Ericsson Blade Server Platform 8100

Ericsson Blade Server Platform 8100 (BSP 8100) is a generic x86 based hardware and infrastructure blade server, suitable for all types of control and payload applications needing scalable processing capacity.

The base of BSP 8100 infrastructure is a sub-rack with that can house 12 processor blades, a duplicated Ethernet switch for internal sub-rack communication, and a redundant infrastructure manager. It also includes a 10 GE switch/router.

BSP 8100 is a data center infrastructure suitable for demanding environments with main characteristics such as deployment flexibility, NEBS3 compliance, small footprint, low noise, low power consumption.
Features and benefits

Software-defined infrastructure (SDI) with multi-VIM and multi-application support

The different applications can be executed as native and/or virtualized. Applications can be evolved from primarily native/bare metal functions to virtualized.

The software architecture has been designed to offer an environment that supports multiple scalable applications. This offers compact and scalable solutions for services build of several network functions.

BSP 8100 supports OpenStack, Red Hat and VMware.
Technical specifications

**BSP 8100 management**

The BSP is managed through an NBI for the O&M communication. The management system can, for example, be element managers or network domain managers, such as the Ericsson Operations Support System (OSS-RC).

The management object model (MOM) defines a structured data model through which all the accessible MOs are made available for O&M operations over the NBI.

**Configuration management**

Ericsson BSP 8100 provides a machine–machine interface based on the IETF NETCONF standard, the Ericsson NETCONF interface, and a human–machine user interface, the Ericsson Command-Line Interface (ECLI). The BSP MOM is exposed through the Ericsson NETCONF interface and the ECLI and provides a consistent view of the configuration and state data.

**Software management**

The software management (SWM) provides functions for performing BSP software-related operations such as:

- Software upgrade management
  This covers the various steps in the software upgrade procedure, such as create, prepare, verify, activate, and committing a software package. It also covers cancellation of an upgrade package activation.

- Backup management
  Backup management covers create, delete, import, export, and restore of a backup. Up to 10 backups can be stored on a node. Ericsson BSP 8100 supports in-service upgrade for a fully redundant system. During the upgrade, the system is non-redundant.

**Transport management**

Transport management provides functions to configure and control the routing functions. The SMX provides Ethernet Switching and Switching and Routing services.

Transport management covers:

- Virtual Routers
- L3 Interfaces
- IPv4 and IPv6 Address
- Static Routing
- Dynamic Routing (OSPFv2 and OSPFv3)
- Resiliency (BFD and VRRP)

**Performance management**

The performance management (PM) functions handle retrieval and reporting of performance measurement results provided by the Ericsson BSP 8100 infrastructure. The system supports a set of standard ingress and egress frame counters for each individual bridge port. The counter values can be retrieved through the NBI.
Fault management

Ericsson BSP 8100 uses both “stateful” and “stateless” notifications to bring attention to possible problems with the node. Alarms are sent as SNMP notifications over NBI and BGCI. Over NBI they are sent as per the standard Ericsson alarm MIBs and over BGCI they follow a BSP-specific MIB. For each alarm, there is a corresponding alarm OPI containing a set of instructions for the operator to manage the fault situation (hardware or software).

Hardware management

- Based on IPMI version 1.5
- Sensors (Voltage, Current, Temperature, Frequency)
- SOL (Serial Over LAN) over 1GbE backplane interface
- System time based on NTP

Switching and routing capabilities

Number of:

- User defined VLAN’s: 512
- Virtual Routers (VRs): 32
- Maximum Transmission Unit (MTU): 3000
- BFD sessions (per CMX): 256
- IPv4 routes using OSPFv2 or OSPFv3: 800
- IPv6 routes using OSPFV3: 400
- IP interfaces (IPv4 and IPv6): 212

Mechanical

Cabinet dimensions:

- Depth: 15,4” (400 mm) and 31,5” as optional (800 mm)
- Height: 5,9 ft (1800 mm) and 7,2 ft as optional (2200 mm)
- Width: 23,6” (600 mm) and 31,5” as optional (800 mm)
- Weight is 68 kg (empty)
- Max weight/equipped frame 211 kg + 23 kg overhead weight (cables etc.), 1000 kg in none earthquake zones.
- The cabinets are designed for airflow from front to top or front to back.

