

PATHOGEN ASSET CONTROL SYSTEM

PACS Maintenance and Support Plan



SI-P-5-8-001-00

Revision 7

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1. Revision History

Revision	Issue Date	Comments
1	10/16/2018	Draft prepared.
2	10/17/2018	Supervisor review.
3	10/18/2018	Technical Writer Review: <ul style="list-style-type: none"> ○ Title ○ Table of Content ○ Revision History ○ Introduction ○ Instruction steps
4	11/05/2018	Additional Review: <ul style="list-style-type: none"> ○ Table of Content ○ Revision History ○ Reference Documents ○ Instruction steps
5	12/12/2019	Document update: <ul style="list-style-type: none"> ○ 5.2.3.1/5.2.3.2 PACS Database Backup/Restore Procedure ○ 5.4 PACS Patching Procedure
6	09/10/2020	Document update: <ul style="list-style-type: none"> ○ 3 Reference Documents ○ 5.4 PACS Patching Procedure ○ PACS Patching Procedure from 5.8.23, 5.8.31, 5.8.38, 5.8.45, 5.8.455, 5.8.501, 5.8.502, 5.8.503, 5.8.650, 5.8.671, 5.8.681, 5.8.684, 5.8.690 to 5.8.702 using one patch ○ PACS Patching Procedure from 5.6.28, 5.7.18, 5.8.11, 5.8.21 to 5.8.702 using one patch
7	02/10/2021	Document update: <ul style="list-style-type: none"> ○ 2 Classification <ul style="list-style-type: none"> ○ 2.3 Applicable Product Version(s) ○ 3 Reference Documents ○ 5.2 Backup Procedures <ul style="list-style-type: none"> ○ 5.2.1 PACS backup strategy ○ 5.2.3 Manual backup/restore procedure <ul style="list-style-type: none"> ○ 5.2.3.1 PACS database backup (screenshots) ○ 5.4 PACS Patching Procedure (content and screenshots)

2. Introduction

2.1. *About Software*

Pathogen Asset Control System (PACS) is an electronic system for accounting, management, and control of biological agent stocks. The application is designed to monitor receiving, transfer, movement, destruction of agents, and other actions performed with biological materials. The system allows tracking samples and strains of any kind. Each item in the repository is marked with a unique barcode label. The barcode technology used with a barcode scanner allows fast and error-free data input and provides an extra level of pathogen asset tracking security. With the help of barcode technology, repository control (material movement, repository inventory etc.) gets fast and convenient.

PACS is a highly customizable tool, which can be configured to meet local needs and regulations, simplify the data entry process, and organize data in an appropriate order. Extensive search and reporting capabilities allow users to output necessary data set in appropriate formats.

2.2. *Organizational Requirements*

Maintenance is performed by the developer, a separate maintainer, or by a third-party organization. It is important that the organization responsible for maintenance be identified in writing with full responsibilities. The Maintenance Plan accomplishes this. The maintainer should develop the Maintenance Plan as well as the supporting procedures. Since software maintenance activities invoke the use of organizational resources, it is recommended that the highest level of management in the organization approves of this undertaking and approves the final version of the plan and the procedures. Other functions that should also review and approve this plan include Software Quality Assurance, Software Engineering, Software Testing, Project Management (when applicable), the organization's Software Configuration Management Function (when applicable), and the customer (when applicable).

3. CLASSIFICATION

3.1. *AREA*

- Hardware
 - Off-site Backup
 - RDX Cartridges Replacement
 - Printers Maintenance
 - Equipment Lifecycle
- Software
 - Backup Configuration
 - PACS Backup Strategy
 - Backup Jobs
 - PACS Database Backup/Restore Procedure
 - Third-party (non-PACS) Software
 - Microsoft Software
- PACS Support Overview

- PACS Helpdesk
- PACS Patching Procedure

3.2. INSTRUCTION TYPE

- Maintenance and Support

3.3. APPLICABLE PRODUCT VERSION(S)

- Windows Server 2019/2016/2012/2012 R2 Standard Edition
- Microsoft SQL Server 2019/2017/2016/2014/2012 Standard Edition, 2019 Express Edition
- Pathogen Asset Control System (PACS) 5.8.834

4. REFERENCE DOCUMENTS

This instruction has the following reference documents:

