1. Introduction

1.1. Get in touch

If you have questions regarding the contents of this document, or do you want to get in touch with our sales and/or support team, then we can be reached via:

- **Phone**: (+45) 3211 2222, open:
  - Monday-Thursday at 08:30 – 16:30 CET
  - Friday at 08:30 - 15:30 CET
- **Email**:
  - Sales: sales@auwau.com
 - Support: support@auwau.com
- **Web**: www.auwau.com

1.2. System overview

From a high-level technical standpoint, Cloutility consists of the following elements:

1. (Prerequisite: Spectrum Protect infrastructure which can be accessed from the host-machine – although this is not directly part of Cloutility.)
2. Prerequisite: A Microsoft SQL Server (Enterprise; Standard; or Express) which hosts the Cloutility **database** containing all of the business-layer data (the database is automatically created on the SQL Server during installation of Cloutility, but the SQL Server itself must be available in order to perform the installation).
3. Prerequisite: A working **outgoing email (SMTP) server**.
4. A set of automated **scheduled tasks** (Windows services/daemons) which synchronize data between the Spectrum Protect infrastructure and the Cloutility **database**; generate various reports and billing data etc.
5. An extensive (RESTful) web **API** through which all on-demand operations can be initiated.
6. A web-based graphical user interface (**GUI**) which uses the API and allows you to e.g. model the business hierarchy; activate backup-clients; access reports and analytics etc.

The components and information flow are depicted in the figure below:

Components and information flow
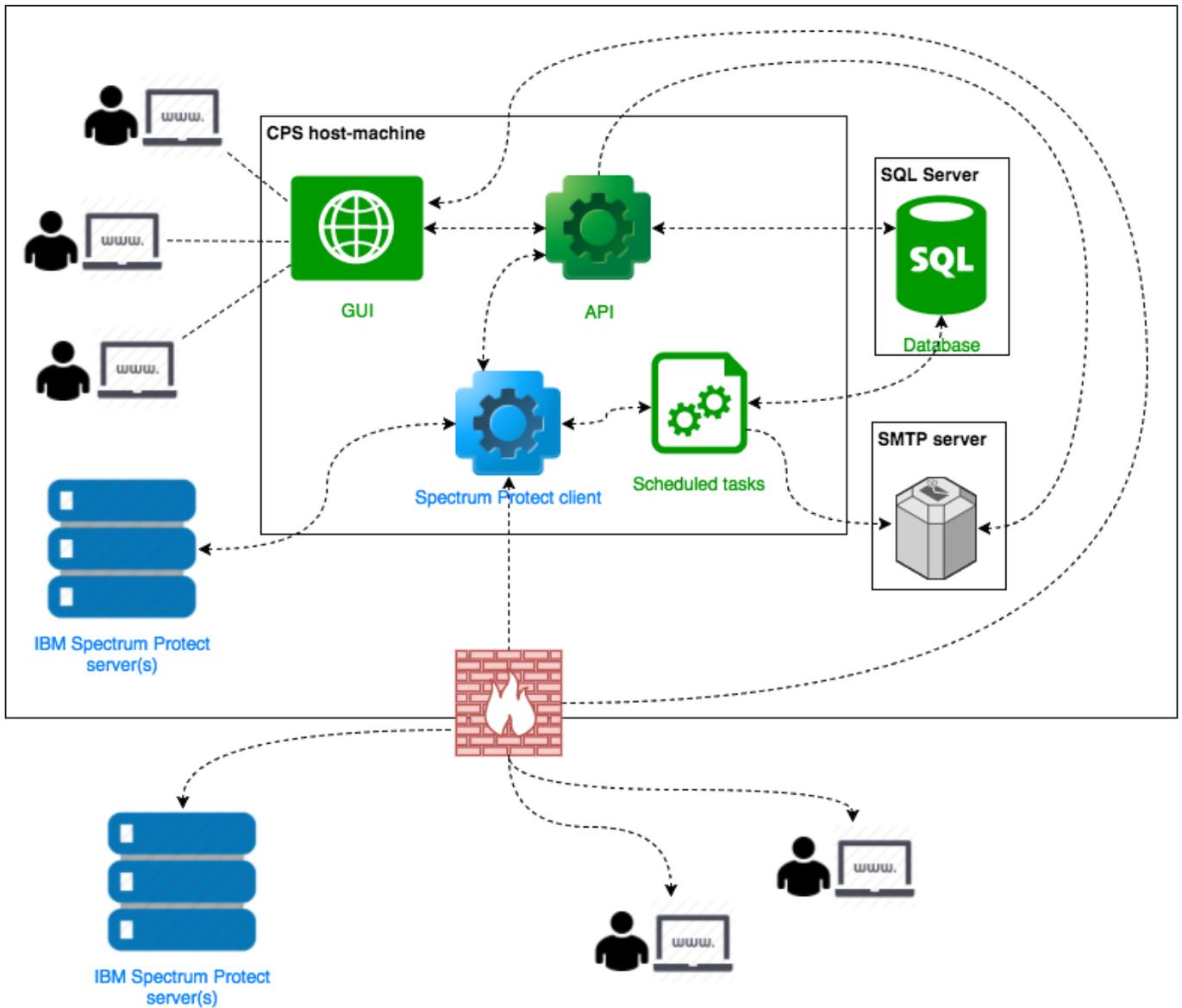
Please note that the figure depicts a "Cloutility (only) host-machine" setup where the SQL Server is located on a separate host-machine. Cloutility also supports a "Cloutility + SQL on same host-machine" setup. Please refer to "Cloutility server (host-machine) requirements" for further details.

