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<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL APPLICATION SETTINGS</td>
<td>166</td>
</tr>
<tr>
<td>Configuring Staging Oracle Server</td>
<td>167</td>
</tr>
<tr>
<td>Enabling Extended Logging</td>
<td>169</td>
</tr>
<tr>
<td>EXPLORING ORACLE BACKUPS</td>
<td>170</td>
</tr>
<tr>
<td>Exploring Application-Enabled Backups</td>
<td>171</td>
</tr>
<tr>
<td>Exploring non-Application Enabled Backups</td>
<td>172</td>
</tr>
<tr>
<td>Exploring RMAN Backups</td>
<td>175</td>
</tr>
<tr>
<td>DATA RESTORE</td>
<td>176</td>
</tr>
<tr>
<td>Restoring Database and Data Guard</td>
<td>177</td>
</tr>
<tr>
<td>Restoring Latest or Point-in-Time State</td>
<td>183</td>
</tr>
<tr>
<td>Restoring Oracle RMAN Backups</td>
<td>187</td>
</tr>
<tr>
<td>VEEAM EXPLORER FOR MICROSOFT EXCHANGE</td>
<td>192</td>
</tr>
<tr>
<td>WHAT'S NEW</td>
<td>193</td>
</tr>
<tr>
<td>PLANNING AND PREPARATION</td>
<td>194</td>
</tr>
<tr>
<td>System Requirements</td>
<td>195</td>
</tr>
<tr>
<td>Used Ports</td>
<td>196</td>
</tr>
<tr>
<td>Required Permissions</td>
<td>197</td>
</tr>
<tr>
<td>Required Backup Job Settings</td>
<td>199</td>
</tr>
<tr>
<td>Considerations and Limitations</td>
<td>200</td>
</tr>
<tr>
<td>LAUNCHING APPLICATION AND EXPLORING BACKUPS</td>
<td>201</td>
</tr>
<tr>
<td>Understanding User Interface</td>
<td>202</td>
</tr>
<tr>
<td>Browsing, Searching and Viewing Items</td>
<td>204</td>
</tr>
<tr>
<td>GENERAL APPLICATION SETTINGS</td>
<td>208</td>
</tr>
<tr>
<td>Configuring Extensible Storage Engine</td>
<td>209</td>
</tr>
<tr>
<td>Configuring SMTP Settings</td>
<td>211</td>
</tr>
<tr>
<td>Enabling Extended Logging</td>
<td>212</td>
</tr>
<tr>
<td>STANDALONE DATABASES MANAGEMENT</td>
<td>213</td>
</tr>
<tr>
<td>Adding Microsoft Exchange Stores</td>
<td>214</td>
</tr>
<tr>
<td>Adding Veeam Backup for Microsoft Office 365 Server</td>
<td>215</td>
</tr>
<tr>
<td>Adding Veeam Backup for Microsoft Office 365 Service Provider</td>
<td>216</td>
</tr>
<tr>
<td>Removing Standalone Databases</td>
<td>218</td>
</tr>
<tr>
<td>DATA RESTORE</td>
<td>219</td>
</tr>
<tr>
<td>Restoring Single Mailbox</td>
<td>220</td>
</tr>
<tr>
<td>Restoring Multiple Mailboxes</td>
<td>223</td>
</tr>
<tr>
<td>Restoring Folders and Items</td>
<td>227</td>
</tr>
<tr>
<td>Using 1-Click Restore</td>
<td>230</td>
</tr>
<tr>
<td>DATA EXPORT</td>
<td>231</td>
</tr>
<tr>
<td>Exporting to Custom Location</td>
<td>232</td>
</tr>
<tr>
<td>Using 1-Click Export</td>
<td>233</td>
</tr>
<tr>
<td>Receiving Export Reports</td>
<td>237</td>
</tr>
</tbody>
</table>
DATA COMPARE .........................................................................................................................................239
Step 1. Specify Credentials .......................................................................................................... 240
Step 2. Specify Target Mailbox Server .......................................................................................... 242
SAVING MICROSOFT EXCHANGE ITEMS.......................................................................................243
SENDING MICROSOFT EXCHANGE ITEMS ...................................................................................245
VEEAM EXPLORER FOR MICROSOFT SHAREPOINT ......................................................................247
WHAT'S NEW ........................................................................................................................................... 248
PLANNING AND PREPARATION ....................................................................................................... 249
System Requirements .................................................................................................................. 250
Used Ports ................................................................................................................................... 251
Required Permissions ................................................................................................................... 252
Required Backup Job Settings ...................................................................................................... 253
Staging SQL Server ....................................................................................................................... 254
Considerations and Limitations ..................................................................................................... 255
LAUNCHING APPLICATION AND EXPLORING BACKUPS ................................................................ 259
Understanding User Interface ...................................................................................................... 260
Browsing, Searching and Viewing Items ...................................................................................... 262