Document Abbreviation	Document Official Name	Link (if applicable)
SSD	SI-P-5-8-002-00 PACS SSD – (Country) – (City) – (Short Site Name)	https://blackandveatch.sharepoint.com/:x:/r/teams/SP/EIDSSPACS_Wiesbaden/layouts/15/Doc.aspx?sourcedoc=%7BD1FCCC3B-6534-44B6-9238-CC8961BB2ADE%7D&file=PACS%20SSD%20-%20(Country)%20-%20(City)%20-%20(Short%20Site%20Name)%20New%20Sites.xlsx&action=default&mobileredirect=true
PACS SERVER/WORKSTATION CONFIGURATION GUIDE	SI-P-5-8-001-00 PACS SERVER&WORKSTATION CONFIGURATION GUIDE	https://blackandveatch.sharepoint.com/:w:/r/teams/SP/EIDSSPACS_Wiesbaden/08xImplementation/Training%20Materials/Manuals/SI-P-5-8-001-00%20PACS%20SERVER%26WORKSTATION%20CONFIGURATION%20GUIDE.docx?d=w0bdc8de8692a4028aab6884324d37cfe&csf=1&e=hywBqf

5. PREREQUISITES

This instruction has the following prerequisites:

- 1) The PACS SERVER/WORKSTATION CONFIGURATION GUIDE instruction shall precede the current instruction.

6. INSTRUCTION STEPS

6.1. EQUIPMENT LIFECYCLE

- 1) It is recommended to refresh equipment according to equipment lifecycle defined by OEM manufacturer.

- 2) Standard server equipment warranty shall be extended with Care Pack Services (or similar) to cover all period of operation.

Recommended equipment lifecycle:

Equipment Type	Default Warranty Period	Recommended Lifecycle
Server Equipment	3 y	5 years w/ extended Care Pack Services (or similar)
Desktop Equipment	3 y	3 y
Peripherals	1 y	5 y

6.2. BACKUP PROCEDURES

6.2.1. PACS backup strategy

- 1) PACS SQL database backup/rotation:
 - a. Schedule – Daily, time should be specified according to SSD;
 - b. Path – VM BACKUP drive (E:\SQLBackup\);
 - c. Backup stack depth - last 7 daily and 2 weekly backups.

This procedure is applicable for both, network and standalone types of installation.

- 2) VM backup drive backup/rotation:
 - a. Schedule – Daily, time should be specified according to SSD;
 - b. Path – Host RDX removable drive (F:_Daily\);
 - c. Backup stack depth - last 7 daily backups.
- 3) Full VM backup/rotation:
 - a. Schedule – Weekly, time should be specified according to SSD, Saturday/Sunday;
 - b. Path – Host RDX removable drive (F:_Weekly\);
 - c. Backup stack depth - last 2 weekly backups.

Backup jobs are automated and run according predefined schedule. System administrator is responsible for checking if backup jobs complete successfully.

6.2.2. Backup jobs result check

System administrator shall check backup jobs results and log files on the weekly basis.

To check PACS SQL database backup/rotation scheduled job results:

- 1) Log in to the PACS SQL virtual machine using login credentials according to SSD;
- 2) Open **rotate_day_log.txt** log file in the *F:\BACKUP_rotate_logs* folder;
- 3) Check backup results for the last 7 days;
- 4) Open **rotate_week_log.txt** log file in the *F:\BACKUP_rotate_logs* folder;
- 5) Check last backup results.

To check VM backup drive backup/rotation scheduled job results:

- 1) Log in to the host server;
- 2) Open **BackupLog.txt** log file in *D:\Hyper-V_VHDX_BACKUP\VMNAME_VHDX_BACKUP* folder;

- 3) Check backup results for the last 8 days.

*Note: For detailed backup job log file please refer **ExportLog.txt** log file in **G:_Day\VMNAME\YYYY.MM.DD** folder.*

To check Full VM backup/rotation scheduled job results:

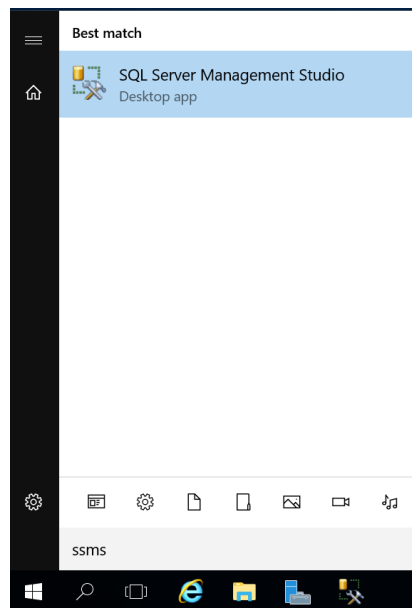
- 1) Log in to the host server;
- 2) Open **BackupLog.txt** log files in
D:\Hyper-V _VM_EXPORT\VMNAME_EXPORT
- 3) Check backup results for the last week.

