAN management and workload clusters are built using Telecom Infrastructure Blocks for Red Hat. The cloud environment configurations are shown in the following diagram.

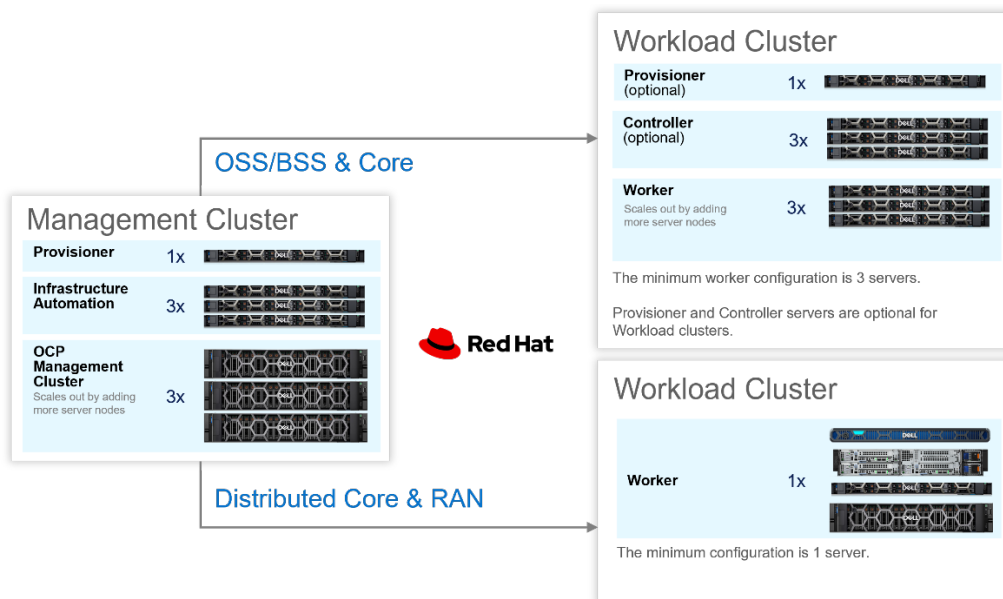


Figure 2: Consult your Dell account team for design guidance on cluster sizing.

Note: Regarding maximums:

- The maximum configuration is 504 servers per workload cluster. Design and sizing required.
- For OpenShift edge and RAN workload clusters, one (1) Red Hat Advanced Cluster Management for Kubernetes (ACM) can manage a maximum of 3500 Single Node OpenShift. Design and sizing required.

Infrastructure Blocks for Red Hat Components

5G Core

There are five (5) types of nodes that are used to build the Management and Workload 5G core cloud clusters of Infrastructure Blocks for Red Hat. They are the Provisioner, Automation, Red Hat OpenShift Container Platform (OCP) Management Cluster, Controller and Worker Nodes. Each node has all the hardware resources and Red Hat Network Platform Sustaining Subscription (NPSS) software licenses needed to build and scale out the management and workload cloud. Each Infrastructure Block also offers various choices for flexible configuration.