1.3. Web-browser support for GUI

The GUI supports the following web-browsers (preferred order):

1. Google Chrome (Microsoft Windows/Apple macOS).
2. Microsoft Edge (Microsoft Windows 10).
3. Microsoft Internet Explorer 11/IE11 (Microsoft Windows 7/8.1).
4. Apple Safari (Apple macOS).

2. System requirements and implementation prerequisites for on-site installations

This chapter describes the prerequisites for installing and running Cloutility in your own infrastructure, i.e. as an on-site installation.

2.1. Cloutility server (host-machine) requirements

Cloutility requires a host-machine running a 64-bit edition of the Microsoft Windows Server operating system, i.e. (in preferred order):

Operating system	Note
Microsoft Windows Server 2016	Windows Server 2016 currently has an issues with executing scheduled tasks correctly, and thus should not be used to operate Cloutility. As per: https://serverfault.com/a/849574, Microsoft has acknowledged the issue and is working on fixing it.
Microsoft Windows Server 2012 R2	
Microsoft Windows Server 2012	
Microsoft Windows Server 2008 R2 SP1	The Cloutility installer may fail on the first installation attempt. Run once, fail, reboot the host-machine and run installer again.
Microsoft Windows Server 2008 (64-bit) SP2	The Cloutility installer may fail on the first installation attempt. Run once, fail, reboot the host-machine and run installer again.

Depending on your preference, you can use a Microsoft SQL Server (SQL) which is installed either on the host-machine itself or on a remote host-machine which is accessible from the Cloutility host-machine. The minimum requirements for setups with 1000 assigned backup nodes are:

	Cloutility (only) host-machine	Cloutility + SQL on same host-machine
Processor	(modern) Intel quad core	(modern) Intel quad core
Memory (RAM)	8 GB	16 GB
Storage available for installation	15 GB*	200 GB

* Min. 1 GB disk space: Besides the installation itself the only disk space required by Cloutility is the space needed for final invoices to customers, e.g. PDF files, if you choose to let Cloutility handle their distribution via email and subsequently make them available for download via the API/GUI.

The software installer can be run on a fresh host-machine and will download and/or install; and configure most dependencies (apart from the database server). Automatically installed/configured dependencies include:

- Microsoft Internet Information Services (IIS) 6 (or newer) with support for Microsoft .NET 4.5 applications.

The only dependencies which need be installed on the host-machine prior to installing Cloutility are:

- Microsoft .NET framework 4.5.2 (.NET framework) or newer.
- IBM Spectrum Protect Storage Manager Client version 6 or higher (BA client) with "Administrative Command Line" files: http://www-01.ibm.com/support/docview.wss?uid=swg21239415 (a detailed walk-through of the BA client installation/configuration can be found later in this document). You are able to install Cloutility without the BA client installed on the host-machine, but you will not be able to connect to a Spectrum Protect server before the BA client is available.

- Please be sure to use English for the communication language, e.g. by modifying the `C:\Program Files\Tivoli\TSM\baclient\dsm.opt` file to `language enu`, if necessary.
  - Note: If modifying the dsm.opt file, the ONLY contents of the said file can be:

    `language enu`

    Any other (or additional) content can prevent Cloutility from working as intended!

