Unify OpenScape Branch

550 / 550 HA

Installation Guide

Atos

Contents

History of Changes

Issue	Date	Summary
1	09/2021	First issue of the guide.

1 OpenScape Branch 550 / 550 HA– Introduction

OpenScape Branch is a Session Initiation Protocol (SIP) based appliance used in a Voice over IP enterprise communication environment for OpenScape Voice solutions to empower the remote branch office.

1.1 About this Guide

This guide focuses on describing the special features of the OpenScape Branch 550 (OSB 550) and OpenScape Branch 550HA (OSB 550HA). Administrators and Service Technicians are recommended to study the instructions within this Installation guide before switching on the power.

Intended Audience

The audience of this guide is Unify Professional Services and Back Level Support personnel. Note that this does not preclude other Unify personnel, customers, or third-party service providers who have the necessary prerequisite knowledge from using the guide.

Prerequisite Knowledge

This guide is written to the user who has:

- Successfully completed the Unify OpenScape Voice installation and technical training courses.

- Advanced SuSE Linux (OpenSuSE) operating system knowledge and experience.

- Basic knowledge of the third-party platforms and equipment used for OpenScape Voice including: their physical characteristics, their assembly, their documentation (installation, service, and troubleshooting), and the documentation web sites associated with the third-party platform and equipment manufacturers.

- Basic knowledge of the industry standards and specifications utilized by OpenScape Voice and associated equipment.

1.2 Symbols

The following symbols may be used in this guide.

⚠DANGER DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE NOTICE indicates a property damage message.

⚠CAUTION CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Electric Shock!

This symbol and title warn of hazards due to electrical shocks when touching products or parts of products. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.

ESD Sensitive Device!

This symbol and title inform that the electronic products and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.

Disconnection, all power plugs!

This symbol informs to remove all AC power supply plugs before opening the device.

Connection, protective conductor (PE)!

This symbol informs of HIGH TOUCH CURRENT - Before connecting to the telecommunication network, be sure to make the grounding connection.

Protective Earth (PE)!

This symbol marks the connection point for protective conductor (PE) on the device.

This symbol indicates general information about the product and the guide. This symbol also indicates detail information about the specific product configuration.

This symbol precedes helpful hints and tips for daily use.

1.3 Scope of Delivery

Check that your delivery is complete, and contains the items listed in Table 1: Scope of delivery. If damaged or missing items are discovered, contact the dealer.

Table 1: Scope of delivery

Part	Qty	Part Description
OpenScape Branch 550 / OpenScape Branch 550HA	1	System configuration as ordered incl. a 19" rack mounting set
Rubber feet	4	Self-adhesive
Safety instructions	1	Installation Guide (incl. Ferrite Instruction)
Ferrites	1	Ferrite with OSB 550-D44 /OSB 550HA-D44
	2	Ferrite with OSB 550-A44 / OSB 550HA-A44
	1	Ferrite with OSB 550-DP14 / OSB 550HA-DP14
	1	Ferrite with OSB 550-DP24 / OSB 550HA-DP24

NOTE: Power cords are not included in delivery. The appropriate country specific power cord has to be ordered separately.

NOTE: Slide Rails are NOT included in the product delivery and can be ordered as a separate option.

NOTE: Ferrites are included to reduce EMI for the OSB 550- A44, OSB 550 / 550HA-D44, OSB 550 / 550HA -DP14 and OSB 550/ 550HA-DP24 variants. Ferrites must be installed on FXS and FSO lines.

1.3.1 Accessories and Spare Parts

Table 2: Accessories

Rack Slide Rails Kit contents for KISS 2U/4U Systems	Qty
Slide rails	2
Rack mounting bracket for 2U/4U systems	4
Plate with 2XM6 threaded holes	4
Countersunk head screw M6X10	8
Countersunk head screw M4X10	8

NOTE: The "Rack Slide Rails Kit" includes the slide rail kit for KISS 1U as well as for KISS 2U/4U V2 Systems. Use the corresponding slide rail kit for your system.

NOTE: The installation of the KISS platform has to be carried-out only by qualified personnel familiar with the associated dangers. Instructions on how to install the slide rails are included in the Slide Rails Kit.

⚠ WARNING During the mounting procedure into a 19" industrial cabinet the KISS system must be powered down and the power cord has to be disconnected from the power source. Disconnect all peripherals.

Table 3: Spare parts

Part Number	Part Description
F31505-E21-S102	Fan Unit
F31505-E21-S103	AC PSU 250W
F31505-E21-S105	Red.AC PSU - 300W Module
F31505-E21-S107	SSD M.2 128GB
V39113-Z7000-A3	Battery CR2032
S30122-X8004-X49	OSB 500i Card 4 PRI
S30122-X8004-X51	OSB 550 Card 4FXS
S30122-X8004-X52	OSB 550 Card 4FXO
S30122-X8004-X53	OSB 550 Card 2E1/T1PRI
S30122-X8004-X54	OSB 550 Card 1E1/T1PRI
S30122-X8004-X55	OSB 550 Card 4BRI
S30122-X8004-X56	OSB 550 Card 4PRI
F31505-E21-A5 F31505-E21-A105	all OSB550/550HA models

Part Number	Part Description
F31505-E21-A1	
F31505-E21-A2	
F31505-E21-A3	
F31505-E21-A4	
F31505-E21-A6	
F31505-E21-A7	
F31505-E21-A101	
F31505-E21-A102	
F31505-E21-A103	
F31505-E21-A104	
F31505-E21-A106	
F31505-E21-A107	

1.3.2 Shipment, Packaging and Unpacking

The OpenScape Branch 550 / 550 HA is packed together with all standard parts in a product specific cardboard packaging with suitable shock absorbers inside.

Each item is packaged separately.

NOTE: Please refer to 1.5.3 Special Handling and Unpacking Instructions.

1.4 Security Information

Refer to the OpenScape Branch 550/550 HA Security Checklist for the measures to be taken to secure OpenScape Branches.

⚠WARNING It is of vital importance that security measures outlined in the Security Checklist are executed.

1.5 Safety Information

⚠WARNING Read and observe the instructions within this chapter that have been compiled for the operator's safety and to ensure accordance with regulations. If the following General Safety Instructions are not observed, it could lead to injuries to the operator and/or damage to the product. Unify Software and Solutions GmbH & Co. KG is exempt from accident liability, also during the warranty period if the instructions within this guide are not observed.

1.5.1 General Safety

The product has been built and tested according to the basic safety requirements for low voltage (LVD) applications and has left the manufacturer in a safety-related, flawless condition. To maintain this condition and to ensure safe operation, the operator must observe the correct operating conditions for the product and following general safety instructions:

- The product must be used as specified in the instructions for safety for the product and for the operator, as described within this guide. The guide contains guidelines for setting up, assembly, installation, maintenance, transport and storage.

- The on-site electrical installation must meet the requirements of the country's specific local regulations.

- The communication system should only be operated with outlets that have connected ground contacts.

- During a thunderstorm, do not connect or disconnect lines and do not install or remove boards.

- If supplied with a power cable, only use the supplied power cable.

- Replace the power cable immediately if it appears to be damaged.

- Do not use an extension cable to connect the product.

- Use separate ground wires to provide protective grounding for the communication system. Before you start up the system and connect the phones and phone lines, connect the communication system with a permanent earthing conductor (PE).

- Only use communication lines with a conductor diameter of 0.4 mm (AWG 26) or more.

- To guarantee that sufficient air flow is available to cool the product, ensure that ventilation openings are not covered or blocked.

- Do not place the product close to heat sources or damp places.