Subrack dimensions:

- Height, 500 mm (11.5 Units in a 19” cabinet)
- Width, 19” or 450 mm ETSI
- Filter and PFMs fit into the subrack

Power & cooling

The PFM (Power & Fan Modules) have power entry connectors on the front.
- PFM 3200W (net effect for board usage is 2900W)

The PFM is a fully redundant system. The PFM fans are speed controlled with thermal sensors that measure the air inlet temperature.

PFM dimensions:

- Height: 1,61” (41 mm), Width: 16,8” (426 mm), Depth: 12” (305 mm)
Air filtering
The subrack is equipped with air filters according to NEBS3

Processor boards
Compute density of 150 CPU’s per sqm.

Processor board (GEP7)
Dimensions: height 265 mm, depth 225 mm, pitch 30 mm

Available configurations
– GEP7-128 GB memory -X
– GEP7-128 GB memory -X16 (1600 GB storage)
– GEP7L-64 GB memory -X
– GEP7L-64 GB memory-X04 (400 GB storage)
– GEP7L-64-GB memory-X16 (1600 GB storage)
"L": Low Power

Processor:
GEP 7: One embedded x86, 64-bit, 14 cores, Intel XEON E5-2658v4 (Broadwell-EP) 105 W, 2.3 GHz, 35MB cache
GEP 7-L: One embedded x86, 64-bit, 10 cores, Intel XEON E5-2618Lv4 (Broadwell-EP) 75 W, 2.2 GHz, 25MB cache

System memory:
64 or 128GB, DDR4 VLP-DIMMs with ECC

Flash memory:
16GB M.2 SATA I/F

Storage:
400 or 1600GB SSD

Supported operating systems and virtualization software:
– Certified Red Hat Enterprise Linux (RHEL) 6
– Certified Red Hot Enterprise Linux (RHEL) 7
– Certified SUSE Linux Enterprise Server (SLES) 11
– Certified SUSE Linux Enterprise Server (SLES) 12
– Mirantis OpenStack (Ericsson Cloud Execution Environment)
– VMware ESXi 6.5
– GEP specific drivers included for Linux (GSDI)

Interface to back plane:
– 2 x 10GBASE-KX4
– 2 x 10GBASE-KX4 on the adjacent slot
– 2 x 1000BASE-T
– IPMI bus
– Power, duplicated -48 VDC

Interface on front panel:
– 1 x combo connector
  – 10/100/1000BASE-T for maintenance
  – RS-232 Console port
  – USB
– 1 x test connector (BIOS and BMC, Board Management controller, maintenance)
Switch board

System control and main switch (SMXB)
Dual slot, 30mm wide

Power
Typical 145 W at 25°C with normal traffic

Interface to back plane
- SMXB 4OE: - 24 x 2 x 10GE (KR / XFI)
- 24 x 1GE (Control switch)
- Synchronization
- IPMI bus (redundant I2C interface)
- Power, duplicated -48 VDC

Interface on front panel
- 8 x SFP+ (40GE / 10GE / 1GE)
- 2 x MPO (40GE; 4OE: 10 x 40GE)
- 2 x 10GE (XAUI, Control switch)
- 1 x GPS
- 1 x 2.048/10 MHz (coaxial QMA) sync input
- 1 x 1.544 Mbps / 2.048 MHz sync input
- 3 x 1000BASE-terminated in the control switch
- Combined RS232, USB and 100BASE-T debug
- USB micro A/B

Ethernet switch
Broadcom BCM56860 or BCM56861 (Transport switch) and BCM56340 (Control switch)

Processor
INTEL Rangeley, 8 cores, 2.4 GHz

Ethernet switching features
- see Transport Management chapter above and Compliance to standards in chapter below

Clock and synchronization features

External reference inputs:
- 1PPS GPS (NMEA version 0183)
- 1.544 Mbit/s (T1, ITU-T G.703), 2.048 or 10 MHz
- 10GE / GE Synchronous Ethernet supporting
- ESMC (Ethernet Synchronization Messaging Channel). All egress Ethernet ports synchronize to the selected external reference
- Holdover accuracy: better than 10 ppb in a period of 24 hours and 16 ppb in a period of 1 week

