

# RAPTOR® (iMX950)

## Guideform Specification

The iS5Com iMX950 RAPTOR® shall meet the following specifications:

### **Hardware**

**Layer 2/Layer 3 Switching Ports:** The device shall support 8, 16, or 24 10/100/1000 MB ethernet ports. These shall be selectable, in blocks of 8, to be copper RJ45, or SFPs. Additionally, the device shall also support 4 ports capable of operation at 1 or 10GB, with SFP interfaces.

**HSR/PRP ports:** The device shall support 2 Redboxes or 1 Quadbox per HSR/PRP module. The device shall support up to 2 HSR/PRP modules.

**Power Over Ethernet (POE) ports:** The device shall support up to 24 POE ports @ 30W per port, or up to 12 POE ports @ 60W per port.

**Serial ports:** The device shall optionally support 8, 16, or 24 serial ports with RJ45 connectors, or 4, 8, or 12 ports with DB9 connectors. All serial ports may be configured for RS232, RS422, or RS485.

**Application processing module:** The device shall support up to 3 application processing modules. These modules shall have a minimum 1.6GHz 4 core Intel architecture processor, with up to 8GB RAM and up to 2 TB Storage. Application processing modules must have minimum 2 ethernet connections into the switch, and one terminated externally.

**Wide Temperature Range:** The device shall operate over a range of -40°C to +85°C (-40°F to 185°F).

**Robust Industrial Design:** The device shall meet the requirements of IEC 61850-3 and IEEE 1613.

**Hot swappable:** All modules shall be replaceable without disturbing the operation of the device.

**Alarm Contact:** The device shall have an alarm contact rated at 1A @ 24VDC.

**Serial Console Port:** The device shall have an RS-232 console port with an RJ45 interface.

**USB Port:** The device shall have a USB 2.0 for software updates, downloading syslog files and configuration backup/restore.

**System Resource Monitoring:** The device shall monitor temperature and CPU speed locally and remotely via SNMP.

**Power Supply options:** The device shall support the following power inputs: 10 – 36 VDC, 36 – 72 VDC, 88 – 300 VDC, and 85 – 264 VAC.

**Redundant power supplies:** The device shall support redundant power supplies.

**Warranty:** The device shall have a materials and workmanship warranty of 5 years, which may optionally be extended to 10 years.

### **Layer 2 Functionality**

**MAC Address table** to support up to 16K addresses.

Switch shall support store and forward operation with switching latency of no more than 7  $\mu$ s.

**Switching Plane Bandwidth:** Minimum of 128 Gbps.

**VLANs:** The device shall support up to 4095 IEEE 802.1Q-2005 VLAN IDs. It shall support VLAN-aware bridging (Port Based VLAN, Protocol based VLAN).

**Rapid Spanning Tree Protocol (RSTP):** The device shall support RSTP (IEEE 802.1D, 2004) /MSTP/PVRST+. BPDU load/attack prevention mechanism, verbose logs on the screen up for debugging level.

**Jumbo Frame:** The device shall support jumbo frames up to 9216 bytes.

**Port Based Authentication:** The device shall support 802.1x authentication.

**Quality of Service:** The device shall support QoS (Classification based on ACL and Priority Map Table, Traffic Shaping, Scheduling and Queueing). It shall support pre-Marking Support for IP, DSCP, Metering TRTCM, Frames for IP, DSCP, Metering and Priority Marking of Frames for IP, DSCP, Egress Port Scheduler and Shaper.

**Link Layer Discovery Protocol (LLDP):** The device shall support IEEE 802.1 AB-2009.

**Link Aggregation:** The device shall support Link Aggregation using LACP.

## **Layer 3 Functionality**

**Unicast Routing:** The device shall support unicast routing with IPv4 (Static, RIPv1/v2, OSPF), and support Route redistribution between protocols.

**Virtual Router Redundancy Protocol:** The device shall support VRRP v2 and v3.

**BGP:** The device shall support BGP.

**Internet Group Management Protocol:** The device shall support IGMP v1, v2, and v3 and IPv4 multicast Routing (Protocol Independent Multicast- Sparse Mode PIM-SM).

## **Management and Administration**

**Command Line Interface (CLI):** The device shall support Console, Telnet, and SSH.

**WebUI:** The device shall support HTTP and HTTPS / SSL.

**Configuration Save and Restore:** The device shall support configuration save and restore using MIB OIDs.

**Software and Configuration:** The device shall support software and configuration upgrades through TFTP and SFTP.

**Multiple User Levels:** The device shall support at least 3 user levels (Admin, Tech, Guest).

**Authentication:** The device shall support RADIUS and TACACS+ Authentication.

## **Other Functionality**

**IEEE 1588 PTP:** The device shall support IEEE 1588 precision timing protocol v2, with power profile v2, in transparent clock mode.

**Syslog:** The device shall have a syslog client to record and syslog relay to forward syslog messages.

**SNMP:** The device shall support SNMP (v1, v2c, and v3) agent and MIB support.

**Simple Network Time Protocol:** The device shall support SNTP.

**RMON:** The device shall support RMONv1.

**Port Mirroring:** The device shall support mirroring of traffic to a designated target port.

**IGMP Snooping:** The device shall support IGMP v1, v2, v3 snooping – explicit Host Tracking and Fast Leave, Multicast Statistics (for control plane messages).

**DHCP:** The device shall support DHCP (Client, Server & Relay) for IPv4, with support for option 82.

**ACLs (Access Control Lists) for Traffic Filtering:** The device shall support L2 ACL and L3 ACL.

## **Security Functionality**

**Network Address Translation:** The device shall support Static NAT, Dynamic Source NAT, Destination NAT, and Network Address Port Translation.

**IPsec:** The device shall support Layer 2 and Layer 3 IPsec.

**GRE:** The device shall support GRE over IPsec.

**Firewall:** The device shall support a Stateful Firewall implementation.

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