- Only connect devices or parts that fulfill the requirements of circuits as stipulated by IEC 62368-1 to the available interfaces.

- Before opening the product, make sure that the product is disconnected from the mains.

- Switching off the product by the power button does not disconnect the product from the mains. Complete disconnection is only possible if the power cable is removed from the wall plug or from the product. Ensure that there is free and easy access to enable disconnection.

- The product may only be opened for the insertion or removal of add-on cards (depending on the configuration of the system). This should only be carried out by qualified operators.

- If extensions are being carried out, the following must be observed:

    - All effective legal regulations and technical data are adhered to.

    - Power consumption of any add-on card does not exceed the specified limitations.

    - Current consumption of the product does not exceed the value stated on the product label.

- Only use original accessories and spare parts approved by Unify Software and Solutions GmbH & Co. KG.

- NOTE: safe operation is no longer possible when any of the following applies:

    - Product has visible damage.

    - Product is no longer functioning
      In these cases, the product must be switched off and disconnected from the mains. Additionally, ensured that the product can no longer be operated.

- After completing test and maintenance work, make sure that all safety equipment is re-installed in the right place.

- Install cables in such a way that they do not pose a risk of an accident (tripping) and cannot be damaged.

- When working on an open communication system, make sure that it is never left unattended.

- When working on the systems, never wear loose clothing and always tie back long hair.

- Do not wear jewelry, metal watchbands or clothes with metal ornaments or rivets.

- Always wear the necessary eye protection whenever appropriate.

- Always wear a hard hat where there is a risk of injury from falling objects.

- Make sure that the work area is well lit and tidy.

- Sudden changes in temperature can result in condensing humidity. If a communication system or server is transported from a cold environment to warmer areas, for example, this could result in the condensation of humidity.

- Wait until the communication system or server has adjusted to the ambient temperature and is completely dry before starting it up.

Emergencies

What to Do in an Emergency:

- In the event of an accident, use caution and remain calm and controlled.

- Always switch of the power supply before touching the victim.

- If you are not able to disconnect the power supply, use a nonconductive object, such as a wooden rod, to push or pull the victim away from electrical contact.

- Administer First Aid.

- Immediately Call for Help.

First Aid

- Be familiar with basic first aid procedures for electrical shock. A fundamental knowledge of various resuscitation methods if the victim has stopped breathing or if the victim's heart is no longer beating, as well as first aid for treating burns, is absolutely necessary in such emergencies.

- If the victim is not breathing, immediately perform mouth-to-mouth or mouth-to-nose resuscitation.

- If you are trained and certified, administer cardiac compression if the victim's heart is not beating.

Call for Help

Immediately call a rescue group, ambulance or hospital. Provide the following information in the following sequence:
- Where did the accident happen?

- What happened?

- How many people were injured?

- What type of injuries?

Wait for questions.

Reporting Accidents

- Report to your manager all accidents, near accidents, and possible hazards to ensure their causes are resolved as soon as possible.

- Report any electric shock, no matter how small.

1.5.2 Safety with electricity

The new OpenScape Branch 550 / 550HA product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new OpenScape Branch 550 / 550HA product, you are requested to conform with the following guidelines.

1.5.2.1 High Voltage Safety

As a precaution and in case of danger, the power connectors must be easily accessible. The power connectors are the product's main disconnect device.

⚠ CAUTION Warning
All operations on this product must be carried out by sufficiently skilled personnel only.

⚡ Electric Shock!

Before installing a non-hot-swappable OpenScape Branch 550 / 550HA into a system always ensure that your main power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug all power cables and any other cables which provide external voltages before performing any work on this product.

Protective conductor (PE) connection shall remain connected to a central grounding point. The protective conductor (PE) cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

1.5.3 Special Handling and Unpacking Instructions

ESD Sensitive Device!

Electronic products and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

⚠ CAUTION Handling and operation of the product is permitted only for trained personnel within a workplace that is access controlled. Follow the "General Safety Instructions" supplied with the product (see 1.5.1 General Safety Instructions).

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at ESD safe workstations. Where a safe workstation is not guaranteed, it is important for the operator to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

1.5.4   Lithium Battery Precautions

When replacing the mainboard's lithium battery observe the instructions described in 1.5.1 General Safety.

⚠WARNING **Danger of explosion when replaced with wrong type of battery or if the battery is replaced incorrectly!**

- Replace only with the same or equivalent type recommended by the manufacturer.
- The lithium battery type must be UL recognized.
- Dispose of used batteries according to the manufacturer's instructions.

Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).

1.5.5   Accessing Internal Components

This chapter contains important information on working safely with internal components. Follow these instructions when handling internal components and observe the corresponding safety instructions included in 1.5.1 General Safety.

⚠WARNING **Energy hazards- 120-240 VA present inside the chassis!**

Before removing the top cover, switch off the product properly using the power switch on the front side and disconnecting the power cable from the mains power supply.

⚠WARNING Activities requiring internal access of the product must be performed by trained personnel aware of the associated dangers!

ESD Sensitive Device!

Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components.

1.5.6 Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices.

Proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

1. Transport ESD-sensitive products in ESD-safe containers such as boxes or bags.
2. Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.
3. Always be properly grounded when touching sensitive products, components, or assembly.
4. Store electrostatic-sensitive products in protective packaging or on antistatic mats.

1.5.6.1 Grounding Methods
To avoid electrostatic damage, observe the following grounding guidelines:

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to the workplace. Always use properly grounded tools and equipment.
2. Use antistatic mats, antistatic wristband, heel straps, or air ionizers for more protection.
3. Always handle electrostatically sensitive components by their edge or by their casing.
4. Avoid contact with pins, leads, or circuitry.
5. Switch off power and input signals before inserting and removing connectors or connecting test equipment.
6. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
7. Use only field service tools that are conductive, such as cutters, screwdrivers, and vacuum cleaners.
8. Always place any boards PCB-assembly-side down on a grounded conductive base

1.5.7 Protective Grounding
The protective grounding provides a secure connection to the ground potential to protect against dangerously high touch voltages in the event of a malfunction.

⚠DANGER Risk of electric shock through contact with live wires!

Only personnel with proper qualifications or qualified electricians should perform work on the low-voltage network (<1000 VAC) and all work must comply with the national/local requirements for electrical connections.

⚠WARNING **Risk of electric shock through contact with live wires!**

Use separate ground wires to provide protective grounding (PE) for the OpenScape Branch 550 / 550HA communication system and possibly any main distribution frames being used. Connect your communication system and your main distribution frame to the ground wire before starting up the system and connecting telephones and lines.

Make sure that the ground wires laid are protected and strain relieved.

NOTE: A figure showing the assembly of the protection ground terminal is to be provided.

1.5.8 Lightning Protection Requirements

The protection of communication system against high-energy surges requires a low-impedance ground connection.

Once a communication system has been grounded, check the low-impedance ground connection of the system using the ground conductor of the mains power supply circuit and the low-impedance connection (of the additional permanently connected protective ground conductor) to the building's potential equalization bus.

NOTICE **Fire hazard due to surge voltage!**

Telecom lines which are over 500m in length or which must leave the building must be conducted through an additional external lightning protection.

Lightning protection of this kind is known as additional primary protection. The additional primary protection is guaranteed by the professional installation of ÜSAGs (surge arresters, gas filled) in the main distribution frame, the patch panel or at the entry point of the pipe in the building. A gas-filled surge arrester with 230 V nominal voltage is switched to ground from each wire that is to be protected.

Without this additional primary protection, lightning could irreparably damage the telecom boards. This can cause the entire communication system to fail or result in components overheating (fire hazard).