*Note: For detailed VM export job log file please refer **ExportLog.txt** log files in **G:_Week\VMNAME\YYYY.MM.DD** folder.*

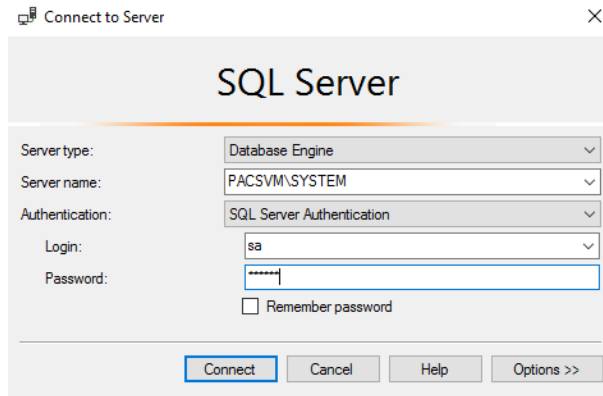
6.2.3. Manual Backup/Restore procedure

6.2.3.1. PACS Database backup

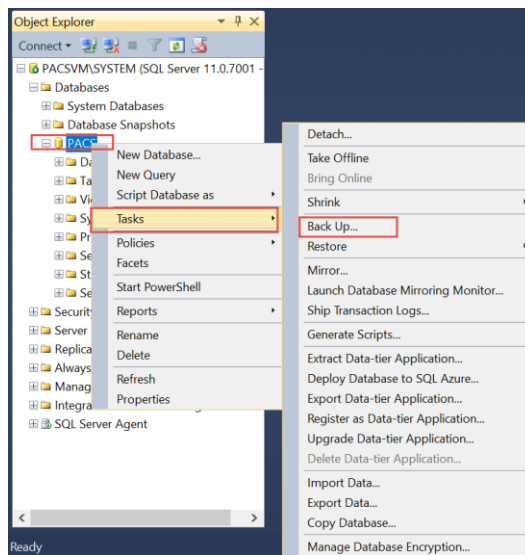
- 1) Close PACS application if it is opened.
- 2) From the **Start** menu, run **SQL Server Management Studio**.



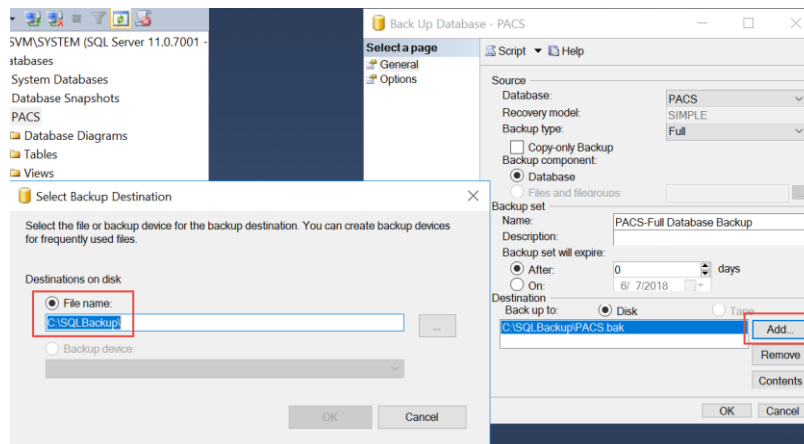
- 3) Enter login credentials either for **SQL Server** or **Windows Authentication**. Click the **Connect** button.



- Expand the **Databases** item, right-click on **PACS**, and from the right-click menu navigate to **Tasks->Back Up...** The **Back Up Database – PACS** window opens.



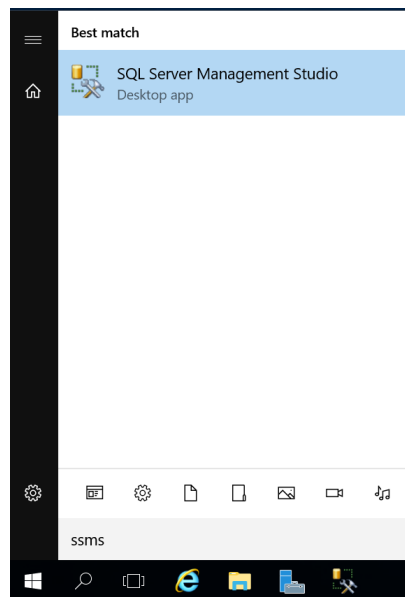
- In the **General** window click the **Add** button. The **Select Back Up Destination** window opens.