5G Core Components and Configuration Quick Links		
Components	Configuration Options Quick Links	Description
Provisioner Infrastructure Nodes	<ul style="list-style-type: none">• PowerEdge R660• PowerEdge R650• PowerEdge R6615• PowerEdge R7615	Provisioner Infrastructure Node come with Red Hat Enterprise Linux factory installed and includes Right to Manage licenses for Dell Technologies Infrastructure Automation Suite and NPSS Red Hat Enterprise Linux Subscription. The Provision Nodes are responsible for cluster management related tasks. They run the required auxiliary services to bring up the cluster.
Automation Infrastructure Nodes	<ul style="list-style-type: none">• PowerEdge R660• PowerEdge R650• PowerEdge R6615• PowerEdge R7615	Automation Infrastructure Nodes come with Red Hat Enterprise Linux factory installed and include Right to Use licenses for Dell Telecom Infrastructure Automation Suite and NPSS Red Hat Enterprise Linux Subscription.
OpenShift Container Platform Management Cluster	<ul style="list-style-type: none">• PowerEdge R760• PowerEdge R660• PowerEdge R750• PowerEdge R6615• PowerEdge R7615	OCP Management Cluster is a three (3) node hyperconverged OCP cluster that will consist of controller/worker/storage node. This node also contains ACM that manages multiple OCP clusters. For licensing, please see the Controller and Worker Node below:
Controller Infrastructure Nodes	<ul style="list-style-type: none">• PowerEdge R660• PowerEdge R650• PowerEdge R6615• PowerEdge R7615	The Controller Infrastructure Nodes include Right to Manage licenses for Dell Technologies Infrastructure Automation Suite. The Cluster Controller which is constructed from three Controller Infrastructure Blocks manages the workloads and schedules them across compute node within the cluster. Kubernetes core components like etcd, API, scheduler etc. are running inside Cluster Controller.
Worker Nodes	<ul style="list-style-type: none">• PowerEdge R660• PowerEdge R760• PowerEdge R750• PowerEdge R6615• PowerEdge R7615	The Worker Nodes include Right to Manage licenses for Dell Technologies Infrastructure Automation Suite and Red Hat software (incl. NPSS OpenShift Data Foundation Subscription as optional). Worker nodes can be used for both compute or storage.

Distributed 5G Core and RAN

There are five (5) types of Telecom Infrastructure Blocks for Red Hat that are used for the Distributed Core and RAN deployments. They are the Provisioner, Automation, OCP Management Cluster, Controller and Worker Infrastructure Blocks. Each Infrastructure Block has all the hardware resources and software licenses needed to build out and manage edge and RAN cloud environments. Each Infrastructure Block also offers various choices for flexible configuration.

Distributed Core* and RAN** Components and Configuration Quick Links		
Components	Configuration Options Quick Links	Description
Provisioner Infrastructure Nodes	<ul style="list-style-type: none"> PowerEdge R660 PowerEdge R650 PowerEdge R6615 PowerEdge R7615 	Provisioner Infrastructure Node come with Red Hat Enterprise Linux factory installed and includes Right to Manage licenses for Dell Technologies Infrastructure Automation Suite and NPSS Red Hat Enterprise Linux Subscription. The Provision Nodes are responsible for cluster management related tasks. They run the required auxiliary services to bring up the cluster.
Automation Infrastructure Nodes	<ul style="list-style-type: none"> PowerEdge R660 PowerEdge R650 PowerEdge R6615 PowerEdge R7615 	Automation Infrastructure Nodes come with Red Hat Enterprise Linux factory installed and include Right to Use licenses for Dell Telecom Infrastructure Automation Suite and NPSS Red Hat Enterprise Linux Subscription.
OpenShift Container Platform Management Cluster	<ul style="list-style-type: none"> PowerEdge R760 PowerEdge R660 PowerEdge R750 PowerEdge R6615 PowerEdge R7615 	OCP Management Cluster is a three (3) node hyperconverged OCP cluster that will consist of controller/worker/storage node. This node also contains ACM that manages multiple OCP clusters. For licensing, please see the Controller and Worker Node below:
Controller Infrastructure Nodes	<ul style="list-style-type: none"> PowerEdge R660 PowerEdge R650 PowerEdge R6615 PowerEdge R7615 	The Controller Infrastructure Nodes include Right to Manage licenses for Dell Technologies Infrastructure Automation Suite. The Cluster Controller which is constructed from three Controller Infrastructure Blocks manages the workloads and schedules them across compute node within the cluster. Kubernetes core components like etcd, API, scheduler etc. are running inside Cluster Controller.
Worker Nodes (vCU/vDU)	<ul style="list-style-type: none"> PowerEdge XR8000 / XR8620t PowerEdge XR8000 / XR8610t PowerEdge XR5610 PowerEdge R660 (Compute) PowerEdge R760 (Compute) PowerEdge R650 (Compute) PowerEdge R750 (Compute) 	The Worker Nodes include Right to Manage licenses for Dell Technologies Infrastructure Automation Suite and Red Hat software (incl. NPSS OpenShift Data Foundation Subscription as optional). Worker nodes can be used for both compute or storage.