1.5.9 Connecting to the Power Supply Circuit

The communication system has been approved for connection to TN-S power supply systems. They can also be connected to a TN-C-S power supply system in which the PEN conductor is divided into a ground wire and a neutral wire. TN-S and TN-C-S systems are defined in the IEC 60364-1 and IEC60364-5-51 standard.

⚠DANGER **Risk of electric shock through contact with live wires!**

Only qualified electricians should perform any work that may be required on the low-voltage network. These installation activities to connect the communication system must be performed in compliance with IEC 60364-1 and IEC 60364-4-41 or any corresponding legal norms or national regulations.

1.6 Thermal Considerations

1.6.1 Active Cooling

The OpenScape Branch 550 / 550HA is forced air-cooled using two internal system fans that force air to flow from the front to the back of the chassis. The processor and expansion cards have integrated cooling solutions or are equipped with corresponding cooling devices.

1.6.2 Temperature Sensor

The temperature conditions of the product (depending on the environmental temperature and the load) are detected by two internal temperature sensors (one at the rear and one near the fan assembly) that control the speed of the system fans within the fan assembly accordingly.

1.6.3 Connecting telecom lines and analog phones

Different types of telecom lines and analog phones can be connected to the OpenScape Branch 550 / 550HA. The connection is made directly at the board.

⚠WARNING **Risk of electric shock through contact with live wires!**

Use separate ground wires to provide protective grounding (PE) for your communication system and any main distribution frames used before connecting telephones and lines.

⚠CAUTION **Fire hazard!**

To reduce the risk of fire, you may only use communication cables with a conductor diameter of at least 0.4mm (AWG 26) or larger.

NOTICE **Fire hazard due to surge voltage!**

In the case of line lengths exceeding 500 m and where the lines exit the building, the OSB550 should be protected by external lightning protection.

Lightning protection of this kind is known as additional primary protection. The additional primary protection is guaranteed by installing ÜSAGs (surge arresters, gas filled) in the patch panel or at the entry point of the pipe in the building. A gas-filled surge arrester with 230 V nominal voltage is switched to ground from each wire that is to be protected.

1.7 Quality and Environmental Management

Unify Software and Solutions GmbH & Co. KG aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements.

Unify Software and Solutions GmbH & Co. KG is certified for its Quality Management System according to ISO9001 and for its Environmental Management System according to ISO 14001.

1.7.1 Disposal and Recycling

Products by Unify Software and Solutions GmbH & Co. KG are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

1.7.2 WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste.
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE.
- Improve the environmental performance of all those involved during the lifecycle of EEE.

All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. The correct disposal and separate collection of your old appliance will help prevent potential negative consequences for the environment and human health. It is a precondition for reuse and recycling of used electrical and electronic equipment. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service, the shop where you purchased the product or your sales representative. The statements quoted above are only fully valid for equipment which is installed and sold in the countries of the European Union and is covered by the directive 2012/19/EU. Countries outside the European Union may have other regulations regarding the disposal of electrical and electronic equipment.

1.8 Marking

Hereby, Unify Software and Solutions GmbH & Co. KG declares that the OpenScape Branch 550 and OpenScape Branch 550HA are in compliance with EU Directives 2014/30/EU, 2014/35/EU and 2011/65/EU as well as the UK Electrical Equipment (Safety) Regulations 2016, UK Electromagnetic Compatibility Regulations 2016 and UK RoHS Regulations 2012.

The full text of the EU and UK declarations of conformity are available under the subdirectory "Declarations of Conformity" at the following internet address: http://wiki.unify.com

2 The OpenScape Branch 550/ 550HA-Overview

The OpenScape Branch 550 is designed for high performance, reliability and offering total flexibility with installation options in a 19" industrial rack or on a desktop.

The OpenScape Branch 550HA has a redundant power supply and is otherwise identical to the OSB 550.

2.1 OpenScape Branch 550 / 550 HA

Table 4: Technical Characteristics

General Features	
Based on:	KISS 2US V3 CFL model server
Physical size (WxHxD):	482 x 88 x 355 mm (18.9" x 3.4" x 13.9")
Weight:	up to 7 kg (15.3 lb)
Average Power Consumption:	41W
Rated Heat Emission:	648 kJ/h (614.2 BTU)
Operating Temperature:	0-50°C (32-122°F)
Operating Humidity:	10 ~ 93% @ 40 °C, non-condensing
MTBF:	> 50000 hours (Server only)
Air flow:	Front to rear
Rated power (OSB 550) -Single AC Power Supply	
Year 2021:	250W, 100-240 VAC, 50-60 Hz, 80 Plus
Year 2022:	300W, 100-240 VAC, 50-60 Hz, 80 Plus silver
Rated power (OSB 550 HA) - Redundant AC Power Supply (high availability)	
Year 2021:	2x 300W, 100-240 VAC, 50-60 Hz, 80 Plus silver
Board	
Mainboard	D3641 micro-ATX C246
Processor Type	Intel Pentium G5400T
Chipset	Intel® C246 Express
Memory	RAM 2x 4GB DDR4 2666 (non ECC)
Front I/O	
USB	2x USB 2.0
Rear I/O	
USB	4x USB 2.0 2x USB 3.1 Gen1 2x USB 3.1 Gen2

LAN	2x 1 Gb (1x i219LM & 1x i210AT)
	10/100/1000 Mbit/s
	ATM 12.0 /vPro support
	Teaming support
Display	1x DVI-D (1920 x 1200 @60 Hz)
	2x Display Port V 1.2 (4096x2304 @60Hz)
PS/2	Keyboard, Mouse
Audio	1x Line in,
	1x Line out
	1x Microphone
Serial Port	1x RS232
	(Two optional additional serial ports cutouts on the rear side of the chassis)
Software	
Operating System	MS Windows 10 IoT x64
	Linux Ubuntu 1804 LTSB Desktop 64 bit
BIOS	AMI UEFI BIOS 5.x[1]

2.2 OpenScape Branch 550 / 550HA models

Table 5: OpenScape Branch 550 models

Model	Variant	PSTN Side	Device Side
OSB 550	**D44**	4x BRI	4x FXS
		1B433LF	1A4B05F
OSB 550	**A44**	4x FXO	4x FXS
		1A4B02F	1A4B05F
OSB 550	**DP14**	1x E1 PRI	4x FXS
		1TE131F	1A4B05F
OSB 550	**DP24**	2x E1 PRI	4x FXS
		1TE235BF	1A4B05F
OSB 550	**DP4**	4x T1/E1 PRI	NA
		1TE435BF	
OSB 550	**DP8**	8x T1/E1 PRI	NA
		1TE435BF	1TE435BF
OSB 550	**NC**	NA	NA
		4x BRI	4x FXS

OSB 550HA	D44	1B433LF	1A4B05F
OSB 550HA	A44	4x FXO	4x FXS
		1A4B02F	1A4B05F
OSB 550HA	DP14	1x E1 PRI	4x FXS
		1TE131F	1A4B05F
OSB 550HA	DP24	2x E1 PRI	4x FXS
		1TE235BF	1A4B05F
OSB 550HA	DP4	4x T1/E1 PRI	NA
		1TE435BF	
OSB 550HA	DP8	8x T1/E1 PRI	NA
		1TE435BF	1TE435BF
OSB 550HA	NC	NA	NA

2.3 OpenScape Branch 550 / 550HA variants

Table below is a preliminary summary that includes all OSB 550 variants.
The correct variant must be ordered to support FXO, FXS, BRI, E1/T1.