GENERAL APPLICATION SETTINGS .................................................................................................. 266
Configuring Staging SQL Server.................................................................................................... 267
Configuring Custom Lists ............................................................................................................ 269
Configuring SMTP Settings ........................................................................................................... 272
Enabling Extended Logging ......................................................................................................... 273
STANDALONE DATABASES MANAGEMENT .................................................................................. 274
Adding Microsoft SharePoint Databases ....................................................................................... 275
Adding Veeam Backup for Microsoft Office 365 Databases ........................................................... 276
Adding Veeam Backup for Microsoft Office 365 Server ................................................................ 277
Adding Veeam Backup for Microsoft Office 365 Service Provider .................................................. 278
Removing Standalone Databases ................................................................................................. 280
DATA RESTORE ................................................................................................................................... 281
Restoring Microsoft SharePoint Document Libraries and Lists ..................................................... 282
Restoring Microsoft SharePoint Documents and List Items .......................................................... 286
Restoring Microsoft SharePoint Sites ........................................................................................... 290
DATA EXPORT ................................................................................................................................... 294
Exporting Microsoft SharePoint Data ............................................................................................ 295
Importing Microsoft SharePoint Data ............................................................................................ 296
SAVING MICROSOFT SHAREPOINT DOCUMENTS AND LIBRARIES ........................................... 297
SENDING MICROSOFT SHAREPOINT DOCUMENTS AND LIBRARIES ......................................... 298
VEEAM EXPLORER FOR MICROSOFT ONEDRIVE FOR BUSINESS .............................................. 300
WHAT'S NEW ........................................................................................................................................... 301
PLANNING AND PREPARATION ....................................................................................................... 302
LAUNCHING APPLICATION AND EXPLORING BACKUPS ................................................................. 303
  Understanding User Interface................................................................. 304
  Browsing, Searching and Viewing Items .............................................. 306
GENERAL APPLICATION SETTINGS .......................................................................................... 310
  Enabling Extended Logging ................................................................. 311
  Configuring SMTP Settings ................................................................. 312
STANDALONE DATABASES MANAGEMENT ................................................................................ 313
  Adding Veeam Backup for Microsoft Office 365 Databases .................. 314
  Adding Veeam Backup for Microsoft Office 365 Server ....................... 315
  Adding Veeam Backup for Microsoft Office 365 Service Provider ........ 316
  Removing Standalone Databases ......................................................... 318
RESTORING MICROSOFT ONEDRIVE DATA............................................................................. 319
COPYING MICROSOFT ONEDRIVE DATA .................................................................................. 321
  Step 1. Specify Credentials ................................................................. 322
  Step 2. Specify Target User ................................................................. 323
  Step 3. Specify Target Folder .............................................................. 324
  Step 4. Specify Restore Options ........................................................ 325
SAVING MICROSOFT ONEDRIVES ......................................................................................... 326
SAVING MICROSOFT ONEDRIVE DOCUMENTS AND FOLDERS ............................................. 328
SENDING MICROSOFT ONEDRIVE DOCUMENTS ................................................................. 329
Contacting Veeam Software