Besides from the above dependencies, the following prerequisites should be available prior to installing Cloutility:

- **Need to have**:
  - The Windows user account used for installing Cloutility must have permission to execute "scheduled tasks" without the user being logged in: During the installation all Cloutility's scheduled tasks are associated with the user account performing the installation.
  - Network access between the Spectrum Protect servers and Cloutility host-machine.
  - An **SQL** (2014; 2012; 2008 R2; or 2008 Service Pack 2) supporting "Data-tier Application Support" (DAC) packages in order to be upgradable by our software installer. Important things to note:
    - Cloutility supports either "**Windows Authentication**" or "**SQL Server Authentication**".
      - When using "Windows Authentication" the user account used for installing Cloutility must have access to the SQL Server.
    - Cloutility will create its own database (default name: "CloudPortal") during installation of the software, so no database needs to/should be created prior to installing Cloutility.
    - The database user must be a member of either the **sysadmin** or **serveradmin** fixed server roles, or use a login that is in the **dbcreator** fixed server role which has "`ALTER ANY LOGIN`" permissions. The login must be the owner of the existing database. The built-in SQL Server system administrator account named "**sa**" can also upgrade a DAC.
    - The database user must also have `SELECT`, `INSERT` and `UPDATE` privileges for the (databases > system databases >) "**msdb**" database as this is used to store information regarding the Cloutility database version, which is used when applying (Cloutility database) updates.
    - The Information regarding SQL host; database name; and user will be auto-filled when performing future upgrades Cloutility - the password must be entered upon each upgrade.
    - As a rule of thumb, each backup node requires a minimum of approx. 0.01 MB of space per day/(0.01 MB x 365 days =) 3.65 MB per year on the SQL Server, resulting in a backup node/GB ratio of approx. (1 GB = 1024 MB/3.65 =) 280 backup nodes/GB per year.
  - Access to a working **outgoing email (SMTP) server**, used for validating new users; e-mail reporting etc. You are, however, able to install the software without a working SMTP server, but will experience somewhat limited functionality until one is available to Cloutility.
  - If you want to run scheduled tasks under a user account performing the installation (as opposed to the SYSTEM account), the **local security policy** named "**Network access: Do not allow storage of passwords and credentials for network authentication**" needs to be disabled on the host-machine. To do this:
    - Open the "local security policy" application in Windows.
    - Navigate to: "Local policies > security options".
    - Locate and double-click on "Network access: Do not allow storage of passwords and credentials for network authentication".
    - Set value to "disabled".
    - Click "OK".
- **Nice to have**:
  - **Microsoft SQL Server Management Studio** (SSMS) preferably installed on the host-machine itself (for debugging purposes, optional).
  - A **web-browser** (Google Chrome recommended) which can access the GUI from the host-machine (required for initial setup).

2.2. Network access

The host-machine running Cloutility should be able to communicate with the **Auwau API** located at:

- URL: https://remote.backupportal.com
- IP address: 185.66.187.140

This network access is used:

1. For software updates (checked at: https://remote.backupportal.com/v1/updates) when using the "check for updates" functionality for Cloutility.

2. As an endpoint for the exchange of license related meta-data regarding the use of the Cloutility installation. This information is used by Auwau for billing purposes. Depending on your Cloutility licensing model your Cloutility installation may not be required to send data to the **Auwau API** and will fully function regardless. The exchanged meta-data is the:
    1. **amount of data**
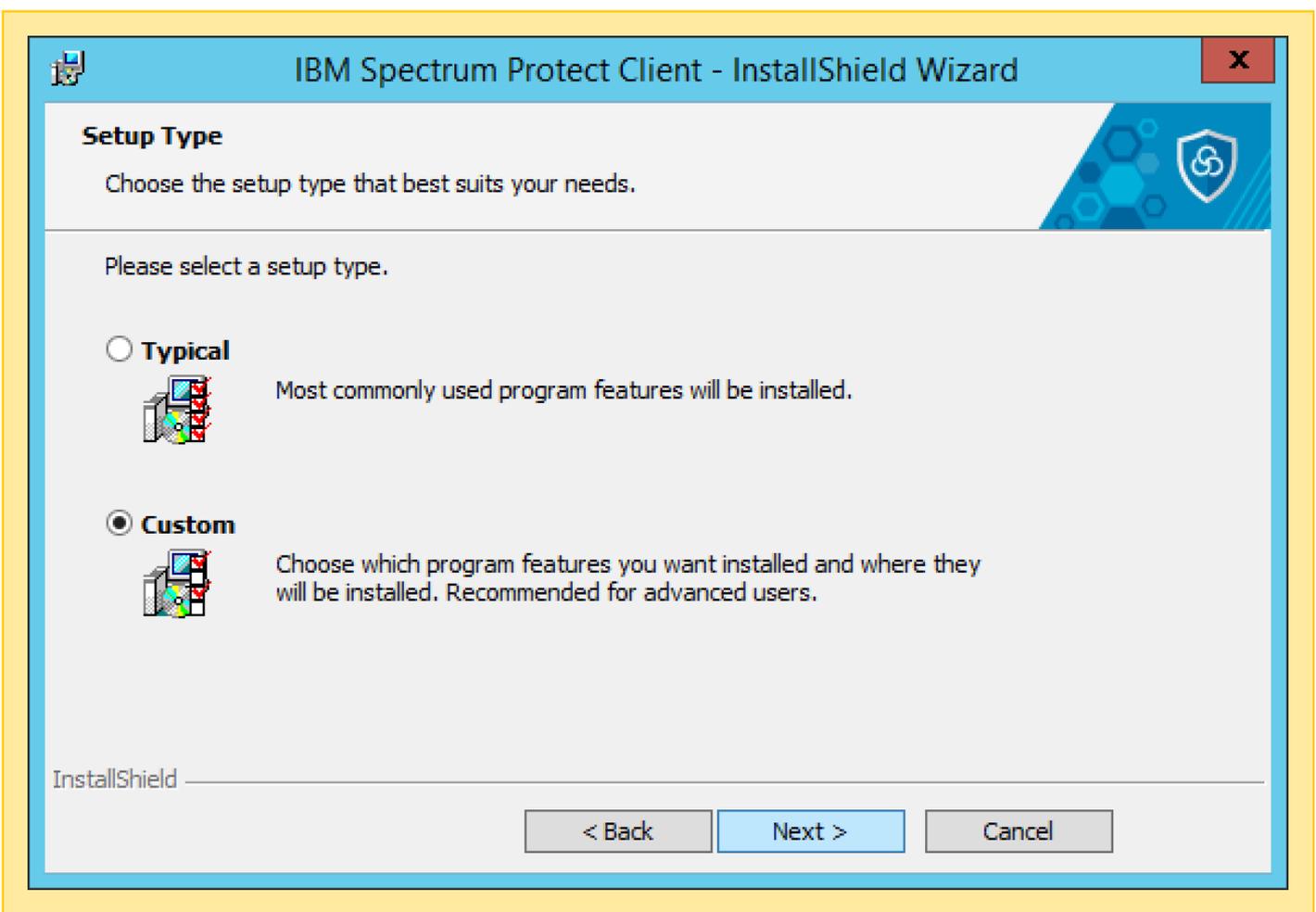   2. **number of backup nodes**
    3. **number of business units**.
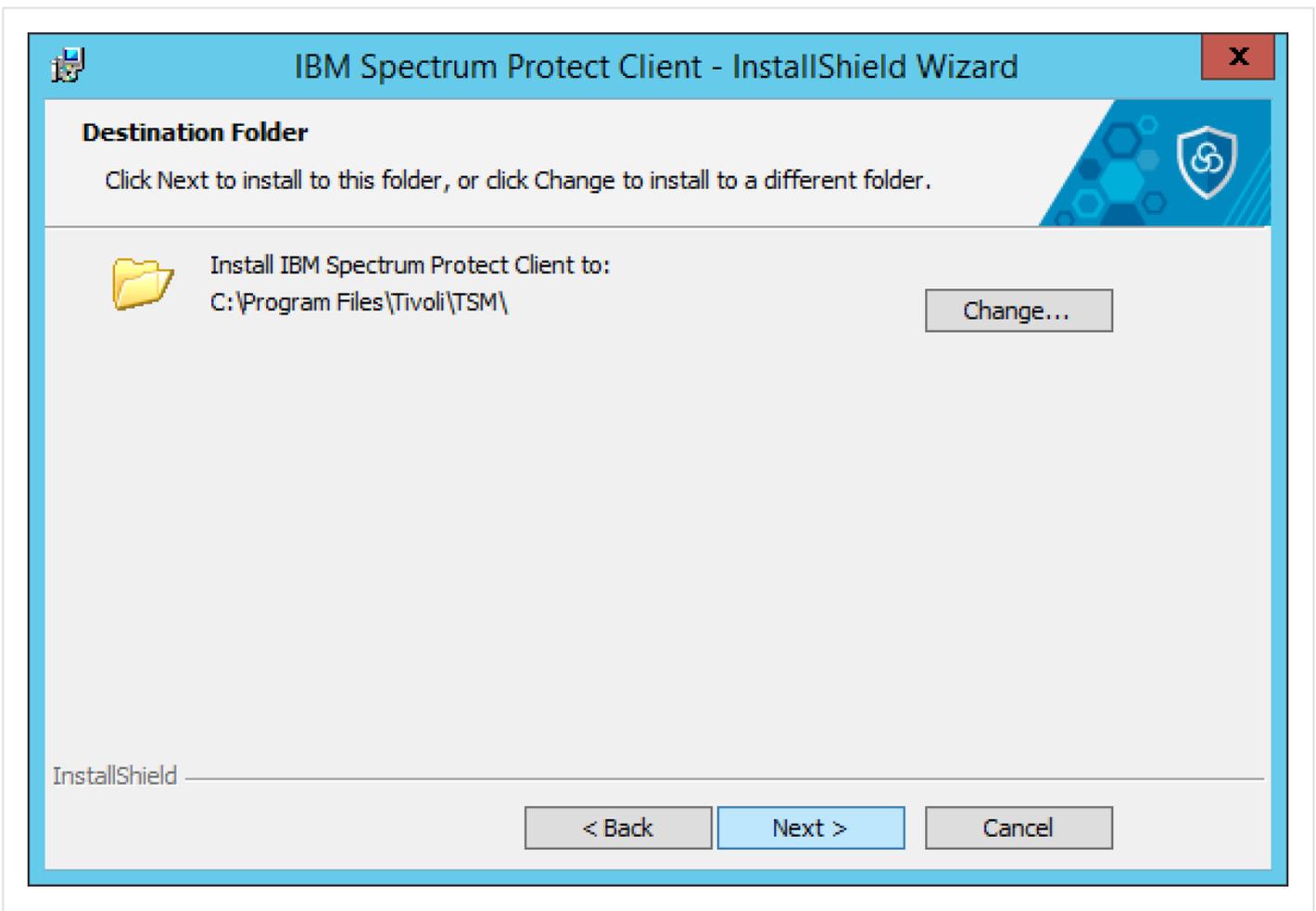
All communication with the Auwau API takes place over an SSL encrypted network connection.

