EVIDEN

BullSequana SA1 Technical Set SA1-0003 Release Note

86 A1 98FS 04 – October 2024

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Hardware

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1 Preface

This document provides information about the Technical Set for the BullSequana SA1 servers:

- BullSequana SA11a
- BullSequana SA21a
- BullSequana SA21Sa
- BullSequana SA21Ga
- BullSequana SA11i
- BullSequana SA21i
- BullSequana SA21Si

2 Glossary

AGESA	AMD Generic Encapsulated Software Architecture AMD library used in BIOS for the system initialization (servers using AMD processors)
BIOS	Basic Input/Output System. Integrated FW in charge of server startup and some low level operations. Now legacy, BIOS is replaced by UEFI.
BMC	Baseboard Management Controler. Management dedicated controller installed on the motherboard. BMC are used for controlling the servers (power on, immediate shutdown, ...) and monitoring the servers (temperatures, fans speeds, ...).
CVE	Common Vulnerability Exposure
Downgrade (Firmware)	Replace the current firmware by an older one.
EMR	Emeralds Rapids Codename for Intel Xeon 5th generation processors
FHHL	Full Height / Half Length - form factor for PCIe adapter.
FRU	Field-Replaceable Units. Component that can be replaced by a field technician. “FRU” is also used for logical fields (Within a flash memory managed by the BMC) where server information is stored: server vendor, server model, motherboard serial number, server serial number.
FW	Firmware
Genoa	Codename of AMD Zen 4th generation processors for servers (EPYC 9004 series)
HBA	Host Board Adapter - Adapter in charge of storage (SATA, SAS, Fibre Channel)
HHHL	Half Height / Half Length - form factor for PCIe adapter ("MD2" is also used).
HII	Human Interface Infrastructure. Configuration utility provided by the adapter FW and available from the UEFI (BIOS) menu. Using HII, adapters can be configured from the UEFI menu without having to start the server with an operating system.
I/O	Input/Output Generic name of server interfaces with peripherals (drives, networks, co-processors, …)
NC-SI	Network Controller - Sideband Interface Interface for connecting the BMC to a network controller. When an OCP network adapter is used, the NC-SI link can be configured for using the BMC through an interface of this OCP adapter, instead of using a shared interface from the motherboard onboard network controller.
NIC	Network Interface Controller.
NVMe	Non Volatile Memory express - Storage drive based on flash NAND technology with PCIe interface.
OCP 3.0	Form factor for PCIe adapter (Open Compute Project).
Option ROM	This is an additional and optional piece of software embedded in an adapter (stored in a dedicated storage area like NAND memory), and providing extra features (HII, OS boot from this device, …)
PCIe	Peripheral Component Interconnect Express System bus, mostly used for I/O, using parallelized serial links (= PCIe lanes)
Power Distributor	Component (within the server) in charge of balancing electrical power from 2 (or more) PSUs. For some servers, the Power Distributor can be located on the motherboard.
PDU	Power Distributor Unit. Electrical box (usually located in the rack) where electrical power is distributed to the servers and other components (switches, storage, …) in this rack.
PSoC	Programmable System On Chip

	Component in charge of power management (unexpected power shutdown / cache, initialization) of the Broadcom HBA and RAID adapters.
PSU	Power Supply Unit.
RAID	Redundant Array of Inexpensive Drives Set of drives where data are stored across the drives in the way to provided an reliable and/or increased storage volume.
SKU	Stock Keeping Unit Reference of a product model (usually a part number)
SPR	Sapphire Rapids Codename for Intel Xeon 4th generation processors
TS	Technical Set. Set of known firmwares and configuration files used by a server and its components.
U.2 and U.3	Form factor for NVMe drive (2.5" drives with PCIe connections). U.3 drive can be used in U.2 slots. U.2 drives are not compatible with U.3 slots (adapters may be required).
UEFI	Unified Extensible Firmware Interface. Integrated FW in charge of server startup and some low level operations, replacing BIOS.
Upgrade (Firmware)	Replace the current firmware by a newer one.
VMD	Volume Management Device (only for Intel processors-based servers). Intel technology providing specific features to the NVMe devices. When VMD is enabled, the VMD devices are using dedicated PCI domains, providing isolation from the other PCI devices. VMD is also providing NVMe drive LED management (this feature also need to be enabled in the BIOS).
VROC	Virtual RAID on CPU (only for Intel processors-based servers). Intel technology providing Software RAID support at BIOS/UEFI level. VMD must be enabled for being able to use VROC.