At Veeam Software we value the feedback from our customers. It is important not only to help you quickly with your technical issues, but it is our mission to listen to your input and build products that incorporate your suggestions.

Customer Support

Should you have a technical concern, suggestion or question, visit the Veeam Customer Support Portal at www.veeam.com/support.html to open a case, search our knowledge base, reference documentation, manage your license or obtain the latest product release.

Company Contacts

For the most up to date information about company contacts and offices location, visit www.veeam.com/contacts.html.

Online Support

If you have any questions about Veeam products, you can use the following resources:

- Full documentation set: www.veeam.com/documentation-guides-datasheets.html
- Community forum at forums.veeam.com
About This Document

This document provides general information on how to use the Veeam Explorers suite consisting of the following applications:

- Veeam Explorer for Microsoft Active Directory
- Veeam Explorer for Microsoft SQL Server
- Veeam Explorer for Oracle
- Veeam Explorer for Microsoft Exchange
- Veeam Explorer for SharePoint
- Veeam Explorer for Microsoft OneDrive for Business

Information hereinafter is applicable to each of the above Veeam Explorer that comes as part of Veeam Backup & Replication Update 4 or Veeam Backup for Microsoft Office 365 until it is replaced with a newer version of the product.

Intended Audience

This user guide is intended for IT administrators, consultants, analysts and any other IT professionals.

Document Revision History

<table>
<thead>
<tr>
<th>Revision #</th>
<th>Date</th>
<th>Change Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision 2</td>
<td>3/26/2019</td>
<td>Updated for Veeam Backup &amp; Replication 9.5 Update 4a.</td>
</tr>
<tr>
<td>Revision 1</td>
<td>1/22/2019</td>
<td>Initial version of the document for Veeam Backup &amp; Replication 9.5 Update 4.</td>
</tr>
</tbody>
</table>
Veeam Explorers Overview

Veeam Explorers suite extends the functionality of Veeam Backup & Replication and allows you to restore or export your application items from backup or replica files.

Veeam Explorers suite consists of the following applications:

- Veeam Explorer for Microsoft Active Directory
- Veeam Explorer for Microsoft SQL
- Veeam Explorer for Oracle
- Veeam Explorer for Microsoft Exchange
- Veeam Explorer for Microsoft SharePoint
- Veeam Explorer for Microsoft OneDrive for Business

Veeam Explorers are distributed as part of Veeam Backup & Replication and do not have to be installed separately, nor any of the above Explorers requires any additional license to be purchased, as the available feature set for each Veeam Explorer depends entirely upon the installed Veeam Backup & Replication edition.

To recover VMware VM data directly from storage snapshots, use Veeam Explorer for Storage Snapshots, as described in Veeam Explorer for Storage Snapshots.
Veeam Explorer for Microsoft Active Directory

Veeam Explorer for Microsoft Active Directory allows you to restore or export your Active Directory objects and containers from backups created by Veeam Backup & Replication.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Active Directory that comes as part of Veeam Backup & Replication 9.5 Update 4:

- Support for CA certificate information restore, Microsoft Exchange System Objects restore and AD Sites sub-net items restore.
- Restore summary dialog that shows general information about restore and export session results.
- Performance and stability Improvements.
Planning and Preparation

Continue with this section to learn how to configure your environment before start using Veeam Explorer for Microsoft Active Directory.
System Requirements

This section lists system requirements for Veeam Explorer for Microsoft Active Directory.

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Active Directory Domain Services</td>
<td>For more information about supported operating systems, see the VSS-Aware Applications subsection of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
</tbody>
</table>

**IMPORTANT!**

Consider the following:

- Database files created by the domain controller can be opened for object recovery with Veeam Explorer for Active Directory only if Veeam Explorer is installed on a Windows machine with the same OS version or higher that the version of that domain controller OS.
- To open database files, Veeam Explorer for Microsoft Active Directory uses a service dynamic link library (esent.dll) which is installed with Microsoft Active Directory Domain Services and can be found in the `%SystemRoot%` directory. The `Esent.dll` file on a machine with Veeam Explorer must be of the same version as that of Microsoft Active Directory Domain Services that was used to create database files.
## Used Ports

The following table lists network ports that must be opened to manage inbound/outbound traffic.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Standalone Console</td>
<td>Microsoft Active Directory VM Guest OS</td>
<td>TCP</td>
<td>135</td>
<td>Manages communication between the domain controller and Veeam backup server.</td>
</tr>
<tr>
<td>TCP, UDP</td>
<td>389</td>
<td>Utilized for LDAP connections.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP</td>
<td>636, 3268, 3269</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP</td>
<td>1025 to 5000 (for Microsoft Windows 2003) 49152 to 65535 (for Microsoft Windows 2008 and newer)</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware image processing (when working over the network, not over VIX API). For more information, see <a href="#">this Microsoft article</a>.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Required Permissions

The following table lists required permissions for user accounts to back up and restore Microsoft Active Directory data.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Required Roles and Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Backup</strong></td>
<td>For more information, see the Required Permissions section of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td><strong>Restore</strong></td>
<td>The account being used must be a member of the Domain Admins group and the Exchange Organization Management group.</td>
</tr>
</tbody>
</table>

Assigning Role via PowerShell

To assign the Organization Management role via PowerShell, run the following cmdlet.

```
Add-RoleGroupMember "Organization Management" -Member "<user_name>"
```
Required Backup Job Settings

When you create a backup job, make sure to enable the application-aware image processing option, as described in the Specify Guest Processing Settings section of the Veeam Backup & Replication user guide.
Considerations and Limitations

This section covers considerations and known limitations of Veeam Explorer for Microsoft Active Directory.