Compliance with standards

All Ethernet interfaces and switching functionality on the Ericsson BSP 8100 are compliant with applicable parts of the following:

- IEEE 802 standards:
  - IEEE Std.802.1D-2004 (excluding spanning tree protocols)
  - IEEE Std.802.1Q-2005
- IEEE 802.3 standards:
  - IEEE Std.802.3-2008, IEEE Std.802.3ba-2010
  - IEEE 802.3, except for minor deviations concerning the front ports 10G_1 through 10G_4 that are 10GBase-X compliant
- The Routing functionality on BSP is compliant with applicable parts of the following IETF RFCs:
  - CIDR (RFC 1519)
  - IPv4 Router Requirements (RFC 1812 - partly)
- OSPFv2 (RFC 1765, 2328, 2370, 3101)
- OSPFv3 (RFC 5348)
- BFD (IETF drafts base, 1hop, generic)
- VRRPv3 (RFC 5798)
- IPv6 Core (RFC 1981, 2375, 2468, 2464, 3306, 3587, 4291, 4443, 4861, 4862, 5095)

Ericsson BSP 8100 is compliant with applicable parts of the following protocols that are used in the NBI:
- NETCONF over SSH
- SNMPv2 and v3
- NTPv4
- LDAPv3

The physical equipment of the BSP complies with the applicable parts of the following standards and directives:

Electromagnetic compatibility:
- ETSI EN 300 386
- Telcordia® GR-1089-CORE
Compliance with standards

- Temperature and relative humidity:
  - ETSI EN 300 019-1-3 Class 3.1 Normal and Exceptional conditions
  - GR-63-CORE

- Restriction of certain Harmful Substances (RoHS in electrical and electronic equipment):
  - EU directive 2011/95/EC

- Product safety:
  - EN 60950-1 for Europe
  - ANSI/UL 60950–1 for the United States
  - CAN/CSA 22.2 No. 60950–1-03 for Canada
  - IEC 60950–1 for other countries

- The cabinet can withstand earthquake zone 4 according to:
  - GR-63-CORE

- All Ethernet interfaces and Switching functionality on the System Control Switch are compliant with applicable parts of IEEE 802 Standards:
  - IEEE Std. 802.3-2008
  - IEEE Std. 802.1D-2004
  - IEEE Std. 802.1Q-2005
  - IEEE Std. 802.1AX-2008
  - NTPv3 (RFC 1305)

- All Ethernet interfaces and Switching functionality on the CMX are compliant with applicable parts of IEEE 802 Standards:
  - IEEE Std.802.1D-2004
  - IEEE Std.802.1Q-2005
  - IEEE Std.802.1AX-2008
  - IEEE Std.802.3-2008
  - IEEE Std.802.3ba-2010

- The Routing functionality on the Component Main Switch is compliant with applicable parts of the following IETF RFCs:
  - ARP (RFC 826)
  - CIDR (RFC 1519)
  - IPv4 Router Requirements (RFC 1812 Deviation: Fragmentation is not supported)
  - OSPFv2 and OSPFv3 (RFC 1765, 2328, 2370, 3101 and RFC 2740)
  - BGP (RFC 1997, 2385, 2439, 2796, 2918, 3065, 3392, 4271, 4273, 4360, 4486, 5291)
  - RIPv2 (RFC 1724, 2453, 4822)
  - BFD (IETF drafts base, 1hop, generic)
  - VRRPv3 (RFC 5798)
  - IPv6 Core (RFC 1981, 2375, 2460, 2464, 3306, 3513, 3587, 4291, 4443, 4861, 4862, 5095)

- The SNMP based management functionality on the CMX is compliant with applicable parts of the following IETF RFCs:
  - SNMP Framework and Architecture (RFC 3411, 3412, 3413, 3414, 3415, 3416, 3417)
  - MIBs and Counters (RFC 1215, 1850, 2863, 4188, 4318, 4363, 4878, 5643)
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