



DESIGN IN INDIA, MAKE IN INDIA, INNOVATE FOR WORLD

NRP-12™ IP/MPLS ROUTING/SWITCHING PLATFORM

Powered by NiOS™

*Nivetti delivers Next Generation Networking
Products based on its revolutionary Network
Operating System – NiOS™*



Up to 960 Gbps Switching
Capacity to ensure non-
blocking performance

Powered by the
revolutionary NiOS™
Network Operating System –
India's first and only fully
indigenously developed NOS

Highly Available and Fully
Redundant System with no
single point of failure

Multi Core supported
Control Plane processing &
NiOS™ innovation ensures
rapid convergence in event
of network topology changes

Complete separation of
Control and Data Path

NIVETTI SYSTEMS

PES South Campus
Electronics City, Hosur Road
Bangalore - 560100,
Karnataka INDIA.

www.nivettisystems.com



NRP-12 Router/Switch

Next Generation Networks are being designed to do more than merely connect devices – they are being designed to provide guaranteed services. A guaranteed service delivered to a business customer accessing time critical inventory information may have different characteristics than a guaranteed service delivering e-lessons to an eager student in a remote village. But the underlying network elements, that enable guaranteed services, need to have the smarts to make this happen – dynamically, efficiently and cost-effectively. Web 2.0 services are designed to amaze its users with rich textual and audio/visual experience. Next Generation Networks designed with guaranteed services in mind take advantage of not just the advances in technologies (e.g. 4G/LTE, G-PON, 40G/100G Metro/Long-Haul) but also flexible service architecture like SDN (Software Defined Networking) that allow seamless delivery of services over various last-mile medium (e.g. 3G/4G, xDSL/FTTX, Wi-Fi) to a variety of devices (e.g. PC, Smartphone, Tablet, TV).

Nivetti aims to deliver a wide portfolio of products infused with its revolutionary Network Operating System - NiOS™. NiOS™ is a bottoms-up approach to building a reliable, secure, highly-available, modular and flexible software operating system. NRP Family of IP/MPLS Edge Routers, powered by NiOS™, are designed as a Convergence Platform to connect various circuit/legacy technologies (e.g. T1/E1, T3/E3, STM1/4/16) and packet technologies (e.g. 1G/10G/40G Ethernet) to a Packet Core Network.



Network Processor based distributed Data Plane ensures future proof design capable of supporting evolving requirements

Ultra low latency Switch Fabric provides industry leading forwarding latency performance

Rich QoS feature set to ensure low latency and prioritization for real-time services like voice, video

Intuitive management and monitoring capability via CLI, EMS, SNMP or XMP

Extensive L2/L3 protocol support to provide maximum flexibility connecting networks

Green Technology Industry leading byte forwarded to wattage ratio

NRP Architecture

Chassis Design:

- Fully Redundant 1:1 or, 1+1 carrier grade systems that can be configured with hot-swappable capabilities
- Distributed Processing architecture to allow unprecedented scaling of ACL rule and flows with slot cards

Backplane Design:

- High Capacity Passive Backplane
- 80Gbps per slot dual star redundant connectivity for Data Path Connections
- Dual Star topology for Control Path Connections
- Separate I2C connections for system maintenance

Distributed Architecture:

- Forwarding table distributed on each user slot for optimal performance, industry leading low latency and 'pay as you grow' model.