- Recovery of Group Policy objects, AD-integrated DNS records and objects from the Configuration partition is supported in the Enterprise and Enterprise Plus editions only.

- If a tombstone object exists in target Active Directory, Veeam will use this object for recovery. This will allow you to recover security attribute values including objectSID and objectGUID for recovered objects, which is especially important for security principals (including User, Computer, inetOrgPerson and Group objects). To be able to restore from the tombstone objects, make sure that AD Recycle Bin feature is disabled in the target domain.

- If no tombstone objects exist in the target Active Directory, Veeam will create a new object during the recovery process and set all attributes to the same values as in the corresponding object in the backup. However, these attributes, including security will be considered new, which may result in losing access rights.

**NOTE:**

To restore business-critical objects for which a tombstone is missing, you can perform authoritative restore of the entire domain from the old DC backups. For more information on tombstone objects, see Scenario Overview for Restoring Deleted Active Directory Objects.

- Always use backups that are newer than the tombstone lifetime interval for Active Directory forest.

- When you move an object from one domain to another within a forest (for example, using the Movetree.exe utility or any 3rd party tool), no tombstone for this object will remain in the source Active Directory. Thus, such an object cannot be fully recovered to the original domain.

- When Group Policy objects are restored from the backup, both Active Directory data (storing Group Policy Containers) and %Sysvol% data (storing Group Policy Templates) is involved. Therefore, for successful restore, data should be consistent in these two locations. Restore logic is implemented as follows: existing Group Policy objects are deleted from target while the new ones from the backup are going to be added.

- Veeam Explorer for Microsoft Active Directory does not support restore via PSDirect, VIX or Sphere API.

**TIP:**

To determine a tombstone lifetime interval, you can use ADSIEdit or Dsquery. For more information, see Determine the tombstone lifetime for the forest.
Launching Application and Exploring Backups

You can launch Veeam Explorer for Microsoft Active Directory and explore the content of a backup file in any of the following ways:

- You can use the **Restore application item** option to explore backups created by Veeam Backup & Replication.
  
  For more information, see the Application Items Restore section of the Veeam Backup & Replication User Guide.

- You can go to **Start** and click **Veeam Explorer for Microsoft Active Directory** to launch the application as a standalone console. Then, add Active Directory databases manually, as described in the Adding Standalone Microsoft Active Directory Databases section.

When launching from the **Start** menu, specify the following parameters:

- Specify the name or IP-address of a Veeam Backup & Replication server to which you want to connect.

- Specify the port number.

- Specify user credentials to connect to the server.
  
  The account must be a member of the **Local Administrator** group on a target server. To use your current account, select **Use Windows session authentication**.

To save the connection shortcut to your desktop, click **Save shortcut** in the bottom-left corner.
Understanding User Interface

Veeam Explorer for Microsoft Active Directory provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options.
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows information about the product.
- **Exit.** Closes the program.
Main Application Window

The main application window can be divided into three categories:

- The ribbon menu, which contains general program commands organized into logical groups.
- The navigation pane, which allows you to browse through the hierarchy of your backup files.
- The preview pane, which shows you the details about objects you have selected in the navigation area.
Browsing, Searching and Viewing Items

Continue with this section to learn more about:

- Browsing your backup content
- Searching for objects in a backup file

Browsing

To view the content of a backup file, use the navigation pane which shows you the database structure containing your active directory objects.

After you select an object in the navigation pane, you can see its content in the preview pane.

Right-click an object and select View Attributes to view objects attributes. To copy necessary attributes to the clipboard, select an attribute and press CRTL+C on the keyboard. Multiple selection is also supported.

NOTE:

Due to organizational and security purposes, recovery of Domain Controllers objects is not supported.
Searching

The search mechanism allows you to find items matching specified search criteria.

