Unify OpenScape Business

Storage Media &
Card Manager V3

Information and Handling

Version 1.0
Date: 2021-10-01

Trusted Partner for your **Digital Journey**

AtoS

Table of History

Date	Version	Changes
2021-10-01	1.0	Initial Creation

Disclaimer

The information provided in this document contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

Availability and technical specifications are subject to change without notice.

Scope

The following description refers to:

OpenScape Business X SW Version V3R1.1.0

Card Manager V3.0.6

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1 OpenScape Business X Storage Media

OpenScape Business X systems use either M.2 SATA SSD on V3 mainboards or SDHC memory cards on V2 mainboards to store the operating system SW and the system configuration data as well as call data records, UC journals, voicemails, traces, etc.

Further on a hard disk is used in combination with the UC Booster Card (OCAB) and V2 mainboards containing system SW and customer data. The V3 mainboards provides a storage expansion using an M.2 NVMe SSD storage for customer data.

- **SDHC card** in OpenScape Business X systems with V2 mainboards**.**
  In the OpenScape Business X1, X3, X5 and X8 systems with V2 mainboards (OCCL, OCCM, OCCMR and OCCS) SDHC cards are used as storage media for the system SW, configuration data and customer data.

- **HDD (Hard disk drive)** in OpenScape Business X system with V2 mainboard and UC Booster Card (OCAB).
  In the OpenScape Business X1, X3, X5 and X8 systems with V2 mainboards (OCCL, OCCM, OCCMR and OCCS) and optional OCAB a HDD storage media is used for the system SW of the OCAB and multimedia data of the UC Smart or UC Suite application.

- **M.2 SATA SSD** in OpenScape Business X systems with V3 mainboards
  In the OpenScape Business X3, X5 and X8 systems with V3 mainboards (OCCLA, OCCMA, OCCMB, OCCMAR and OCCMBR) M.2 SATA SSD storage cards are used as storage media for the system SW, configuration data and customer data.

- **M.2 NVMe SSD** in OpenScape Business X systems with V3 mainboards
  In the OpenScape Business X3, X5 and X8 systems with V3 mainboards (OCCLA, OCCMA, OCCMB, OCCMAR and OCCMBR) M.2 NVMe SSD storage cards are used as storage media for the multimedia data of the UC Suite or UC Smart application.

The SDHC and M.2 SSD storage cards for OpenScape Business X systems have been specially selected and tested for operation on Linux operating systems. For SDHC cards applies that the card-specific firmware, the controller and the used memory cells of the SDHC card have been registered with the manufacturer in order to ensure the required operating parameters for all SDHC cards. Other SDHC / M.2 SSD storage cards should not be used (even from the same manufacturer) because the operating parameters required for OpenScape Business may not be met and malfunctions may occur in the systems.

1.1 M.2 SSD and SDHC card lifespan

Flash memory cells, as used in SDHC and M.2 SSD storage cards, supports a limited number of write cycles per memory cell. A built-in memory controller with corresponding firmware ensures that all the memory cells of the card are evenly loaded, and that reserve cells are installed when the memory cells are defective. Despite all the built-in intelligence for optimum use of the memory, the life span of a SDHC and M.2 SSD storage card is finite.

The SDHC / M.2 SSD card lifetime in OpenScape Business Systems, depends on system configuration and the use of embedded applications such as UC Smart and Smart Voicemail.

OpenScape Business supports the system administrator by its integrated "storage card health status" detection mechanism and by the integrated "SDHC / SSD Data Backup" function to replace an exhausted storage card.

This document describes the necessary steps and preconditions to be observed when changing and cloning / copying the SDHC/ SSD card.

1.2 Replacement of M.2 SSD or SDHC cards

For the replacement of M.2 SSD storage media, certified M.2 cards can be obtained from the Unify spare parts service. When replacing SDHC cards, it is recommended to replace the media by the same type and capacity.

1.2.1 Replacement of M.2 SSD

Within OpenScape Busines two different type of M2.SSD storage media are used for different purposes, that require a different handling in case of a replacement.

1.2.1.1 M.2 SATA SSD replacement

M.2 SATA SSD as spare part can be obtained either with or without SW

Spare part Part number	Description	Remarks
S30122-X8014-X30	SSD M.2 SATA 16GB	16GB SATA SSD blank without system SW Single packed in box
F30152-P1649-P3	OpenScape Business System SW on M.2 SATA SSD	16GB SATA SSD with system SW Single packed in box

Table 1 M.2 SATA SSD as spare part for OpenScape Business X with V3 mainboard

1.2.1.2 M.2 NVMe SSD replacement

M.2 NVMe SSDs as spare part can only be obtained without SW, since the OpenScape Business X system partitions and formats a newly installed M.2 NVMe SSD according to its needs

Spare part Part number	Description	Remarks
S30122-X8014-X32	M.2 NVMe SSD memory card 256 GB	256GB NVMe SSD blank, without SW Single packed in box

Table 2 M.2 NVMe SSD as spare part for OpenScape Business X with V3 mainboard

1.2.2 Replacement of SDHC Cards

For the replacement of SDHC cards, certified SDHC cards can be obtained from the Unify spare parts service. When replacing SDHC cards, it is recommended to replace any 8 GB cards with 16 GB cards.

Due to the timing behavior of the used SDHC cards, the SW Version of the system must be observed when replacing the cards.

Note: Ignoring the following instructions about the SW version of the system and supported SDHC cards may result in a system not booting from the new SDHC card.

1.2.2.1 Systems with V3 SW

The following SDHC cards, which are currently offered as spare parts, can be used for systems with V3 SW. Prerequisite for this is:

The system is operated with at least SW version V3R1.1.0_303 or the system is booted from an SDHC card on which this SW version or higher is preinstalled.

Spare part Partnumber	Description	Remarks
S30122-X8002-X40	SDHC Karte 16 GB Blank	Blank 16GB SDHC card blank without system SW Delivery on tray

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F31505-E1-A12	OSBiz SDHC 16GB without SW	Blank 16GB SDHC card blank without system SW Single packed in box
F30152-P1649-P1-**16**	System Software small (w/o) OCAB	16 GB SDHC card with SW version V3 Single packed in box **The included SDHC card can only be used in systems with V3 SW from issue 16 or higher**

Table 3 SDHC card as spare part for OpenScape Business X with SW Version V3

1.2.2.2 Systems with V2 SW

For systems with V2 SW only the following SDHC cards, which are currently offered as spare parts, can be used.

Note: SW support is no longer provided for V2 systems. It is recommended by Unify to upgrade these systems to SW version V3.

Spare part Partnumber	Description	Remarks
S30122-X8002-X40	SDHC Card 16 GB Blank w/o SW	Blank 16GB SDHC card blank without system SW Delivery on tray
F31505-E1-A12	OSBiz SDHC 16GB without SW	Blank 16GB SDHC card blank without system SW Single packed in box
F30152-P1649-P1-**12**	System Software small (w/o) OCAB	16 GB SDHC card with SW version V3 Single packed in box **The included SDHC card can be used in systems with V2 SW only up to issue 12** (Assumed that delivered SW V3 is deleted and V2 is copied manually to this card)

Table 4 SDHC card as spare part for OpenScape Business X with SW Version V2

2 Memory Card Health Status

The actual health status of the SDHC / SSD storage cards is displayed at the Home page of the WBM in traffic light colors red, yellow and green. Depending on the status specific action are required depending in the type of SSD or SDHC card.
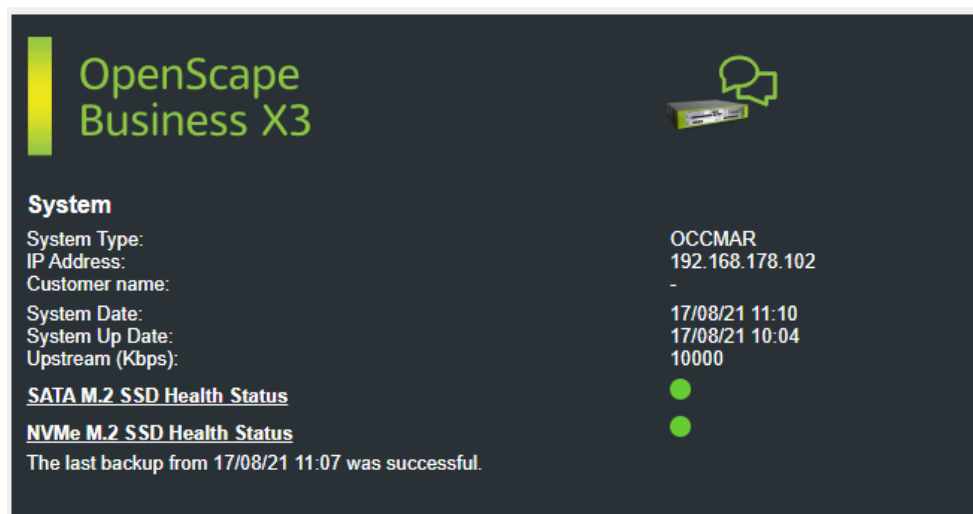
Figure 1   SSD card Health Status at the WBM Home Page
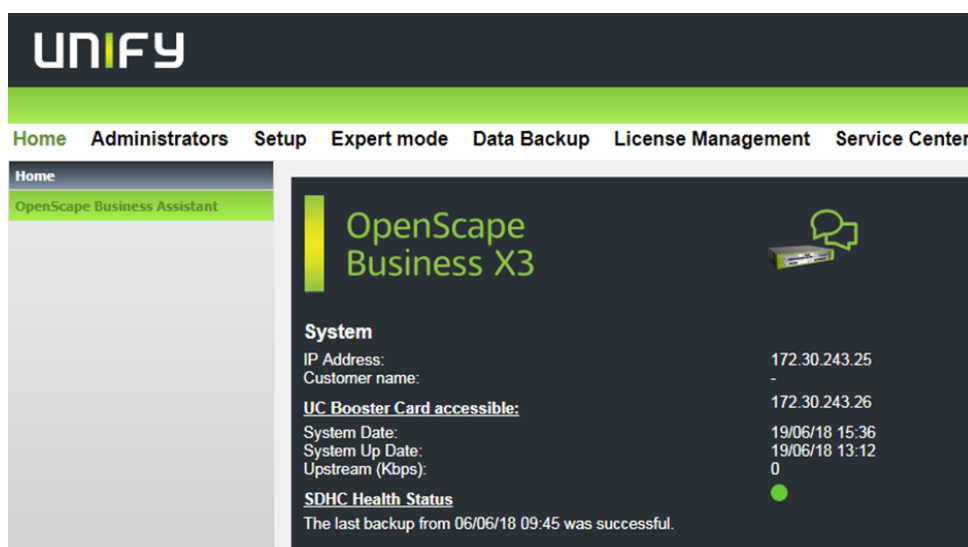
Figure 2   SDHC Health Status at the WBM Home Page

Click on the link to branch to the M.2 SSD card Health Check page within the WBM and display details on the status.

2.1 Status „Green"

In this case the estimated lifetime of the SSD / SDHC card is not yet reached and no file system errors have been detected. No further actions are required.

2.2 Status „Yellow"

The estimated lifetime of the SSD / SDHC card has been reached. The SSD / SDHC card is not defect and no file system errors have been detected!

Backup your data to an external storage media and perform the SSD / SDHC card health check. In case of no errors, schedule SSD/ SDHC card replacement. In case of errors replace SSD / SDHC card immediately. The replaced SSD / SDHC card has to be disposed. It may not be used in OpenScape Business systems again.

M.2 SATA SSD / SDHC cards can be created in this case either by the OpenScape Business system itself (not in case of X1) or by the Card Manager tool.

Both options do not require to remove the M.2 SATA SSD / SDHC card that is in operation during the card creation process. The system needs to be shut down only for card replacement. It can be restarted immediately after the card change with full customer configuration and is fully operational.

2.2.1   M.2 SATA SSD or SDHC Card Creation by OpenScape Business

Using the OpenScape Business system (not X1) for card creation is the fastest way but can only be done on system premise. In this case the following steps apply.

Tasks	Description
Create a new M.2 SATA SSD or SDHC card with full customer data in one step (Use an M.2 SATA SSD or SDHC card reader)	4.1
Replace old M.2 SATA SSD or SDHC card by the new one in the system.	5.1.1

Table 5 Tasks for Status "Yellow" – OpenScape Business

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2.2.2 M.2 NVMe SSD Card Creation by OpenScape Business

M.2 NVMe SSD cards need no specific handling in case of a replacement. An inserted blank NVMe card is detected by the system SW and is partitioned and formatted automatically. After a restore of previously backed up system data, the NVMe card contains customer multimedia media data and is fully operational.

2.2.3 M.2 SATA SSD or SDHC Card Creation by Card Manager

A second option is available mainly for OpenScape Business X1 system or in case that the "One Step" option cannot be used. This option requires the Card Manager tool and a system specific M.2 SATA SSD or SDHC Card Backup Data file to create new M.2 SATA SSD or SDHC card containing all customer data.

INFO:
This option requires transmission of the M.2 SATA SSD or SDHC Card Backup Data file to the Card Manager PC. This can be done either via physical storage medium or via a file transfer.

Tasks	Description
Create a M.2 SATA SSD or SDHC Card Backup Data file ("tar"-file) Either on USB memory stick (not usable for X1 system) or on a network file system (NFS) location.	4.3
Use the Card Manager tool to create a M.2 SATA SSD or SDHC card with full customer data.	7.5
Replace old M.2 SATA SSD or SDHC card by the new one in the system.	5.1.1 or 5.2.1

Table 6 Recommended Tasks for Status "Yellow" – Card Manager

2.3 Status „Red"

2.3.1 SDHC card

OpenScape Business has detected more than 50 SDHC card error entries in the log files.

It can be assumed in this case, that the SDHC card is defect and that the file system or files on the card are corrupted. Do not shut down or restart the system at this stage and do not perform a full "SDHC Card Health Check", as a subsequent restart might fail.

Check how long the card has been operated in the system using information about the manufacturing and file system creation date. In case that the card has been in operation since years it can be assumed that the card is exhausted. The SDHC card has to be replaced and has to be disposed. It may not be used in OpenScape Business systems again.

Files on the SDHC card could be corrupted; therefore no files of this card should be used for the creation of the new SDHC card. Use the Card Manager to create a new SDHC card without any customer data and restore customer data form the backup file. Do not use the "tar"-file option of the Card Manager or other SDHC card cloning tools to create a new SDHC card with customer data. The risk copying corrupted files to the new card is high.

Note:

In case, that a new card in a new system shows status "red" after installation or short time after, the mainboard of the system has to be checked and the card should be replaced by a new one. In this case it can be assumed, that the card is not exhausted and that it can further be used after system SW has been restored by the Card Manager tool.

2.3.2 M.2 SATA SSD card

OpenScape Business has read the S.M.A.R.T data of the SSD that indicated that the card has reached end of life.

The M.2 SATA SSD card must be replaced and has to be disposed. It may not be used in OpenScape Business systems again.

Tasks	Description (in chapter)
Determine the exact SW version of the system	8.2.4
Determine the application package that is active within the system.	8.2.5
Check for an actual backup. If no actual backup is available: Backup the system configuration to an external storage device (USB stick or Admin PC).	8.2.2
Retrieve System SW image from Software download server	8.2.6
Use the Card Manager tool to copy system SW to a new M.2 SATA SSD or SDHC card	7.5
Replace the SSD or SDHC card with the new one.	5.1 or 5.2
Restore system configuration using the backup file	8.2.1

Table 7 Recommended Tasks for M.2 SATA card with Status "Red"

2.3.3   M.2 NVMe SSD card

OpenScape Business has read the S.M.A.R.T. data of the SSD, which indicates that the card has reached the end of its life.