Table 6: OpenScape Branch 550 /550HA Performance

Models	OSB 550 / OSB 550HA						
	D44	A44	DP14	DP24	DP4	DP8	NC
Max. supported number of SIP registered lines[1]	500	500	500	500	500	500	500
Max. number of concurrent sessions	400	400	400	400	400	400	400
Max. number of calls per second (continuous)	4	4	4	4	4	4	4
Max. registrations per second (background)	10	10	10	10	10	10	10
Max. registrations per second (peak)	500	500	500	500	500	500	500
Max. number of concurrent announcement ports	16	16	16	16	16	16	16
Max. number of concurrent conference ports	30	30	30	30	30	30	30
Max. number of supported languages	2	2	2	2	2	2	2
Max. number of backup ACD agents	250	250	250	250	250	250	250

Max. number of SIP trunking sessions	60	60	60	60	60	60	60
Number of FXO ports	NA	4	NA	NA	NA	NA	NA
Number of BRI ports2	4	NA	NA	NA	NA	NA	NA
Numsber of E1/T1 PRI ports	NA	NA	1	2	NA	NA	NA
Max. number of concurrent integrated gateway calls	8	4	30	60	120	240	NA
Number of Analog Terminal Adapter ports (FXS)	4	4	4	4	NA	NA	NA
Max. number of concurrent Voice Mail Calls	5	5	5	5	5	5	5
Max. allocated storage for Voice Mail messages (MB)	200	200	200	200	200	200	200
Max. number of stored Voice Mail messages	60	60	60	60	60	60	60
Max. number of Management Sessions	5	5	5	5	5	5	5

[1]Registered lines includes primary lines, secondary call appearances and phantom lines.

2.4 General Instructions on Usage

In order to maintain the product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Unify Software and Solutions GmbH & Co. KG and described in this guide or received from Unify Software and Solutions GmbH & Co. KG Support as a special handling instruction, will void your warranty.

Install the product only in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific product version that must not be exceeded.

In performing all necessary installation and application operations, only follow the instructions supplied within this guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack the product in the same manner as the product was delivered.

Special care is necessary when handling or unpacking the product. Refer to any special handling and unpacking instruction within this guide.

2.4.1 Minimum System Clearance

To guarantee that sufficient air flows from the front to the back of the chassis, ensure that the ventilation holes are not covered, blocked or obstructed by surrounding parts.

Before installing the OpenScape Branch 550 / 550HA take into account, any thermal considerations mentioned in 1.6 Thermal Considerations, such as airflow obstructions and the correct mount orientation.

⚠ WARNING **Ensure Sufficient Airflow**

Ensure that the 19" rack cabinet is well ventilated and does not prevent the OpenScape Branch 550 / 550HA from taking in air at the front and exhausting air at the rear.

⚠ WARNING Do not place the product close to heat sources or damp places.

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i There are no ventilation restrictions above and below the product, enabling installation directly on top of or below another system.

2.5 Hardware Characteristics

OpenScape Branch 550 / 550HA is a scalable 2U rackmount system equipped with a micro-ATX mainboard. The flexible customer-specific hardware system configuration and the robust construction with excellent mechanical stability offers the superior qualities of a computer designed for operation in harsh industrial environments.

i The OpenScape Branch 550 / 550HA is designed for horizontal operation. Vertical operation is possible.

The power button is located on the front side. The LED indicators are located on the front side and consist of a power LED and a hard disk activity LED.

Two system fans are installed at the front side of the product. The two system fans are attached to the product by means of a slide-in fan assembly. The fan assembly simplifies the installation and removal of the two system fans and enables replacement even during operation.

When powering on the OpenScape Branch 550 / 550HA make sure that the ventilation holes (air intake and air exhaust), are not obstructed by objects.
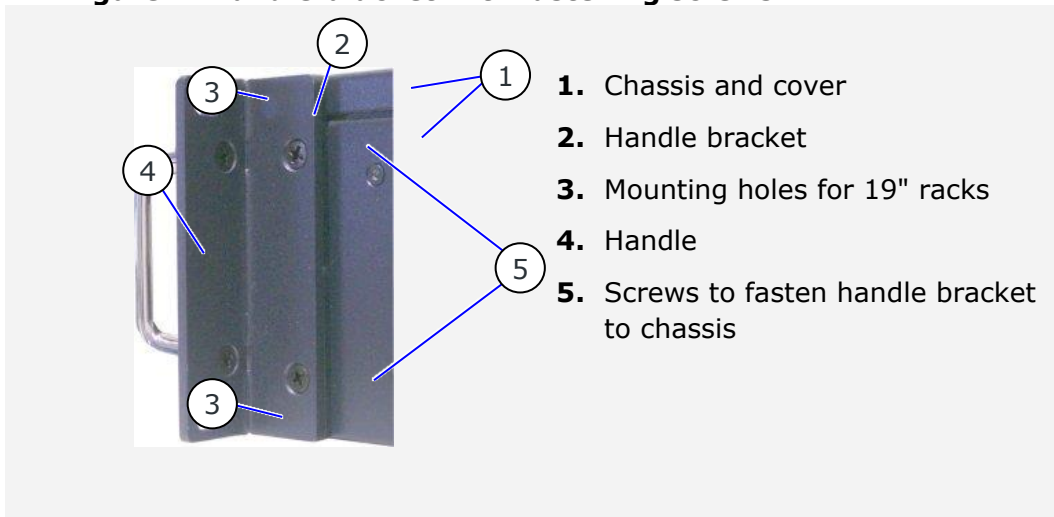
2.5.1 Front Side

The front side consists of two handle brackets for installation in a 19" Industrial rack.

Figure 1: OSB 550 / 550 HA front side
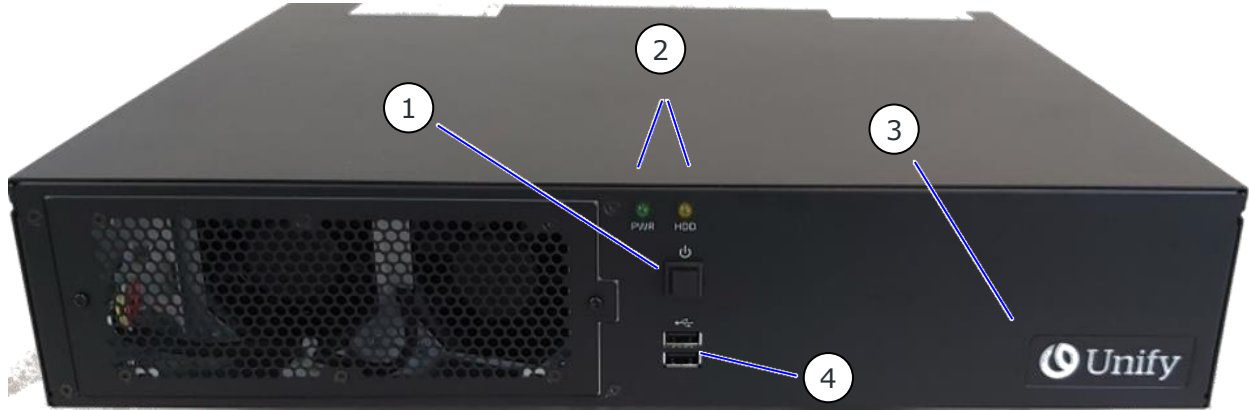
1. Power button   3. Unify logo
2. LED indicators   4. USB (2.0) ports
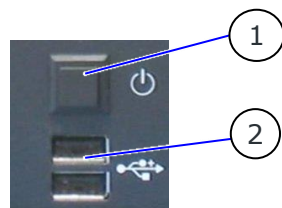
Figure 2: Handle bracket with fastening screws

1. Chassis and cover

2. Handle bracket

3. Mounting holes for 19" racks

4. Handle

5. Screws to fasten handle bracket to chassis

2.5.1.2 USB Ports

The two USB 2.0 ports are located on the front side of the product.