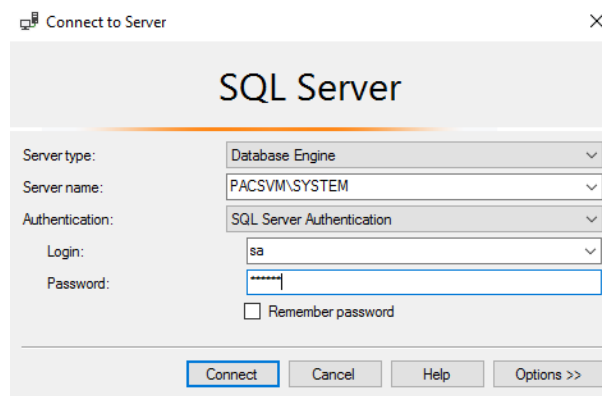
- 6) Type the unique name for a backup, e.g. *PACS17.3.2014.bak*.
- 7) Click the **Ok** button. The **Select Back Up Destination** window closes.
- 8) Click **Options** menu in **Back Up Database – PACS** window and select **Verify Backup when finished**. Click the **Ok** button.
- 9) The **Back Up Database – PACS** window closes. The confirmation window opens.
- 10) Click the **Ok** button to confirm the process.

6.2.3.2. PACS Database restore

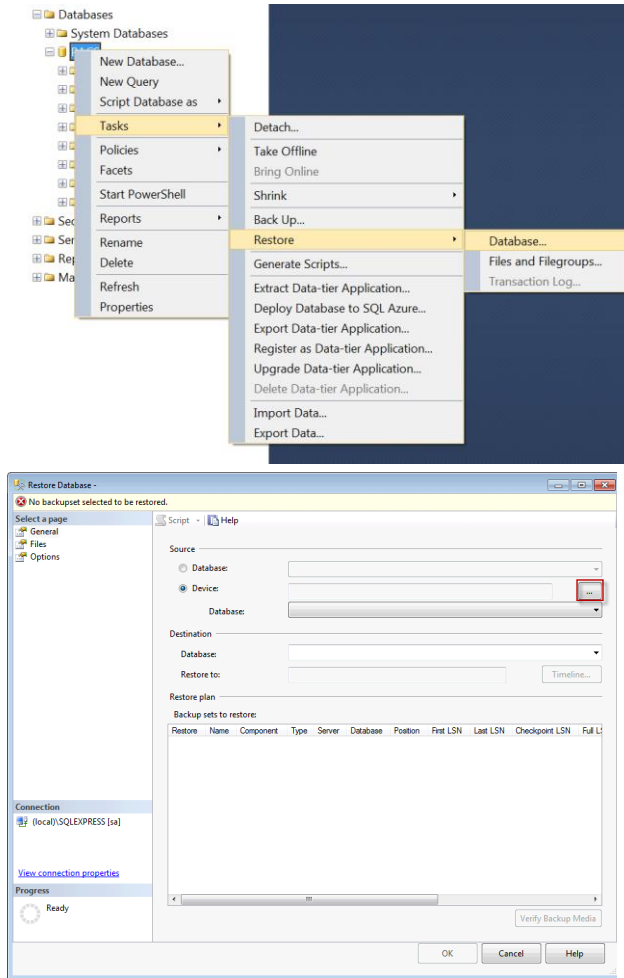
- 1) From the **Start** menu, run **SQL Management Studio**.



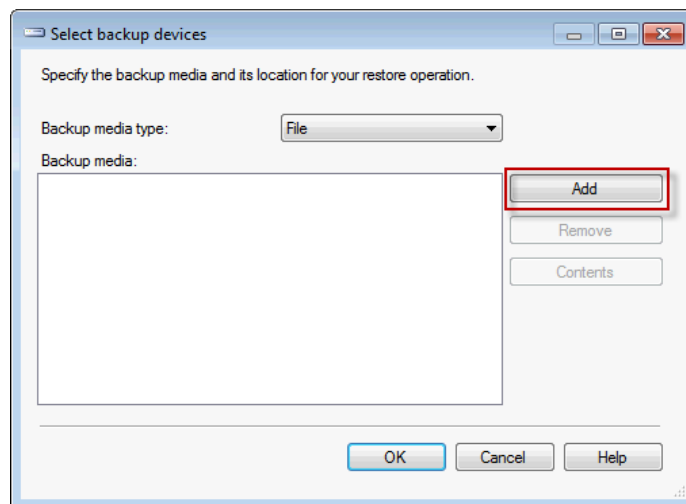
- 2) Enter login credentials either for **SQL Server** or **Windows Authentication**. Click the **Connect** button.