The M.2 NVMe SSD card has to be replaced and has to be disposed. It may not be used in OpenScape Business systems again.

Tasks	Description (in chapter)
Check for an actual backup. If no actual backup is available: Backup the system configuration to an external storage device (USB stick or Admin PC).	8.2.2
Replace the M.2 NVMe card with the new one.	
Restore system configuration using the backup file	8.2.1

Table 8 Recommended Tasks for M.2 NVMe card with Status "Red"

Note:

M.2 NVMe SSD cards need no specific handling in case of a replacement. An inserted blank NVMe card is detected by the system SW and is partitioned and formatted automatically. After a restore of previously backed up system data, the NVMe card contains customer multimedia media data and is fully operational.

2.4 Status „Grey"

The SSD / SDHC card vendor cannot be determined or is not known. The card should be replaced by a Unify certificated SSD / SDHC card. The same action as for status red, see chapter 2.3 should be performed.

Note:

Status "Red" is also shown for "unknown cards" in case that read/write errors are detected or S.M.A.R.T data indicate end of life.

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3 Detailed Health Status Information

3.1 M.2 SATA SSD and M.2 NVMe SSD Card Health Status

OpenScape Business with V3 mainboard evaluates the M.2 SATA and M.2 NVMe SSD card health status by reading the card internal S.M.A.R.T. data information (Self-Monitoring, Analysis and Reporting Technology) information.
The determined M.2.SSD card health status is displayed at the home page of the OpenScape Business Assistant (WBM). Depending on the available M.2 SSDs within the system either one or two cards are displayed.

3.1.1 M.2 SSD Log file information

At system startup, OpenScape Business reads the S.M.A.R.T. data and saves it in log files.
Since the information depth of the S.M.A.R.T. data depends on the SSD type (SATA or NVMe) and the SSD manufacturer, only the most meaningful data is read by OpenScape Business and stored in the log files to determine the health status. These data are display at the SSD Health Check page within the WBM. This page additionally offers the possibility to manually check the SSD card status either immediately or at a specific time.

Note:
The values of S.M.A.R.T data and their thresholds are manufacturer depend as no standard exist. OpenScape Business can only correctly interpret data of certified/evaluated SSD cards. In other words: only for known SSD cards.

3.1.1.1 M.2 SATA SSD log file information

The SSD Health Check page within the WBM shows the following data under the SATA SSD tab:

- SSD card status
- SSD device model
- SATA device
- Disk size
- Wear levelling count
- Life expectancy

Figure 3   M.2 SATA SSD Health Check page within the WBM Expert Mode

3.1.1.2 M.2 NVMe SSD log file information

The SSD Health Check page in WBM displays the following data under the NVMe SSD tab:

- SSD card status
- SSD card model
- NVMe CTITWR
- SATA device
- Disk Size

Figure 4   *M.2 NVMe SSD Health Check page within the WBM Expert Mode*

3.1.2 M.2 SATA SSD memory card status

The SSD memory card health status is implemented as a traffic light.

- Green
- Yellow
- Red
- Grey

Recommended actions are displayed together with the status. More information about the card status and the recommended actions are described in chapter 22.2.

In case of status "Grey" the card is not known by the system SW by following reasons.

- Card not in the list of certified cards within the system SW
- Not possible to retrieve card information.

The card type should be checked manually in this case. If the card was not certified by Unify it should be replaced by a certified one.

3.1.3 M.2 SATA SSD card information

The card information about M.2 SATA SSD storage card shows various values in order to determine if the card was certified by UNIFY, how it is mounted within the file system and the card internal data about its health status.

3.1.3.1 *SSD device model*

The device model is written by the card manufacturer and identifies card and manufacturer. OpenScape Business used this information to determine, if the card has been evaluated for use in OpenScape Business.
In case that the device model is known the traffic light is applied for health status indication and the card parameters are displayed.
In case that the device model is not known or cannot be read, card status grey is displayed.

3.1.3.2 *SATA device*

SATA device shows the mount point of the storage media within the Linux file system.

3.1.3.3   Disk size

The storage capacity of the M.2 SATA card as calculated by the Linux operating system is shown here.

3.1.3.4   Wear levelling count

Definition: Counts the maximum worst erase count on any block.

The Wear Leveling Count (WLC) value stands for the remaining endurance of the drive in percentage, meaning that it starts from 100 and decreases linearly as the drive is written to

3.1.3.5   Life expectancy

Definition: Indicates the approximate SSD life left, in terms of available reserved blocks.

A normalized value of 100 represents a new drive, with a threshold value at 10 indicating a need for replacement.

It starts with 100% and deceased over the time.

3.1.4   M.2 NVMe SSD card information

The card information about M.2 NVMe SSD storage card shows various values to determine if the card was certified by UNIFY, how it is mounted within the file system and the card internal data about its health status. In general, the available internal data for NVMe SSD cards is not as extensive as that for SATA SSD.

3.1.4.1   Model

The device model is written by the card manufactured and identifies card and manufacturer. OpenScape Business used this information to determine if the card has been evaluated for use in OpenScape Business.

In case that the device model is known the traffic light is applied for health status indication and the card parameters are displayed.

In case that the device model is not known or cannot be read, card status grey is displayed.

The card parameters are not shown.

3.1.4.2   NVMe CRITWR

Critical Warning: This value represents the controller's information about critical warnings. Each bit of the value corresponds to a critical warning type; multiple bits may be set. This is the only criterion used by OpenScape Business to determine the health status of SSD

Bit Definition

00:    If set to '1', then the available spare space has fallen below the threshold.
01:    If set to '1', then a temperature is above an over temperature threshold or below
        an under-temperature threshold.
02:    If set to '1', then the NVM subsystem reliability has been degraded due to significant
        media related errors or any internal error that degrades NVM subsystem reliability.

03:    If set to '1', then the media has been placed in read only mode.

04:    If set to '1', then the volatile memory backup device has failed.
        This field is only valid if the controller has a volatile memory backup solution.

07:05: Reserved

3.1.4.3   SATA device

SATA device shows the mount point of the M.2 NVMe storage media within the Linux file system

3.1.4.4   Disk size

The storage capacity of the M.2 NVMe card as calculated by the Linux operating system is shown here.

3.1.5 SSD Health Check

A "Quick" and a "Full" SSD Health Check are implemented in OpenScape Business.

3.1.5.1 Quick SSD Health Check

The Quick SSD Health Check is performed automatically every night and in addition at the time when the WBM is started. The "Quick" check is independent on the "Full" check. It reads S.M.A.R.T data of the SSD. Depending on the retrieved data the health status of the SSD card is set to "yellow" or "red" and a warning is issued either by e-mail or SNMP if configured. An appropriate entry is also written into the customer trace.

The Quick SSD Health Check does not execute an explicate filesystem check.

3.1.5.2 Full SDD Health Check

The system administrator can trigger an immediate or a scheduled full SSD Health Check. This full SSD Health Check includes a file system check and can only be performed on unmounted storage devices. Therefore, the system is shut down and restarted.

During the restart the full SSD Health Check is executed. Problems that are detected in the filesystem structure are repaired if possible.

3.1.5.3 How to activate a Full M.2 SATA SSD Card Health Check

Prerequisites

You are logged into the WBM with the Expert profile.

Step by Step

Figure 5   Activate Full M.2 SATA SSD Card SSD Health Check

1) Save the system with the Backup function to an external medium.
2) In the navigation bar, click on Expert Mode.
3) Click Maintenance > Actions in the navigation tree.
4) Click on Actions > Automatic Actions in the menu tree.
   The names of all automatic actions are displayed in the menu tree.
5) Click SDHC Health Check in the menu tree.
   Date and time of Local System Time and Last Health Check are displayed. The content of log file is also displayed.
6) Click to the tab labelled with "SATA M.2 SSD Health Check"
7) Select one of the following available options:
   a. Start Health Check immediately.
   b. Start Health Check on a specific date
8) Click on Apply followed by OK.

3.1.5.4 How to activate a Full M.2 NVMe SSD Card Health Check

Prerequisites

You are logged into the WBM with the Expert profile.

Step by Step

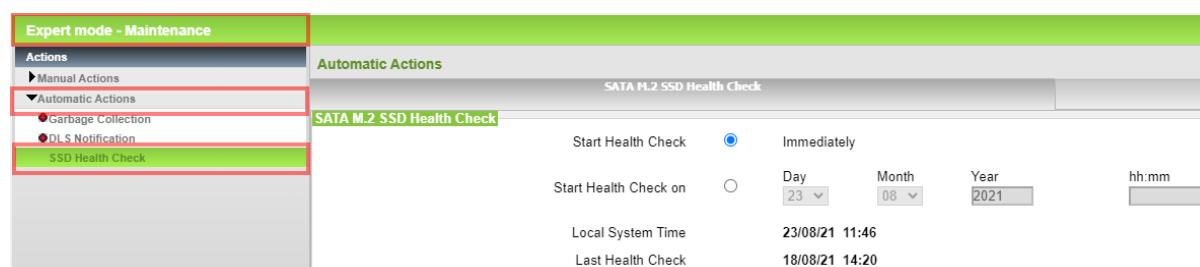OSBiz Storage Media and Card Manager – Information and Handling

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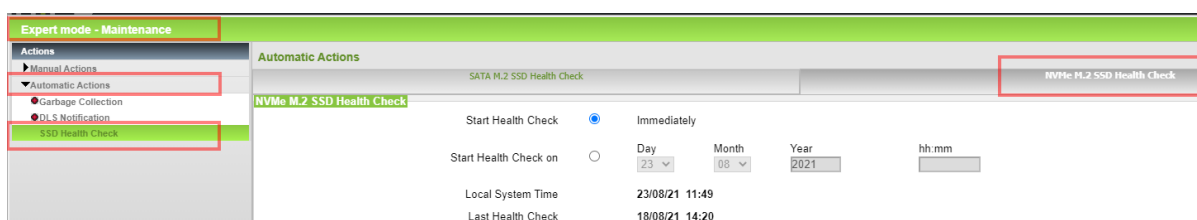
Figure 6   Activate Full M.2 NVMe SSD Card SSD Health Check

1) Save the system with the Backup function to an external medium.
2) In the navigation bar, click on Expert Mode.
3) Click Maintenance > Actions in the navigation tree.
4) Click on Actions > Automatic Actions in the menu tree.
    The names of all automatic actions are displayed in the menu tree.
5) Click SDHC Health Check in the menu tree.
    Date and time of Local System Time and Last Health Check are displayed. The content of log
    file is also displayed.
6) Click to the tab labelled with "NVMe M.2 SSD Health Check"
7) Select one of the following available options:
    a. Start Health Check immediately.
    b. Start Health Check on a specific date
8) Click on Apply followed by OK.

3.1.5.5   How to set a notification in case of SSD Card Status change

In case that the SDHC Card Health check changes the SDHC card status from "green" to "yellow",
from "green" to "red" or from "yellow" to "red" the system can notify the administrator with an E-
Mail or a SNMP event.

Prerequisites

- You are logged into the WBM with the Expert profile.
- In case of e-mail notification:
    The e-mail address needs to be configured in Expert mode > Maintenance > Events > E-mail

Figure 7   Set notification for SSD Card Status change

Step by Step

1) In the navigation bar, click on Expert Mode.
2) Click Maintenance > Events in the navigation tree.
3) Click on Events > Reaction Table in the menu tree. The names of Reaction
    Table are displayed in the menu tree.
4) Select FP_EVT_HW_067 in the menu tree.
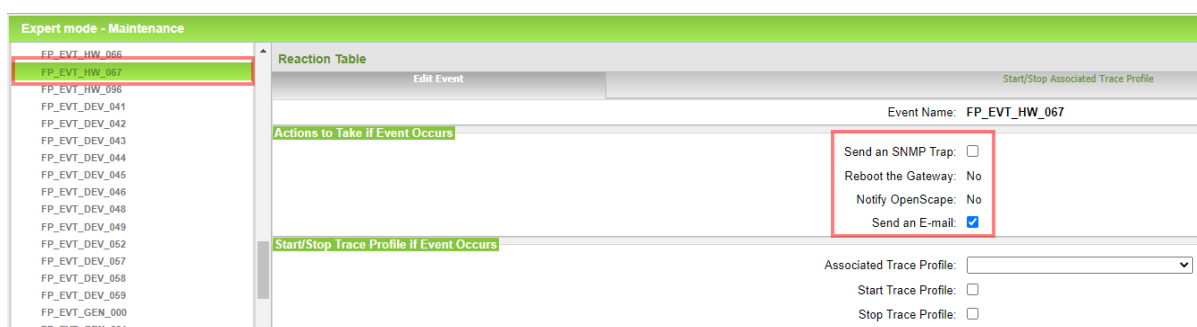
Figure 8   *Select Event for SSD Card Status change notification*
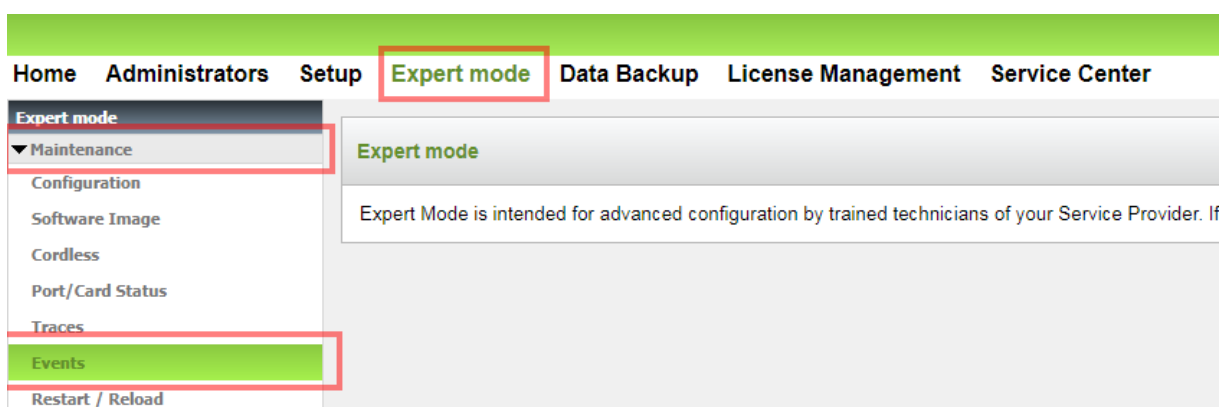
5) Select one of the following available options:
   a) Send an SNMP Trap.
   b) Send an E-mail.
6) Click on Apply followed by OK.

3.2 SDHC Card

3.2.1 SDHC Card Health Status

SDHC cards offer only very few information to determine its health status. In case that corresponding data are stored on the SDHC card, they can often be read and evaluated only with manufacturer-specific software tools. Standardized information and access mechanisms are not available for this purpose.

OpenScape Business evaluates the SDHC card health status on base of the following parameters:

- Prorated life span of the SDHC card that was determined before by tests in the lab.
- Read / write errors during operation of the system

The currently determined SDHC card health status is displayed at the home page of the OpenScape Business Assistant (WBM).

Click on the link to branch to the SDHC Health Check page within the WBM and display details on the status.

