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# Cisco Network Convergence System 1004

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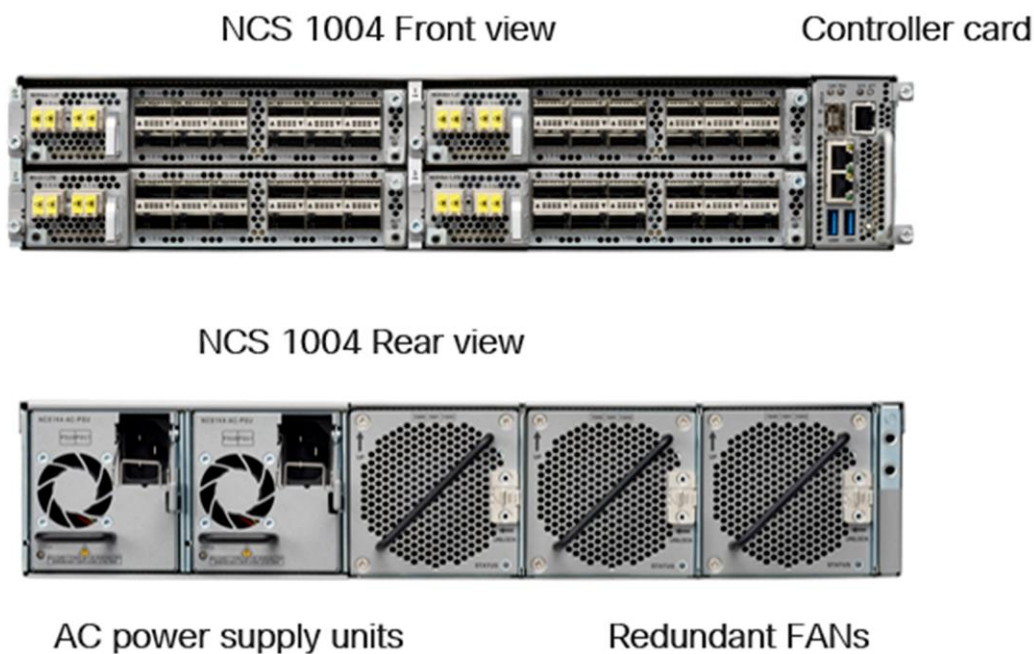
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Video traffic continues to grow rapidly. It would take more than 5 million years to watch the amount of video that will cross global IP networks each month in 2021. Every second, a million minutes of video content will cross the network. Content Delivery Networks (CDNs) will carry 71 percent of Internet traffic by 2021. Content providers will need to scale their networks at speed to keep up with the demand for more video. Networks need to be designed with “web-scale” in mind. A web-scale network needs to scale at deployment speed while being operationally simple. Network Convergence System 1004 uses state of the art silicon along with complete automation and real-time visibility to deliver a universal transponder solution that provides best-in-class performance for metro, long-haul and submarine applications while being simple to deploy and manage.

### Product overview

The Cisco NCS 1004 (Figure 1) is a 2RU system, mechanically optimized to maximize capacity at minimum space and power footprint. The system uses a Linux kernel with the 64 bit IOS XR OS in a Linux Container (LxC) and admin plane operating in a separate LxC. It encompasses carrier-class software with a number of features such as machine-to-machine APIs based on YANG data models, streaming telemetry agent for real time, granular device monitoring and also an infrastructure for 3rd party applications.

The NCS 1004 has two redundant and field replaceable AC & DC power supply units and three redundant and field replaceable fans. It also provides a field replaceable controller card (Figure 1). The NCS 1004 has one main SSD removable from CPU controller unit which is field replaceable. In addition, a local non-removable backup SSD is provided to store backup XR images and system customer configuration. Each NCS 1004 chassis provide four line card slots.



**Figure 1.**  
Cisco NCS 1004 Front and Rear Views

## Features and benefits

NCS 1004 has a front to back airflow scheme. The air inlet is at the front side of the chassis and the exhaust is on the rear side. This ensures that the airflow is not obstructed or impeded by any object as it may lead to reduced airflow in the system, causing components to operate at a higher temperature. The controller is on the front side and the PSUs and the fan units are on the rear side of the chassis. NCS1004 can host upto 4xsingle slot NCS1004 line cards, but has been designed also to accommodate 2xdouble-high line cards.