To search for required items, do the following:

1. In the navigation pane, select an object in which you want to find your data.
2. Type in a search query using the search field at the top of the preview pane.

NOTE:

To find the exact phrase, use double quotes. For example, "group policy".
Using LDAP Queries

To use the LDAP search query, do the following:

1. In the preview pane, select a container.
2. Go to the Home tab and click Use LDAP Filter.
3. In the search field, enter an LDAP query and click the search button.
Standalone Databases Management

Continue with this section to learn more about adding and removing Microsoft Active Directory databases.

IMPORTANT!

Make sure the database you are adding to the Veeam Explorer scope was not locked by another process.
Adding Standalone Databases

To add a standalone Active Directory database manually, do the following:

1. Right-click the root **Active Directory** node and select **Add database** or switch to the **Home** tab and click **Add Database** on the toolbar.

2. Specify the location of the Active Directory database file and folder that contains associated transaction log files (*Edb.log* and *Edb.chk*).

   By default, the Active Directory database file (*NTDS.DIT*) is located in the `%SystemRoot%\NTDS` directory. Make sure that the system registry hive is located in the same place.
Removing Standalone Databases

To remove a database from the application scope, right-click a database in the navigation pane and select **Remove Database**.
Data Restore

Continue with this section to learn more about restoring Active Directory objects and containers.

Consider the following:

- Veeam Explorer is capable of restoring relationships between Active Directory objects and corresponding mailboxes. If an object (a user or a group) was removed from the production Active Directory server, Veeam Explorer will be able to restore such an object from the Active Directory backup. Make sure to reconnect Exchange mailbox and restore mailbox security role for that object.

- Veeam Explorer for Microsoft Active Directory supports restore of both mailbox-enabled objects (including hard-deleted items and Online Archives), and mail-enabled objects for the following Microsoft Exchange versions: Microsoft Exchange Server 2019, Microsoft Exchange Server 2016, Microsoft Exchange Server 2013, Microsoft Exchange Server 2010 SP1 and higher. For other Microsoft Exchange versions, restore of mailbox-enabled objects is not supported (only mail-enabled objects can be restored).

- To restore passwords, Veeam Explorer for Microsoft Active Directory uses the registry database. If you plan to restore passwords, make sure System registry hive is available. The default location of the hive is `%systemroot%\System32\Config`. If you restore an Active Directory database from the Active Directory backup using Veeam file-level restore, the registry hive will be located automatically. If you restore from an imported backup or from a VeeamZIP backups, make sure the system registry hive is located in the same directory as a .DIT file.

- If you plan to restore database items from an Active Directory Domain Services server running Microsoft Windows ReFS, consider that a Veeam backup server or a management console must be installed on Microsoft Windows Server 2012 or higher.

- To restore from a server running Microsoft Windows ReFS 3.x, a Veeam backup server or a management console must be installed on Microsoft Windows Server 2016.
Restoring Objects

To restore Active Directory objects, do the following:

1. In the preview pane, select an object.

2. On the Objects tab, select Restore Objects > Restore objects to `<server_name>` or right-click an object and select Restore objects to `<server_name>`.

3. Proceed to Specify Connection Parameters.
Step 1. Specify Connection Parameters

At this step of the wizard, specify the following:

- A target production server to which you want to restore your data. Select the Use SSL checkbox to establish a secure SSL connection.
- User credentials to connect to the LDAP server.

### Global Catalog Server

To specify a Global Catalog server, click the button on the right side of the **Server** field and choose either of the following options:

- **Detect automatically.** To detect a server automatically.
- **Use the following server.** To choose a server from the list.
Step 2. Specify Restore Location

At this step of the wizard, select a container to which you want to restore the objects.

You can select the following:

- **Restore to the original container.** To restore data to the original container in your production environment.

- **Restore to the following container.** To select a different container, as described in Browsing Container.

**TIP:**

If a container that is being restored was not found in the production environment, it will be restored anew.
Browsing Container

To select a different container, click **Browse** and choose a container you want to use.

---

**Select Container**

To select a different container, click **Browse** and choose a container you want to use.

---

**Step 3. Specify Password Restore Options**

At this step, specify the manner in which you want your passwords to be restored.

Consider the following when restoring passwords:

- When providing a new password for the account that is being restored, check that it complies with the password policy in your production environment.

- If you select **Restore password** or **Set password to** options, you may also request a user to change the password at next log on.
  