3.2.2 SDHC Log File Information

On system startup OpenScape Business generates several log files that include information about the SDHC card such as:

- SDHC card status
- SDHC card vendor (OEM_ID)
- SDHC card manufacturing date
- File system date
- Time since SDHC card creation
- Time since file system creation
- SDHC card size

Figure 9   SDHC Health Check page within the WBM Expert Mode

This page additionally offers the possibility to manually check the SDHC card status either immediately or at a specific time.

3.2.3   SDHC card status

The SDHC card health status is implemented as a traffic light.

- Green
- Yellow
- Red
- Grey

Recommended actions are displayed together with the status. More information about the card status and the recommended actions are described in chapter 2.2.

In case of status "Grey" the card is not known by the system SW by following reasons.

- Card not in the list of certified cards within the system SW
- Not possible to retrieve card information.

It is recommended to check the card type manually and in case that the card was not certified by Unify to replace the card by a certified one.

3.2.4   SDHC card information

SDHC cards offer the following information, that are read by the system and written into a log file.

3.2.4.1 SDHC card vendor

The OEM-ID is written by the card manufactured and identifies card and manufacturer. OpenScape Business checks the OEM_ID to determine if the card has been evaluated for use in OpenScape Business. In case that the card is known the manufacturer name and the ID is displayed. In case that the ID is not known the text "unknown" is displayed. In this case no information about expected life time is available. The card status remains grey, except that read/ write errors have been detected. In this case the status "red" is displayed.

3.2.4.2 Manufacturing Date and Filesystem Creation Date

The manufacturing date is written by the card manufacturer and is not changed when the card is partitioned and formatted. The filesystem creation date is written each time when the card is formatted.

The Warning Mechanism for "Yellow" health status is based on the manufacturing date and the estimated lifetime of the card. As cards can be in stock for longer time until they are used within OpenScape Business, the filesystem creation date is also considered within the calculation

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algorithm. An overview of the estimated lifetime of SDHC cards that are released for use in OpenScape Business is shown in chapter 8.1.1.

Below a calculation table is shown for Card Health Status with an estimated lifetime of 4 years under consideration of file system creation data.

Factor	Years and Weight								
Manufacturing Date	< 4 years	< 5 years		< 6 years		< 7 years		< 8 years		> 8 years
Filesystem Created	< 4 years	< 4 years	4-5 years	< 4 years	4 - 6 years	< 3 years	3-7 years	< 2 years	2 - 8 years	-
Health Status	Green	Green	Yellow	Green	Yellow	Green	Yellow	Green	Yellow	Yellow

Table 9 Calculation table for Card Health Status with an estimated lifetime of 4 years

3.2.4.3 Time since SDHC card creation

The time since card creation is displayed here, calculated on based of the actual time in OpenScape Business.

3.2.4.4 Time since File System creation

The time since file system creation is displayed here, calculated on based of the actual time in OpenScape Business.

3.2.4.5 SDHC card size

The total capacity of the SDHC card in Mega Bytes is shown

3.2.5   SDHC Health Check

A "Quick" and a "Full" SDHC Health Check are implemented in OpenScape Business.

3.2.5.1   Quick SDHC Health Check

The Quick SDHC Health Check is performed automatically every night and in addition at the time when the WBM is started. The "Quick" check is independent on the "Full" check. It reads specific log files of the system in order to determine SDHC card read/write errors. It does not execute an explicate filesystem check. In case of more than 50 errors in the log files the status of the SDHC card is set to "red" and a warning is issued either by e-mail or SNMP if configured. An appropriate entry is also written into the customer trace.

3.2.5.2   Full SDHC Health Check

The system administrator can trigger an immediate or a scheduled full SDHC Health Check. The full SDHC Health Check can only be performed on unmounted storage devices. Therefore the system is shut down and restarted. During the restart the full SDHC Health Check is executed. Problems that are detected in the filesystem structure are repaired if possible. After a successful file system check the log-files containing SDHC card errors are reset. This means that a SDHC card with status red can change to status yellow or green afterwards.

Note:
The full SDHC Health Check should be handled with care in case of SDHC cards in status "red". It can detect and fix errors in the filesystem structure but not corrupt data in files itself (e.g., in OpenScape Business configuration files). This can lead to system malfunctions afterwards. The SDHC card status must be observed after a Full SDHC card check has been done. In case that the SDHC card is defect or at End of Life new read/write errors occur very fast and the card status changes to "red" again after a short time. In this case the SDHC card has to be replaced immediately.

3.2.5.3   How to activate a Full SDHC Card Health Check

Prerequisites

You are logged into the WBM with the Expert profile.

Step by Step
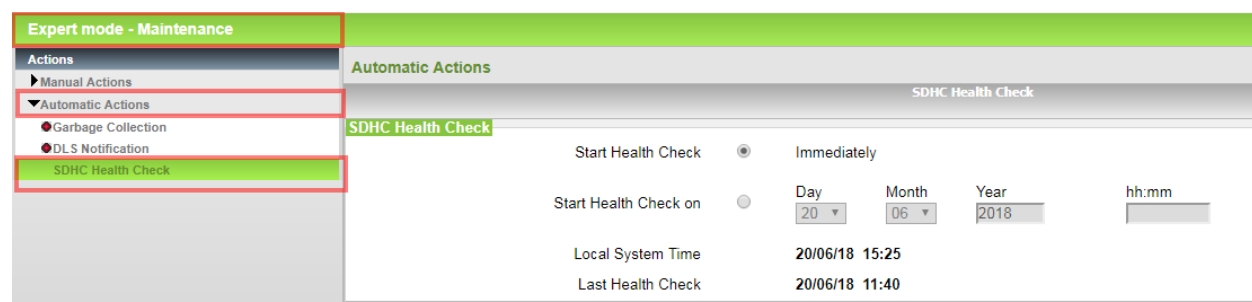
Figure 10   Activate Full SDHC Card Check

1) Save the system with the Backup function to an external medium.
2) In the navigation bar, click on Expert Mode.
3) Click Maintenance > Actions in the navigation tree.
4) Click on Actions > Automatic Actions in the menu tree.
    The names of all automatic actions are displayed in the menu tree.
5) Click SDHC Health Check in the menu tree.
    Date and time of Local System Time and Last Health Check are displayed. The content of log file is also displayed.
6) Select one of the following available options:
    a.   Start Health Check immediately.
    b.   Start Health Check on a specific date
7) Click on Apply followed by OK.

3.2.5.4   How to set a notification in case of SDHC Card Status change

In case that the SDHC Card Health check changes the SDHC card status from "green" to "yellow", from "green" to "red" or from "yellow" to "red" the system can notify the administrator with an E-Mail or a SNMP event.

Prerequisites

- You are logged into the WBM with the Expert profile.
- In case of e-mail notification:
    The e-mail address needs to be configured in Expert mode > Maintenance > Events > E-mail
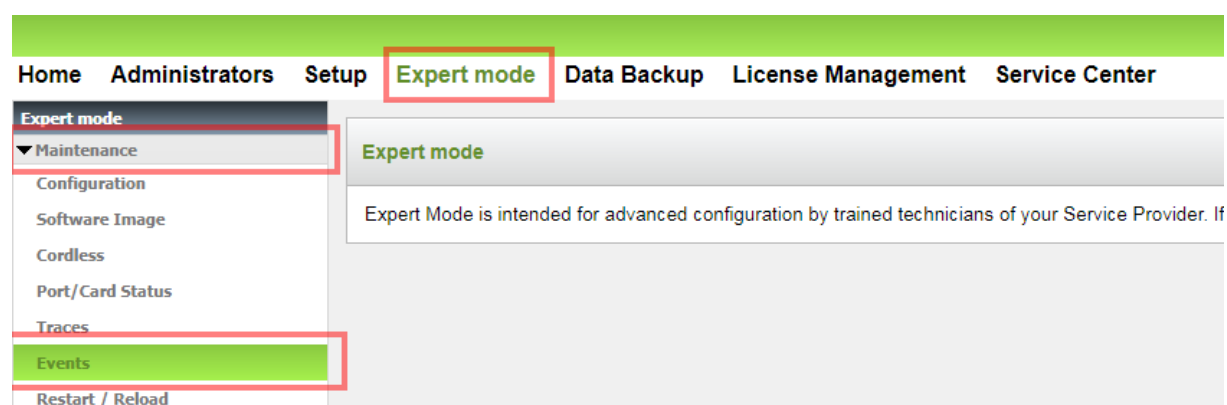
Figure 11   Set notification for SDHC Card Status change

Step by Step

1) In the navigation bar, click on Expert Mode.
2) Click Maintenance > Events in the navigation tree.

3) Click on Events > Reaction Table in the menu tree. The names of Reaction
   Table are displayed in the menu tree.
4) Select FP_EVT_HW_067 in the menu tree.

Figure 12   Select Event for SDHC Card Status change notification

5) Select one of the following available options:
   a) Send an SNMP Trap.
   b) Send an E-mail.
6) Click on Apply followed by OK.

4 Create bootable M.2 SATA SSD / SDHC Card

In this chapter the creation of a new bootable M.2 SATA SSD or SDHC card is described using either the integrated **SSD/ SDHC Data Backup** function or the **Card Manager** tool.

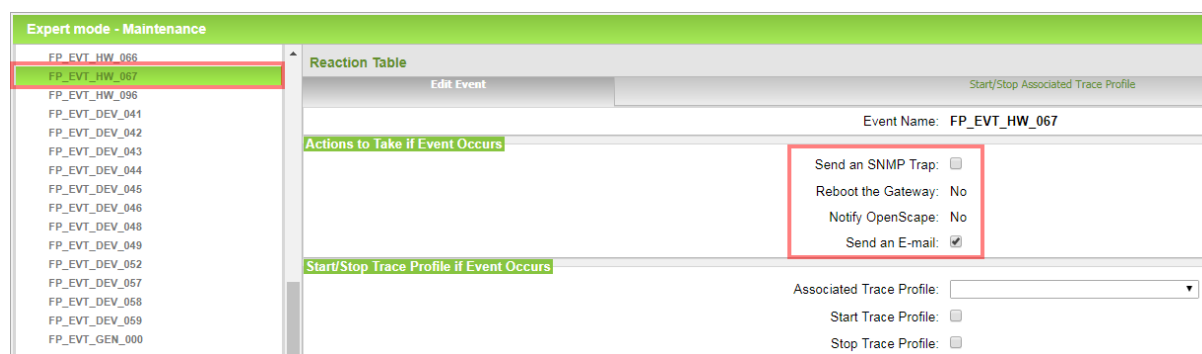The SSD / SDHC Data Backup function within the OpenScape Business System is able to copy the content of the SSD or SDHC card that is currently inserted in the system without the need to shut down the system to different storage locations and storage media as:

- USB Stick connected to the system
- USB card reader connected to the system
- Network File System (NFS) drive
- Network File System (NFS) drive via USB

The USB Stick or USB Card Reader options are not available for OpenScape Business X1. In these cases the SDHC Backup data needs to be stored on a NFS drive.

The integrated **SSD / SDHC Data Backup** function creates directly a full functional SSD / SDHC card in case that an USB Card Reader with inserted new SSD / SDHC card is used and directly connected to the system.

When using a USB card reader, it may not be possible to access or format the SDHC card. In this case, a different USB card reader should be used. A list of suitable card readers cannot be provided, as models, specifications and availability change very quickly.

In all other cases **SSD / SDHC Data Backup** function creates a so called "tar"-file that contains all system and configuration specific data. This specific backup file is used by the **Card Manager** tool to create a full functional new SDHC card containing all customer data.

INFO:
The "tar"-file cannot be used by the restore function of the system. The size of the "tar"-file depends on the system specific data. It can increase up to multiple Giga Bytes in systems with many stored media files such as voicemails or call records.

Once the new SSD or SDHC card including system specific (customer) data has been created and inserted in the system, the system starts from the new SSD or SDHC card with the same software version and configuration as before. No further administration tasks are required. All trace- and log-files are re-initialized automatically.

4.1 How to create a bootable M.2 SATA SSD card by the system

OpenScape Business (X3, X5 or X8) can copy the content of the currently used M.2 SATA SSD card including all required files and customer data (without log- and trace files) on the fly to a new SSD card. The new SDHC card can be used afterwards in the system without additional administration activities.

Prerequisites

- USB M.2 SATA SSD Card Reader (USB M.2 NVMe or PCIe card reader cannot be used)
- M.2 SATA SSD
    - Qualified for use in OpenScape Business
    - Formatted FAT32

Step by Step

Open WBM in the role expert

Figure 13 M.2 SATA SSD Data Backup as data copy on USB Card Reader

1. In the navigation bar, click on **Data Backup**.
2. Click **SSD Data Backup > Data Backup** in the navigation tree.
3. Select the **Card Reader** option.
    This option is only available if a USB device is plugged in. A fully functional copy of the system SDHC card is created, without any trace and log files.

    NOTICE: A scheduled backup is available for any of the actions. Only one action can be scheduled at a time and the user will be able to change it or cancel it.
    ----

4. Click on **OK & Next**.
    The backup process is started. The inserted SSD card is formatted and all relevant files are transferred to the inserted SSD card. The backup progress is displayed in a separate window
    The message "Backup task was finished successfully" is displayed after the backup files have been successfully copied.
    INFO: The USB M.2 SATA SSD card reader with an inserted SSD card must be plugged in the system before the copy process is started. An error message appears if the USB card reader cannot be mounted or if the storage media cannot be accessed or formatted.
5. Click on **Finish**
    to return to the previous page**.**
    Do not remove the USB Card reader or the inserted SDHC card before!
    The SSD card contains now all required files and can be used in the system.

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6. Change SSD card (see chapter 5.1)
   The system starts from the new SDHC card with the same software version and configuration as before. Log and trace files are re-initiated automatically.

4.2 How to create a bootable SDHC card by the system

OpenScape Business (X3, X5 or X8) can copy the content of the currently used SSD SDHC card including all required files and customer data (without log- and trace files) on the fly to a new SDHC card. The new SDHC card can be used afterwards in the system without additional administration activities.