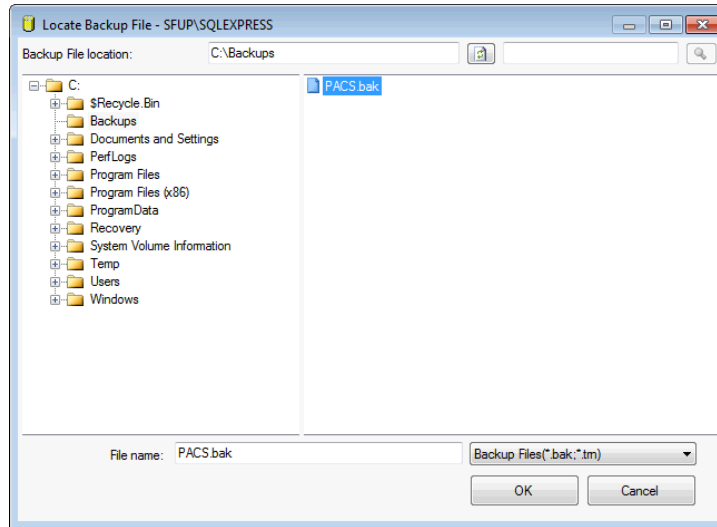
- 3) Right-click on **Databases** item, and from the right-click menu select **Restore Database**. The **Restore Database** window opens.



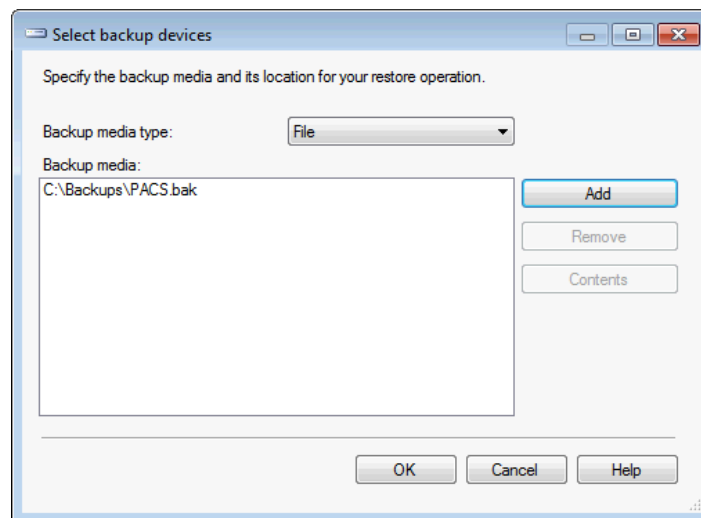
- 4) Ensure the **Device** radio-button is selected. Click the **Browse** button next to the **Device** radio-button. The **Specify backup devices** window opens.



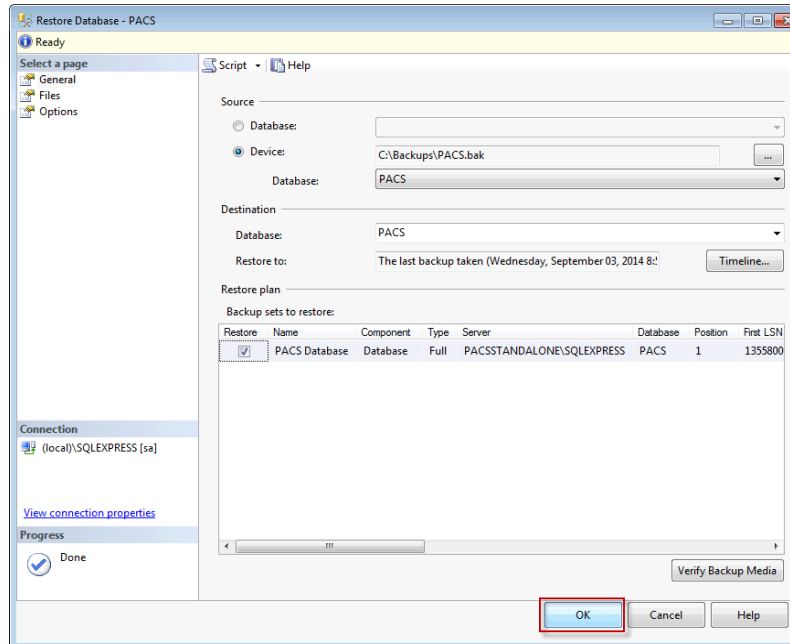
- 5) Click the **Add** button. The **Locate Backup File** window opens.



- 6) Select the folder where the backup file is stored. Select the backup file name. Click the **OK** button.
- 7) The **Locate Backup File** window closes. The selected file is in the **Backup media** box on the **Specify Backup Devices** window.



- 8) Click the **OK** button. The **Specify Backup Devices** window closes. The selected backup set is in the **Backup sets to restore** box.



- 9) Select the **Restore** checkbox prior to the selected backup set in the **Backup sets to restore** box. Click the **OK** button.
- 10) Wait for the database to be restored. Close **Restore Database** window.

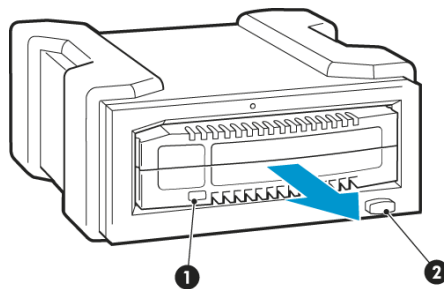
6.2.4. Off-site backup

- 1) PACS host server is equipped with HP RDX Removable Disk Backup System.
- 2) RDX Cartridges shall be rotated on the monthly basis by system administrator.
- 3) RDX Cartridges shall be stored in their protective cases in a safe place (preferably not in the same building where server is located).

6.2.5. RDX Cartridges replacement procedure

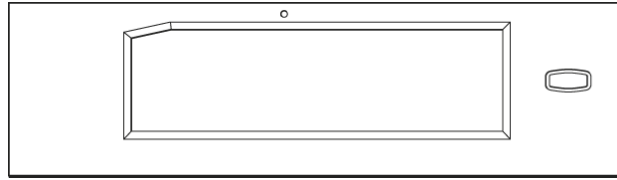
6.2.5.1. Unload cartridge

- 1) Press the **Eject** button on the front panel.



1 - Cartridge activity LED; 2 - Eject button

*Note: On the internal model, the **Eject** button is to the right of the cartridge slot.*

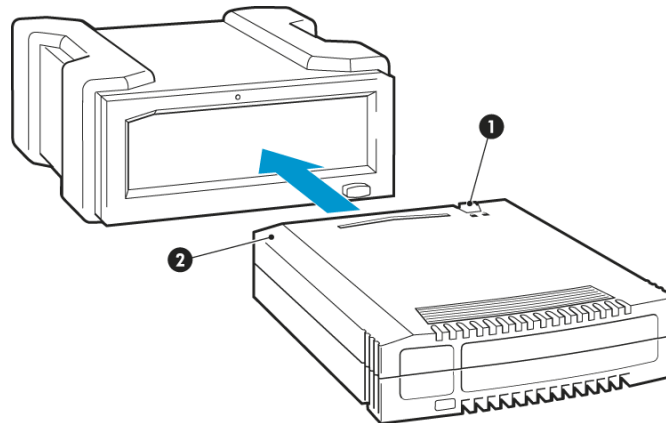


Front panel of an internal drive

- 2) The drive completes any task it is currently performing and ejects the cartridge. When the cartridge has been ejected by the unit, grasp the exposed sides of the cartridge and pull it straight out.

6.2.5.2. Inserting cartridge

- 1) Insert a cartridge into the unit with the keyed corner facing the upper left corner of the RDX Removable Disk Backup System. The cartridge fits in only one orientation. (The write-protect tab is on the back right of the cartridge.)
- 2) Push the cartridge gently into the unit until it locks into place with a clicking sound.



1 - Write protect tab; 2 - Keyed corner

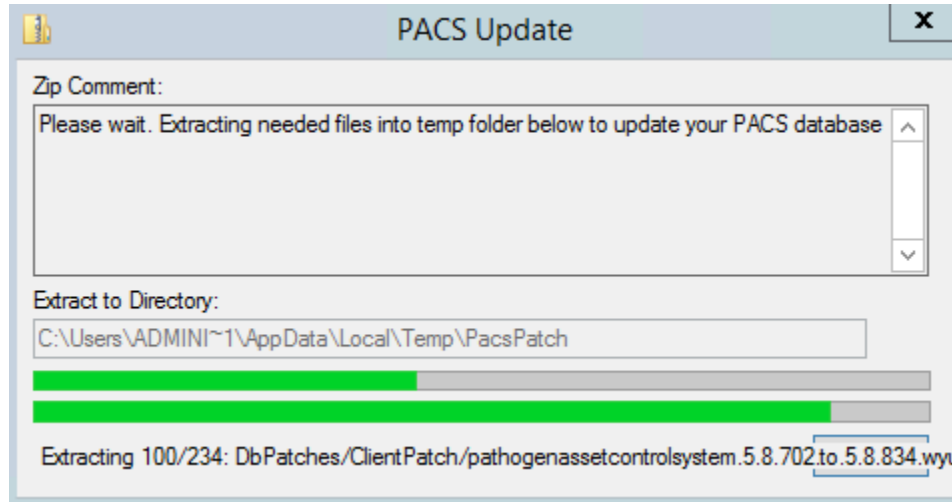
6.3. PRINTERS MAINTENANCE

Please refer to documentation provided by OEM manufacturer.

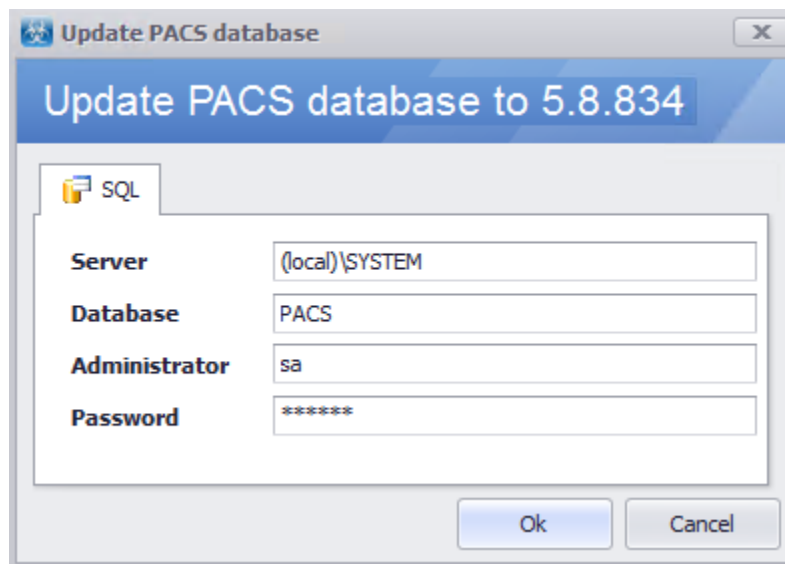
6.4. PACS PATCHING PROCEDURE

For this procedure log in to OS of the PACS VM under the domain Administrator account and upload the **PACS Patch** file from PACS Country Specific installation package to a directory on the PACS VM local drive.

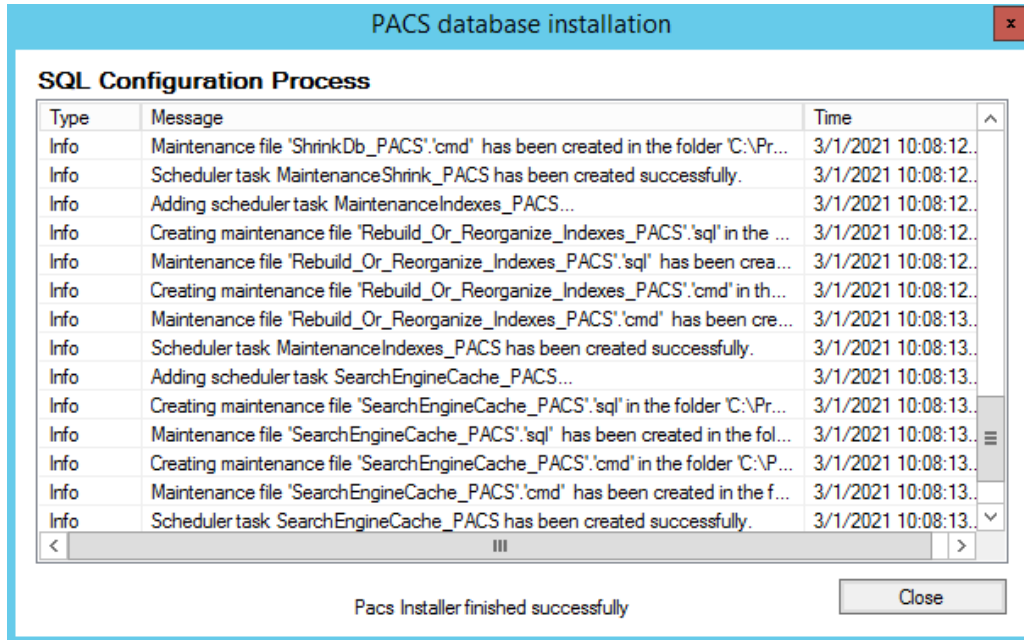
- 1) Run as Administrator the **PACSpatch.exe**.
The **PACS Update Installation** window appears.