  Mind that this setting will not take effect if a user is not allowed to change the password due to security limitations.

- When restoring multiple accounts, a new password will be set for all the accounts altogether.

- To restore account passwords, Veeam Explorer for Microsoft Active Directory uses registry database. Make sure that the *System* registry hive is available.
  
  The default location is %systemroot%\System32\Config.

- When restoring Active Directory database from an Active Directory backup file using Veeam file-level restore, the registry hive will be located automatically. Otherwise, make sure the system registry hive is located in the same folder as .DIT file.
Step 4. Specify Account State

At this step of the wizard, specify whether you want to keep the account state as it is in the backup file or select Enabled or Disabled to assign a state you need.
Step 5. Specify Restore Options

At this step of the wizard, specify restore options.

You can select the following:

- **Objects to process:**
  - **Changed objects.** To restore changed objects.
  - **Deleted objects.** To restore deleted objects.

- **Restore:**
  - **Entire objects.** To restore entire objects collection.
  - **Selected attributes only.** To select particular attributes.

When selecting **Selected attributes only**, you will be offered to choose the attributes you want to restore at the next step.

- **Multi-valued attributes:**
  - **Replace.** To replace production data with that of a backup file.
  - **Merge.** To merge existing data with that of a backup file.

By default, multi-valued attributes will be replaced, not merged.

**NOTE:**
- When working with Active Directory 2016, this dialog will also include the **Restore expiration time** option, which allows you to restore expiration time for linked attributes.
- Users cannot change recovery settings for disabled attributes. Such attributes will be either restored or skipped according to the default configuration.

![RESTORE WIZARD](image)
Step 6. Specify Attributes to Restore

At this step of the wizard, select attributes you want to restore.

This step is only available if you have chosen the **Selected attributes only** option at the previous step.

Once restore is complete, review the results shown in the **Restore Summary** dialog.

You can select whether to display all types of notifications or only those you need by selecting/deselecting the corresponding checkboxes at the lower-left corner of the dialog.
Restoring Containers

To restore Active Directory containers, do the following:

1. In the navigation pane, select a container.
2. On the Container tab, select Restore Container > Restore container to or right-click a container and select Restore container to.
3. Proceed to Specify Connection Parameters.
Step 1. Specify Connection Parameters

At this step of the wizard, specify the following:

- A target production server to which you want to restore your data. Select the Use SSL checkbox to establish a secure SSL connection.
- User credentials to connect to the LDAP server.

Specify server connection parameters

<table>
<thead>
<tr>
<th>Server: dlcd.dim.local</th>
<th>Use SSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify the account to be used to connect to LDAP server:</td>
<td></td>
</tr>
<tr>
<td>Use current account (EPSILON\Administrator)</td>
<td></td>
</tr>
<tr>
<td>Use the following account:</td>
<td></td>
</tr>
<tr>
<td>User name: dim\Administrator</td>
<td></td>
</tr>
<tr>
<td>Password: **********</td>
<td></td>
</tr>
</tbody>
</table>

Global Catalog Server

To specify a Global Catalog server, click the button on the right side of the Server field and choose either of the following options:

- Detect automatically. To detect a server automatically.
- Use the following server. To choose a server from the list.

Specify global catalog server:

<table>
<thead>
<tr>
<th>Detect automatically</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the following server</td>
</tr>
<tr>
<td>DLCD.dim.local</td>
</tr>
</tbody>
</table>

Step 2. Specify Restore Location

At this step of the wizard, select a container to which you want to restore the objects.

You can select the following:

- Restore to the original container. To restore data to the original container in your production
environment.

- **Restore to the following container.** To select a different container, as described in Browsing Container.

  ![RESTORE WIZARD](image)

  **Specify restore location**

  Specify the container to restore to:
  
  - [ ] Restore to the original container
  - [x] Restore to the following container:

    ![CN: Dfs-Configuration, CN: System, DC=dim, DC=local](image)

  ![Browse...](image)

  ![TIP:](image)

  If a container that is being restored was not found in the production environment, it will be restored anew.

**Browsing Container**

To select a different container, click **Browse** and choose a container you want to use.

![Select Container](image)

![OK](image)  ![Cancel](image)
Step 3. Specify Password Restore Options

At this step, specify the manner in which you want your passwords to be restored.

Consider the following when restoring passwords:

- When providing a new password for the account that is being restored, check that it complies with the password policy in your production environment.