Prerequisites

- USB Card Reader (optional)
- USB M.2 SATA Card Reader
- SDHC Card
    - o Qualified for OpenScape Business
    - o Formatted FAT32
    - o Same capacity as currently used in the system
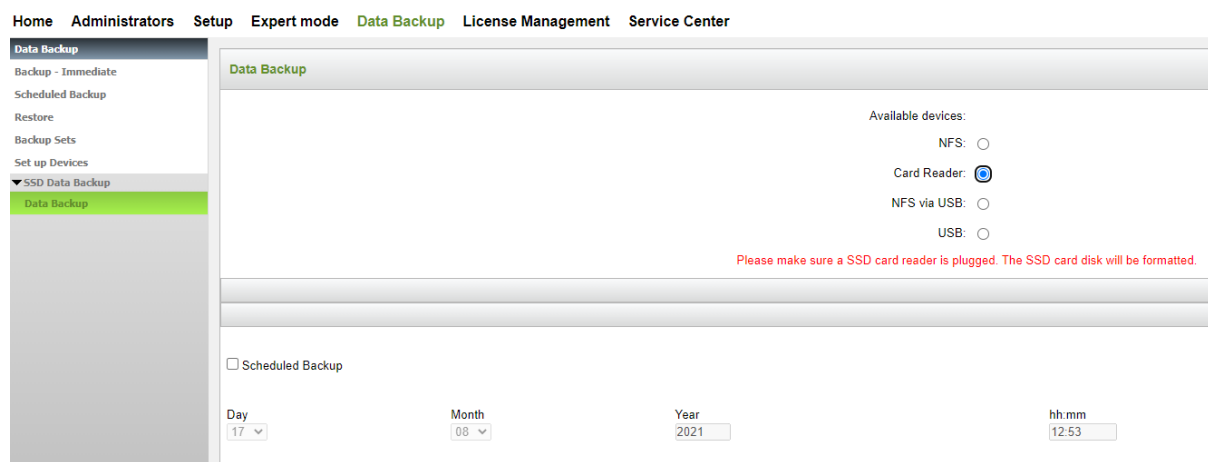
Step by Step

Open WBM in the role expert
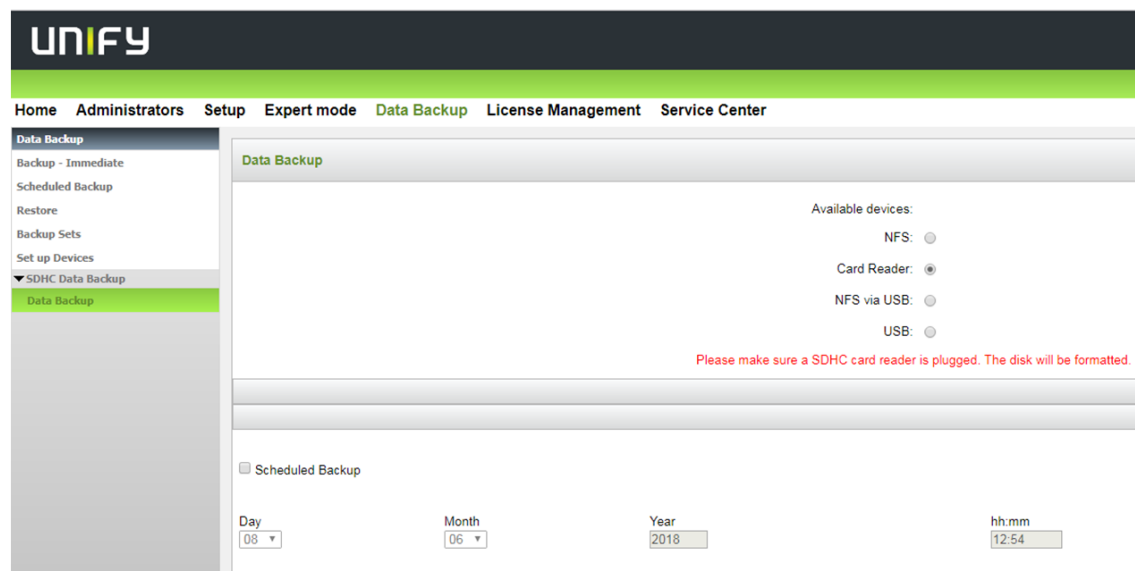
Figure 14 SDHC Data Backup as data copy on USB Card Reader

7. In the navigation bar, click on **Data Backup**.
8. Click **SDHC Data Backup > Data Backup** in the navigation tree.
9. Select the **Card Reader** option.
   This option is only available if a USB device is plugged in. A fully functional copy of the system SDHC card is created, without any trace and log files.

   NOTICE: A scheduled backup is available for any of the actions. Only one action can be scheduled at a time and the user will be able to change it or cancel it.
   ----

10. Click on **OK & Next**.
    The backup process is started. The inserted SDHC card is formatted and all relevant files are transferred to the inserted SDHC card. The backup progress is displayed in a separate window
    The message "Backup task was finished successfully" is displayed after the backup files have been successfully copied.
    INFO: The USB SDHC card reader with an inserted SDHC card must be plugged in the

system before the copy process is started. An error message appears if the USB card reader cannot be mounted or if the storage media cannot be accessed or formatted.

11. Click on **Finish**
    to return to the previous page**.**
    Do not remove the USB Card reader or the inserted SDHC card before!
    The SDHC card contains now all required files and can be used in the system.

12. Change SDHC card (see chapter 5.1)
    The system starts from the new SDHC card with the same software version and configuration as before. Log and trace files are re-initiated automatically.

4.3 How to create a M.2 SATA SSD or SDHC Card Backup Data File ("tar"-file)

OpenScape Business X can copy the system specific content of the currently used SSD or SDHC card including all required files and customer data (without log- and trace files) into a specific "tar"-file on different storage locations and storage media, such as:

- USB Stick connected to the system
- Network File System (NFS) drive
- Network File System (NFS) drive via USB

This "tar"-file is used by the **Card Manager** tool to create a full functional new SDHC card containing all system specific (customer) data. The new created SDHC card can be used afterwards in the system without additional administration activities.

Note: The "USB" memory stick and "NFS via USB" option are not available for OpenScape Business X1. In this case the SDHC Backup data needs to be stored on a NFS drive and copied / transferred afterwards to a suitable storage medium, if required.

Prerequisites

USB Stick with at least the same capacity as SSD / SDHC card of the system

or

A Network File System (NFS) drive that is accessible from the system. (Incl. server address, the relevant path and valid login credentials.)

Step by Step

Open WBM in the role expert
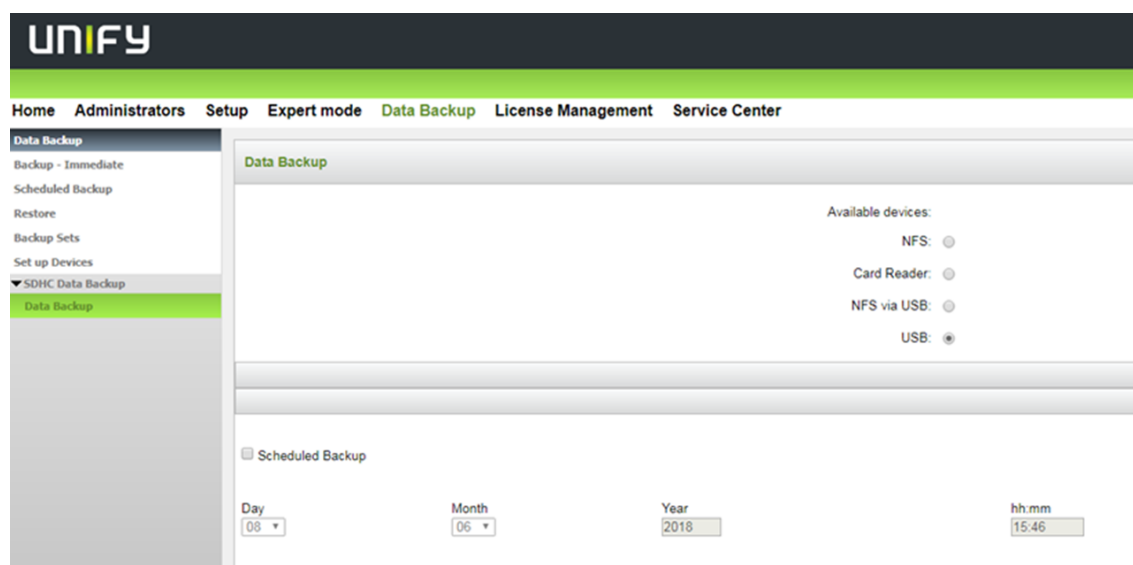

Figure 15 SSD or SDHC Data Backup as „tar" file on USB memory stick

1. In the navigation bar, click on **Data Backup**.
2. Click SSD or SDHC Data Backup > Data Backup in the navigation tree.

3. Select one of the following available options depending on the available storage location and media:
    a. **NFS**.
        A valid server address, the relevant path and valid login credentials must be configured.
        Click on **Save & check**
    b. **NFS via USB**.
        A valid server address, the relevant path and valid credentials must be configured.
        Click on **Save & check**
    c. **USB**.
        A FAT 32 formatted USB memory stick has to be plugged in the system.
        The SDHC Backup Data file ("tar"-file), containing all relevant system specific data, is copied to the USB memory stick.

        NOTICE:
        The USB memory stick must be plugged in the system before the copy process is started.
        A Scheduled Backup is available for any of the actions. Only one action can be scheduled at a time and the user will be able to change it or cancel it.
        ----

4. Click on **OK & Next**.
    The backup process is started. All relevant files are transferred to the selected storage media. The backup progress is displayed in a separate window
    The message "Backup task was finished successfully" is displayed after the "tar"-file has been successfully written to the storage device.
    INFO: An error message appears if the NFS share or the USB memory stick cannot be mounted or if the storage media cannot be formatted.
5. Click on **Finish**
    to return to the previous page. Do not remove a USB memory stick before! The storage location contains now the "tar"-file with all system specific files.
6. Use the **Card Manager** tool and create a new SSD / SDHC card (see chapter 7.5)
    Copy the "tar"-file to a storage medium that can be accessed by the Card Manager.
7. Change SSD / SDHC card (see chapter 5.1)
    The system starts from the new SDHC card with the same software version and configuration as before. Log and trace files were not copied and are re-initiated.

5 Change bootable M.2 SATA SSD / SDHC Card

5.1 How to change the SDHC card of an OpenScape Business X System

This chapter applies to OpenScape systems with V2 mainboards that use SDHC cards.

Before the SDHC card of a system is replaced the following must be considered and ensured.

- The new SDHC card must have the same SW version than the card in operation to avoid any side effects. In case that a UC Booster Server cards is operated a SW downgrade by SDHC card change is not possible
- A system backup to an external storage media must be done before card change. Depending on the kind of SDHC card creation or in case of a problem it could be necessary to restore the system from the backup set after card change.

Prerequisites

- You are logged on to the WBM with the Advanced profile.

- A full functional SDHC card with the appropriate system software version is available.
- An actual system backup file on external storage media / location is available

5.1.1 SDHC card with customer data.

Prerequisite:

- You are logged on to the WBM with the Advanced profile.
- A full functional SDHC card with the appropriate system software version including the customer data.

Step by Step:

1. Shut down and power off the system
2. Remove the existing SDHC card
3. Install the new SDHC card
4. Power on the system
   The system starts from new SDHC card with the same software version and configuration data as before. Log and trace files that were not copied are re-initiated.
5. No further administrator actions are required

5.1.2 SDHC card without customer data.

Prerequisites

- You are logged on to the WBM with the Advanced profile.
- Actual system backup file on external storage media / location is available
- New SDHC card with the current Software version is available

Step by Step

1. Backup system configuration
2. Shut down and power off the system
3. Remove the existing SDHC card.
4. Install the new SDHC card.
5. Switch on the system.
   System starts up, initiates the new SDHC card and installs the default configuration.
   After Startup, system will have the default IP address.
6. Restore system configuration → See How to restore system configuration

5.2 How to change the M.2 SATA SSD card of an OpenScape Business X System

Before the M.2 SATA SSD card of a system is replaced the following must be considered and ensured.

- The new SSD card has to have the same SW version than the card in operation to avoid any side effects.
- A system backup to an external storage media has to be done before card change. Depending on the kind of SSD card creation or in case of a problem it could be necessary to restore the system from the backup set after card change.

Prerequisites

- You are logged on to the WBM with the Advanced profile.
- A full functional M.2 SATA SSD card with the appropriate system software version is available.
- An actual system backup file on external storage media / location is available

5.2.1 M.2 SATA SSD card with customer data.

Prerequisite:

- You are logged on to the WBM with the Advanced profile.

AtoS

- A full functional SSD card with the appropriate system software version including the customer data.

Step by Step:

1. Shut down and power off the system
2. Remove the existing M.2 SATA SSD card (note the SSD card slot)
3. Install the new M.2 SATA SSD card
4. Power on the system
   The system starts from new SSD card with the same software version and configuration data as before. Log and trace files that were not copied are re-initiated.
5. No further administrator actions are required

5.2.2   M.2 SATA SSD card without customer data.

Prerequisites

- You are logged on to the WBM with the Advanced profile.
- Actual system backup file on external storage media / location is available
- New SSD card with the current Software version is available

Step by Step

1. Backup system configuration
2. Shut down and power off the system
3. Remove the existing M.2 SATA SSD card (note the SSD card slot)
4. Install the new M.2 SATA SSD card
5. Switch on the system.
   System starts up, initiates the new SSD card and installs the default configuration.
   After Startup, system will have the default IP address.
6. Restore system configuration → See How to restore system configuration

6 Copy System SW to of UC Booster Card HDD

This chapter applies only for OpenScape Business X systems with V2 mainboard and UC Booster Card (OCAB).

For OCAB to operate, it is important that the system SW version and the OCAB SW version are identical. If the SW versions are different, OCAB does not operate correctly, and an error message is displayed on the WBM home page.

In normal operation, the OCAB SW version is automatically upgraded to the correct SW version via the manual or automatic SW upgrade process of the OpenScape Business system.

In the case of an OCAB or OCAB-HDD exchange, two different handling scenarios must be considered in order to copy the correct SW version to the OCAB-HDD::

1. Use of OpenScape Business SW upgrade mechanism
2. Use of the Cardmanager

6.1 Use of OpenScape Business SW upgrade mechanism

In case of replacement of the OCAB HDD or the complete OCAB incl. HDD, the System SW update mechanism can be used to update the OCAB SW under the following conditions.

- A System Backup is available
- OCAB was successfully booted from the HDD
- The HDD contains at least SW version V1.R3
- The HDD SW version is lower than the system SW version

Note:

The SW upgrade needs to be done manually via the WBM using the OCAB SW image file, if the OCAB HDD SW version is lower than version 2.4

In case of SW version is equal or higher than V2.4 the SW can also be updated automatically using the software upgrade mechanism via the Internet.

The System Backup is required to restore customer media data (e.g. voicemail data) after HDD replacement.

6.2 Use of the Cardmanager

In the following cases, it is necessary to copy the SW directly to the OCAB hard disk using the Cardmanger:

- OCAB does not boot from HDD due to SW problem
- OCAB HDD is defect and is replaced by a blank HDD
- OCAB HDD SW version is higher than the system SW version.
- OCAB HDD is defect and is replaced by HDD containing a higher SW Version than the mainboard.

As a general requirement the system SW is needed as "image_osbiz_v3_Rx.x.x_xxx _ocab.img.tar" for the Cardmanager to copy the SW to the OCAB harddisk.

Note:

It is necessary to create an actual System Backup file on an external storage location. Do not use the OCAB HDD for system backup, as the HDD is partitioned and formatted before the system SW is copied by the Card Manager.

In the event that system backups are stored on the OCAB HDD and it is not possible to create new system backups on an external location, backup sets can be retrieved from the OCAB HDD and used for system recovery under the following conditions:

- The OCBA HDD itself is not defective.
- The Linux file system is not corrupted
- The backup set matches the SW version that will later be copied to the OCAB HDD.

To do this, the OCAB HDD must be connected to a Linux base PC via a USB-SATA adapter and mounted in the Linux file system.
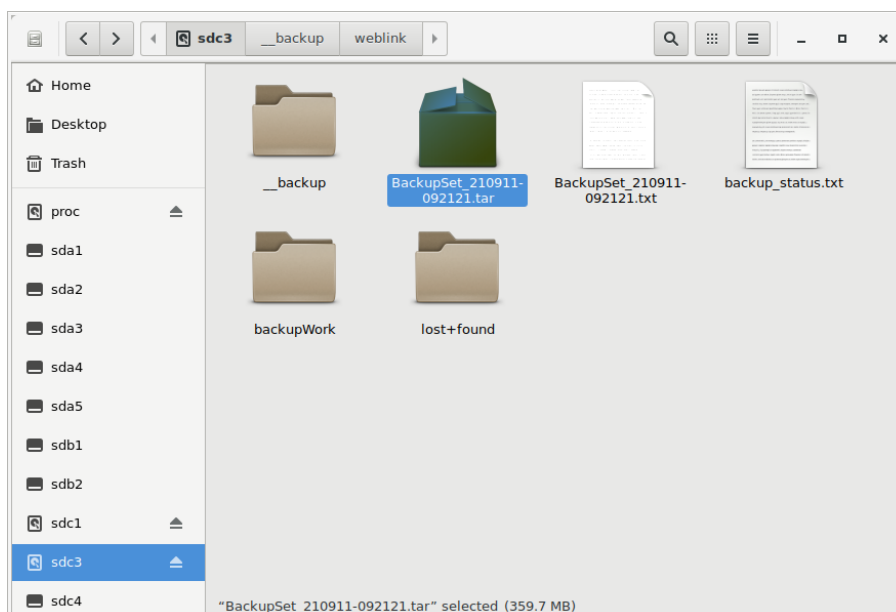
Figure 16   OCAB HDD partitions mounted into Linux FS

The backup sets are located in the backup partition of the hard disk and can be copied to another external storage location (preferably USB stick). The backup "tar" file and the associated "txt" file must be copied to be able to restore the OpenScape system afterwards.

7 Card Manager Description

The Card Manager is a service tool for OpenScape Business X models.

It extracts and copies SW images that have been downloaded before from the Software Download Server of Unify either to a SDHC card, to an M.2 SATA SSD card or to the hard disk of the UC Booster server.

The Card Manager tool is used in case that a storage card or hard disk contains outdated SW and needs to be updated to the latest SW version or in case that the system SW needs be copied to a blank (formatted) storage media.

In addition, the Card Manager can also be used to create a new fully functional SDHC /M.2 SSD card including customer configuration data. The new created card can be used in the specific system as a full functional replacement for the existing ('old') SDHC card.

The Card Manager tool is available on the SW Download Server of Unify in two different SW-packages.

- Card Manager DVD as ISO file
  The iso file is split into 4 parts. Before use the 4 parts need to be combined.
  The ISO file contains a Microknoppix Linux system with the Card Manager application on top. It is used to create a bootable Linux DVD that can be used with mostly any PCs that support boot from DVD drive.
- Card Manager as "jar"-file
  this file contains the pure Card Manager program and the associated script-files. These files can be used directly on Linux PC if the requirements are met by the Linux Operating systems.

7.1 Preparations

7.1.1 Download Card Manager from Software Supply Server

Login into the SW Downloads Server within the Unify Partner Portal and search for "Card Manager". Choose latest released version for OpenScape Business from the list. Click to "Details".

Figure 17   SWS - Search for Card Manager

Download the release note and the required files by a mouse click.

Figure 18   SWS – Card Manager Details page

Note:
On the following page you must agree the Download Terms before the download button is offered.
Make sure that your Internet Browser allows PopUps. Otherwise download is not started.

Figure 19   SWS – Download Terms agreement

Read the release note for latest information about the downloaded Card Manager version.

7.1.2   Built the ISO Image

The ISO image is split into 4 parts. Before it can be burned on a DVD or USB Stick is has to be combined from the 4 parts. This is done by using the MS Windows tool 7-zip.

Open 7-Zip application and add the 4 Card Manager files that need to be combined.

Figure 20   7-Zip – Combine Card Manager files step 1

Choose the first file, open file menu and select combine
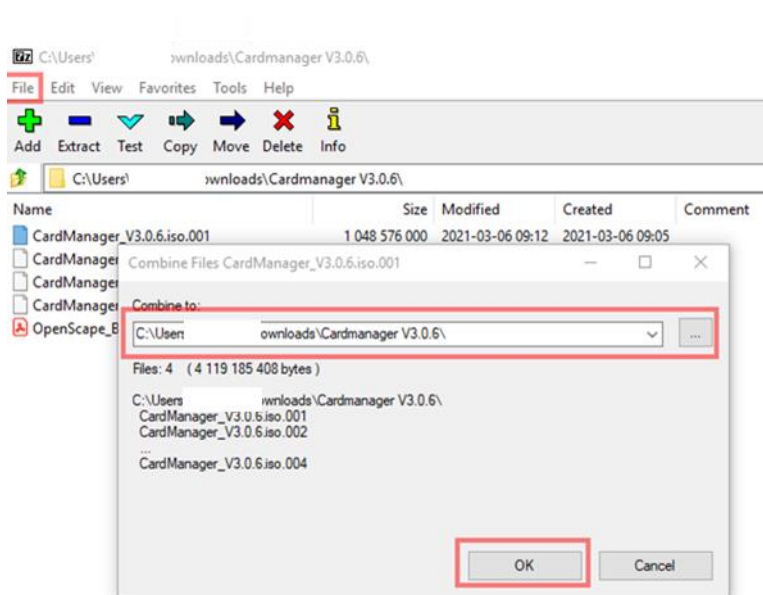
Figure 21   7-Zip – Combine and save Card Manager ISO file

Choose the appropriate path and click to OK. Afterwards the Card Manager ISO file is available in the selected folder.

7.1.3   Create DVD from Image.

Insert an empty DVD into the DVD burner.

Use either a DVD burning application like "ISObuster" or the Windows 10 "Explorer" to burn the Card Manager ISO image file to DVD. In the case of Explorer, simply drag the ISO file to the DVD drive as the destination. In the following dialog select the DVD option.

7.1.4   Create USB Boot Image

Boot the Card Manager from DVD.

After the KNOPPIX system is running and Card Manager is started, close Card Manager application and click to the Icon labeled with "Install KNOPPIX to flash memory" on the desktop to copy the KNOPPIX to an USB Memory Stick.

Figure 22   Knoppix – Create bootable USB Memory Stick

Follow the instructions.

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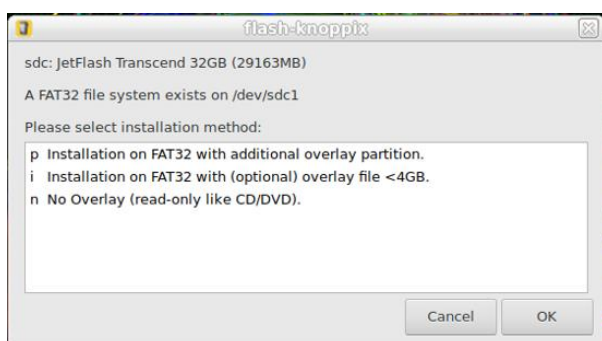
Figure 23   Knoppix – Bootable USB Memory Stick optional overlay partition

Select "p" or "i" if you want to install additional SW packages persistent on the Knoppix boot stick

Select "n" if the boot stick should be read only

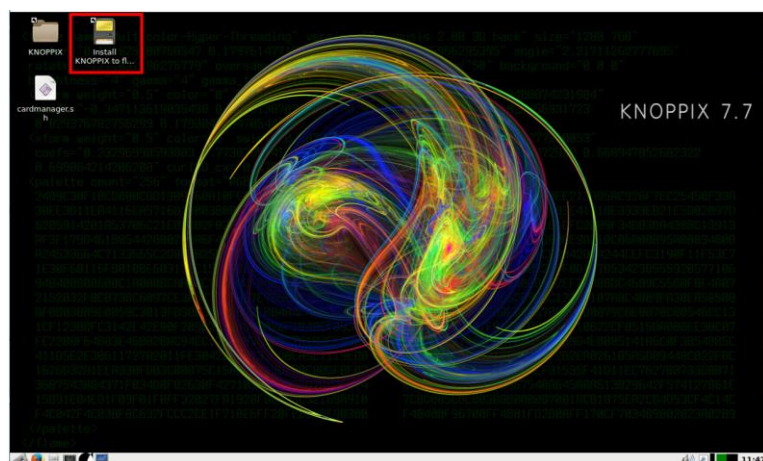### 7.1.5   Download OpenScape Business SW from Software Download Server

Download the OpenScape Business system SW image from the SWS in the same way as the Card Manager SW.

Note that the same OpenScape Business SW version is provided as a different SW image for M.2 SATA SSD, for SDHC card and for OCAB HDD. If in doubt, check the part number of the SW image in the SW release note and look for the part number on the SWS.

Following naming is used within the Release Notes:

- image_osbiz_v3_Rx.x.x_xxx _**occ.img.tar**   So called "small" SW-image"
  for SDHC cards used in V2 Mainboards
- image_osbiz_v3_Rx.x.x_xxx _**ocab.img.tar**   So called "big" SW-image for the harddisk
  of the UC-Booster Card (OCAB).
  This SW-image can also be used for the
  SDHC card used in V2 Mainboards.
- image_osbiz_v3_Rx.x.x_xxx _**occe.img.tar**   SW-image for M.2 SATA SSD used by
  V3 Mainboards

Figure 24   Example: part number for System SW Images for M.2 SSD within SW Release Note

Figure 25   Example SWS - Search for a specific OpenScape Business SW Version

Copy the downloaded OpenScape Business SW image ("tar"- file) to an USB memory stick afterward.

7.2 Prerequisites and Hardware / Software requirements

The Card Manager tool can be operated either directly on a physical PC or in a virtual environment. Depending on the operation mode different requirements and prerequisites have to be observed.

The following prerequisites refer to the operation of the Card Manager on base of the ISO file containing a "Live Linux" (Knoppix) environment. It is assumed that the ISO file containing the "Live Linux" is booted either directly by the PC BIOS using a physical DVD drive or USB media or by a virtual machine that is installed as guest on the PC operating system.

7.2.1   PC Hardware / Software Prerequisites for direct boot from DVD or USB stick

7.2.1.1   PC HW

- PC HW at least with 4GB RAM
- Bios support of boot from DVD drive or boot from USB memory stick.
- DVD drive (optional)
- Two USB 3 interfaces

7.2.1.2   PC SW

- None

7.2.2   PC Hardware / Software Prerequisites for boot within a virtual machine

7.2.2.1.1   PC HW

- PC HW with at least 8 GB RAM
- Bios support of virtualization (enable within BIOS)
- Two USB 3 interfaces

7.2.2.2   PC SW

- Microsoft Windows 10 64 Bit
- vmWare Player version 15 or higher

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![Atos]

7.3 HW Prerequisites for USB adapters and memory media

7.3.1 USB Adapter

The Card Manager will use commercially available USB adapters that meet the general specifications listed below.

Since the availability of adapters and their specifications can change at any time without notice, it cannot be guaranteed that an adapter once recommended will work forever in all PC environments.

Therefore, it is recommended to test a currently available USB adapter in connection with the Card Manager PC and to use it after successful test exclusively in the tested Card Manager PC environment.

7.3.1.1   M.2 USB Adapter

The M.2 USB adapter must support:

- M.2 SATA SSD (B + M key) coding
- 2280 2260 2242 2230 M.2 card sizes
- USB 3.0 interface with backwards compatibility to USB 2.0
- Windows 10 and Linux operating systems without specific drivers
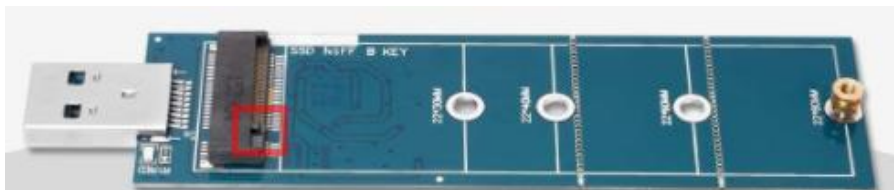
Figure 26   Example M.2 USB Adapter with B-key coding for M.2 SATA SSD

Figure 27   Example M.2 SATA SSD with B- and M-key coding

Note:
It is crucial that the adapter supports M.2 SATA SSD. An adapter that supports NVMe SSD only cannot be used.

The M.2 SATA SSD Adapter should be connected preferably to a USB 3 interface of the PC. Even if a USB 2.0 compatibility is noted in the specification, the implementation could not be 100% compatible and might cause malfunction if connected to a USB 2.0 interface.

7.3.1.2   SDHC USB Adapter (USB Card Reader)

The SDHC USB adapter (Card reader) must support:

- SDHC UHS 1 class 10 cards with 16 GB or higher
- USB 3.0 interface with backwards compatibility to USB 2.0

- Windows 10 and Linux operating systems without specific drivers

Figure 28   Example SDHC – USB Adapter

Note:

The M.2 SATA SSD Adapter should l be connected preferably to a USB 3 interface of the PC. Even if a USB 2.0 compatibility is noted in the specification, the implementation could not be 100% compatible and might cause malfunction if connected to a USB 2.0 interface.

7.3.1.3   SATA - USB Adapter

The SATA SDHC is required to copy the System SW from the so called "ocab_img.tar" file to the OCAB hard disk. It must support:

- USB 3.0 interface with backwards compatibility to USB 2.0
- Windows 10 and Linux operating systems without specific drivers

Figure 29   Example SATA USB M.2 SATA SSD with B- and M-key coding

Note:

The SATA USB Adapter should l be connected preferably to a USB 3 interface of the PC. Even if a USB 2.0 compatibility is noted in the specification, the implementation could not be 100% compatible and might cause malfunction if connected to a USB 2.0 interface.

7.3.2   Memory Media

7.3.2.1   M.2 SATA SSD

A M.2 SATA SSD that is qualified for use in OpenScape Business is required in case of OpenScape Business X systems with V3 mainboard.

7.3.2.2 SDHC Card

A SDHC card that is qualified for use in OpenScape Business is required in case of OpenScape Business X systems with V2 mainboard.

7.3.2.3 OCAB HDD Card

OpenScape Business X systems with V2 mainboard require a hard disk qualified for use in the UC Booster Card. It is recommended to order the hard disk as a spare part from Unify, since hard disks are generally critical components with regard to the Safety approval of the OpenScape Business system. Use of a hard disk other than the one specified for the UC Booster Card will void the system's Saftey approval.

7.4 Boot and run Card Manager

The following chapters describe the best practice approach to successfully boot and run Card Manager from the DVD or ISO file containing the "Live Linux" (KNOPPIX).

Using the Card Manager jar file on an already installed Linux PC is not described here, since successful operation depends heavily on the Linux distribution used as well as the system's internal environment settings and the installed SW packages, which may differ from distribution to distribution.

7.4.1 Run Card Manager on a physical Machine

The Card Manager on base of the "Live Linux" (KNOPPIX) can either be booted from a DVD or from a USB Stick.

7.4.1.1 Boot from DVD

Step by step

1. Create a bootable DVD from the ISO file as described in chapter 7.1.3.
2. Set DVD as the primary boot medium or activate the boot menu in the BIOS
3. Insert the DVD into the drive and (re-)boot the PC.
4. If enabled, select DVD as boot media in the boot menu.
5. Press "Enter" to confirm KNOPPIX boot mode when prompted.
6. Wait until Knoppix is completely booted.
7. The Card Manager tool will start automatically.

7.4.1.2 Boot from USB Memory Stick

Step by step

1. Create a bootable USB Memory Stick as described in chapter 7.1.4.
2. Set "USB interface as the primary boot medium or activate the boot menu in the BIOS.
3. Plug the USB memory stick and (re)boot to the PC.
4. If enabled, select USB memory stick as boot media in the boot menu.
5. Press "Enter" to confirm Knoppix boot mode when prompted.
6. Wait until Knoppix is completely booted.
7. The Card Manager will start automatically.

7.4.2 Run Cards Manager on a virtual Machine

The following description refers to the virtual machine vmWare Player 15.