3 Technical Set

This document refers to Technical Set SA1-0003

4 External links

Bull on-line support:
https://support.bull.com/

BullSequana SA1 Quick Start Guide:
https://support.bull.com/ols/product/platforms/bullion/bullsequana-sa-servers/qsgsa1/

5 Content of this Technical Set

5.1 Documents

The documents are provided in dedicated directories.

5.1.1 Servers and main documents

Document Reference	Document Title	Revision
86 A1 78FS	BullSequana SA21a - User's Guide	02
86 A1 79FS	BullSequana SA11a - User's Guide	02
86 A1 80FS	BullSequana SA21Ga - User's Guide	02
86 A1 89FS	BullSequana SA21Sa - User's Guide	02
86 A1 90FS	BullSequana SA21i - User's Guide	04
86 A1 91FS	BullSequana SA11i - User's Guide	02
86 A1 92FS	BullSequana SA21Si - User's Guide	02
86 A1 98FS	BullSequana SA1 – Release Note	04
86 A1 22FT	BullSequana SA1 – BMC Web User Interface	02
86 A1 27FT	BullSequana SA1 – Rack Mounting kit	01
86 A1 45FT	BullSequana SA1 – Quick Start Guide	02

5.1.2 BIOS Release Notes for servers using AMD processors

These documents are the Release Notes related to the BIOS for “SA1a” (AMD based) servers:

Document Content Server models – motherboard BIOS version	Document Title
SA11a Motherboard MZ33-DC0 BIOS F24 (Genoa)	Relnotes_MZ33-DC0_F24_Genoa.pdf
SA21a and SA21Sa Motherboard MZ93-FS0 BIOS F27 (Genoa)	Relnotes_MZ93-FS0_F27_Genoa.pdf
SA21Ga Motherboard MZF3-GP0 BIOS F18 (Genoa)	Relnotes_MZF3-GP0_F18_Genoa.pdf

5.1.3 BIOS Release Notes for servers using Intel processors

These documents are the Release Notes related to the BIOS for “SA1i” (Intel based) servers:

Document Content Server models – motherboard BIOS version	Document Title
SA11i Motherboard MS33-DC0 BIOS R09 (SPR and EMR)	RelNotes_MS33-DC0_R09.pdf
SA21i and SA21Si Motherboard MS93-FS0 BIOS R09 (SPR and EMR)	RelNotes_MS93-FS0_000_R09.pdf

5.1.4 BMC Release Notes

BMC release note : “BMC_Release_Note_130609.docx”.
As all the SA1 models are using the same BMC model (AST2600) with the same BMC FW, this release note is applicable to all the SA1 models.

5.1.5 NVidia Network Adapters

5.1.5.1 NVIDIA ConnectX-6 Dx Ethernet_adapters

Information about the adapters:

- nvidia-connectx-6-dx-ethernet-adapter-cards-user-manual - 2024-10-21.pdf
- nvidia-connectx-6-dx-ethernet-adapter-cards-for-ocp-spec-3-0-user-manual - 2024-10-21.pdf

Information about the firmware:

- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.37.1014.pdf
- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.35.1012.pdf

- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.34.4000.pdf
- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.34.1002.pdf
- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.33.1048.pdf
- NVIDIA_ConnectX-6_Dx_Adapter_Cards_Firmware_Release_Notes_v22.39.2048_LTS.pdf
- nvidia-connectx-6-dx-adapter-cards-firmware-release-notes-v22-41-1000.pdf

5.1.6 Broadcom NetXtreme NIC

The following FW Release Note related to Broadcom NetXtreme adapters are provided in the TS:

- NetXtreme-Release_Notes-223.1.96.0.pdf
- NetXtreme-Release_Notes-224.1.102.0.pdf
- NetXtreme-Release_Notes-225.1.95.0.pdf
- NetXtreme-Release_Notes-226.1.107.1.pdf
- NetXtreme-Release_Notes-227.1.111.0.pdf
- NetXtreme-Release_Notes-228.1.111.0.pdf
- NetXtreme-Release_Notes-229.1.123.0.pdf
- NetXtreme-Release_Notes-231.1.162.1.pdf

5.1.7 Broadcom HBA 9500 series

Overview of the latest FW (Package 32):

- README_9500_16i_Pkg_P32_MIXED_FW_BIOS_UEFI.txt
- README_9500_8e_Pkg_P32_MIXED_FW_BIOS_UEFI.txt
- README_9500_8i_Pkg_P32_MIXED_FW_BIOS_UEFI.txt

The following documents are the release notes of the Broadcom HBA 9500 Firmware:

- Release_Notes_SASFW_P26.pdf
- Release_Notes_SASFW_P27.pdf
- Release_Notes_SASFW_P28.pdf
- Release_Notes_SASFW_P29.pdf
- Release_Notes_SASFW_P30.pdf
- Release_Notes_SASFW_P30.pdf
- Release_Notes_SASFW_P31.pdf
- Release_Notes_SASFW_P32.pdf

The following documents are the release notes of the Broadcom HBA 9500 UEFI:

- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P14.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P15.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P16.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P17.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P18.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P19.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P20.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P21.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P22.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P23.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P24.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P25.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P26.pdf

- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P27.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P28.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P29.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P30.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P31.pdf
- Release_Notes_SAS3.5_Aero_IT_Legacy_x86_UEFIBSD_MPT_P32.pdf

5.1.8 Broadcom MegaRAID 9500 series (and PSoC)

The following documents related to Broadcom MegaRAID 9500 series are provided in this TS:

- 52.20.0-4481_SAS_MR_FW_IMAGE.txt
- 52.21.0-4428_SAS_MR_FW_IMAGE.txt
- 52.22.0-4544_SAS_MR_FW_IMAGE.txt
- 52.23.0-4636_SAS_MR_FW_IMAGE.txt
- 52.24.0-4763_SAS_MR_FW_IMAGE.txt
- 52.26.0-5014_MR7.26_FW-readme.txt
- 52.27.0-5171_MR7.27_FW_readme.txt
- 52.28.0-5305_MR7.28_FW_readme.txt
- 52.29.0-5442_FW_readme.txt
- 52.30.0-5604_MR7.30_FW_readme.txt
- 52.30.0-5660_MR7.30_Point_FW_readme.txt

5.1.9 Broadcom PSoC for MegaRAID and HBA

Document “1.30-psoc-readme.txt” is related to PSoC FW for Broadcom HBA 9500 and MegaRAID 9500 adapters.

5.1.10 Broadcom FC LPe 31000 and LPe 32000 series

The following FW Release Notes related to Broadcom LPe 31000 and LPe 32000 series are provided in this TS:

- LPe31XXX-LPe32XXX-ReleaseNote-12.2.673.40-FWBT-RN14210-100.pdf
- LPe31XXX-LPe32XXX-ReleaseNote-12.8.614.31-FWBT-RN12813-102.pdf
- LPe31XXX-LPe32XXX-ReleaseNote-14.2.539.16-FWBT-RN1423-100.pdf
- LPe31XXX-LPe32XXX-ReleaseNote-14.2.673.40-FWBT-RN14210-100.pdf
- LPe31XXX-LPe32XXX-ReleaseNote-14.4.317.7-FWBT-RN1441-100.pdf

5.1.11 Broadcom FC LPe 35000 and LPe 36000 series

The following FW Release Notes related to Broadcom LPe 31000 and LPe 32000 series are provided in this TS:

- LPe35XXX-LPe36XXX-ReleaseNote-12.2.539.21-FWBT-RN1423-201.pdf
- LPe35XXX-LPe36XXX-ReleaseNote-12.8.614.31-FWBT-RN12813-202.pdf
- LPe35XXX-LPe36XXX-ReleaseNote-14.2.455.15-FWBT-RN1421-202.pdf
- LPe35XXX-LPe36XXX-ReleaseNote-14.2.539.16-FWBT-RN1423-200.pdf
- LPe35XXX-LPe36XXX-ReleaseNote-14.2.673.40-FWBT-RN14210-200.pdf
- LPe35XXX-LPe36XXX-ReleaseNote-14.4.317.10-FWBT-RN1441-100.pdf

5.2 Network Adapters FW

5.2.1 Network Adapters FW - Broadcom

Vendor	Model - Comments	Firmware Package
Broadcom	N225P – 2 x 25GbE SFP28 OCP 3.0 (10GbE Compatible)	BCM957414N4140C 231.1.162.1
Broadcom	P225P – 2 x 25GbE SFP28 HHHL (10GbE Compatible)	BCM957414A4142CC 231.1.162.1
Broadcom	N425G – 4 x 25GbE SFP28 OCP 3.0 (10GbE Compatible)	BCM957504-N425G 231.1.162.1
Broadcom	P425G – 4 x 25GbE SFP28 HHHL (10GbE Compatible)	BCM957504-P425G 231.1.162.1
Broadcom	N210TP – 2 x 10GbE 10GBASE-T OCP 3.0	BCM957416N4160C 231.1.162.1
Broadcom	P210TP – 2 x 10GbE 10GBASE-T HHHL	BCM957416A4160C 231.1.162.1

5.2.2 Network Adapters FW - Mellanox

Vendor	Model - Comments	Firmware
NVidia (Mellanox)	MCX623436AN-CDAB – ConnectX-6 2 x 100GbE QSFP56 OCP 3.0 (psid MT_0000000327)	FW 22.41.1000 (including UEFI 14.34.12 and FlexBoot 3.7.400)
NVidia (Mellanox)	MCX623106AN-CDAT – ConnectX-6 2 x 100GbE QSFP56 HHHL (psid MT_0000000359)	FW 22.41.1000 (including UEFI 14.34.12 and FlexBoot 3.7.400)

5.2.3 Network Adapters – Intel Pre-Boot

Note: i350T4 adapters are provided with FW 1.63. According to Intel, no FW upgrade is required. However, Intel is providing a “Pre-Boot” FW stack providing updated BIOS and UEFI features (PXE, HII).

Preboot 29.3 is provided in this Technical Set.

Vendor	Model - Comments	Firmware
Intel	i350T4-V2 – 4 x 1000BASE-T	Preboot 29.3

5.3 Storage Adapters FW

5.3.1 Storage Adapters FW – Broadcom Fibre Channel

Vendor	Model - Comments	Firmware
Broadcom	LPe31002-M6 – 2 x FC16	lancerg6_A14.4.317.7
Broadcom	LPe35002-M2 – 2 x FC32 LPe36002-M2 – 2 x FC64	prism_A14.4.317.10

5.3.2 Storage Adapters FW – Broadcom MegaRAID

For PSoC, please refer to the “psoc-readme.txt” document provided in the PSoC package.

Vendor	Model - Comments	Firmware
Broadcom	MegaRAID 9540-8i	52.30.0-5660 MR7.30 PSoC 1.30
Broadcom	MegaRAID 9560-8i	52.30.0-5660 MR7.30 PSoC 1.30
Broadcom	MegaRAID 9560-16i	52.30.0-5660 MR7.30 PSoC 1.30
Broadcom	MegaRAID 9580-8i8e	52.30.0-5660 MR7.30 PSoC 1.30

5.3.3 Storage Adapters FW – Broadcom SAS/SATA HBA

For PSoC, please refer to the “psoc-readme.txt” document provided in the PSoC package.

Vendor	Model - Comments	Firmware package
Broadcom	SAS 9500-8i	Pkg 32
Broadcom	SAS 9500-8e	Pkg 32
Broadcom	SAS 9500-16i	Pkg 32

5.4 SAS SATA drives FW

5.4.1 SATA drives FW – Micron 5400PRO

Vendor	Model - Comments	Firmware
Micron	5400PRO 480GB MTFDDAK480TGA-1BC1ZABYY	D4MU04802
Micron	5400PRO 960GB MTFDDAK960TGA-1BC1ZABYY	D4MU04802
Micron	5400PRO 1920GB MTFDDAK1T9TGA-1BC1ZABYY	D4MU04802
Micron	5400PRO 3840GB MTFDDAK3T8TGA-1BC1ZABYY	D4MU04802
Micron	5400PRO 7680GB MTFDDAK7T6TGA-1BC1ZABYY	D4MU04802

5.4.2 SAS drives FW – Seagate Exos 7E10

Vendor	Model - Comments	Firmware
Seagate	Exos 7E10 4TB SAS-NL 512e ST4000NM025B	E004 CimarronBP
Seagate	Exos 7E10 8TB SAS-NL 512e ST8000NM018B	E004 CimarronBP

5.4.3 SAS drives FW – Exos X18

Vendor	Model - Comments	Firmware
Seagate	Exos X18 14TB SAS-NL 512e ST14000NM004J	E006 EvansBP
Seagate	Exos X18 18TB SAS-NL 512e ST18000NM004J	E006 EvansBP

5.5 NVMe drives FW

5.5.1 NVMe drives FW – Micron 7450MAX

Vendor	Model – Comments	Firmware
Micron	7450MAX 800GB U.3 MTFDKCC800TFS-1BC1ZABYY	E2MU200
Micron	7450MAX 1600GB U.3 MTFDKCC1T6TFS-1BC1ZABYY	E2MU200
Micron	7450MAX 3200GB U.3 MTFDKCC3T2TFS-1BC1ZABYY	E2MU200
Micron	7450MAX 6400GB U.3 MTFDKCC6T4TFS-1BC1ZABYY	E2MU200
Micron	7450MAX 12800GB U.3 MTFDKCC12T8TFS-1BC1ZABYY	E2MU200

5.5.2 NVMe drives FW – Micron 7450PRO

Vendor	Model – Comments	Firmware
Micron	7450PRO 960GB U.3 MTFDKCC960TFR-1BC1ZABYY	E2MU200
Micron	7450PRO 1920GB U.3 MTFDKCC1T9TFR-1BC1ZABYY	E2MU200
Micron	7450PRO 3840GB U.3 MTFDKCC3T8TFR-1BC1ZABYY	E2MU200
Micron	7450PRO 7680GB U.3 MTFDKCC7T6TFR-1BC1ZABYY	E2MU200
Micron	7450PRO 15360GB U.3 MTFDKCC15T3TFR-1BC1ZABYY	E2MU200

5.6 BMC

BMC FW 13.06.09 is provided with this Technical Set.
This BMC FW can be applied to all the SA1 servers models.
A dedicated release note is provided with the FW package.

5.7 BIOS

5.7.1 BIOS for SA1 servers based on AMD processors

Server	Motherboard	BIOS
SA11a	MZ33-DC0	MZ33-DC0_EVD_F24 (delivery 20240928)
SA21a	MZ93-FS0	MZ93-FS0_EVD_F27 (delivery 20240928)
SA21Sa	MZ93-FS0	MZ93-FS0_EVD_F27 (delivery 20240928)
SA21Ga	MZF3-GP0	MZF3-GP0_EVD_F18 (delivery 20240928)

5.7.2 BIOS for SA1 servers based on Intel processors

Server	Motherboard	BIOS
SA11i	MS33-DC0	MS33-DC0_EVD_R09 (delivery 20240928)
SA21i	MS93-FS0	MS93-FS0_EVD_R09 (delivery #01)
SA21Si	MS93-FS0	MS93-FS0_EVD_R09 (delivery #01)

5.8 BIOS settings

There is currently no specific BIOS settings.
The provided BIOS settings files have an empty set of parameters (files provided for future usage).

5.9 SKU packages

Preliminary Note:
A motherboard model can be used in different server models.
Examples:

- motherboard MZ93-FS0 is used in SA21a and SA21Sa
- motherboard MS93-FS0 is used in SA21i and SA21Si

For each server model, a “SKU” package is provided. By applying a SKU package, the motherboard will be configured for being used with dedicated server settings (fans, temperatures sensors, …).

When the BMC is replaced (new motherboard, or new G-SC module) the server SKU package must be updated in the new BMC.

5.9.1 SKU packages for SA1 servers based on AMD processors

Servers	SKU Models	SKU packages
SA11a	R263-Z30-AAH2	R263-Z30-AAH2-000-20230706.zip
SA21a	R183-Z92-AAV1	R183-Z92-AAV1-000-20230817.zip
SA21Sa	R283-Z92-AAJ3	R283-Z92-AAJ3-000-20230817.zip
SA21Ga	R283-ZF0-AAL1	R283-ZF0-AAL1-000-20230817.zip

5.9.2 SKU packages for SA1 servers based on Intel processors

Servers	SKU Model	SKU packages
SA11i	R263-S30-AAH1	R263-S30-AAH1-000-20230706.zip
SA21i	R183-S92-AAV1	R183-S92-AAV1-000-20230508.zip
SA21Si	R283-S92-AAJ1	R283-S92-AAJ1-000-20230508.zip

5.10 BMC FRU

BMC FRU are fields stored into the BMC flash memory, with server information.
When BMC is replaced (new motherboard, or new G-SC module) the server information should be written to the new BMC, after SKU update.
For all the SA1 servers, the BMC FRU can be written by using IPMI commands, like ipmitool or freeipmi.
Syntax when using ipmitool:

```
ipmitool -I lanplus -U admin -P password -H <BMC> fru edit 0 field p 0 "BULL"
ipmitool -I lanplus -U admin -P password -H <BMC> fru edit 0 field p 1 <Server model>
ipmitool -I lanplus -U admin -P password -H <BMC> fru edit 0 field p 3 <TS version>
ipmitool -I lanplus -U admin -P password -H <BMC> fru edit 0 field p 5 <XAN-XYZ-01234>
```

Use of the fields p0, p1, p3 and p5 is defined as “FRU v4”
Note:
p 0 stands for FRU 0 field product #0, “Product Manufactuer”
p 1 stands for FRU 0 field product #1, “Product Name”
p 3 stands for FRU 0 field product #3, “Product Version”
p 5 stands for FRU 0 field product #5, “Product Asset Tag”

5.11 MIB

MIB *BULL_SEQUANA_SA_20220815.MIB* is provided by this Technical Set.

6 Operating Systems

BullSequana SA1 servers are supported with the following Operating Systems:

- VMware ESXi 8.
- RHEL 9.
- Windows Server 2022.

Some certifications may still be in progress.

For servers with AMD 96c (or more) processors and Windows Server Operating System, please refer to section “10.2.1 Windows Server and AMD 96c (or +) processors”.

7 Components installations

The BullSequana SA servers are provided with components (adapters, drives, processors, memories, …) installed according to specific installation rules (aka "Slotting Rules"):

- Each component is installed in a compliant location (PCIe slot, drive slot, memory slot …)
- For a given batch of server production, the components are installed in a replicable way.

Please ask your Eviden representative if you want to use additional components or if you have dedicated requirements.

WARNING: The rules used for installing the components may evolve, and components may be installed in different ways in servers from different production batches. Please be aware, when ordering, to refer to such previous batch for having the components to be installed in the same way.

8 Features

8.1 PSU Cold Redundancy

A PSU has a higher power efficiency when used with a higher load.

To take advantage of that fact, the SA1 servers are providing a power management feature called "Cold Redundancy" for servers with [1+1] power supplies: When the total system load falls lower than 40%, the system will automatically place one PSU into standby mode. The total PSU efficiency is improved by 10%.

When a PSU is placed in standby mode, the status LED of this PSU is blinking at 1Hz (green color). Please refer to the server manual for details about the PSU status LED.

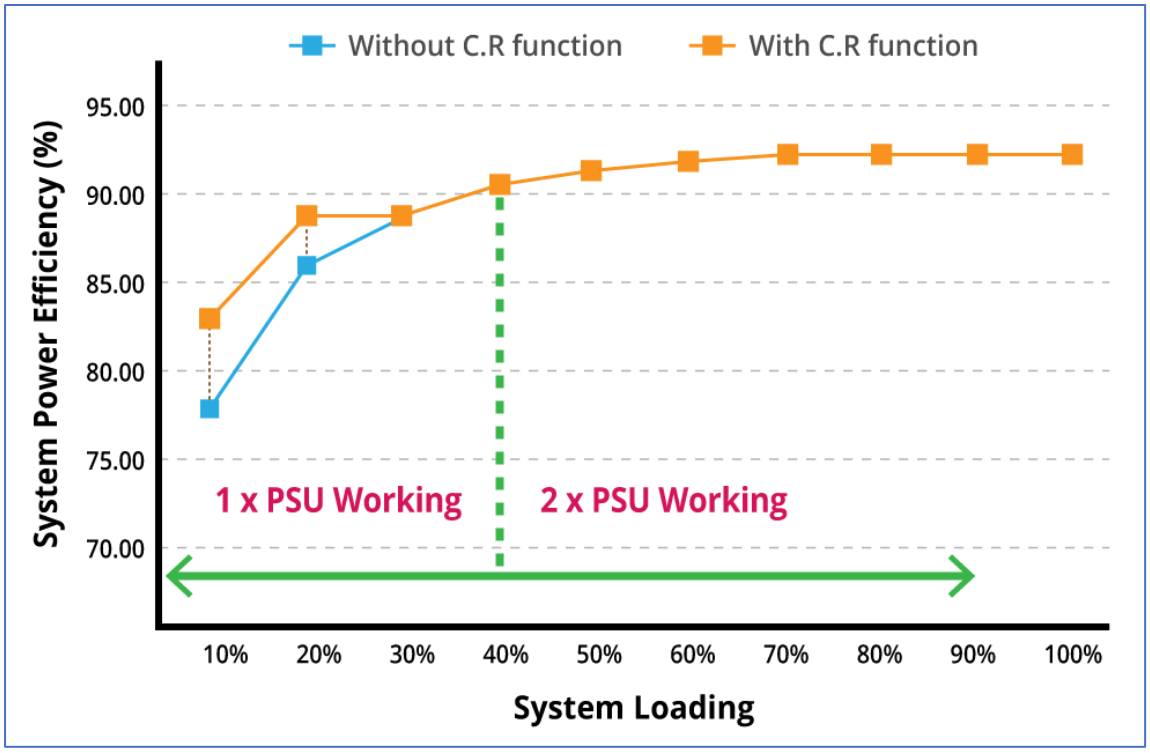

Figure 1- Cold Redundancy - PSU efficiency vs System Load

9 Important Changes

9.1 86 A1 98FS 01

Initial release

9.2 86 A1 98FS 02

- Added SA11a, SA21a, SA21Sa, SA11i and SA21Si
- New SKUXML release 20230508 and 20230706
- New FW :
    - 226.1.107.1 for Broadcom Network adapters
    - 14.2.539.16 for Broadcom FC adapters
    - 52.26.0-5014 for Broadcom MegaRAID adapters (9500 Series)
    - P27 for Broadcom SAS adapters (9500 Series)
    - E003 for Seagate CimarronBP (4TB and 8TB) drives
- BMC 13.05.01
- New BIOS (for all the server models)
- Empty BIOS settings
- LOD files for Seagate FW drives renamed and repackaged.

9.3 86 A1 98FS 03

- Added SA21Ga
- Added BIOS with EMR support (Servers with Intel processors)
- New BIOS (for all the server models)
- Updated FW

9.4 86 A1 98FS 04

- New BIOS (for all the server models)
- Updated FW

10 Know Restrictions and Issues

10.1 BMC

10.1.1 « admin » default password

Each server is provided with a unique password for the BMC access. This unique password is based on the last 11 digits of the motherboard serial number.
For exemple, for the below serial number, the password for the “admin” account will be "JG6P5400156".

The motherboard serial number can be found:

- On the motherboard,
- On the server side,
- On the label available in the front of the server (please refer to the Quick Start Guide).

10.1.2 Lost BMC password

The only way to recover the BMC password is to modify the BMC password from an operating system running on the server.

Example 1:
You can run a Linux live distribution with ipmitool utility.
First, look for the ID of the "admin" account (user with ADMINISTRATOR privilege):

```
[root@linux ~]# ipmitool user list 1
ID  Name             Callin  Link Auth  IPMI Msg   Channel Priv Limit
1                    false   false      false      NO ACCESS
2   admin            false   false      true       ADMINISTRATOR
3                    true    false      false      NO ACCESS
4                    true    false      false      NO ACCESS
5                    true    false      false      NO ACCESS
6                    true    false      false      NO ACCESS
7                    true    false      false      NO ACCESS
8                    true    false      false      NO ACCESS
9                    true    false      false      NO ACCESS
10                   true    false      false      NO ACCESS
11                   true    false      false      NO ACCESS
12                   true    false      false      NO ACCESS
13                   true    false      false      NO ACCESS
14                   true    false      false      NO ACCESS
15                   true    false      false      NO ACCESS
16                   true    false      false      NO ACCESS
```

Here we can see the “admin” account has user ID 2.

Now, using the “root” login from the Live OS, the password for the “admin” account can be changed without having to use the previous (lost) password:

```
[root@linux ~]# ipmitool user set password 2 <newpassword>
Set User Password command successful (user 2)
```

Example 2: This is the same method using *freeipmi commands*. First, look for the “admin” account ID:

```
[root@linux ~]# for ID in $(seq 1 15);do USERNAME=$(ipmi-config -o -S "User${ID}"| awk
'/^\s*Username/{print $2}');echo "${ID} ${USERNAME}";done
1
2 admin
3
4
5
6
7
8
9
10
11
12
13
14
15
```

Now, the password can be changed for account #2 (admin):

```
[root@linux ~]# ipmi-config -c -e "User2:password=<newpassord>"
```

10.2 Windows Server

10.2.1 Windows Server and AMD 96c (or +) processors

When using AMD 96c (or more) processor :

- For Windows Server 2019 bare metal, Windows Update 9C is required. Please refer to Microsoft KB5017379

- For Windows Server 2019 Hyper-V support, Windows Update 10B is required. Please refer to Microsoft KB5018419

- For Windows Server 2022 bare metal, the 2021 December installation “iso" image is required, or the already installed existing WS2022 OS must be patched with KB5007251. Please refer to Microsoft KB5007254

- For Windows Server 2019 Hyper-V support, Windows Update 2C is required. Please refer to Microsoft KB5010421

10.3 Drivers

The drivers for BullSequana SA1 can be downloaded from the Bull Support Online web site. These drivers are listed in the following table, with servers models assignments:

Drivers & Utilities					SA1 Servers						
item	OS	version	Size	File	SA11a	SA21a	SA21Sa	SA21Ga	SA11i	SA21i	SA21Si
AMD Chipset	WS2022	4.06.27.500	15.58MB	server_driver_chipset_amd_4.06.27.500.zip	X	X	X	X			
Intel LAN	WS2022	27.4	755.19MB	server_driver_intel_lan_27.4.zip	X	X	X				
Intel LAN	WS2022	28.2.1	776.69MB	server_driver_intel_lan_28.2.1.zip					X	X	X
Aspeed Graphic	WS2022	1.15.01	2.58MB	server_driver_vga_aspeed_v1.15.01.zip	X	X	X	X	X		
Aspeed Graphic	Linux	1.14.2	7.72MB	server_driver_vga_aspeed_v1.14.2.zip	X	X	X	X	X		
Intel Chipset Driver	WS2022	10.1.19485.8386	3.81MB	server_driver_intel_chipset_10.1.19485.8386.zip					X	X	X
Intel VROC and Utility	WS2022	8.5.0.1593	99.21MB	server_driver_intel_vroc_8.5.0.1593.zip					X	X	X
Intel QuickAssist Technology	WS2022	w.2.1.0-0025	37.69MB	server_driver_intel_qat2.0.w.2.1.0-0025.zip					X	X	X
Intel QuickAssist Technology	Linux	l.1.1.20-0030	4.47MB	server_driver_intel_qat20.l.1.1.20-00030.zip					X	X	X

10.4 Drives connected to a RAID adapter.

When using a RAID adapter, the drives managed by this adapter are configured at factory level:

- Boot drives (if any) are configured as RAID1 with default adapter parameters.

- The other drives are configured as JBOD (pass-through).

10.5 Chassis power policy after power loss

The “chassis power policy after power loss” feature is used to avoid a power surge when the power is restored after a power loss due to all the servers starting simultaneously. In most cases, this policy should be set to “stay off”.
With previous servers models, the “chassis power policy after power loss” was configured through a BIOS parameter. Now, this feature is configured by using IPMI.

10.5.1 Managing “chassis power policy after power loss” with ipmitool

The list of supported actions is reported by using the “chassis policy” subcommand:

```
ipmitool -I lanplus -U admin -P <password> -H <bmc> chassis policy
chassis policy <state>
   list        : return supported policies
   always-on   : turn on when power is restored
   previous    : return to previous state when power is restored
   always-off  : stay off after power is restored
```

Use “chassis policy always-off” subcommand for configuring the server to stay off when power is restored:

```
ipmitool -I lanplus -U admin -P passpass -H 10.197.177.90 chassis policy always-off
Set chassis power restore policy to always-off
```

Current configuration is reported by using the “chassis status” subcommand:

```
ipmitool -I lanplus -U admin -P <password> -H <bmc> chassis status
System Power         : on
Power Overload       : false
Power Interlock      : inactive
Main Power Fault     : false
Power Control Fault  : false
Power Restore Policy : always-off
Last Power Event     : ac-failed
Chassis Intrusion    : inactive
Front-Panel Lockout  : inactive
Drive Fault          : false
Cooling/Fan Fault    : false
Sleep Button Disable : allowed
Diag Button Disable  : allowed
Reset Button Disable : allowed
Power Button Disable : allowed
Sleep Button Disabled: false
Diag Button Disabled : false
Reset Button Disabled: false
Power Button Disabled: false
```

10.5.2 Managing “chassis power policy after power loss” with freeipmi

The chassis power policy can be managed by using ipmi-chassis-config command, and keypair "Chassis_Power_Conf:Power_Restore_Policy".
Checking out the keypair will report the current configuration:

```
ipmi-chassis-config -u admin -p <pwd> -h <bmc> --checkout -e "Chassis_Power_Conf:Power_Restore_Policy"
Section Chassis_Power_Conf
        ## Possible values: Off_State_AC_Apply/Restore_State_AC_Apply/On_State_AC_Apply
        Power_Restore_Policy                        Restore_State_AC_Apply
EndSection
```

Then, commit the keypair if you have to configuring a new policy :

```
ipmi-chassis-config -u admin -p <pwd> -h <bmc> --commit -e
"Chassis_Power_Conf:Power_Restore_Policy=Off_State_AC_Apply"
```

```
ipmi-chassis-config -u admin -p <pwd> -h <bmc> --checkout -e "Chassis_Power_Conf:Power_Restore_Policy"
Section Chassis_Power_Conf
        ## Possible values: Off_State_AC_Apply/Restore_State_AC_Apply/On_State_AC_Apply
        Power_Restore_Policy                        Off_State_AC_Apply
EndSection
```

10.6 BIOS settings are reset after BIOS update

After BIOS update, the BIOS settings are reset to BIOS default when the system is restarted.
Before running a BIOS upgrade, the user must get the details of the modified BIOS settings, and apply the same modifications when the server has been restarted with the new BIOS.

10.6.1 Intel VROC and BIOS update

VMD/VROC is a specific BIOS configuration, and it can only be applied to servers with Intel processor(s). In such case, after BIOS upgrade, the VMD/VROC feature must be reconfigured, else the Operating System cannot be started.

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