2.3. Installing prerequisite software

2.3.1. IBM Spectrum Protect Client (BA client) (configured for English language in DSM.opt file)

The BA client is free an can be downloaded from IBM. Locate it by searching the web, e.g. using google.com, for "IBM Spectrum Protect Client download".

IBM Spectrum Protect Client - InstallShield Wizard

Destination Folder

Click Next to install to this folder, or click Change to install to a different folder.

Install IBM Spectrum Protect Client to:
C:\Program Files\Tivoli\TSM\

Change...

InstallShield

< Back   Next >   Cancel

IBM Spectrum Protect Client - InstallShield Wizard

Setup Type

Choose the setup type that best suits your needs.

Please select a setup type.

○ **Typical**

Most commonly used program features will be installed.

● **Custom**

Choose which program features you want installed and where they will be installed. Recommended for advanced users.

InstallShield

< Back   Next >   Cancel

IBM Spectrum Protect Client - InstallShield Wizard

Custom Setup

Select the program features you want installed.

Click on an icon in the list below to change how a feature is installed.

- Backup-Archive Client
  - Backup-Archive Client GUI Files
  - Backup-Archive Client Web Files
  - Client API (64-bit) Runtime Files
  - ✗ Client API SDK Files
  - Administrative Client Command Line F

Administrative Client Command Line Files

This feature requires 269KB on

	This feature will be installed on local hard drive.
	This feature, and all subfeatures, will be installed on local hard drive.
	This feature will be installed when required.
✗	This feature will not be available.

Install to:

C:\Program Files

InstallShield

| Help | Space | < Back | Next > | Cancel |

Make sure to include (i.e. choose "this feature will be installed on local hard drive") the "Administrative Client Command Line Files" as part of the BA client configuration as Cloutility uses this component for communicating with Spectrum Protect servers.

IBM Spectrum Protect Client - InstallShield Wizard

Ready to Install the Program

The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

InstallShield

< Back | Install | Cancel

IBM Spectrum Protect Client - InstallShield Wizard

InstallShield Wizard Completed

The InstallShield Wizard has successfully installed IBM Spectrum Protect Client. Click Finish to exit the wizard.

< Back | Finish | Cancel

The BA client must be using the English language pack. To ensure this, please make sure that if a **dsm.opt** file exists (in **C:\Program Files\Tivoli\TSM\baclient**) on the host-machine, it should only contain the following data:

`language enu`

Any additional information in the **dsm.opt** file, e.g. specification of `tcpserveraddress`, can cause Cloutility to malfunction, so please refrain from adding anything but the above.