Step by step

1. Preparations
   a. Copy the Card Manager ISO file (see chapter 7.1.2) to a specific folder within the file system of the Host PC that can be accessed by the virtual machine.
   b. Install the virtual machine SW as guest on a Microsoft Windows 10-64 Bit Host PC.
   c. Start the virtual machine SW and create a new virtual machine.
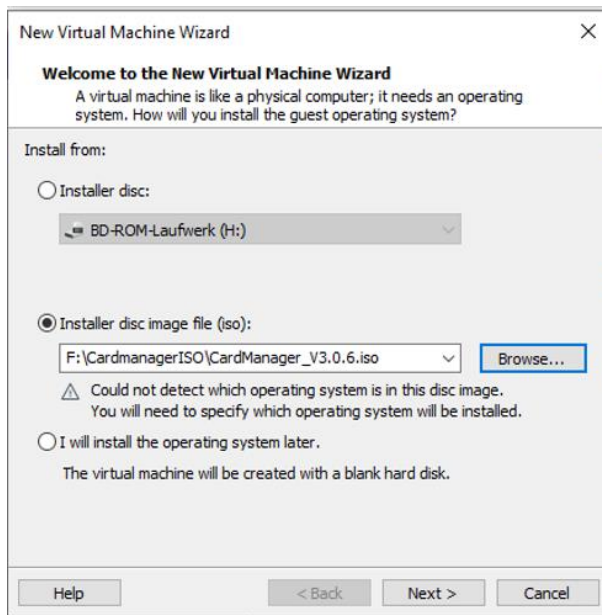
Figure 30   Create a new virtual machine

       d. Select radio button "Choose Installer disk image file (iso)" an choose previously installed Card Manager ISO file. Click to Next.
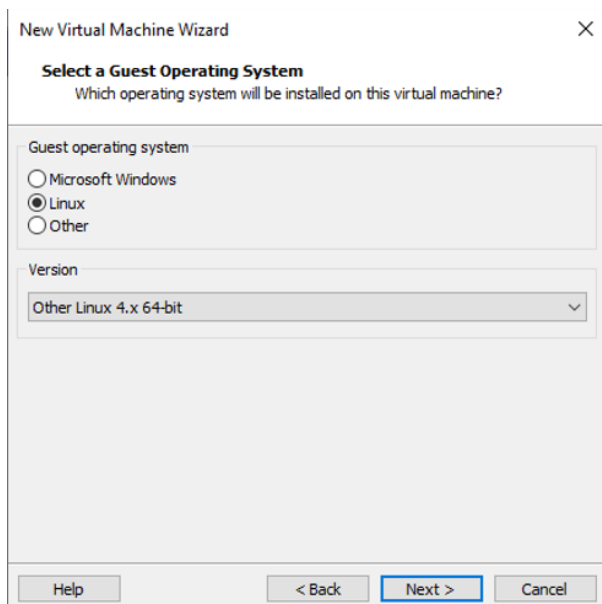
Figure 31   Select Guest Operating System

       e. Select "Linux" as Guest Operating System and choose "Other Linux 4.x 64-bit. Click Next.
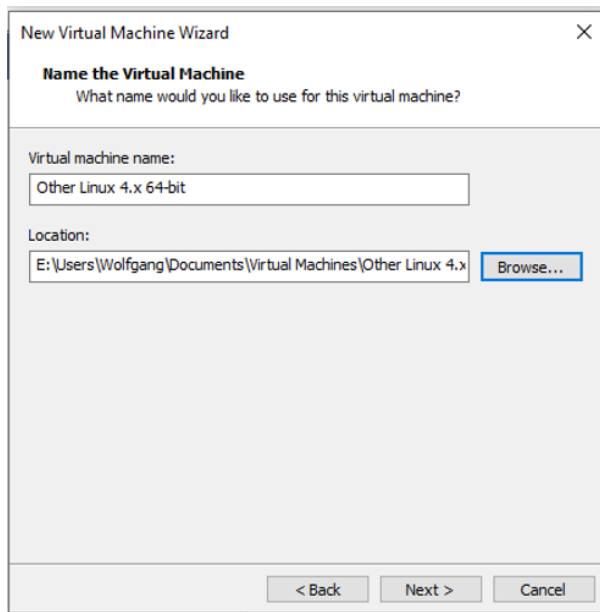
Figure 32   Name the virtual Machine

> f. Choose a unique name for the virtual machine. Click Next.
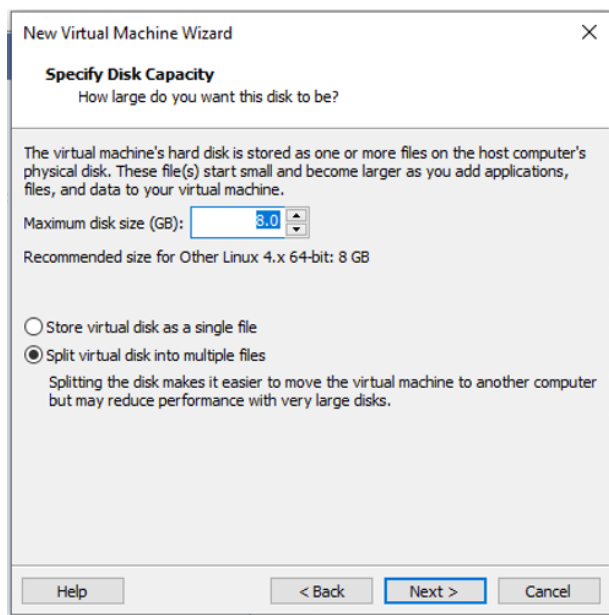
Figure 33   Specify Disk Capacity

> g. Define the HD Space (follow the recommendation of the Wizard) and split the virtual disk into multiple files. Click Next.

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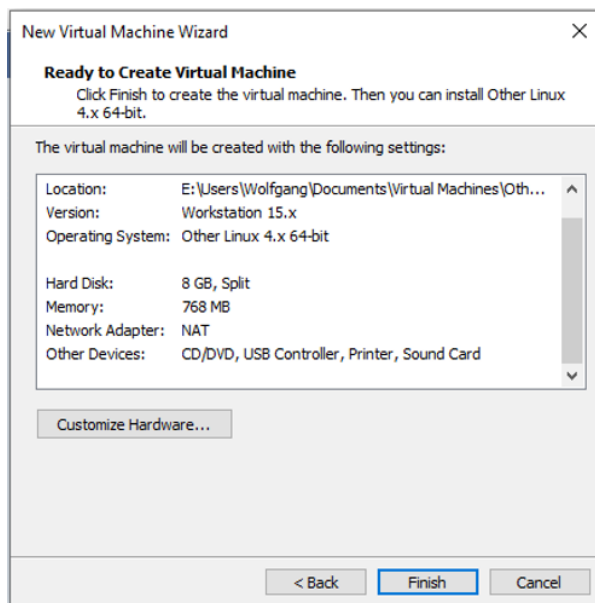
Figure 34   Customize VM Hardware

> h. Click to the button "Customize HW"
> i. Select USB Controller.
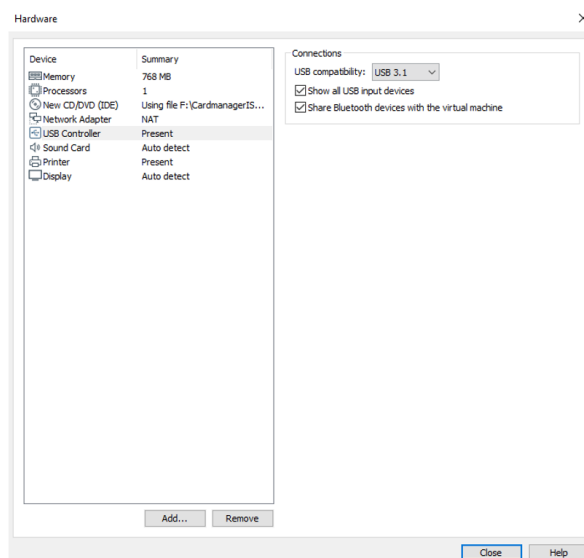
Figure 35   Set USB controller compatibility

> j. Choose USB compatibility. Set value to 3.1
> k. Set a tick the checkbox → Show all USB devices
> l. Click to the button "Close"

2. Run Card Manager
    a. Choose the previously configured virtual machine and run the machine.
        (The Card Manager ISO file is loaded and Knoppix is booted by the virtual machine)
    b. Press "Enter" to confirm KNOPPIX boot mode when prompted.
    c. Wait until KNOPPIX is completely booted.
    d. The Card Manager will start automatically.

7.5 Operate Card Manager

The Card Manager copies OpenScape Business system SW provided as so called "tar" file to the target memory media used in OpenScape Business systems. The card manager is able to generate bootable media with or without customer configuration data.

Note:
Card Manager does not clone storage media 1:1.

In the following are the steps for copying system SW to

- M.2 SSD storage
- SDHC cards
- UC-Booster HD drive

are described.

The chapter 7.5.1.1 for M.2 SSD contains a step-by-step description. All following chapters refer to the delta within the handling for M.2 SSD Handling

7.5.1 Physical machine

7.5.1.1 *Copy SW image to a M.2 SATA SSD card*

Prerequisites for the specific scenario:

- USB to M.2 SATA SSD adapter with inserted M.2 SATA SSD storage card.
- OpenScape SW image as tar file suitable for M.2 SSD (see chapter 7.1.5) on USB memory stick.
- SDHC Backup file (optionally) on the same USB memory stick as OpenScape Business SW image.
- Two free USB 3 interfaces at the PC.

Step by Step

1. **Determine the card path for the USB adapter:**
   Click the "Find" button at the end of the line. Card Manger prompts you to plug in the USB to M.2 SATA SSD adapter with the M.2 storage medium inserted. If the adapter was already plugged in before clicking the "Find" button, it must be removed and plugged in again. Do not remove the USB adapter until the copy process is completed.

Figure 36   Card Manager – Find Card Path

After plugging in the adapter and clicking the OK button, Card Manager recognizes the USB adapter and displays its path in the Linux file system.
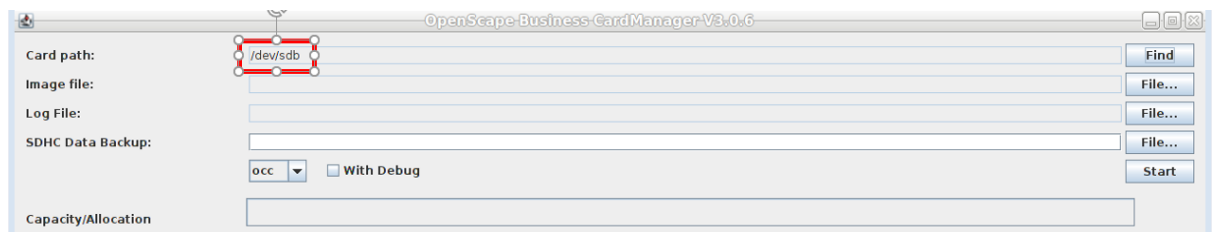
Figure 37   Card Manager – Successfully detected USB adapter (Card Path)

2. **Determine the OpenScape Business image file path:**
   Plug in the USB memory stick containing the OpenScape Business SW image file.
   Click the "File" button at the end of the line. Afterwards Card Manger opens a window in which the OpenScape Business SW image file can be selected.
   The USB memory stick is mounted within the Linux file system as device in the Linux file system under the folder "Media".
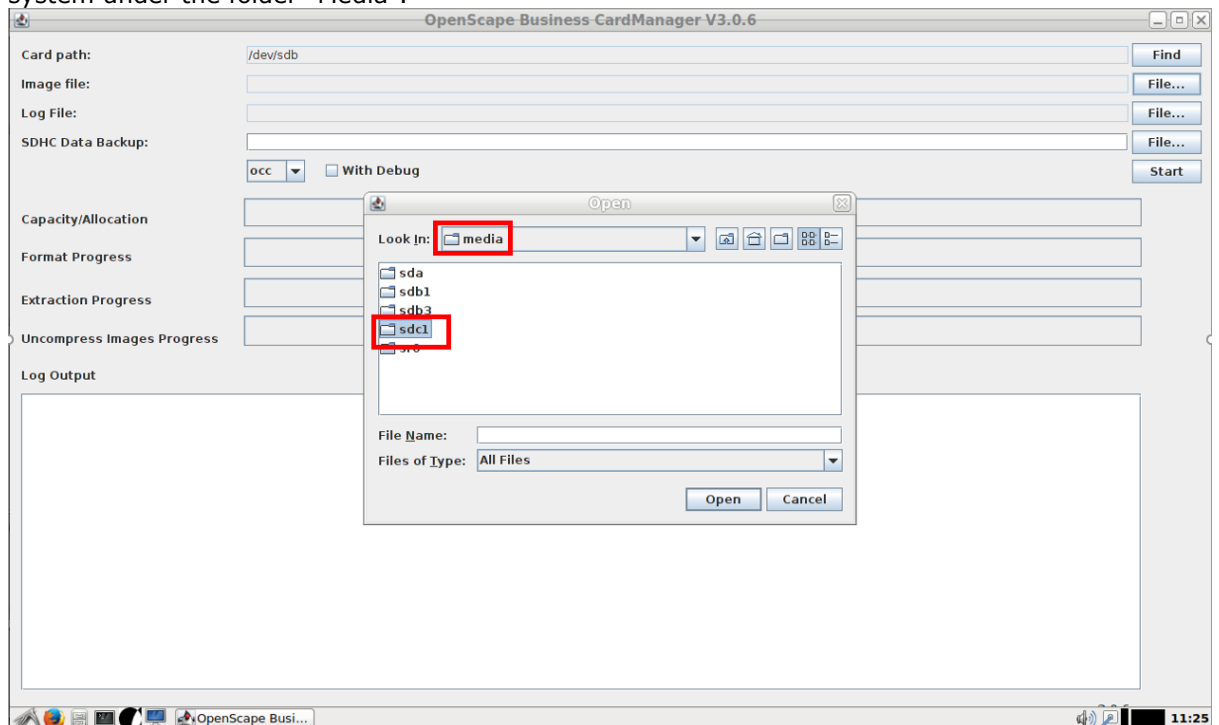
Figure 38   Card Manager – Path of the USB Memory Stick with the OSBiz SW image file

The shown drive (sdc1) is an example only. The drive could be named otherwise depending on the disk partitioning of the PC.
After selection of the drive and click to the "Open" button the content of the drive is displayed and the OpenScape Business SW image file can be selected.