- If you select Restore password or Set password to options, you may also request a user to change the password at next log on.
  
  Mind that this setting will not take effect if a user is not allowed to change the password due to security limitations.

- When restoring multiple accounts, a new password will be set for all the accounts altogether.

- To restore account passwords, Veeam Explorer for Microsoft Active Directory uses registry database. Make sure that the System registry hive is available.
  
  The default location is %systemroot%\System32\Config.

- When restoring Active Directory database from an Active Directory backup file using Veeam file-level restore, the registry hive will be located automatically. Otherwise, make sure the system registry hive is located in the same folder as .DIT file.

![RESTORE WIZARD](image)

Specify password restore options

Password options:
- Restore password
- Set password to:
  
  *****
- Do not restore password

Account options:
- User must change password at next logon
  
  This option will not be set if the 'User cannot change password' option is set for the restored object.
Step 4. Specify Account State

At this step of the wizard, specify whether you want to keep the account state as it is in the backup file or select **Enabled** or **Disabled** to assign a state you need.

![Restore Wizard](image)

Step 5. Specify Restore Options

At this step of the wizard, specify restore options.

You can select the following:

- **Objects to process:**
  - **Changed objects.** To restore changed objects.
  - **Deleted objects.** To restore deleted objects.

- **Restore:**
  - **Entire objects.** To restore entire objects collection.
  - **Selected attributes only.** To select particular attributes.
    - When selecting **Selected attributes only**, you will be offered to choose the attributes you want to restore at the next step.

- **Multi-valued attributes:**
  - **Replace.** To replace production data with that of a backup file.
  - **Merge.** To merge existing data with that of a backup file.
    - By default, multi-valued attributes will be replaced, not merged.
NOTE:

- When working with Active Directory 2016, this dialog will also include the Restore expiration time option which allows you to restore expiration time for linked attributes. If an attribute being restored expires during the restore session, then such an attribute will not be restored.
- Users cannot change recovery settings for disabled attributes. Such attributes will be either restored or skipped according to the default configuration.

Step 6. Specify Attributes to Restore

At this step of the wizard, select attributes you want to restore.

This step is only available if you have chosen the **Selected attributes only** option at the previous step.

Once restore is complete, review the results shown in the *Restore Summary* dialog.
You can select whether to display all types of notifications or only those you need by selecting/deselecting the corresponding checkboxes at the lower-left corner of the dialog.

<table>
<thead>
<tr>
<th>NAME</th>
<th>RESULT</th>
<th>PATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td></td>
<td>cn=401,cn=DisplaySpecifiers,cn=Conf...</td>
</tr>
<tr>
<td>DS-UI-Default-Settings</td>
<td></td>
<td>cn=DS-UI-Default-Settings,cn=401,cn...</td>
</tr>
<tr>
<td>IntellimirrorGroup-Display</td>
<td></td>
<td>cn=intellimirrorGroup-Display,cn=401,...</td>
</tr>
<tr>
<td>IntellimirrorSCP-Display</td>
<td></td>
<td>cn=intellimirrorSCP-Display,cn=401,cn...</td>
</tr>
<tr>
<td>user-Display</td>
<td></td>
<td>cn=user-Display,cn=401,cn=DisplaySpecifiers,cn=Conf...</td>
</tr>
<tr>
<td>group-Display</td>
<td></td>
<td>cn=group-Display,cn=401,cn=DisplaySpecifiers,cn=Conf...</td>
</tr>
<tr>
<td>domain-DNS-Display</td>
<td></td>
<td>cn=domainDNS-Display,cn=401,cn=Disp...</td>
</tr>
<tr>
<td>context-Display</td>
<td></td>
<td>cn=context-Display,cn=401,cn=Disp...</td>
</tr>
<tr>
<td>domainPolicy-Display</td>
<td></td>
<td>cn=domainPolicy-Display,cn=401,cn=Disp...</td>
</tr>
<tr>
<td>localPolicy-Display</td>
<td></td>
<td>cn=localPolicy-Display,cn=401,cn=Disp...</td>
</tr>
<tr>
<td>volume-Display</td>
<td></td>
<td>cn=volume-Display,cn=401,cn=Disp...</td>
</tr>
</tbody>
</table>

Errors ✔️ Warnings ✔️ Success ✔️
Using 1-Click Restore

The 1-Click Restore feature allows you to quickly recover Active Directory objects and containers back to the original domain in your production environment.