Figure 3: Power button and USB 2.0 ports

1. Power button

2. USB (2.0) ports

2.5.1.3 Controls and Indicators

Power Button

The power button is located on the front side of the product. Press the power button to switch on or switch off the product.

Pressing the power button for longer than four seconds initiates a forced system shutdown before the power to the product is switched off.

⚠WARNING The power button does not disconnect from the mains power supply. When switched off using the power button, there is still a standby voltage of 5 VSB on the mainboard

---

⚠WARNING AC Power cable and power connectors must always remain easily accessible.

The OpenScape Branch 550 / 550HA is only completely disconnected from the mains power supply when all power cables are disconnected, from the mains power sockets or the OpenScape Branch 550's AC input power connector (Figure 13, Figure 14, pos. 1).

If the end environment restricts access to the power cable, disconnection must be guaranteed using a separate cut-off fixture.

NOTICE Performing a forced shutdown can lead to loss of data or other undesirable effects.

Power LED and HDD Activity LED

The indicators are located on the front side.

Figure 4: LED indicators

1. Power LED

2. HDD activity LED

Table 7: Power LED and HDD LED activity description

| Power LED (green)	LED illuminates (green) when the product is switched on by pressing the power button. **Prerequisite:** Connection to an appropriate AC power source.
HDD LED (orange)	LED lights up during hard disk activity.

2.5.2 Rear Side

The rear panel includes the external interfaces of the integrated mainboard, any expansion cards interfaces/ports, power supply unit (PSU) sockets , and air exhaust ventilation holes.

> **i** The positioning and number of interfaces varies depending on the system configuration.

Figure 5: Rear side of OSB 550
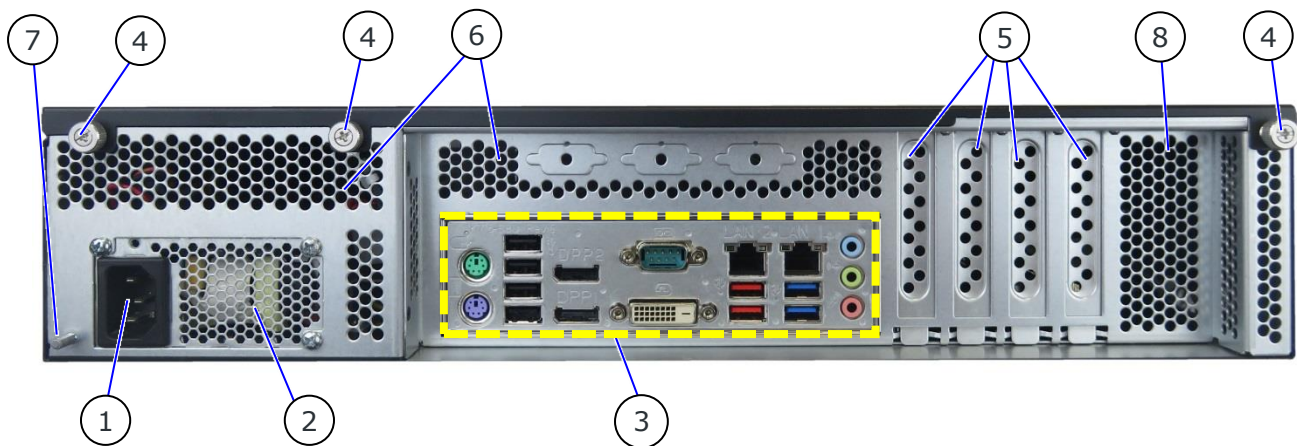
1. Input power socket
2. Power Supply Unit (PSU) ventilation holes
3. Mainboard external interfaces
4. Rear side of the cover with three knurled screws

5. Slot brackets for:
   - Slots 1-2: gateway cards
   - Slots 3-4: reserved; no usage allowed
6. Cut-outs for optional interfaces routed to the rear (9-pin D-SUB type)
7. Potential equalization stud
8. Ventilation holes

Figure 6: Rear side of OSB 550HA
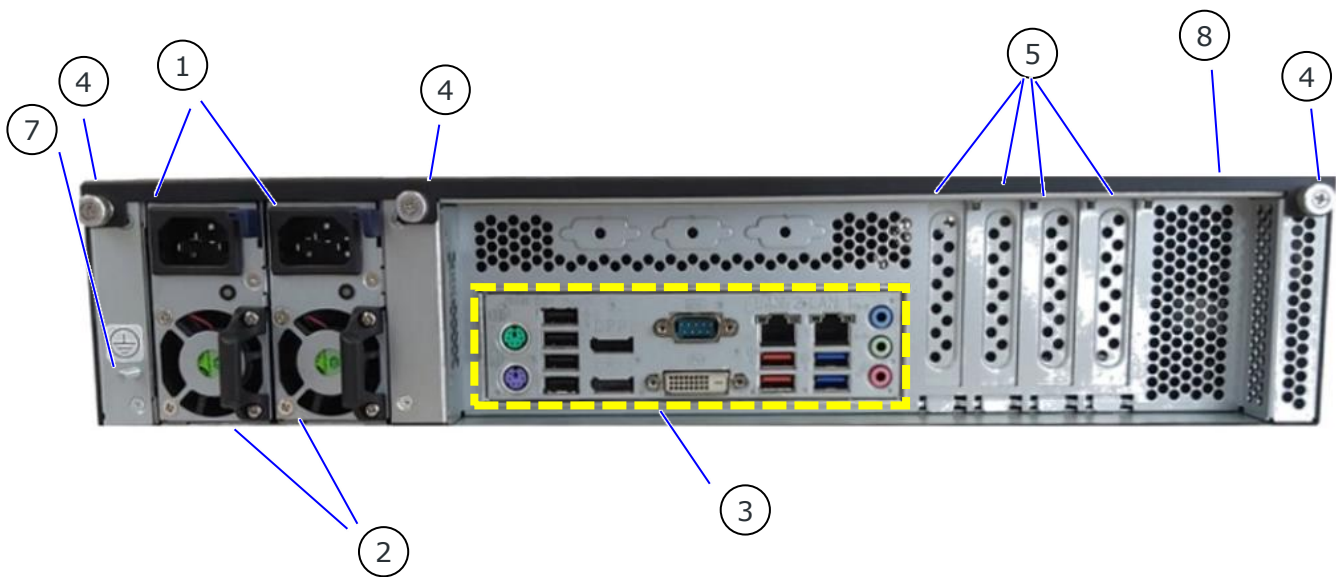
1. Input power sockets

2. Power Supply Unit (PSU)

3. Mainboard external interfaces

4. Rear side of the cover with three knurled screws

5. Slot brackets for:

   - Slots 1-2: gateway cards

   - Slots 3-4: reserved; no usage allowed

6. Cut-outs for optional interfaces routed to the rear (9-pin D-SUB type)

7. Potential equalization stud

8. Ventilation holes

2.5.2.1 External Interfaces

Depending on the installed mainboard, the following external interfaces are available for peripherals.