* The Distributed Core is defined as core workloads that run at Local Data Centers (LDCs) and or Edge locations.

** PowerEdge AMD-based servers are not offered for RAN locations.

Network Switches		
Components	Configuration Options Quick Links	Description
Dell PowerSwitch (Optional)	<ul style="list-style-type: none"> PowerSwitch S5232F-ON PowerSwitch Z9432F-ON 	<p>Dell PowerSwitch comprise Dell Technologies' latest disaggregated hardware and software data center networking solutions. The PowerSwitch S5200-ON 25/100GbE fixed switch series provide state-of-the-art, high-density 25/100GbE ports.</p> <p>The Z9432F-ON 100/400GbE fixed switch provide state-of-the art, high-density 100/400 GbE ports.</p>

Notes:

Telecom Infrastructure Blocks offer a broad range of configuration options for increased flexibility. The following configurations are representative examples of available configurations and additional options are available to support specific workload needs. All nodes follow Red Hat subscription rules.

Red Hat Network Platform Sustaining Subscription (NPSS) provides Enhanced Support with telecom grade SLAs. For information on Dell services and support offerings for telecom please [click here](#).

Depending on the server node's role (Core, Edge, RAN), some options may not be available.

Please work with your account team to select the best options based on workload and business needs.

Dell PowerEdge R660	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Chassis	<ul style="list-style-type: none"> 10 x 2.5" SAS/SATA Chassis 10 x 2.5" NVMe Chassis
Processors	<ul style="list-style-type: none"> Up to two 4th Generation Intel® Xeon® Scalable processors with up to 64 cores per processor (Gold /Platinum options)
Memory	<ul style="list-style-type: none"> Memory: Up to 64GB RDIMM, (5600 MT/s)
Storage Controller	<ul style="list-style-type: none"> Front HBA355i, HBA465i, PERC H755 or PERC H965i
NIC	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Low Profile Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Full Height Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Full Height Intel E810-2CQDA2 Dual Port 100GbE QSFP28 PCIe Full Height Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Low Profile Intel E810-CQDA2 Dual Port 100GbE QSFP28 Adapter, PCIe Full Height, 100GbE max bandwidth Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full Height Broadcom 5720 Dual Port 1GbE LOM

Dell PowerEdge R660	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
OCP NIC 3.0	<ul style="list-style-type: none"> Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto No OCP 3.0 mezzanine NIC card, Blank Filler Only
Riser	<ul style="list-style-type: none"> Config 2 and Config 3
Embedded System Management	<ul style="list-style-type: none"> iDRAC9 Datacenter 16G OpenManage Enterprise Advanced Plus
Form Factor	<ul style="list-style-type: none"> 2U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Hot-plug, Redundant Power Supply (1+1),1100/1400W Dual, Fully Redundant(1+1), 1100/1800 W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS RHEL Red Hat NPSS for Datacenter <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage Red Hat NPSS ODF Capacity Expansion Pack (256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge R650	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Chassis	<ul style="list-style-type: none"> 10 x 2.5" SAS/SATA Chassis
Processors	<ul style="list-style-type: none"> Up to two 3rd Generation Intel® Xeon® Scalable processors with up to 32 cores per processor (Gold option)
Memory	<ul style="list-style-type: none"> 32GB RDIMM , 3200MT/s
Storage Controller	<ul style="list-style-type: none"> PERC H755
NIC	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Low Profile

Dell PowerEdge R650	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
OCP NIC 3.0	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28
Riser	<ul style="list-style-type: none"> Config 0
Embedded System Management	<ul style="list-style-type: none"> iDRAC9 Datacenter 15G
Form Factor	<ul style="list-style-type: none"> 1U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Hot-plug Power Supply Redundant (1+1), 1100W/1400W Dual, Redundant(1+1), 1800 W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS RHEL Red Hat NPSS for Datacenter <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage

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Dell PowerEdge R760	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Chassis	<ul style="list-style-type: none"> 24 x 2.5" SAS/SATA Chassis 24 x 2.5" NVMe Chassis
Processors	<ul style="list-style-type: none"> Up to two 4th Generation Intel® Xeon® Scalable processors with up to 64 cores per processor (Gold/ Platinum options)
Memory	<ul style="list-style-type: none"> Up to 64GB RDIMM, (5600 MT/s)
Storage Controller	<ul style="list-style-type: none"> Front HBA355, Front PERC H755, PERC H965i, HBA465i
NIC / DPU	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Low Profile Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Full Height Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Full Height Intel E810-2CQDA2 Dual Port 100GbE QSFP28 PCIe Full Height

Dell PowerEdge R760	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
	<ul style="list-style-type: none"> Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Low Profile Intel E810-CQDA2 Dual Port 100GbE QSFP28 Adapter, PCIe Full Height, 100GbE max bandwidth Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full Height Broadcom 5720 Dual Port 1GbE LOM
OCN NIC 3.0	<ul style="list-style-type: none"> Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, OCP NIC 3.0 No OCP 3.0 mezzanine NIC card, Blank Filler Only
GPUs	<ul style="list-style-type: none"> NVIDIA L40S, PCIe, 350W, 48GB Passive, Double Wide, Full Height GPU
Riser	<ul style="list-style-type: none"> Config 2 and Config 3
Embedded System Management	<ul style="list-style-type: none"> iDRAC9 Datacenter 16G OpenManage Enterprise Advanced Plus
Form Factor	<ul style="list-style-type: none"> 2U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Hot-plug, Redundant Power Supply (1+1), 1100/1400/1800W Dual, Fault Tolerant Redundant(1+1), 1800W/1100W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS RHEL Red Hat NPSS for Datacenter <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage Red Hat NPSS ODF Capacity Expansion Pack (256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge R750	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Chassis	<ul style="list-style-type: none"> 24 x 2.5" SAS/SATA Chassis
Processors	<ul style="list-style-type: none"> Up to two 3rd Generation Intel® Xeon® Scalable processors, with up to 32 cores per processor (Gold Option)

Dell PowerEdge R750	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Memory	<ul style="list-style-type: none"> 32GB RDIMM , 3200MT/s
Storage Controller	<ul style="list-style-type: none"> PERC H755
NIC	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Low Profile
OCP NIC 3.0	<ul style="list-style-type: none"> Intel E810-XXV Dual Port 10/25GbE SFP28
Riser	<ul style="list-style-type: none"> Config 2
Embedded System Management	<ul style="list-style-type: none"> iDRAC9 Datacenter 15G
Form Factor	<ul style="list-style-type: none"> 1U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Fully Redundant (1+1),1400W/1800W Dual, Hot-plug PSU Fault Tolerant 1100W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS RHEL Red Hat NPSS for Datacenter <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage

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Dell PowerEdge R6615	
Provisioner Infrastructure Node Automation Infrastructure Node Controller Infrastructure Node Worker Node (compute/storage)	
Components	Description
Chassis	<ul style="list-style-type: none"> 10 x 2.5" SAS/SATA Chassis 10 x 2.5" NVMe Chassis
Processors	<ul style="list-style-type: none"> AMD™ EPYC 4th Generation 9004 Series with up to 84 cores per processor (9634, 9534, 9554P Options)

Dell PowerEdge R6615

Provisioner Infrastructure Node | Automation Infrastructure Node | Controller Infrastructure Node | Worker Node (compute/storage)

Components	Description
Memory	<ul style="list-style-type: none">Up to 64GB RDIMM, 5600 MT/s
Storage Controller	<ul style="list-style-type: none">PERC H965i, PERC H755, HBA465i, HBA355i
NIC	<ul style="list-style-type: none">Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Full HeightMellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Full HeightMellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Low ProfileIntel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full HeightBroadcom 5720 Dual Port 1GbE LOM
OCF NIC 3.0	<ul style="list-style-type: none">Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No CryptoIntel E810-XXV Dual Port 10/25GbE SFP28Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 AdapterNo OCP 3.0 mezzanine NIC card, Blank Filler Only
Riser	<ul style="list-style-type: none">Riser Config 2, 3 (Gen 5)
Embedded System Management	<ul style="list-style-type: none">iDRAC9 Datacenter 16G
Form Factor	<ul style="list-style-type: none">1U Rack
Power Supplies	<ul style="list-style-type: none">Dual, Hot Plug, Power Supply Fully Redundant (1+1), 1100W/1400W/1800WDual, Hot-plug, Redundant Power Supply (1+1), 1100W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none">Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none">Red Hat NPSS RHELRed Hat NPSS for Datacenter<ul style="list-style-type: none">Red Hat OpenShift Container PlatformRed Hat Advanced Cluster Management for KubernetesRed Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph StorageRed Hat NPSS ODF Capacity Expansion Pack(256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge R7615

Provisioner Infrastructure Node | Automation Infrastructure Node | Controller Infrastructure Node | Worker Node (compute/storage)

Components	Description
Chassis	<ul style="list-style-type: none"> 24 x 2.5" SAS/SATA Chassis 16 x 2.5" NVMe Chassis
Processors	<ul style="list-style-type: none"> AMD EPYC™ 4th Generation 9004 Series with up to 96 cores per processor (9654P, 94545P, 9554P Options)
Memory	<ul style="list-style-type: none"> Up to 64GB RDIMM, 5600 MT/s
Storage Controller	<ul style="list-style-type: none"> PERC H755, H965i, HBA465i, HBA355i
NIC	<ul style="list-style-type: none"> Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Full Height Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Low Profile Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Full Height Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Low Profile Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full Height Broadcom 5720 Dual Port 1GbE LOM
OCN NIC 3.0	<ul style="list-style-type: none"> Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto , OCP NIC 3.0 Nvidia ConnectX-6 Dual Port 100 GbE QSFP56 Adapter Intel E810-XXV Dual Port 10/25GbE SFP28 Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter No OCP 3.0 mezzanine NIC card, Blank Filler Only
Riser	<ul style="list-style-type: none"> Riser Config 1, 3 or 5 (Gen5)
Embedded System Management	<ul style="list-style-type: none"> iDRAC9 Datacenter 16G
Form Factor	<ul style="list-style-type: none"> 2U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Hot-Plug, Power Supply Redundant (1+1), 1100W/1400W/1800W Dual, Fully Redundant (1+1), Hot-Plug Power Supply 1400W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS for Datacenter <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage Red Hat NPSS ODF Capacity Expansion Pack(256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge XR8000r chassis with XR8620t compute sled

Worker Node (vCU/vDU) (Distributed Core and RAN)

Components	Description
Chassis	<ul style="list-style-type: none">PowerEdge XR8000r
Processors	<ul style="list-style-type: none">One 4th Generation Intel® Xeon® Edge Enhanced Processor (vRAN boost) with up to 32 cores (Gold Option)
Memory	<ul style="list-style-type: none">Up to 64GB RDIMM, (5600 MT/s)
NIC	<ul style="list-style-type: none">Intel E810-CQDA2T GG1 Dual Port 100GbE QSFP28 Precision Timing Adapter with GNSS, PCIe Full HeightIntel E810-CQDA2T G1 Dual Port 100GbE QSFP28 Precision Timing Adapter, PCIe Full HeightIntel E810-CQDA2T GG1 Dual Port 100GbE QSFP28 Precision Timing Adapter with GNSS, PCIe Full HeightMellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Full HeightIntel E810-2CQDA2 Dual Port 100GbE QSFP28, PCIe Full HeightIntel E810-XXVDA4T G1 Quad Port 10/25GbE SFP28 Precision Timing Adapter, PCIe Full HeightIntel E810-CQDA2 Dual Port 100GbE QSFP28 Adapter, PCIe Full Height, 100GbE max bandwidthIntel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full HeightIntel E810-XXVDA4TGG1 Quad Port 10/25GbE SFP28 Precision Timing Adapter with GNSS, PCIe Full Height
GPU	<ul style="list-style-type: none">NVIDIA L4, PCIe, 72W, 24GB
Riser	<ul style="list-style-type: none">Riser Config 0, 1
Embedded System Management	<ul style="list-style-type: none">iDRAC9, Datacenter 16G
Form Factor	<ul style="list-style-type: none">2U Rack
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none">Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none">Red Hat NPSS for Edge/RAN<ul style="list-style-type: none">Red Hat OpenShift Container PlatformRed Hat Advanced Cluster Management for KubernetesRed Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph StorageRed Hat NPSS ODF Capacity Expansion Pack(256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge XR8000r chassis with XR8610t compute sled

Worker Node (vCU/vDU) (Distributed Core and RAN)

Components	Description
Chassis	<ul style="list-style-type: none"> PowerEdge XR8000r
Processors	<ul style="list-style-type: none"> One 4th Generation Intel Xeon Edge Enhanced Processor (vRAN boost) with up to 32 cores (Gold Options)
Memory	<ul style="list-style-type: none"> Up to 64GB RDIMM, (5600 MT/s)
NIC	<ul style="list-style-type: none"> NVIDIA ConnectX-6 LX Dual Port 25GbE SFP28 Network Adapter, Full Height (Dell FW) - DSS RESTRICTED Intel E810-XXVDA4TGG1 Quad Port 10/25GbE SFP28 Precision Timing Adapter with GNSS, PCIe Full Height Intel E810-CQDA2T GG1 Dual Port 100GbE QSFP28 Precision Timing Adapter with GNSS, PCIe Full Height Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Full Height Intel E810-2CQDA2 Dual Port 100GbE QSFP28, PCIe Full Height Intel E810-CQDA2 Dual Port 100GbE QSFP28 Adapter, PCIe Full Height, 100GbE max bandwidth Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full Height Intel E810-XXVDA4TGG1 Quad Port 10/25GbE SFP28 Precision Timing Adapter with GNSS, PCIe Full Height
Riser	<ul style="list-style-type: none"> Riser Config 3
Embedded System Management	<ul style="list-style-type: none"> iDRAC9, Datacenter 16G
Form Factor	<ul style="list-style-type: none"> 1U Rack
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS for Edge/RAN <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage Red Hat NPSS ODF Capacity Expansion Pack(256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerEdge XR5610

Worker Node (vCU/vDU) (Distributed Core and RAN)

Components	Description
Chassis	<ul style="list-style-type: none"> Front Port Access Chassis with up to 4 (SATA/NVMe Options)
Processors	<ul style="list-style-type: none"> One 4th Generation Intel® Xeon® Scalable processor with up to 32 cores per processor (Gold Options)
Memory	<ul style="list-style-type: none"> Up to 64GB RDIMM, (5600 MT/s)
NIC	<ul style="list-style-type: none"> Intel E810-CQDA2T GG1 Dual Port 100GbE QSFP28 Precision Timing Adapter with GNSS, PCIe Full Height Nvidia ConnectX-6 Lx Dual Port 10/25GbE SFP28, No Crypto, PCIe Full Height Intel E810-XXV Dual Port 10/25GbE SFP28 Adapter, PCIe Full Height Intel E810-CQDA2T G1 Dual Port 100GbE QSFP28 Precision Timing Adapter, PCIe Full Height Mellanox ConnectX-6 DX Dual Port 100GbE QSFP56 Network Adapter, Full Height Intel E810-2CQDA2 Dual Port 100GbE QSFP28, PCIe Full Height Intel E810-XXVDA4T G1 Quad Port 10/25GbE SFP28 Precision Timing Adapter, PCIe Full Height Intel E810-CQDA2 Dual Port 100GbE QSFP28 Adapter, PCIe Full Height, 100GbE max bandwidth Intel E810-XXVDA4 Quad Port 10/25GbE SFP28 Adapter, PCIe Full Height Intel E810-XXVDA4TGG1 Quad Port 10/25GbE SFP28 Precision Timing Adapter with GNSS, PCIe Full Height
Riser	<ul style="list-style-type: none"> Riser Config 0, 1 and 3 (Gen5)
Embedded System Management	<ul style="list-style-type: none"> iDRAC9, Datacenter 16G
Form Factor	<ul style="list-style-type: none"> 1U Rack
Power Supplies	<ul style="list-style-type: none"> Dual, Fully Redundant(1+1), 1100W/1400W/1800W Dual, Fault Tolerant Redundant (1+1), 1400W
Dell Software licenses (1 or 3 years)	<ul style="list-style-type: none"> Dell Telecom Infrastructure Automation Suite
Red Hat Software Subscription (1 or 3 years)	<ul style="list-style-type: none"> Red Hat NPSS for Edge/RAN <ul style="list-style-type: none"> Red Hat OpenShift Container Platform Red Hat Advanced Cluster Management for Kubernetes Red Hat NPSS for Datacenter, Red Hat OpenShift Data Foundation Essentials or Red Hat Ceph Storage Red Hat NPSS ODF Capacity Expansion Pack(256TB, 512 TB) & (1, 2, 3, 4, 5, and 10 PB)