NRP-12 Applications

Convergence Platform:

- Connect legacy Branch Offices, Wireless Backhaul Traffic (T1/E1, T3/E3) to a packet switched core network
- Provide Routed Connections to packet switched locations (e.g. Wi-Fi Hotspots)

Service Provider & Enterprise Edge Routing:

- High Density 10G and 40G Port Aggregation
- Secure, Scalable and high-availability software and hardware to provide uninterrupted services

Enterprise Core Router and Switch:

- High Density Gigabit/10G Core switch with high-availability features
- Multi-Service core Router with ability to support Legacy T1/E1, T3/E3, STM-1 and Gigabit Ethernet/ 10G high-speed packet interfaces

NiOS™ Features

	Features
Management	CLI, SSHv1,v2, HTTPS, XMP/XML APIs, SNMPv2, v3, RMON, IPFIX, EzEMS™ (Orchestration) RADIUS, TACACS*, ZTP AAA Policy Domains, Syslog
Layer 2	VLAN (802.1Q, 802.1p), STP,RSTP,MSTP Link Aggregation (802.1ax), LACP(802.3ad), PPP GVRP/MVRP LLDP/LLDP-MED DHCP Snooping/Relay 802.1x ERPS G.8032 Q-in-Q(VLAN Stacking) EVC, LFA
Layer 3 (IPv4, IPv6)	RIPv1,v2, OSPFv2,OSPFv3, Graceful Restart IS-IS ARP, Proxy ARP RIP-NG BFD Dual Stack, BGP4, MP-BGP4, Graceful Restart ECMP DHCP Relay Policy Based Routing (PBR) MPLS, RSVP TE, LDP, L2 VPN, L3 VPN FRR

Category	Features
Quality of Service (QoS)	DSCP, IP Precedence, 802.1Q Multi-field L2 to L4 classification & Marking Up to 8 priorities queues per interface Policing – TCM, SR/DR LB, Shaping and Scheduling – SPQ, WFQ, CIR-EIR RED,WRED (Congestion Control) IntServ RSVP, CAC DOS/DDOS protection
Multicast	IGMP v2/v3, IGMP Proxy and Snooping, PIM SM/SSM/DM MLDv1,v2
Advanced Features	Virtual bridges Virtual routers, VRRP NAT
Timing	NTP,SNTP 1588 v2 PTP, SyncE
Security	802.1x Port Auth MAC Security L2-L4 ACLs, Time Based ACLs MD5 & SHA-1 Authentication DAI (Dynamic ARP inspection) BC, UC and MC Storm Control Control Plane Policing URPF,PKI

NRP-12 Slot Card options

Module	Specifications
Chassis	NRP-12, 12 User Slots
Controller Card	2 x 10/100/1000 Ethernet (2+2 RJ-45/SFP Combo), 2 x USB, 1 Console(2 GB, 4 GB, 8 GB RAM options)
Switch Fabric Card	- 960 Gbps, 720 MPPS
T1/E1 Card	- 8 Port Channelized/Unchannelized
STM-1 Card	- 4 X STM-1 SFP Port
Gigabit Ethernet Cards	- 4+4 10/100/1000 Gigabit Ethernet (RJ-45/SFP Combo) - 16 X Gigabit Ethernet Base-T - 16 X Gigabit Ethernet SFP
10Gigabit Ethernet Card	- 2 X 10 Gigabit Ethernet (SFP+) - 4 X 10 Gigabit Ethernet (SFP+)

NRP-12 Series Specification

Parameter	NRP-12
Bandwidth	960 Gbps
MPPS	720 MPSS Switching
IP Routes	128K IPv4, 64K IPv6
MAC Table	96K
VLANs/SVI	4K
Multicast Groups	4K
VRF	512
ACL/Classification Rules	32K per slot
Flow Entries	32K per slot
Jumbo Frame Size	9K
Dimensions (HxWxD)inch	14 X 17.2 X 17
Maximum Weight	30 Kg
Mounting	19 inch Rack Mount
Power	-40V to 57V DC or, 110V to 260V AC
Operating Temperature	Commercial: 0 to +55°C, Industrial: -10°C to +65°C
Humidity	5% to 95% Non-Condensing
Altitude	3000m above MSA
Safety	IEC 60950
EMI/EMC	CISPR 22 A complaint IEC / EN 61000-4-2 IEC / EN 61000-4-3 IEC / EN 61000-4-4 IEC / EN 61000-4-5 IEC / EN 61000-4-6 IEC / EN 61000-4-8