## Management

The Cisco NCS 1004 provides comprehensive management capabilities to support Operations, Administration, Maintenance, and Provisioning (OAM&P) through IOS-XR CLI, SNMP, Syslog, and XML. In addition, iPXE for automated software download and Zero Touch Provisioning (ZTP) for automated configuration download are available for simplified installation. For machine-to-machine configuration and management of NCS 1004, NETCONF, RESTCONF and gRPC transport protocols with JSON, XML and GPB encoding are provided. OpenConfig protocols for management GNMI and operations GNOI are also supported. The NCS 1004 provides a set of native YANG models as well as the ability to map into any industry standard or customer defined YANG data models. For monitoring, NCS 1004 provides a streaming telemetry feature that relies on a push mechanism to disseminate user selected PM and status information at user specified frequencies at granular 10 second intervals. This improves monitoring speed and scale compared to traditional pull based mechanisms such as SNMP. The telemetry infrastructure also allows for events such as alarms, port-state changes to be notified.

The NCS 1004 can also support third party application hosting. Such an application can be hosted in a container or docker and can perform provisioning and monitoring on the NCS 1004.

## Headless Operation

The headless operation allows for NCS 1004 data plane to operate errorless during software upgrades and when the controller card is either physically absent or in a failed state. The fault propagation will continue to operate for client and trunk failures without the presence of the controller module.

## Product Specifications

**Table 1.** Product Specifications

Feature Summary	
Software Compatibility	IOS X.R 7.0.1 or above
Physical Dimensions (NCS 1004)	Occupies 2RU and fits into 2 or 4 post 19inch, 600mm ETSI, 23inch racks. Weight: 65 pounds/29.48Kg
Maximum Power Consumption	480W
Typical Power Consumption	250W

Feature Summary	
<b>Common Units</b>	2+1 FRU FANs 2KW 40-72 Vdc DC redundant PSU 2KW 90-264Vac AC redundant PSU FRU Controller-5 ports(1 console, 2 RJ45 and 1 GE SFP management port, 2 USB3.0 with power delivery 1.8A @ 5V)
<b>Dimensions</b>	NCS1004 17.4" wide x 19" deep x 3.5" tall NCS1K4-DC-PSU 2.9" wide x 7.4" deep x 3.1" tall NCS1K4-AC-PSU 2.9" wide x 7.4" deep x 3.1" tall NCS1K4-FAN 3.3" wide x 6.9" deep x 3.2" tall NCS1K4-CNTRLR-K9 6.4" wide x 11" deep x 1.1" tall
<b>Weight</b>	NCS 1004 9.73 Kg(empty chassis) NCS1K4-DC-PSU 1.39 Kg NCS1K4-AC-PSU 1.28 Kg NCS1K4-FAN 0.8 Kg NCS1K4-CNTRLR-K9 1.08 Kg
LED	
<b>Attention LED</b>	Blue
<b>Client and DWDM port LEDs</b>	Green
<ul style="list-style-type: none"> <li>No alarms</li> <li>Minor alarms</li> </ul>	Amber
<b>Critical and Major alarms</b>	Red
<b>Fan LED</b>	Green
<ul style="list-style-type: none"> <li>All 3 FANs are present and running</li> </ul>	Red
<b>One or more FANs are absent or failed</b>	Red
<b>PSU LED</b>	Green
<ul style="list-style-type: none"> <li>2 PSUs present and operational</li> </ul>	Red
<b>2 PSUs are not fully operational</b>	Red

## Regulatory Compliance

Table 2 lists regulatory compliance information for the chassis. Note that all compliance documentation may not be completed at the time of product release. Please check with your Cisco sales representative for countries that are not listed below.