Consider the following:

- Both changed and deleted objects will be restored.
- All the attributes will be restored.
- Attribute values and security descriptors will be replaced with that of a backup file.

Restoring Containers

To restore a container, do the following:

1. In the navigation tree, select a container.
2. On the **Container** tab, select **Restore Container > Restore container to <server_name>** or right-click a container and select **Restore container to <server_name>**.

   ![Diagram](image.png)

   Once restore is complete, review the results shown in the **Restore Summary** dialog.

   You can select whether to display all types of notifications or only those you need by selecting/deselecting the corresponding checkboxes at the lower-left corner of the dialog.
Restoring Objects

To restore an object, do the following:

1. In the preview pane, select objects.

2. On the Objects tab, select Restore Objects > Restore objects to <server_name> or right-click an object and select Restore objects to <server_name>.
Once restore is complete, review the results shown in the **Restore Summary** dialog.

You can select whether to display all types of notifications or only those you need by selecting/deselecting the corresponding checkboxes at the lower-left corner of the dialog.

<table>
<thead>
<tr>
<th>NAME</th>
<th>RESULT</th>
<th>PATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer-Display</td>
<td></td>
<td>cm:\computer-Display;cm=404,cm=Disp...</td>
</tr>
</tbody>
</table>
Data Export

Continue with this section to learn more about exporting Active Directory objects and containers.

NOTE:

Veeam uses Lightweight Data Interchange Format to save Active Directory objects and containers into .LDF files. You can make a .LDF file available to the Active Directory Domain Services server by importing it with the ldifde utility. For more information, see Import or Export Directory Objects Using Ldifde.
Exporting Objects

To export Active Directory objects, do the following:

1. In the preview pane, select an object.

2. On the Objects tab, select Export Objects > Export objects to or right-click an object and select Export objects to.

3. Specify the destination folder and click Save.
Exporting Containers

To export containers and its content, do the following:

1. In the preview pane, select a container.

2. On the Container tab, select Export Container > Export container to or right-click a container and select Export container to.

3. In the Export to field specify the destination location.
   To save only objects included in the selected container and meet specific filtering criteria, click Show settings to set the filter.

4. (Optionally) Select the Save only objects that suit the following filter checkbox and enter filtering criteria.
   If necessary, select the Use LDAP filter checkbox to switch to the corresponding filtering mode.

5. Click Export.
   All the nested containers (if any) will be preserved during the export.
Specify target path and export settings

Export to: C:Users\Administrator\Documents\MyExportedData.ffd

- Save only objects that suit the following filter:
  (name="Jo")

- Use LDAP filter

- Hide settings

Export | Cancel
Using 1-Click Export

To export a container or object to a default location, do the following:

1. Select a container or object.

2. On the **Container** tab, select **Export Container > Export Container to <target_folder>** or **Export Objects > Export Object to <target_folder>** respectively or use the associated context menu command.

**NOTE:**

The **<target_folder>** destination depends on the location you have been using during the last export operation.
Data Compare

This section explains how to use Veeam Explorer for Microsoft Active Directory to compare data in a backup file with that of the production state.

**IMPORTANT!**

To compare objects, make sure the account you are using has access to your production Active Directory.
Comparing Containers

To compare Active Directory containers, do the following:

1. In the navigation pane, select a container.

2. On the **Home** tab, select **Compare with Production** to detect changed, moved or deleted objects since the last Active Directory backup.

3. Click **Show Changed Items Only** on the toolbar to view only those items that have been changed since the last backup.

The following figure shows user accounts, the attributes of which have been changed since the last time they were backed up. Veeam can also combine item states to represent the most accurate state of an object. For example, if object attributes have been changed and the object was moved to a different location, the object status in this case will be shown as *Moved, Changed*. 

<table>
<thead>
<tr>
<th>NAME</th>
<th>TYPE</th>
<th>ITEM STATE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>computer-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>Contact-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>container-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>default-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>domainDNS-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>domainPolicy-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>OU-Default-Settings</td>
<td>eSUsettings</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>foreignSecurityPrincipal-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>group-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>inetOrgPerson-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>IntellimineOSD-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>IntellimineUser-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>interSiteTransportContainer-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>interSiteTransport-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>licensingSiteSettings-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>localPolicy-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>localSC trying-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOM-