HPE ConvergedSystem 500 for SAP HANA Scale-up Configurations User Guide

Based on the HPE ProLiant DL560 Gen10 platform

Abstract

This document is intended to assist SAP solution architects, SAP database and basis administrators, storage administrators, and IT professionals who are involved in planning and deploying HPE ConvergedSystem 500 for SAP HANA Scale-up configurations. This document assumes you have experience with SAP HANA databases, familiarization with HPE ConvergedSystem 500 for SAP HANA Scale-up configurations, understanding of Linux Operating Systems (SLES and RHEL).

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HPE ConvergedSystem 500 5.0 for SAP HANA introduction

HPE offers configurations that support large data volumes on SAP HANA database. The HPE ConvergedSystem CS500 Scale-up solution is an enterprise-class real-time analytics or Suite on HANA (SoH) solution optimized to run SAP business application workloads. Hewlett Packard Enterprise solution for SAP HANA configurations is a hardware and software solution that integrates SAP HANA with industry-leading HPE ProLiant DL560 Gen10 enterprise servers.

For detailed configuration information, see the HPE ConvergedSystem 500 for SAP HANA Scale-up Configurations QuickSpecs (**http://www.hpe.com/info/quickspecs**).

SAP HANA license statement

This Hewlett Packard Enterprise solution contains an unlicensed copy of the SAP HANA software by SAP. Each SAP product is subject to its respective SAP end-user license agreement.

You are not licensed to use the copy of the SAP HANA software contained in the Hewlett Packard Enterprise solution until you have purchased, or have available for use, the appropriate license from SAP or its authorized distributors.

Contact your SAP representative to obtain the applicable license rights to use the SAP software.

CS500 Scale-up networking

Hewlett Packard Enterprise collects a set of parameters for each installation. One requirement is to collect networking details such as network addresses and the type and quantity of networks required.
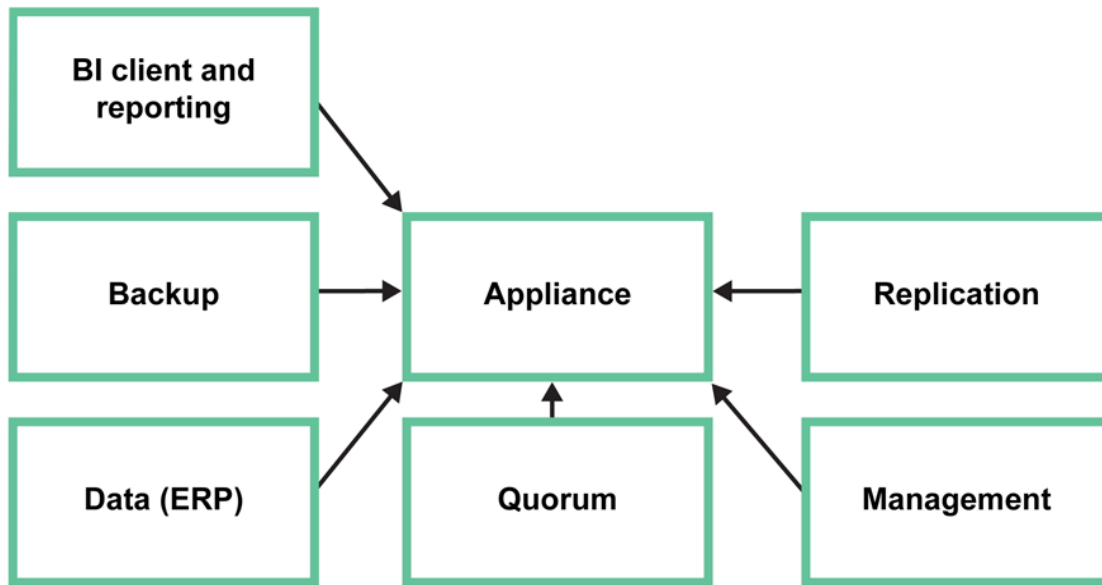

Figure 1: HANA application network touch points

- All data[1] and BI[2]-connections are 10/25GbE capable.

- Management connections are 1GbE capable.

- Backup[3] and replication are 10/25GbE capable.

These connections help isolate the traffic types onto their own LANs or VLANs. Management and iLO networks may be merged depending on the data center requirements. These connections are typically set up at the Hewlett Packard Enterprise factory prior to delivery of the appliance or can be configured during installation.

Hewlett Packard Enterprise provides bonding across network cards for high availability. An HPE ConvergedSystem 500 for SAP HANA Scale-up consists of two types of network architecture depending on the number of processors in the appliance.

The network architecture layout and the network bond mapping with device ports are detailed in the following.

- 2 socket - **CS500 Scale-up network connections for 2-socket configurations** on page 7

- 4 socket - **CS500 Scale-up network connections for 4-socket configurations** on page 8

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[1]   Data10 network
[2]   1GbE capable in 2-socket configurations
[3]   1GbE capable in 2-socket configurations

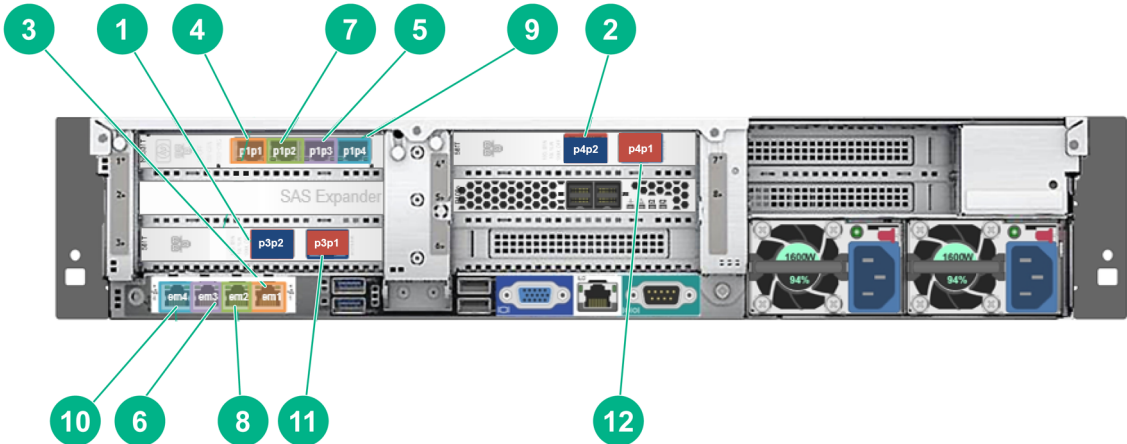# CS500 Scale-up network connections for 2-socket configurations

Figure 2: HPE ConvergedSystem 500 for SAP HANA Scale-up (2-socket) - network connections layout

Table 1: Network bond mapping with device ports (2-socket)

Item	Bond	Card Slot	Type	Devices	Network Traffic
1	bond6	PCI#3 Port2	10/25GigE	p3p2	Replication
2	bond6	PCI#4 Port2	10/25GigE	p4p2	Replication
3	bond8	ALOM Port1	1GigE	em1	data1
4	bond8	PCI#1 Port1	1GigE	p1p1	data1
5	bond7	PCI#1 Port3	1GigE	p1p3	Backup
6	bond7	ALOM Port3	1GigE	em3	Backup
7	bond4	PCI#1 Port2	1GigE	p1p2	Management/ Quorum
8	bond4	ALOM Port2	1GigE	em2	Management/ Quorum
9	bond3	PCI#1 Port4	1GigE	p1p4	User/BI
10	bond3	ALOM Port4	1GigE	em4	User/BI
11	bond2	PCI#3 Port1	10/25GigE	p3p1	data10
12	bond2	PCI#4 Port1	10/25GigE	p4p1	data10

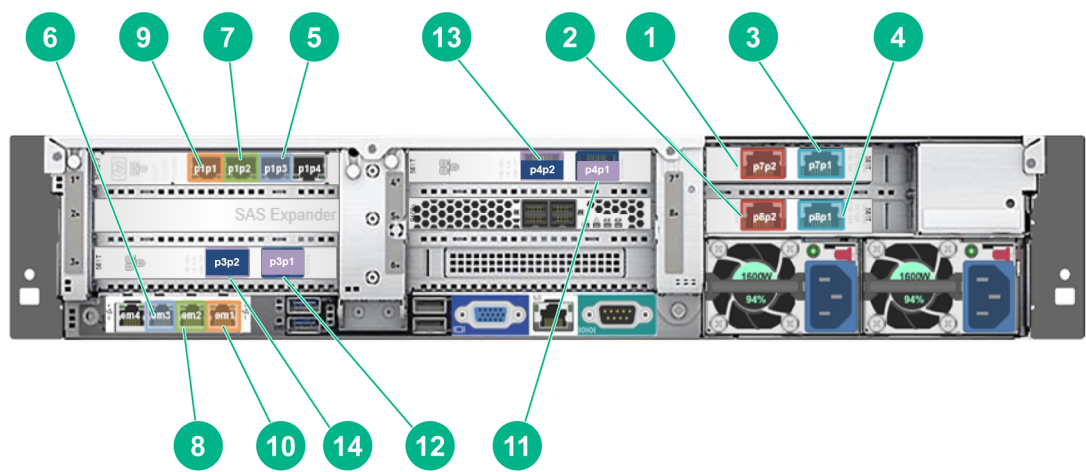# CS500 Scale-up network connections for 4-socket configurations

Figure 3: HPE ConvergedSystem 500 for SAP HANA Scale-up (4-socket) - network connections layout

Table 2: Network bond mapping with device ports (4-socket)

Item	Bond	Card Slot	Type	Devices	Network Traffic
1	bond2	PCI#7 Port2	10/25GigE	p7p2	Data10
2	bond2	PCI#8 Port2	10/25GigE	p8p2	Data10
3	bond3	PCI#7 Port1	10/25GigE	p7p1	User/BI
4	bond3	PCI#8 Port1	10/25GigE	p8p1	User/BI
5	bond9	PCI#1 Port3	1GigE	p1p3	Quorum
6	bond9	ALOM Port3	1GigE	em3	Quorum
7	bond4	PCI#1 Port2	1GigE	p1p2	Management
8	bond4	ALOM Port2	1GigE	em2	Management
9	bond8	PCI#1 Port1	1GigE	p1p1	Data1
10	bond8	ALOM Port1	1GigE	em1	Data1
11	bond7	PCI#4 Port1	10/25GigE	p4p1	Backup
12	bond7	PCI#3 Port1	10/25GigE	p3p1	Backup
13	bond6	PCI#4 Port2	10/25GigE	p4p2	Replication
14	bond6	PCI#3 Port2	10/25GigE	p3p2	Replication

The minimum requirements are for iLO and Data management networks to be configured. All the hostnames on the SAP HANA database server must follow SAP requirements as specified in SAP note 611361.

CS500 Scale-up storage

The HPE ConvergedSystem 500 for SAP HANA Scale-up file system layout is shown in the following figure.
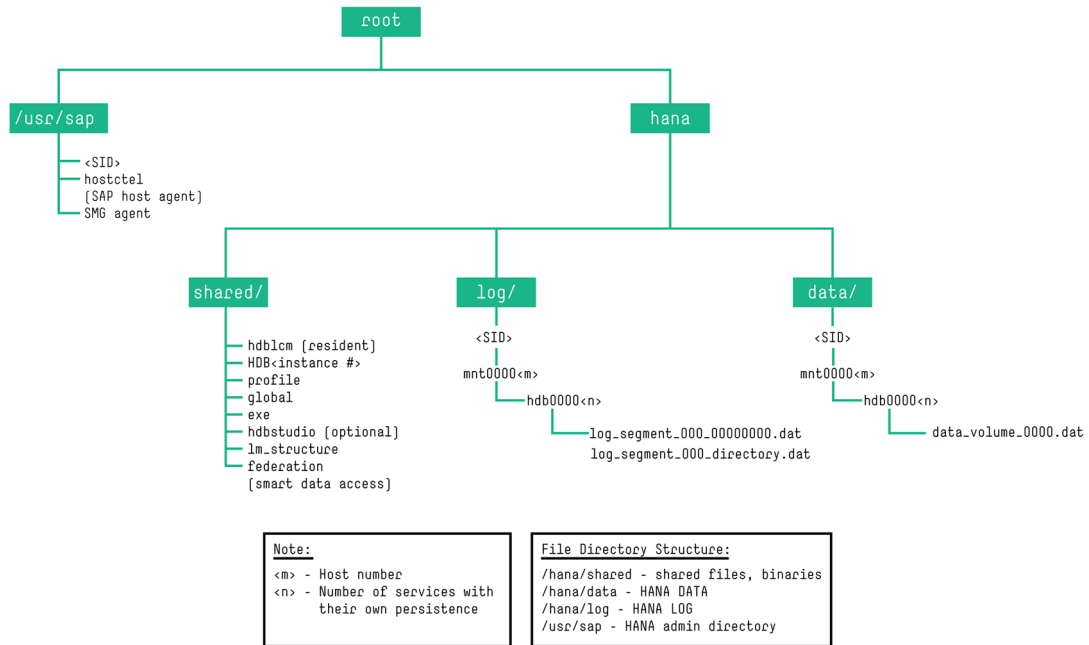

Figure 4: SAP recommended file system layout with edits for deployment overlay

The file system layout with mount point, size, and RAID type is shown in the following table.

Table 3: Filesystem layout

Mount Point	Size	RAID Type
/hana/shared	1x RAM	RAID5
/hana/data	3x RAM	RAID5
/hana/log	512GB[1]	RAID5
/hand/temp[2]	—	—
/usr/sap	50GB	RAID5

[1] RAM/2 for systems <= 256GB RAM and minimum 512GB for all other systems

[2] The location /hana/temp is used for temporary storage. This location cannot be used for regular usage.

Maintenance and operations tasks and responsibilities

> ⓘ **IMPORTANT:** Hewlett Packard Enterprise recommends following data center best practices to connect Hewlett Packard Enterprise servers, storage, and switches for power, networking, and fiber channel. Doing so will minimize downtime and inconveniences.

Table 4: Provisioning and setup

Task	Responsible
Installation of Hardware	Hewlett Packard Enterprise
Installation of Operating System	Hewlett Packard Enterprise
Installation of SAP HANA Platform	Hewlett Packard Enterprise
Adding additional SAP HANA database instances (MCOS)	Customer
Installing multitenant database containers (MDC)	Customer
Data Source Connectivity	Customer

Table 5: Maintenance

Task	Responsible
Patching of Firmware	Hewlett Packard Enterprise
Patching of Operating System	Customer[1] (Optional HPE Pointnext)
Patching of SAP HANA Platform components	Customer
Patching of peripheral components	Customer
Upgrade of Operating System	Hewlett Packard Enterprise
Update of SAP HANA platform components	Customer

[1] The customer is generally responsible for maintenance of the SAP HANA system. If the customer has a special support agreement with the hardware partner, maintenance may be the responsibility of the hardware partner.

Table 6: Operations

Task	Responsible
General administration of SAP HANA database	Customer
Backup and Recovery	Customer
SAP HANA system replication	Customer
SAP HANA System Monitoring	Customer
SAP HANA Database Monitoring	Customer

Table Continued

Task	Responsible
Installation of third-party software components	Customer
Support	Customer
Issue Handling Process	SAP Customers

During installation and startup, the hardware, operating system, and SAP HANA Platform are installed in the Factory Express and on-site startup services.

During provisioning and startup, Hewlett Packard Enterprise, another party, or the customer may add additional SAP HANA database instances and data source connectivity.

During ongoing maintenance and operations, the maintenance and update activities are dependent upon the support agreement with Hewlett Packard Enterprise and SAP.

Hewlett Packard Enterprise SAP consulting is available to help with additional configuration requirements such as high availability, disaster recovery, backup and recovery strategies, connectivity with other SAP solutions, and so on.

Support

Hewlett Packard Enterprise provides support services to help protect your investment in this appliance. Contacts for support services for the software and firmware updates for the appliance are provided in your support agreement.

CS500 Scale-up tools

Tools such as HPE Insight Remote Support (IRS) might require installation on a separate Microsoft Windows server before some support tasks can be run. These tools are subject to the site security requirements and network protocol. Follow all security protocols, and if approved, apply the approved security and anti-virus processes before exposing the system to the external network, and before connecting to an internet domain or downloading software to the system.

Insight Remote Support

HPE Insight Remote Support provides remote support to certain devices under warranty or support services contract.

SAP HANA Studio

SAP HANA Studio is the tool used for general administration and monitoring functions related to SAP HANA. The system includes a Linux version of SAP HANA Studio that is installed on the delivered appliance.

To install SAP HANA Studio, see the SAP HANA Studio Installation Guide. Many administrative functions are provided by SAP HANA Studio. Follow the instructions available in the SAP HANA Administration Guide and the **SAP HANA Server Installation and Update Guide**, as needed. For more information, see "**References** on page 19."

SAP HANA Cockpit

SAP HANA cockpit provides a single point of access to a range of tools for administration and detailed monitoring of SAP HANA databases. SAP HANA cockpit should be installed on a dedicated system. It is a web-based HTML5 user interface that is accessible through a browser. Follow the instructions available in the **SAP HANA Administration Guide** and the **SAP HANA Server Installation and Update Guide**, as needed.

YaST

YaST (Yet another Setup Tool) is the operating system setup and configuration tool for the SLES distribution. Use this tool to perform normal operating system maintenance. For RHEL, refer to the **Red Hat Enterprise Linux System Administrator Guide**.

IP addresses

The IP addresses for the components in the appliance are listed in the Smart CID.

Managing licenses

For SAP HANA, see the "Managing SAP HANA Licenses" section in the **SAP HANA Administration Guide**.

For SLES, this process is handled upon delivery of the system. Hewlett Packard Enterprise offers the SLES subscriptions for electronic delivery. For the registration process, perform the following steps:

1. You will receive an email which includes your Hewlett Packard Enterprise License Entitlement Certificate containing your Entitlement Order Number.

2. Go to the **Hewlett Packard Enterprise Software Licensing Portal** to retrieve your SuSE activation token.

3. Once you retrieve your activation token, go to the **SuSE website** to activate your subscriptions.

4. For RHEL, go to the **Red Hat website** to activate your subscriptions.

Managing users

The default user identifiers and passwords for the components in the appliance are listed in the Customer Intent Documentation (CID).

There are two user sets for SAP HANA and SLES, they are managed accordingly.

For SAP HANA, see the SAP HANA Administration Guide, "Managing SAP HANA Users".

For SLES, see the YaST User and Group Administration dialog.

For RHEL, see "Managing Users and Groups" in the **Red Hat Enterprise Linux System Administrator's Guide**.

For the other components, see the appropriate user guide.

Updates

Hewlett Packard Enterprise Support offers a variety of update and upgrade services to keep your HPE ConvergedSystem for SAP HANA appliance running at peak performance. Contact your local Hewlett Packard Enterprise sales representative for services details.

Power-on sequence

1. Power on the server.

2. Verify that all components are powered on.

3. Start the SAP HANA database using SAP HANA Studio.

Power-off sequence

1. Stop SAP HANA database using SAP HANA Studio, or by using the command line, and wait for the HANA processes to stop.

   To stop the SAP HANA database using command line:

   a. Log in to the server as <sid>adm user.

   b. Execute `HDB stop`.

   c. Verify all the processes are stopped.

2. Shut down SLES/RHEL and power off the server.

Backups

Use the site recommended tools and procedures to back up the SAP HANA nodes and SAP HANA Studio or site recommended tools to back up the database. If you require more information on the backup and recovery options, contact Hewlett Packard Enterprise Pointnext.

HPE OneView and ConvergedSystem SAP HANA Appliances

> ⓘ **IMPORTANT:** Do not edit the configuration of an HPE SAP HANA appliance using HPE OneView in Manage mode. These changes could impact the integrity of the appliance. For assistance with updating your SAP HANA appliance, contact your HPE Pointnext services representative.

The best practice for using HPE OneView with an CS500 for SAP HANA appliance is to monitor, but not manage. When you install HPE OneView with CS500 SAP HANA appliances, select Monitor mode.

For CS500 for SAP HANA appliances, HPE does not recommend enabling the remote monitoring capabilities of HPE OneView. Enabling HPE OneView remote monitoring would override the HPE Insight Remote Support (HPE IRS) solution configuration information, impacting proper case routing for your SAP HANA appliance to the appropriate HANA support resources.

When using both HPE IRS and HPE OneView to monitor a CS500 SAP HANA appliance, use HPE IRS for remote monitoring and use HPE OneView for local monitoring of devices. HPE recommends engaging HPE Pointnext Services to configure HPE IRS or HPE OneView on your CS500 for SAP HANA appliance.

Resources

• HPE OneView Install guide for customers: **Hewlett Packard Enterprise Information Library**

• Insight Remote Support Solutions FAQ: **Hewlett Packard Enterprise Information Library**

SAP HANA best practices

Avoid system outage
To avoid system outage, follow these guidelines:

• Schedule installation of updates (drivers and firmware) for SAP HANA ConvergedSystem periodically with HPE personnel.

• If you have IBRIX storage, reboot IBRIX systems once every 496 days or earlier.

This reboot avoids the known issue with IBRIX. For more information about this issue, see customer advisory at **Hewlett Packard Enterprise Support Center**.

- Ensure that there is sufficient free space available on the SAP HANA file systems including HANA shared, data, and log.

  To view the available free space, run the `df -h` command on the HANA nodes.

- The size of the HANA database must not exceed the physical memory installed on the system.

- Ensure that backup and replication activities are configured on the network with optimal speed.

- The following tasks must be performed by HPE service personnel only:
  - Connecting the appliance to the Customer Enterprise Network
  - Replacing any cables on the appliance

    NOTE: HPE recommends using HPE cables only. Use of non-HPE cables will not guarantee proper contacts and the appliance might not function correctly.
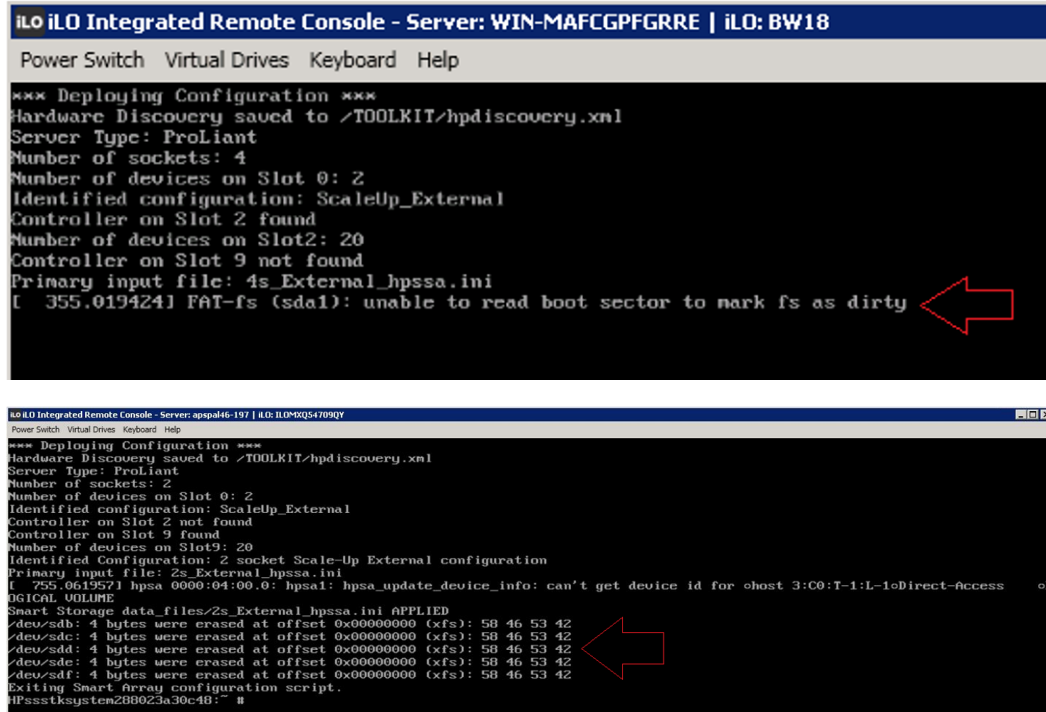
  - Updating the kernel

- Do not use Operating System file systems for saving any other files or for backups.

- Do not update any of the kernel parameters as this update might reduce system performance.

Troubleshooting

Known issues

Configuring an HPE Smart Array

The following messages may appear. These messages can be ignored.

Messages appearing in /var/log/messages file

The following message appears in /var/log/messages file. This message can be ignored.

```
suseSL14:/var/log # grep -i temperature /var/log/messages |tail -6
2017-06-30T01:34:43.650328-06:00 suseSL14 smartd[3000]: Device: /dev/sdd,
failed to read Temperature
2017-06-30T01:34:43.650336-06:00 suseSL14 smartd[3000]: Device: /dev/sde,
failed to read Temperature

2017-07-11T09:21:35.376944+00:00 suseSL13 kernel: [    3.951464] pci
0000:36:00.0: BAR 6: failed to assign [mem size 0x00200000 pref]
```

Error message while booting the server
In some cases while booting an appliance the following error message for HPE Smart Storage Battery
backup displays. This message can be ignored.
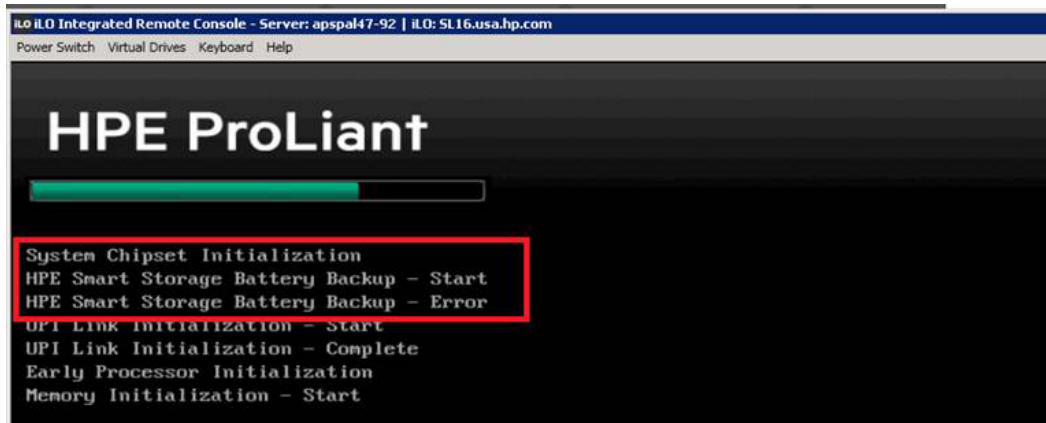
Common problem resolution

The following list provides some recommendations for starting the troubleshooting process.

Before calling for service, perform the following basic troubleshooting procedures. If the following procedures do not solve your problem, follow the instructions outlined in "**Proactive Care electronic case logging**."

Power and connectivity issues

Isolate the problem to the component level by checking power and connectivity.

- Check any interlock or interconnect LEDs that may indicate a component is not connected properly.

- Be sure all power cords are securely connected.

- Be sure all network cables are properly aligned and securely connected.

- If a device has latches, be sure they are completely closed and locked.

Server and storage issues

- For server and storage, use the Service Pack for ProLiant tools to check for basic operational statistics.

- For networking, isolate to the network and port using ping and troubleshoot from this point.

- Ensure that all the files systems, including HANA data and log, have enough free space.

HANA Studio tools (database issues)

HANA Studio has monitoring capability. Use this tool to discover issues with the HANA software.

Service notifications

To search for service notifications, see the **Hewlett Packard Enterprise Support Center**. Enter the product name or number, and then click **Go**. Select **Advisories, Bulletins and Notices**. The complete list of documents is displayed.

Safety considerations

Important safety information

Familiarize yourself with the safety information in the following sections before troubleshooting the server.

⚠️ **Important safety information**

Before servicing this product, read the Important Safety Information document provided with the server.

Warnings and cautions

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.

⚠️⚡	This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel. ⚠️ **WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.
⚠️⊘	This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason. ⚠️ **WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure.
⚠️📞	This symbol on an RJ-45 receptacle indicates a network interface connection. ⚠️ **WARNING:** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.
⚠️♨️	This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. ⚠️ **WARNING:** To reduce the risk of injury from a hot component, allow the surface to cool before touching.

These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to disconnect power from the system completely.

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you must follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.

- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

- Place parts on a grounded surface before removing them from their containers.

- Avoid touching pins, leads, or circuitry.

- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

- Use conductive field service tools.

- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact the **Hewlett Packard Enterprise Support Center**.

References

HPE ConvergedSystem 500 for SAP HANA Scale-up

HPE ConvergedSystem 500 for SAP HANA Scale-up Configurations v5 Solution Architecture

SAP HANA

- **SAP HANA Platform Documentation**

- **SAP HANA Administration Guide**

- **SAP HANA Server Installation and Update Guide**

ProLiant Servers, storage and miscellaneous

- **HPE ProLiant DL560 Server**

- **HPE D3710 Disk Enclosure**

- **Insight Remote Support**

SUSE Linux Enterprise Server

SLES 12

Red Hat Linux Enterprise Server

RHEL 7.3

Proactive Care

ConvergedSystems are sold with Proactive Care as a minimum support level. You will have been provided a Service Agreement ID (SAID). You can engage support using the following methods.

- Proactive Care electronic case logging (recommended)
- Proactive Care phone support

Submitting a support case for an HPE CS500 SAP HANA solution

Procedure

1. On the Hewlett Packard Enterprise Support Center (HPESC) website (**http://www.hpe.com/support/hpesc**), select **My HPE Support sign-in** and sign-in with your HPE Passport ID.

2. Select **Submit or manage support cases**.

   The Support Case Manager screen displays.

3. Under More support options, click Submit or manage support cases.

   The Support Case Manager screen displays.

4. Under Submit a case, enter your Service Agreement Identifier (SAID) then click Submit case.

   The Support Case Manager screen displays.

5. In the Action column, click the **Submit a case** button in the solution row.

   The Case details page displays.

6. Enter your Contact information, Equipment location, the Support Case Manager PIN, and detailed information about your request.

7. Click **Submit**.

   The Contact & equipment location Information screen displays.

8. Verify, change, or enter the information in the Contact & equipment location Information screen, then click **Submit**.

   Your request is submitted. A member of the support team will contact you.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  http://www.hpe.com/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  http://www.hpe.com/support/hpesc

  Information to collect

- Technical support registration number (if applicable)

- Product name, model or version, and serial number

- Operating system name and version

- Firmware version

- Error messages

- Product-specific reports and logs

- Add-on products or components

- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.

- To download product updates:

  Hewlett Packard Enterprise Support Center
      www.hpe.com/support/hpesc
  Hewlett Packard Enterprise Support Center: Software downloads
      www.hpe.com/support/downloads
  Software Depot
      www.hpe.com/support/softwaredepot

- To subscribe to eNewsletters and alerts:

  www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

  www.hpe.com/support/AccessToSupportMaterials

> ⓘ **IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information
HPE Get Connected
    www.hpe.com/services/getconnected
HPE Proactive Care services
    www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
    www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
    www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information
Proactive Care central
    www.hpe.com/services/proactivecarecentral
Proactive Care service activation
    www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options
    www.hpe.com/support/ProLiantServers-Warranties
HPE Enterprise and Cloudline Servers
    www.hpe.com/support/EnterpriseServers-Warranties
HPE Storage Products
    www.hpe.com/support/Storage-Warranties
HPE Networking Products
    www.hpe.com/support/Networking-Warranties

Regulatory information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (**docsfeedback@hpe.com**). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.