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Dell PowerSwitch S5232F-ON

(see the [PowerSwitch S5200-ON Series Specification Sheet](#) for more details)

Features	Description
Ports	<ul style="list-style-type: none">32xQSFP28 2xSFP+
Max density	<ul style="list-style-type: none">10/25/40/50/100GbE
Switching capacity	<ul style="list-style-type: none">3.2 Tbps (6.4 Tbps full duplex)
Packet Buffer	<ul style="list-style-type: none">32 MB
Maximum Power	<ul style="list-style-type: none">635W

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Dell PowerSwitch Z9432F-ON

(see the [PowerSwitch Z9432F-ON Series Specification Sheet](#) for more details)

Features	Description
Ports	<ul style="list-style-type: none">32xQSFP56-DD 2xSFP+
Max density	<ul style="list-style-type: none">10/25/40/50/100/400GbE
Switching capacity	<ul style="list-style-type: none">25.6Tbps non-blocking (full duplex),
Packet Buffer	<ul style="list-style-type: none">132 MB
Maximum Power	<ul style="list-style-type: none">1404W

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Dell Services

Dell Technologies offers a range of services and support options to support Day 0 through Day 2 operations. While Dell Telecom Infrastructure Blocks provide an engineered system that is ready for deployment out of the box, some operators may require custom configurations to meet specific outcomes. Dell ProDeploy for Telecom Networks enables you to quickly operationalize critical network infrastructure with agility and scale. During Day 0 operations, Dell Services can work with you to develop optimized designs through custom intake that outlines requirements,

collaborate in workshops to define outcomes, and fine-tune designs for peak performance, scalability, and cost-effectiveness. Dell Services can also support Day 1 and Day 2 operations by providing tailored integration services from onsite racking and stacking of hardware and network integration, to remote installation and support, to network design and validation. This allows operators to deploy at any scale anywhere in their network. Dell Services can deliver custom configurations direct from Dell factories to streamline operator processes to meet unique requirements.

Telecom Infrastructure Blocks for Red Hat are backed by one call support for the hardware and software stack. This eliminates the need for you to determine if it is a hardware or software issue, you just call Dell. And, with Dell's carrier grade support options, operators can receive guaranteed response times of under 15 minutes and guaranteed service restoration times under four hours.*

For information on Dell services and support offerings for telecom please [click here](#).

We are open to innovation

Dell Technologies is committed to open telecom solutions, from OpenStack and Kubernetes to Open RAN. Dell Telecom Infrastructure Blocks for Red Hat allow CSPs to quickly deploy, easily manage, and seamlessly scale OpenShift clusters to support 5G Core, Edge and RAN workloads while driving cost and complexity out of the network. Dell Technologies supports each of our Infrastructure Blocks across the entire stack to eliminate finger-pointing between vendors. There is one trusted source for procurement, deployment, and lifecycle management—backed by a global supply chain and a world-class team of telecom service professionals. When it comes to building telecom clouds, nothing else stacks up to Dell Telecom Infrastructure Blocks for Red Hat.

* Availability and terms of Dell Technologies services vary by region and by product. Contact your Dell sales representative for more information.



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