Figure 7: External mainboard interface panel OpenScape Branch 550 / 550 HA
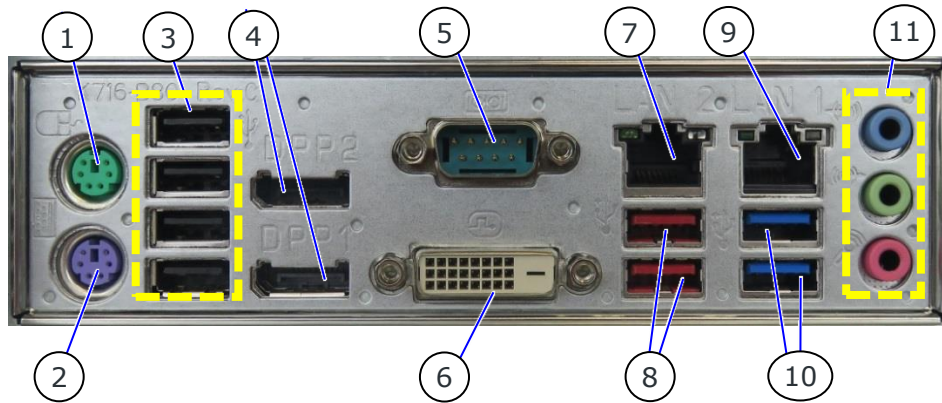
1. Mouse	**7.** LAN2
2. Keyboard	**8.** 2x USB 3.1 (Gen 2) Type A
3. 4x USB 2.0	**9.** LAN1 (iAMT)
4. 2x DP V1.2	**10.** 2x USB 3.1 (Gen 1) Type A
5. Serial port (COM)	**11.** Audio jacks
6. DVI-D	

2.5.2.2 Power Supply Unit

OpenScape Branch 550

The Power Supply Unit (PSU) is located on the rear side of the product and supplies the required internal 12V, 5V and 3.3V voltages using standard certified cabling. The OpenScape Branch 550 supports a 250W PSU with a nominal voltage range 100 V to 240 V.

OpenScape Branch 550 HA

The Power Supply Unit (PSU) is located on the rear side of the product and supplies the required internal 12V, 5V and 3.3V voltages using standard certified cabling. The OpenScape Branch 550 supports a 2 x 300W hot-swappable PSU with a nominal voltage range 100 V to 240 V.

⚠WARNING Even when switched off using the power button parts of the product may still be energized! The product is only completely switched off by switching off power using the power button and disconnecting the power cable from the mains power supply or Input power socket.

⚠WARNING **AC Power cable and power connectors must always remain easily accessible.**

If the end environment restricts access to the power cable, disconnection must be guaranteed using a separate cut-off fixture.

NOTICE **Do not disconnect the power from the product while the product is switched on!**

Performing a forced shut down may lead to loss of data or other undesirable effects! Switch off using the power button to perform an orderly shutdown without data loss.

Figure 8: OSB 550- PSU 250W AC with single AC input power socket

Figure 9: OSB 550HA-Redundant AC Power Supply 2x300W (high availability)

2.5.3 Mainboard

Figure 10: Configuration with micro-ATX mainboard and low profile expansion cards

1. Cover retaining plate on the front side
2. Cover retaining plates on the rear side
3. Power Supply Unit (PSU)
4. Battery CR2032
5. Interface connectors (available externally)
6. Fastening screws for the slot brackets
7. Mainboard
8. Fans (of the fan assembly)
9. Fan assembly
10. M.2 SSD drive
11. 2 slots for DDR4 RAM

The following slots are available on the rear side of the chassis.

Table 8: Low Profile cards slots

Installed Mainboard	Low Profile cards
micro-ATX (CFL)	Up to 4x PCIe (low profile) 1. Slot 1: x16: 1x 16 lanes, Gen3 (Reserved for OSB 550 Card 1) 2. Slot 2: PCIe 1x Gen3, "open" (Reserved for OSB 550 Card 2) 3. Slot 3: PCIe 1x 4 lanes, Gen3 (Reserved for OSB 550 future variant) 4. Slot 4: PCIe 1x Gen3, "closed" (Reserved for OSB 550 future variant)

3 OpenScapeBranch 550 / 550HA Installation

The OpenScape Branch 550 / 550HA is designed for horizontal installation in a 19" industrial rack cabinet. There are no ventilation holes on the top and bottom side of the product, enabling installation directly on top of or below other systems in the 19" industrial rack cabinet.

Before installing, read the installation instructions in this chapter and observe the information in 1.5.1 General Safety. Due to possible access restrictions, Unify Software and Solutions GmbH & Co. KG. KG recommends installing all expansion cards and connecting all peripherals to the corresponding system ports before installing in the end environment.

⚠WARNING The product must be installed only by trained personnel aware of the associated dangers.

⚠WARNING **Ensure Sufficient Airflow**

Ensure the OpenScape Branch 550 /550HA is well ventilated and does not prevent the product from taking in air at the front and exhausting air at the rear.

⚠WARNING Do not place the product close to heat sources or damp places.

⚠️**CAUTION** Before connecting any I/O cables, ensure that protective grounding (PE) is connected, the product is switched off and the power cable is disconnected connected from the power connector or mains power.

⚠️**CAUTION** When connecting cables, following proper cabling procedures:

1. Grounding pin is connected first and disconnected last.

2. Connect all I/O cables.

3. Power connection is the last connection.

ℹ️ The OpenScape Branch 550 / 550HA is designed for horizontal operation. Vertical operation is possible.

Due to possible access restrictions, before installing the product install all expansion cards and connect required peripherals to the corresponding system port.

3.1 How to Install as a Desktop

Before installing the OpenScape Branch 550 /550HA in a desktop environment, install the rubber feet as described in the instructions below, to avoid scratching the installation surface. Additionally, observe the general instructions and any safety warnings within 1.5.1 General Safety.

⚠️**WARNING** **The voltage feeds must not be overloaded**

Adjust the cabling and the external overcharge protection to correspond with the electrical data indicated on the type label located on right side of the chassis.

⚠️**WARNING** **Ensure Sufficient Air Flow**

Ensure that nothing obstructs the OpenScape Branch 550 / 550HA from taking in air at the front and exhausting air at the rear.

Follow the instructions below to install the supplied four rubber feet:

1.   Switch off and disconnect the product from the mains power supply. Disconnect all peripherals.

2.   Ensure that all components are securely installed.

3.   Turn the chassis upside down (Orientation: bottom side facing upwards).

4.   Remove the protective film from the self-adhesive rubber feet and attach to the bottom side of the chassis.

5.   Turn the chassis the right way around (Orientation: cover facing upwards).

3.2 How to Install in a 19" Industrial Rack

Before installing the OpenScape Branch 550 / 550HA in a 19" industrial rack, observe the instructions in 1.5.1 General Safety.

⚠️**WARNING** Install only in a stable 19" industrial rack cabinet. To improve stability:

- Place system from the bottom up
- Place heavy systems lower down
- Bolt the cabinet to the floor or anchor the cabinet to the wall

⚠️**WARNING** To support the OpenScape Branch 550's weight, two separate fixation methods must be used:

Front handle brackets (left side, right side)

Slide rails or L brackets or a 19" rack rear/side fixation

⚠️**WARNING** **Ensure Sufficient Airflow**

Ensure that the 19" Industrial rack cabinet is well ventilated and does not prevent the OpenScape Branch 550 from taking in air at the front and exhausting air at the rear.

⚠️**CAUTION** Installing the OpenScape Branch 550 / 550HA alone can result in product damage or personal injury.

NOTE: Slide Rails are NOT included in the product delivery and can be ordered as a separate option.