Atos
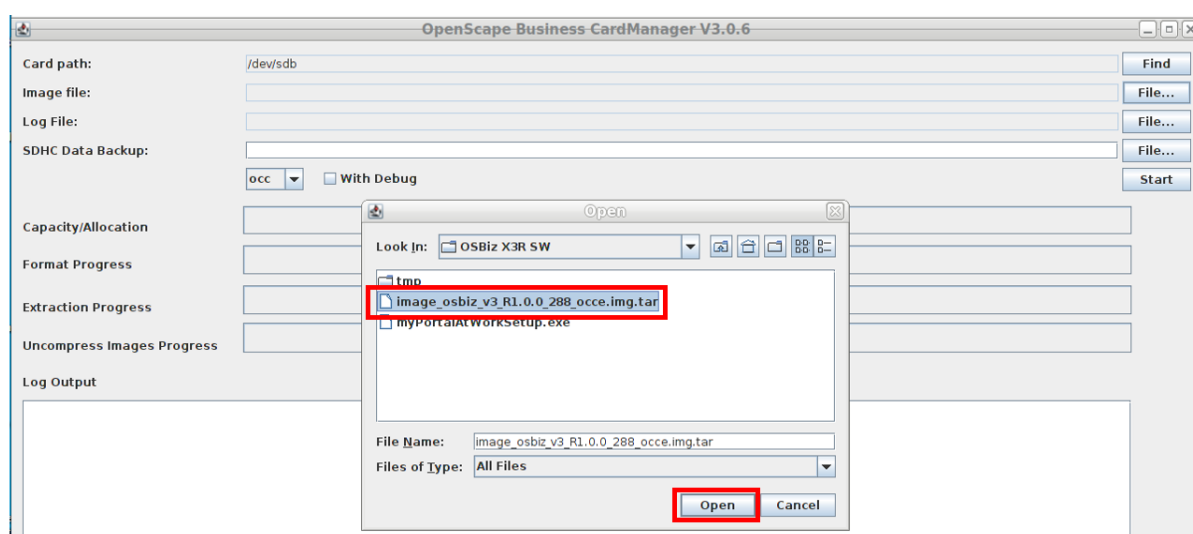
Figure 39   Card Manager – Selection of the OSBiz SW image file

After a click to the "Open" Button the path of the OpenScape Business SW image file is displayed in the Card Manager
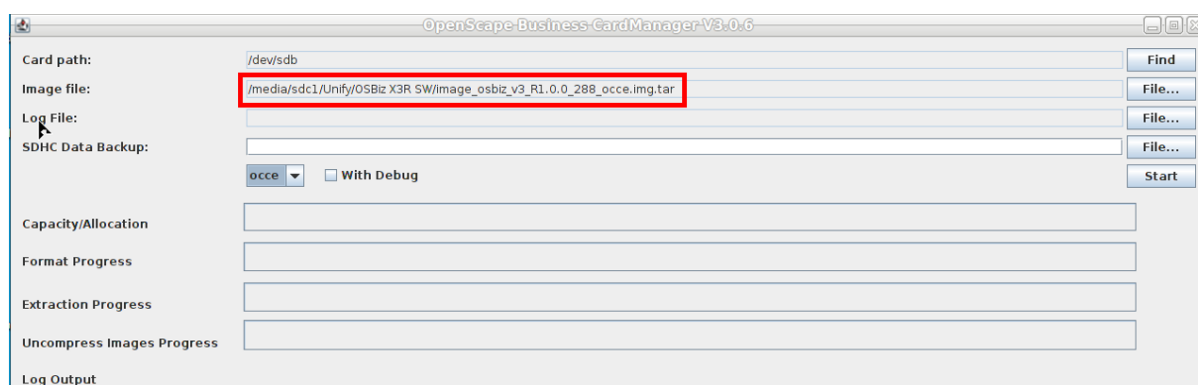
Figure 40   Card Manager – Selection of the OSBiz SW image file

3. **Select Log file destination (optional)**
   Card manager logs the steps while writing the SW to the storage medium. Log information is displayed in real-time within the Card Manger window. Optionally Log output can be recorder in a log file. The path and the name of the log file can be selected in a pop up window after a click to the "File" button at the end of the Log File line. The procedure to determine the path is the same as described before for the "image" file in step 2.

•
4. **Select SDHC DATA Backup path (optional):**
   Note:
   OpenScape Business V3 can only create customer SDHC Data Backup files for SDHC cards at time of document creation.

•
5. **Select Type of Storage Media and Debug option:**
   The Card Manager is able to copy different OpenScape Business image SW files to different storage media. The drop-down menu shown in figure xx is used to specify the storage medium.

   occe   This option must be selected for M.2 SATA SSD storage media.

Atos
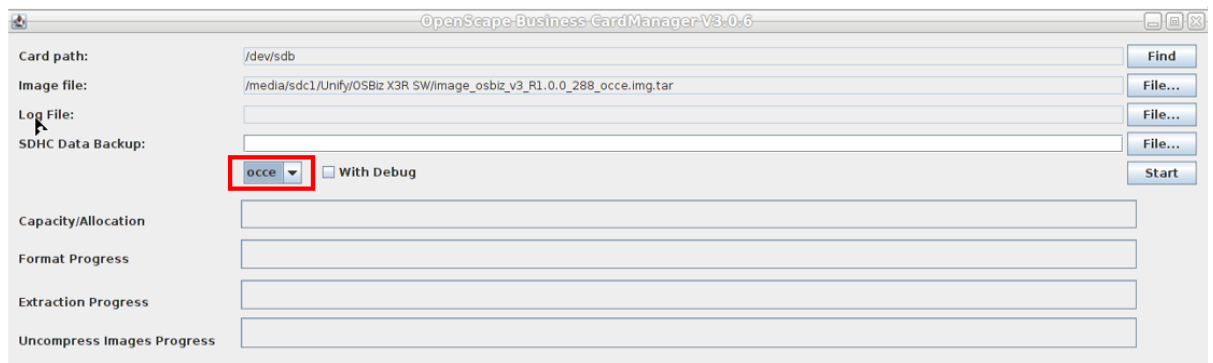
Figure 41   Card Manager – Selection of the type of storage media

Make sure that the selected storage media is compatible with the previously selected SW image file, otherwise the copy operation will fail. The Card Manager does not check the selected storage medium and image file for compatibility.

In case that the check box "with Debug" is ticked the Card Manager performs a verification of the copied SW with the original SW after the SW is copied to the storage media

6. Start of the copy process
After all parameters a set the copy process can be started by clicking to the "Start" button.
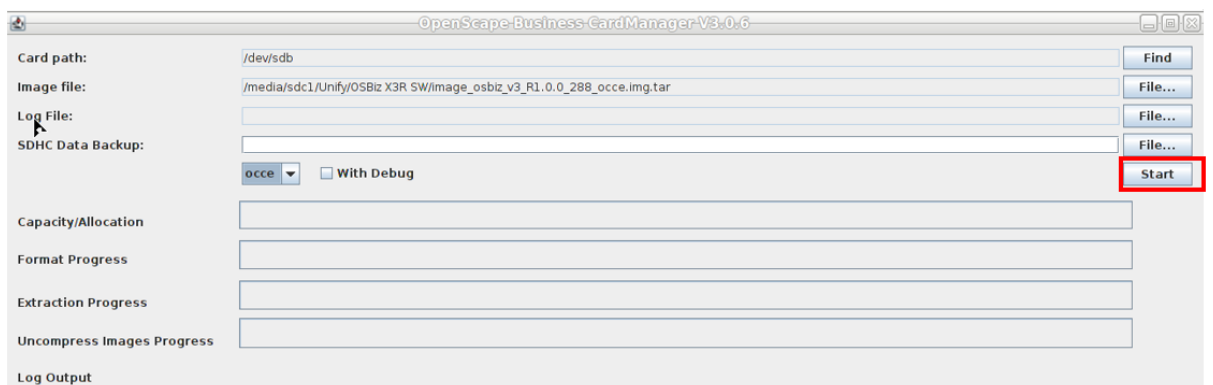
Figure 42   Card Manager – Start Copy process

In a first step, the Card Manager checks the target storage medium and performs partitioning and formatting. Then the OpenScape Business SW image "tar" file is unpacked, decompressed and copied to the storage medium.
The progress of the individual steps is displayed in a corresponding progress bar.
In addition, details about the action performed are displayed in the Log Output window

Atos
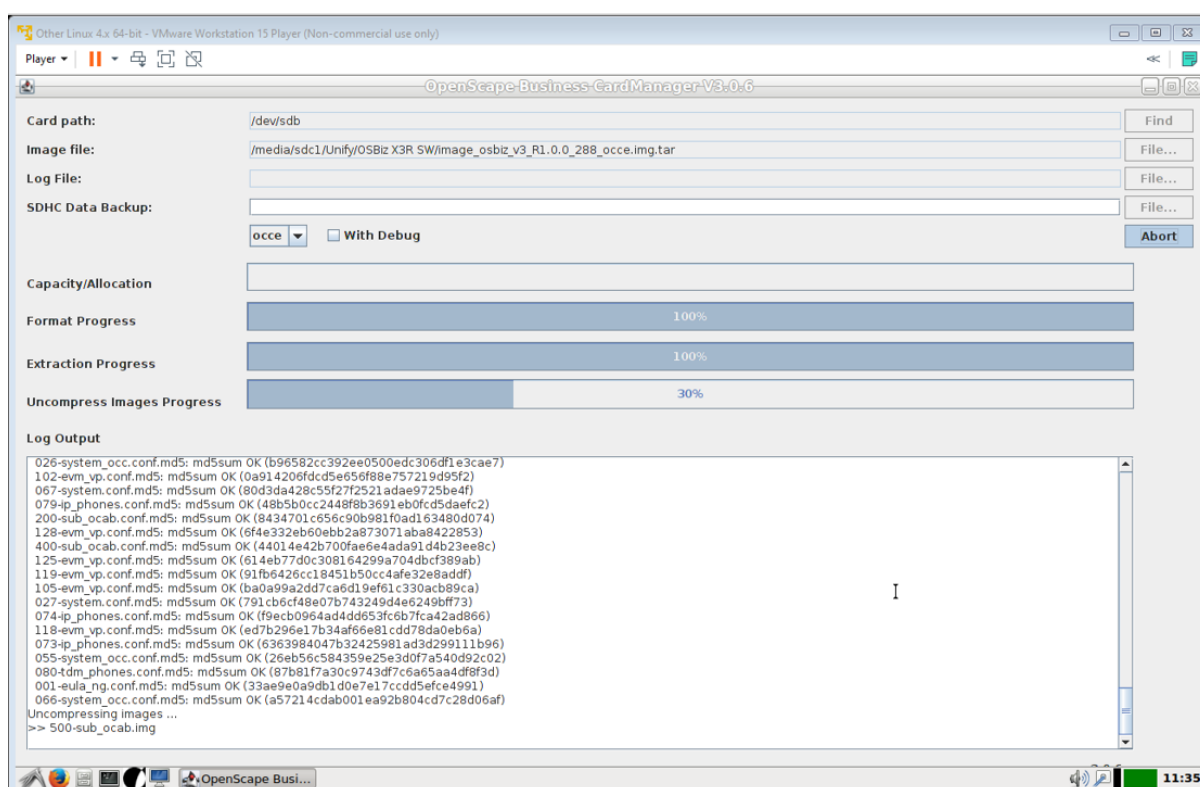
Figure 43   Card Manager – Copy process

After copy of SW has finished the Card Manager prompts an corresponding message
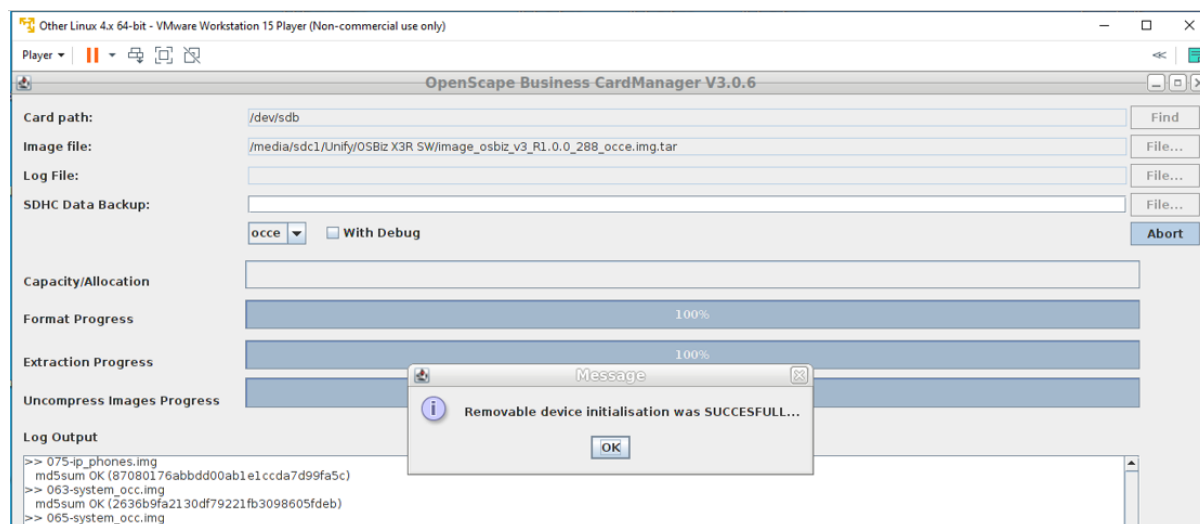
Figure 44   Card Manager – Finish Copy process

After a Click to the "OK" bottom the Card Manager is ready to copy the OpenScape Business SW to an additional storage medium. In case that no other tasks should be performed the KNOPPIX system can be shutdown using the menu within the KNOPPIX task bar.

7. **Exiting the Card Manager Application**
In case that no other copy task should be performed the Card Manager Application can be terminated by a click to the "x" button on the right side of the menu bar. If required it can be started again by a click to the Card Manager symbol on the KNOPPIX desktop.

Atos

Figure 45   Card Manager – Desktop Icon

7.5.1.2   Copy SW image to a SDHC card

Prerequisites for the specific scenario:

- USB card reader for SDHC cards with inserted, writeable SDHC card storage card.
- OpenScape SW image as tar file suitable for SDHC card or OCAB (see chapter 7.1.5) on USB memory stick.
- SDHC Backup file (optionally) on the same USB memory stick as OpenScape Business SW image.
- Two free USB 3 interfaces at the PC.

Step by Step

1. **Determine the card path for the USB adapter:**
   As described in chapter 7.5.1.1 but with USB card reader and SDHC card.

2. **Determine the OpenScape Business image file path:**
   As described in chapter 7.5.1.1

3. **Select Log file destination (optional)**
   As described in chapter 7.5.1.1

4. **Select SDHC DATA Backup path (optional):**
   Card manager is able to copy customer configuration data that have previously saved from a customer system also to the new storage media.
   The path and the name of the SDHC Data Backup file can be selected in a pop up window after a click to the "File" button at the end of the Log File line. The procedure to determine the path and the file is the same as described before for the "image" file in step 2.
   Note:
   If the path is filled in, Card Manager will firstly compare the version of the SDHC Card Backup file with the version of the system SW image file. In case of a mismatch an error message is displayed and the process is aborted. If no SDHC Data Backup is available, the

text field should remain empty.

5. **Select Type of Storage Media and Debug option:**
   As described in chapter 7.5.1.1 but with the "**occ"** option.

6. **Start of the copy process**
   As described in chapter 7.5.1.1.

7. **Exiting the Card Manager Application**
   As described in chapter 7.5.1.1.

7.5.2 Virtual machine

The operation of Card Manager in virtual environment is largely identical to the operation on a physical machine. The difference is mainly the access to the file system of the PC and to the USB and network interfaces.

In general, the Card Manager application can only access the storage media and interfaces that the Live Linux operating system (KNOPPIX) recognizes as guests in the virtual environment. Whether and how the USB interfaces in particular are recognized depends on the virtual machine itself and its configuration. (see also chapter 7.4.2).

In case the Card Manager does not recognize the USB adapters with the inserted storage media, it must first be checked whether these were made available to the KNOPPIX guest operating system by the virtual machine and were recognized by KNOPPIX.

The following descriptions refer exclusively to the vmWare Player 15 with installed vmWare Tools on a Windows 10 64-bit host system.