**Table 2.** Regulatory Compliance

ANSI System	ETSI System
<b>Countries and Regions Supported</b>	
<ul style="list-style-type: none"> <li>• Canada</li> <li>• United States</li> <li>• Korea</li> <li>• Japan</li> <li>• European Union</li> </ul>	<ul style="list-style-type: none"> <li>• European Union</li> <li>• Africa</li> <li>• CSI</li> <li>• Australia</li> <li>• New Zealand</li> <li>• China</li> <li>• Korea</li> <li>• India</li> <li>• Saudi Arabia</li> <li>• South America</li> </ul>
<b>Safety</b>	
<ul style="list-style-type: none"> <li>• CSA C22.2 #60950-1 - Edition 7, March 2007</li> <li>• UL 60950-1 - Edition 2, 2014</li> </ul>	<ul style="list-style-type: none"> <li>• IEC 60950-1 Information technology equipment Safety Part 1: General requirements - Edition 2, 2005 + Amendment 1 2009 + Amendment 2 2013</li> <li>• EN 60950-1: Edition 2 (2006) Information technology equipment - Safety - Part 1: General requirements + A11:2009 + A1:2010 + A12:2011 + A2:2013</li> <li>• CE Low Voltage Directive (LVD): 2014/35/EC</li> </ul>
<b>Laser</b>	
<ul style="list-style-type: none"> <li>• 21CFR1040 (2008/04) (Accession Letter and CDRH Report) Guidance for Industry and FDA Staff (Laser Notice No. 56), May 2019</li> </ul>	<ul style="list-style-type: none"> <li>• IEC 60825-1: 2014-05 Ed. 3.0 Safety of laser products Part 1: Equipment classification, requirements and users guide</li> <li>• IEC60825-2 Ed.3.2 (2010) Safety of laser products Part 2: Safety of optical fibre communication systems</li> </ul>
<b>Optical</b>	
<ul style="list-style-type: none"> <li>• ITU-T G.691</li> </ul>	<ul style="list-style-type: none"> <li>• ITU-T G.975</li> </ul>
<b>Quality</b>	
<ul style="list-style-type: none"> <li>• TR-NWT-000332, Issue 4, Method 1 calculation for 20-year Mean Time Between Failure (MTBF)</li> </ul>	

## Ordering information

Part Number	Description
<b>NCS1004=</b>	Network Convergence System 1004 4 line card slots
<b>NCS1K4-SYS</b>	NCS1004 Assemble To Order
<b>NCS1K4-CNTRLR-K9=</b>	Network Convergence System 1004 Controller
<b>NCS1K4-FAN=</b>	Network Convergence System 1004 Fan
<b>NCS1K4-AC-PSU=</b>	Network Convergence System 1004 AC Power Supply Unit
<b>NCS1K4-AC-PSU-CBL=</b>	Network Convergence System 1004 AC Power Supply Cable
<b>NCS1K4-AC-CBL-EU=</b>	Network Convergence System 1004 AC Power Supply Cable EU
<b>NCS1K4-C21-C14-2M=</b>	NCS1004 power cord C21-C14 2 meter long
<b>NCS1K4-CBL-4.25M=</b>	NCS1004 power cord C21-C14 4.25 meter long
<b>NCS1K4-DC-PSU=</b>	Network Convergence System 1004 DC Power Supply Unit
<b>XR-NCS1K4-721K9</b>	NCS 1004 IOS XR Software Release 7.2.1 RTU- USB key
<b>SF-NCS1K4-R721K9</b>	NCS 1K - R7.2.1 SW, NCS1004-No RTU
<b>NCS1K4-FLTR-ASL=</b>	Mechanical assembly for NCS1004 air filter
<b>NCS1K4-FLTR=</b>	Network Convergence System 1004 Air Filter
<b>NCS1K4-BRKT-19=</b>	NCS1004 mounting brackets for 19 inch rack

## Warranty

The following are the warranty:

- Hardware warranty duration: 5 years
- Software warranty duration: 1 year
- Hardware replacement, repair, or refund procedure: Cisco or our service center will use commercially reasonable efforts to ship a replacement part for delivery within 15 working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products may vary depending on customer location.

Your formal warranty statement appears in the Cisco Information Packet that accompanies your Cisco product.

Product warranty terms and other information applicable to Cisco products are available at:

<https://www.cisco.com/go/warranty>.

## Cisco environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>

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