To install in a 19" industrial rack, proceed as follows:

1. Install the slide rails according to the installation and safety instructions included in the Rack Slide Rails Kit.
2. Install the corresponding slide kits to the 19" industrial rack cabinet.
3. Push the OpenScape Branch 550 / 550HA with slide rail assembly as far as possible into the corresponding installed rack slide rail.
4. Firmly attach the handle brackets to the sides of the 19" industrial rack cabinet.
5. Verify that the OpenScape Branch 550 / 550HA is securely mounted.

3.3 How to Install and Remove Low Profile Expansion Cards

To install or remove low profile expansion cards (Table 8: Low Profile cards slots), proceed as follows:

⚠ WARNING Observe the General Safety Instructions within this user guide (1.5. Safety Information).

1. Switch off and disconnect the product from the mains power supply.

2. Install a low profile expansion card by removing the slot bracket's fasten screw and retaining the slot bracket with screw for later use.

3. Insert the low profile expansion card into the respective expansion card slot and secure the expansion card with fastening screw (Figure 10, pos. 6)

4. Remove a low profile expansion card by unscrewing the expansion card's screw (Figure 10, pos. 6) and by removing the low profile expansion card from the respective expansion card slot on the mainboard. (Store the expansion card with screw for possible later use).

5. Insert a slot bracket into the empty expansion card slot on the rear side of the chassis and secure the slot bracket by fastening the slot bracket screw. (Figure 10, pos. 6)

3.4 How to Install and Remove a M.2 SSD Module

To install an M.2 SSD module on the motherboard, perform the following:

1. Locate the M.2 socket and the corresponding nut on the motherboard.

2. Insert and push the M.2 module into the M.2 socket gently and at a slight angle, until the M.2 module's fixing hole aligns with the corresponding motherboard's nut.

3. Secure the M.2 module by pressing down on the M.2 module's free end and carefully fixing the M.2 module with screw to the corresponding nut on the motherboard, until the M.2 module lies flat and parallel with the motherboard.

NOTICE Do not use force when fastening the mounting screw. Too much force may damage the motherboard nut.

To remove an M.2 SSD module from the motherboard, perform the following:

1. Locate the installed M.2 module. Loosen and remove the M.2 module's fixing screw. The M.2 module springs up at the free end.

2. Pull the M.2 module carefully out of the M.2 socket carefully.

i After installing or removing a M.2 SSD module, memory partitioning may be different.

⚠ WARNING Make sure that the product is switched off using the power button and disconnected from the mains power supply.

Disconnect all connected peripheral devices. Observe the General Safety Instructions within this user guide (1.5. Safety Information).

⚠CAUTION Handling and operation of the product is permitted only for trained personnel aware of the associated dangers, within a work place that is access controlled and fulfills all necessary technical and environmental requirements.

Follow the electrostatic discharge (ESD) precautions for components that are sensitive to ESD and use a clean, flat and ESD-safe surface when handling the product. Failure to observe this warning notice may result in damage to the product or/and internal components (see 1.5.6 Electrostatic Disharge).

3.5 OpenScape Branch 550 / 550HA System Startup

Before staring up observe the instructions in 1.5 Safety Information and read the instructions and warnings in this chapter.

⚠WARNING Easy Access to Power Cable and Power Connectors

The power cables must always remain easily accessible. If the end environment restricts access to power cable, disconnection must be guaranteed using a separate cut-off fixture.

⚠WARNING Energy hazards-110/240 VA present in the chassis

To switch off the product properly and ensure no energized internal parts, switch off the product using the power switch on the front side and disconnecting all product's power cable from the input power socket or the mains power supply.

⚠CAUTION Ensure that the mains power supply sockets (power outlets) is properly grounded and the power cables is in perfect condition with no visible damage.

⚠CAUTION The rated mains voltage range must agree with the voltage specified on the type label.

3.6 How to connect the Power Connection

The input power socket is located on the rear side. To connect the power and start up, proceed as follows:

1. Connect the ends of the supplied AC power cable to the corresponding sockets:
   - Input power socket.
   - Mains power supply socket using the electrical plug for the region.

Figure 11: Input power socket – single AC power

Input power socket

Figure 12: Input power socket – Redundant AC Power Supply

Input power sockets

2. Press the power button.
3. The power LED illuminates green.

NOTICE **Do not disconnect the power from the product while the product is powered up!**

Performing a forced shut down can lead to loss of data or other undesirable effects!

4 Serviceability Features

4.1 OpenScape Branch 550 / 550HA Maintenance

Unify Software and Solutions GmbH & Co. KG systems only require minimal maintenance and care to maintain correct operation.

- Wipe the product with a soft dry cloth if required
- Remove persistent dirt using a soft, slightly damp cloth (only use a mild detergent).

4.2 How to Replace the Fan Assembly

Before replacing the fan assembly, read the following instructions:

⚠CAUTION **Operation is permitted only with a functional fan assembly!**

Replace a defective fan assemble only with an original fan assembly.

⚠CAUTION **Fan assembly replaceable during operation**

Replace fan only by qualified personnel or a suitably instructed persons aware of the associated dangers. Before removing the fan assembly, wait until the fans have totally stopped. Keep hands and fingers away from rotating fan parts.

To replace the fan assembly, proceed as follows:

1. Loosen the two knurled screws on the fan assembly (Figure 15, pos. 2)
2. Pull out the fan assembly to disconnect the fan assembly from the internal fan control socket.
3. Lift the fan assembly upwards as shown (Figure 5) to remove from the fan compartment.

Figure 13: Removing the fan assembly

1. Fan assembly

2. Two knurled screws

4. To replace with a new functional fan assembly, align the fan assembly with the fan compartment.

5. Push the fan assembly carefully into the fan compartment until the fan assembly's control connector is firmly inserted into the internal fan power control socket.

6. Secure by fasten the knurled screws of the fan assembly (Figure 15, pos. 2)

4.2.1 How to Replace the Lithium Battery

Refer to 1.5.1 General Safety, 1.5.4 Lithium Battery Precautions and 1.5.5 Accessing Internal Components before replacing the lithium battery.

⚠WARNING **Danger of explosion when replaced with wrong battery type**

Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.

Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).

To replace the lithium battery on the mainboard, proceed as follows:

1. Switch off and disconnect the product from the mains power supply.

2. Remove the lithium battery from the holder by pulling the ejector spring outwards.

3. Place a new lithium battery in the battery holder.

4. Pay attention to the polarity of the battery.

5. Replace the lithium battery only with the same type of battery or with a type of battery recommended by Unify Software and Solutions GmbH & Co. KG.

6. Reinstall the removed expansion cards and reattach the connecting cables.

4.3 OpenScape Branch 550 / 550HA Storage

If the product is not in use for an extended period time, disconnect the power plug from the mains power source. If it is necessary to store the product then re-pack the product as originally delivered to avoid damage. The storage facility must meet the products environmental storage requirements as stated within this guide. Unify Software and Solutions GmbH & Co. KG recommends keeping the original packaging material for future storage or warranty shipments.