7.5.2.1 Copy SW image to a M.2 SSD card

Prerequisites for the specific scenario:

- USB to M.2 SATA SSD adapter with inserted M.2 SATA SSD storage card.
- OpenScape SW image as tar file suitable for M.2 SSD (see chapter 7.1.5) on USB memory stick.
- Two free USB 3 interfaces at the PC.

Step by Step

1. **Determine the card path for the USB adapter:**
   As described in chapter 7.5.1.1.

   Mind that the plugged in USB adapter needs to be connected to the virtual machine, otherwise the Card Manager cannot recognize the device.
   Depending on the configuration of the virtual machine the device is connected automatically or manually.

Figure 46   USB-Device – Connect device to host or virtual machine

2. **Determine the OpenScape Business image file path:**
   As described in chapter 7.5.1.1.
   Mind that the plugged in USB adapter needs to be connected to the virtual machine.

3. **Select Log file destination (optional)**
   As described in chapter 7.5.1.1.
   Mind that the Card Manger needs access and writing rights to the mass storage media of the PC host or to a connected USB memory stick. Writing the log file in the KNOPPIX file system is not persistent. Data are lost after shutdown of the KNOPPIX.

   •
4. **Select SDHC DATA Backup path (optional):**
   As described in chapter 7.5.1.1.

5. **Select Type of Storage Media and Debug option:**
   As described in chapter 7.5.1.1.

6. **Start of the copy process**
   As described in chapter 7.5.1.1.

7. **Exiting the Card Manager Application**
   As described in chapter 7.5.1.1.

7.5.2.2   Copy SW image to a SDHC card

Prerequisites for the specific scenario:

- USB card reader for SDHC cards with inserted, writeable SDHC card storage card.
- OpenScape SW image as tar file suitable for SDHC card or OCAB (see chapter 7.1.5) on USB memory stick.
- SDHC Backup file (optionally) on the same USB memory stick as OpenScape Business SW image.
- Two free USB 3 interfaces at the PC.

Step by Step

1. **Determine the card path for the USB adapter:**
   As described in chapter 7.5.1.1.

   Mind that the plugged in USB adapter needs to be connected to the virtual machine, otherwise the Card Manager cannot recognize the device.
   Depending on the configuration of the virtual machine the device is connected automatically or manually.
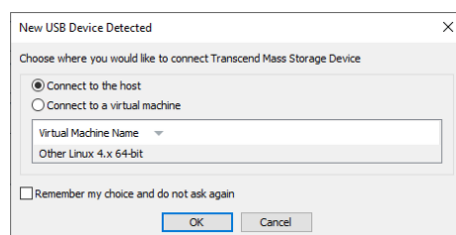

Figure 47   USB-Device – Connect device to host or virtual machine

2. **Determine the OpenScape Business image file path:**
   As described in chapter 7.5.1.1.

Mind that the plugged in USB adapter needs to be connected to the virtual machine.

3. **Select Log file destination (optional)**
   As described in chapter 7.5.1.1.
   Mind that the Card Manger needs access and writing rights to the mass storage media of the PC host or to a connected USB memory stick. Writing the log file in the KNOPPIX file system is not persistent. Data are lost after shutdown of the KNOPPIX.

-
4. **Select SDHC DATA Backup path (optional):**
   As described in chapter 7.5.1.1.

5. **Select Type of Storage Media and Debug option:**
   As described in chapter 7.5.1.1 but with the **"occ"** option.

6. **Start of the copy process**
   As described in chapter 7.5.1.1.

7. **Exiting the Card Manager Application**
   As described in chapter 7.5.1.1.

8 Appendix

8.1 Information about SDHC Cards

8.1.1 SDHC Cards used in OpenScape Business

It is common use within the SDHC card market that manufactures change the internal components of the SDHC cards without changing the labelling of the card. Unify has evaluated several SDHC cards for use in OpenScape Business over the time and has agreed a so-called fixed BoM with the manufacturers to ensure the same specifications of the cards shipped to Unify.

For the reason above it is recommend ordering SDHC cards only via the Unify order tools.

The following cards have been or are shipped with OpenScape Business

Manufacturer	Type	Estimated lifetime in OpenScape Business	Capacity (nominal)	Total Number of sectors a 512 bytes	Total Capacity in bytes	Remark
Toshiba	Exceria THNSU0008GCC3H1	4 years	8 GB	15,349,092	7,858,735,104	
Transcend (blue)		4 years	8 GB	15,759,360	8,086,792,320	
Transcend (black)	TS8GSDHC10I	4 years	8 GB	15,333,374	7,850,687,488	
Transcend (black) from April 2017 on	TS8GSDHC10I	4 years	8 GB	15,333,376	7,850,688,512	
Centon	S4-EPS-SDU1-8.2	10 years	8 GB	15,122,432	7,742,685,184	
Transcend	TS16GBSDHC10U1	8 years	16 GB	---	---	For system SW V2 and V3
Transcend	TS16GBSDC500S	8 years	16 GB	---	---	For System SW V3 only

Table 10   OpenScape Business SDHC Cards

8.1.2 SDHC card read/write timing behavior

The manufacturers of SDHC cards use for their production the currently available flash memories of different semiconductor suppliers. Due to the current worldwide shortage of flash memory, suppliers are changing more frequently than in the past.

Modification of the flash memory and associated controller components used in the SDHC card may result in changes in data read/write timing within the limits specified by the manufacturer.

This behavior has recently sporadically caused an OpenScape Business system to fail to boot from a newly delivered SDHC card.

These changes in timing were compensated for by a software adjustment in the system software and it was ensured that the systems booted from the SDHC cards supplied.

Starting in calendar week 32/2021, Unify ship SW version V3R1.1.0_303 or later for new systems that include this timing adjustment.

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If an SDHC card has to be replaced, the instructions described in chapter xx must be followed to ensure booting of the OpenScape Business system after replacing the SDHC card.

8.2 OpenScape Business related Tasks

8.2.1 How to restore Open Scape Business configuration after card change

This description applies only if the OpenScape Business system is started with a new SDHC card that does not contain the system specific (customer) data.

Prerequisites

- Admin PC
- System Backup file
- New SDHC card that contains system SW but no system specific (customer) data

Step by Step

1. Start system with new SDHC card
2. Connect Admin PC to the "Admin" LAN port
   Use the default IP address and default login credentials to login into the Assistant (WBM) with the role expert.
3. Check / Set system date and time
4. Set the application package according to the previously noted package
5. Restore the system configuration using the backup file.(see chapter 8.2.3)How to restore System Configuration
6. Restart the system after the data have been restored

8.2.2 How to backup System Configuration

Step by Step

1. Click on Backup and Restore in the navigation bar.
2. In the navigation tree, click Backup - Immediate.
3. Enter a comment for the backup set in the Comment field so that the backup set can be easily identified if needed later for a restore. Avoid the use of diacritical characters such as umlauts and special characters in your input. If you want to create a backup set including voice messages an announcements, select the Full Backup option.
4. Activate the target drive on which the backup set is to be saved in the Devices area.
5. Click on OK & Next. The progress of the backup process is displayed in a separate window.
   INFO: If the OK & Next button is grayed out, then one or more applications (e.g., UC Suite) for which the data is to be saved were not started correctly. If you do not have access rights for the selected archive directory, you will receive an error message. Select another destination drive or change the path for the archive. An error message appears if there is not enough disk space on the destination drive for the backup set. If this occurs, select another destination drive or delete a backup set and restart the backup.
   INFO: If you are using a USB device as a backup medium, wait till the LED of the USB device stops flashing. It is only then that the backup has been successfully stored on the USB device. You can then remove the USB device.
   INFO: In addition to backup set, a text file associated with the backup set must also be saved. It contains information about the date and time of the backup and under which software version the backup was performed.
6. The backup was successful if the message Backup completedsuccessfully! 100% appears.
7. If you have selected HTTPS as a backup medium, you must save the backup set and the text file associated with the backup to a location of your choice. This is done automatically for the other backup media. The browser window must remain open until the save operation for the backup set and text file has been completed.
8. Click on Finish.

8.2.3 How to restore System Configuration

1. Click on Backup and Restore in the navigation bar.

2. Click Restore in the navigation tree.
3. Activate the medium containing the backup set to be restored in the Devices area.
4. If you activated HTTPS as the backup medium, navigate to the storage location of the backup set and select the backup set. Then navigate to the storage location of the text file and select it.
5. If you activated any other backup medium than HTTPS, select the backup set containing the configuration data to be restored in the List of available backup sets area.
6. Wait until the files have been loaded onto the system and then click OK & Next. The recovery of the configuration data is started. The progress of the restore process is displayed.
7. After the message Restore complete! appears, the system will automatically reboot. The restoration is completed successfully when the system is ready for use again.

8.2.4   How to determine the System SW Version

The system SW version can be found at the WBM home page. In addition it has also to be determined if a UC Booster Card (OCAB) is operated within the system this is also stated at the home page.

It has to be ensured that exactly this SW version is used for SDHC card restoring; otherwise the configuration backup set might not work properly after restoration.

8.2.5   How to determine the Application Package

The application package can be determined within the WBM Expert Mode under the Application → Application selection.

This information is essential in case that a UC Booster card or server is present within the system.

8.2.6   How to download the Software

The OpenScape Business system SW and the Card Manager tool SW can be downloaded from the SW Download Server (SWS) of Unify. Access to the SWS requires a valid account for the Unify Partner Portal.

8.2.6.1   OpenScape Business System SW image

The appropriate SW image for the target system has to be chosen and downloaded from the SWS. Before the SW can be used by the Card Manager tool it has to be uncompressed from "tgz" to "tar" file format by using uncompressing tools like "WinZip" or "7Zip".

It is recommended to copy the system SW file into an easy accessible directory of the PC or Laptop in order to facilitate access by the Linux based Card Manager tool.

8.2.6.2   Card Manager SW.

The Card Manager tool can be downloaded from the SWS either as a single Java file that is executed on an existing Linux system or as ISO Images for use in a VMware VSphere environment or for creation of a bootable Linux DVD.

8.3 Log and messaging files

8.3.1   SSD and SDHC card log files

Information about SDHC card and driver status is stored in the following log files

File:	Remark
messages	Beneath other information this contains all messaged reported for the device **mmcblk0** device.

healthCheck.xml	**Contains the last determined Health Status. Conten is shown in WBM from V2R4.1 on**

Table 11   Trace file location in the file system SDHC Card Specifications

8.3.1.1   How to retrieve log files

Retrieve log files
Servicecenter Diagnose Trace
Button Diagnostic data
Remove tic in checkbox trace protocol
Load and Confirm with OK
Store file OSO diagnostics.tgz
Extract file OSO diagnostic.tar from tgz file
Extract file OCC Diagnostic.tar
Extract file „Diego.log" und „HealthCheck.xml"

Table 12   Steps How to retrieve the trace files

8.3.2   Content of SSD or SDHC card health status log file

8.3.2.1   Content of SSD cards Log File

2021/07/30 11:39:46   diego.c:146 pid=7824 command = quick

2021/07/30 11:39:46   health.c:91   pid=7824 healthCheck()

2021/07/30 11:39:46   health.c:366 pid=7824 healthCheckOCCE()

2021/07/30 11:39:46   health.c:373 pid=7824 Num of SSD disks: 2

2021/07/30 11:39:46   health.c:375 pid=7824 SSD device[0]: /dev/sda

2021/07/30 11:39:46   health.c:698 pid=7824 healthCheckLastFSXML()

2021/07/30 11:39:46   health.c:1076 pid=7824 healthCheckSSDSize()

2021/07/30 11:39:46   health.c:1084 pid=7824 SSD disk size = 256060M

2021/07/30 11:39:46   health.c:1000 pid=7824 healthCheckSSDModel(): TS256GMTS400

2021/07/30 11:39:46   health.c:1106 pid=7824 healthCheckSSDStatus()

2021/07/30 11:39:46   health.c:1113 pid=7824 SSD SMART status: PASSED

2021/07/30 11:39:46   health.c:1027 pid=7824 healthCheckWearLeveling(): 100

2021/07/30 11:39:46   health.c:1056 pid=7824 healthCheckRemainingLife(): 100%

2021/07/30 11:39:46   health.c:453 pid=7824 Health Status GREEN

```
2021/07/30 11:39:46     health.c:375  pid=7824  SSD device[1]: /dev/nvme0n1

2021/07/30 11:39:46     health.c:1076 pid=7824  healthCheckSSDSize()

2021/07/30 11:39:46     health.c:1084 pid=7824  SSD disk size = 256060M

2021/07/30 11:39:46     health.c:1000 pid=7824  healthCheckSSDModel(): PCIe SSD

2021/07/30 11:39:46     health.c:1144 pid=7824  healthCheckNVMeStatus(): 0x00

2021/07/30 11:39:46     health.c:453  pid=7824  Health Status GREEN

2021/07/30 11:39:46      diego.c:73   pid=7824  ----- DIEGO END -----
```

8.3.2.2   SDHC card XML file

Example for the content of the **healthCheck.xml** file:

```xml
<?xml version="1.0" encoding="UTF-8"?>
-<HEALTH_STATUS>
<INFO>OK</INFO>
<STATUS>RED</STATUS>
<OEM_ID>0x4a60</OEM_ID>
<SDDATE>SDHC card creation date: 4/2017</SDDATE>
<FSDATE>SDHC file system creation date: 1/2013</FSDATE>
<SDPASS>0 years and 3 months have passed since card creation</SDPASS>
<FSPASS>4 years and 6 months have passed since file system creation</FSPASS>
<LASTFS>20-07-2017 15:51</LASTFS>
<TRACES>1180 SDHC errors found in the traces</TRACES>
</HEALTH_STATUS>
```

8.3.2.3   SSD card XML file

XML File

```xml
<?xml version="1.0" encoding="UTF-8"?>

<SSD_STATUS>
    <INFO>OK</INFO>
    <STATUS>GREEN</STATUS>
    <MODELO>TS256GMTS400</MODELO>
    <DEVICE>/dev/sda</DEVICE>
    <WEARLV>100</WEARLV>
    <LIFEPR>100%</LIFEPR>
    <LASTFS>30-07-2021 16:47</LASTFS>
    <SDSIZE>256060M</SDSIZE>
```

    <SSDSTA>PASSED</SSDSTA>

</SSD_STATUS>

<NVME_STATUS>

    <INFO>OK</INFO>

    <STATUS>GREEN</STATUS>

    <MODELO>PCIe SSD</MODELO>

    <CRITWR>0</CRITWR>

    <DEVICE>/dev/nvme0n1</DEVICE>

    <SDSIZE>256060M</SDSIZE>

</NVME_STATUS>

8.4 KNOPPIX Handling Notes

8.4.1 Access KNOPPIX Desktop

If you only want to access the KNOPPIX desktop for other tasks, while the Card Manager is running, you can send the Card Manager window by clicking on the "_" button and move it to the tray bar. A click on the program button in the tray bar opens the program again.

8.4.2 Shut Down KNOPPIX

In case that no other tasks should be performed the KNOPPIX system can be shutdown using the menu within the KNOPPIX task bar.

9 Abbreviations

SW	Software
SDHC	Secure Disc High Capacity
EXT3	Linux file system format
HTTP	Hyper Text Transmission Protocol
WBM	Web Based management (Administration Portal)
OCAB	UC Booster Card
SWS	Software Download Server
S.M.A.R.T.	Self-Monitoring, Analysis and Reporting Technology
SSD	Solid State Disk
ISO	International Standard organization (Image according to ISO 9660)
MS	Microsoft
HW	Hardware

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