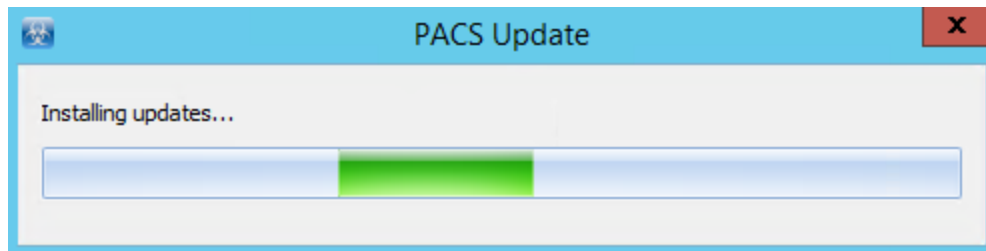
- 2) The **Update PACS database** window appears. Specify the **Server** and **Database** values according to **PACS Configuration** section in the SSD document for the current VM.
- 3) In the **User** field, type **sa** and in the **Password** field, type the password according to **Microsoft SQL Server Configuration** section in the SSD document for the current VM.



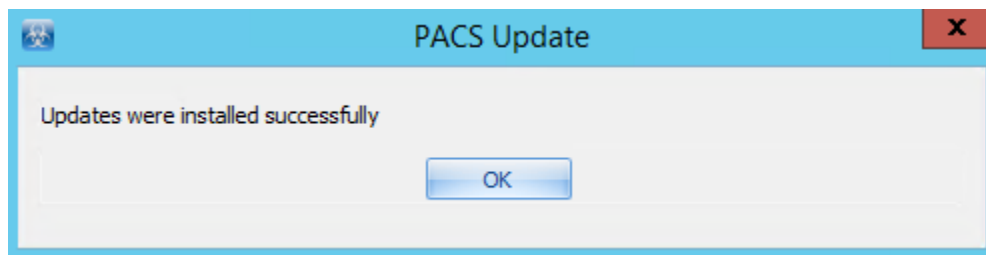
- 4) Click the **Ok** button. The **PACS database installation** window opens.



- 5) Wait for the configuration process to complete.
- 6) Click the **Close** button. **PACS database installation** window closes. The PACS database is updated.
- 7) Run **PACS** application to initialize the update process of the application itself. This final process may take several minutes.

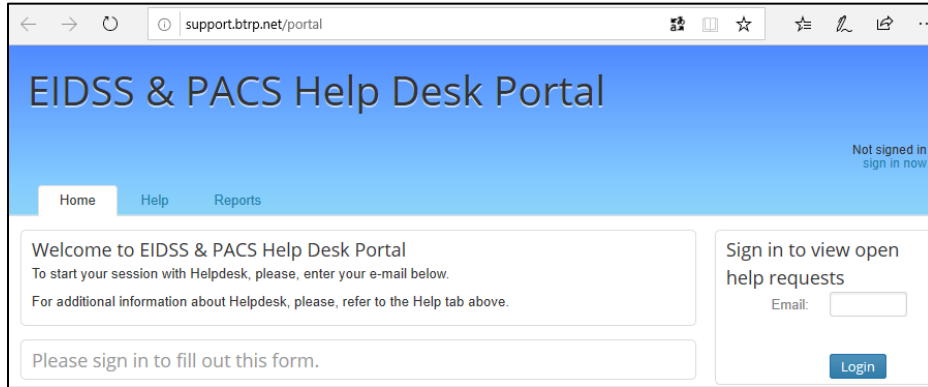


- 8) Wait until the installation is complete.



6.5. PACS SUPPORT

- 1) If users have a problem or a question related to the PACS software, they can register a support request on the web PACS helpdesk portal by following the link: <http://support.btrp.net>
- 2) To register a ticket via the web portal, please enter your email on the welcome page and click the **Login** button.



3) Then fill out the form with the information you have and click the **Submit** button.

For help with an IT issue you are experiencing, please complete the form below.

Summary: *

Description:

Country: *

Site Name: *

User Name:

Optional Attachment: [Clear Attachment](#)

4) After receiving a user's request PACS Support Team will reply in the next 24 hours.