4.4 OpenScape Branch 550 / 550HA Transportation

To ship the product, use the original packaging, designed to withstand impact and adequately protect the product. When packing or unpacking products always take shock and ESD protection into consideration and use an ESD safe working area.
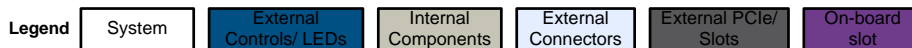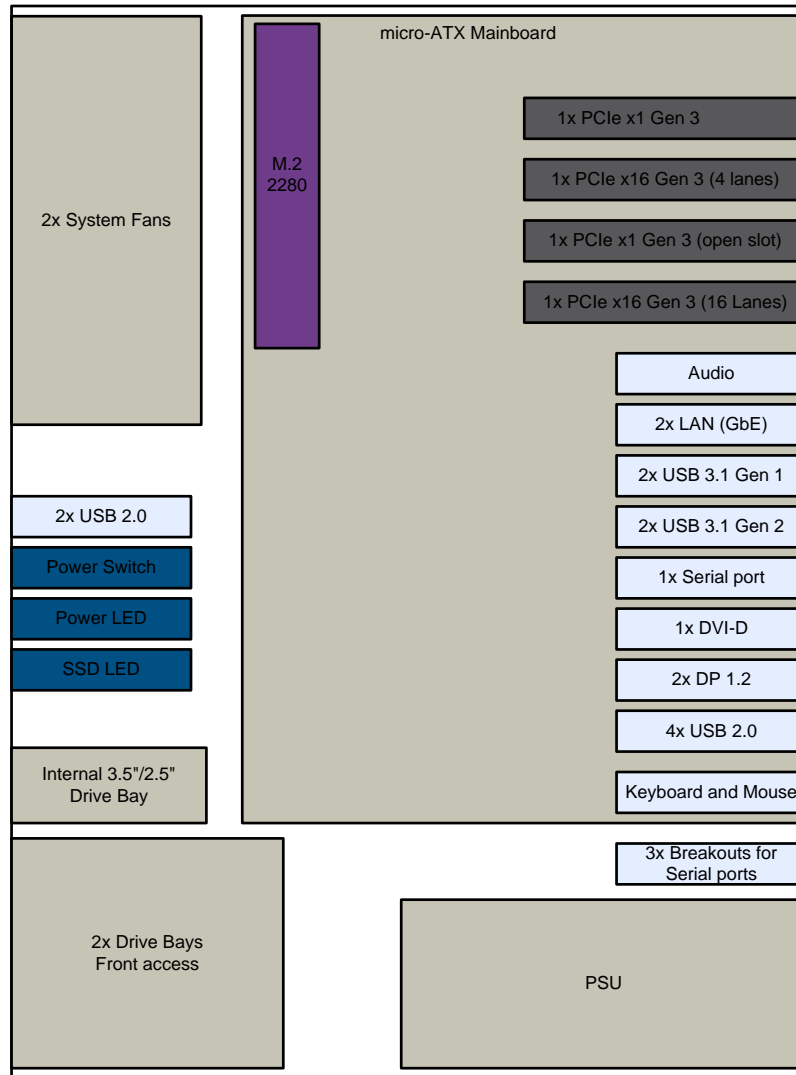
5 Technical Data

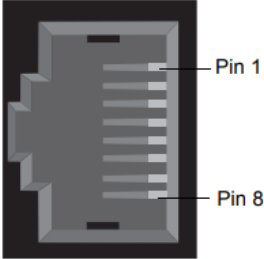This chapter lists the main OpenScape Branch 550 / 550HA technical specifications.

5.1 Block Diagrams

Figure 14: Block diagram OpenScape Branch 550 / 550HA Low Profile

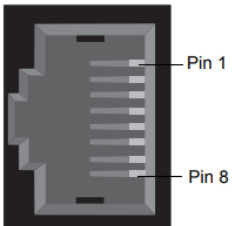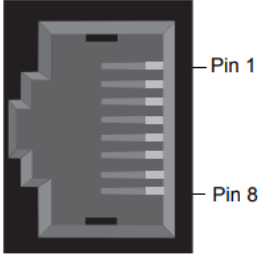**KISS 2U Short V3 CFL Low Profile**

5.2 Standard Interfaces

5.2.1 Sangoma card: TE130 Series TE131/TE132/TE133/TE134

Pin	Signal Name	Connector
1	Rx	RJ45 Telco Port Connector
2	Rx	
3	Not used	
4	Tx	
5	Tx	
6	Not used	
7	Not used	
8	Not used	
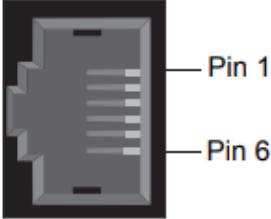
5.2.2 Sangoma card: TE430 Series TE435B/TE435/TE436B/TE4364

Pin	Signal Name	Connector
1	Rx	RJ45 Telco Port Connector
2	Rx	
3	Not used	
4	Tx	
5	Tx	
6	Not used	
7	Not used	
8	Not used	

5.2.3 Sangoma card: TE230 Series
TE235B/TE235/TE236B/TE236

Pin	Signal Name	Connector
1	Rx	RJ45 Telco Port Connector
2	Rx	
3	Not used	
4	Tx	
5	Tx	
6	Not used	
7	Not used	
8	Not used	

5.2.4 Sangoma card: A4A / A4B

Pin	Signal Name	Connector
1	Not used	RJ11 Telco Port Connector
2	Not used	
3	Tip	
4	Ring	
5	Not used	
6	Not used	

5.3 Environmental Specification

Temperature		Description
Temperature	Operating	0 °C to +50 °C (+50°F to +122 °F)
	Storage & Transit	-20°C to +70°C (-4°F to +158°F)
Relative Humidity	Operating and Storage & Transit	10-93 % @ 40° C, non condensing
Environment		Description
Altitude	Operating	5,000 m (16,400 ft.) Max.
	Storage & Transit	10,000 m (32,810 ft.) Max.
Shock	Operating	15 g, 11 ms, duration
	Storage & Transit	30 g., 11 ms, duration

Temperature		Description
Temperature	Operating	0 °C to +50 °C (+50°F to +122 °F)
	Storage & Transit	-20°C to +70°C (-4°F to +158°F)
Relative Humidity	Operating and Storage & Transit	10-93 % @ 40° C, non condensing

Environment		Description
Vibration	Operating	10 Hz – 150 Hz, 1.0 g, 3 axis
	Storage & Transit	10 Hz – 150 Hz, 2.0 g, 3 axis
MTBF		50,000h @ 30°C (min. configuration)

5.4 CE Directives and Standards

The OpenScape Branch 550 / 550HA complies with the European Council Directive and the approximation of the laws of the member states. If modified, the prerequisites for specific approvals may no longer apply.

Unify Software and Solutions GmbH & Co. KG is not responsible for any radio television interference caused by unauthorized modifications of the product or the substitution or attachment of connecting cables and equipment other than those specified by Unify Software and Solutions GmbH & Co. KG. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the operator.

CE			
Safety			
		Low Voltage Directive (LVD)	2014/35/EU
Electromagnetic Compatibility		Electromagnetic Compatibility Directive (EMC)	2014/30/EU
EMC			
Emission (Class B)	EN 55032/ CISPR 32	Electromagnetic compatibility of multimedia equipment-Emission requirements	
	EN 61000-6-3	Emission standard for residential, commercial and light-industrial environments	
Immunity (Industrial Equipment)	EN 55035 / CISPR 35	Information technology equipment- Immunity characteristics	
	EN6100-6-2	Immunity for industrial environments	
Safety			
Europe	EN 62368-1	Audio/video, information and communication technology equipment – Safety requirements	
CB Scheme	CB Report - IEC 62368-1		
Environment			
WEEE	Compliant with the Waste Electrical and Electronic Equipment (WEEE) 2012/19/EU directive; to reduce waste of electrical and electronic equipment, encourage recycling and environmental disposal and increase the environmental awareness of producers		
Environment			
RoHS II	Compliant with the Restriction of Hazardous Substances (RoHS) 2011/65/EU directive or the latest status thereof, to reduce hazardous substances in electrical and electronic equipment		
REACH	Compliant with the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation No. 1907/2006 to identify the intrinsic properties of chemical substances earlier		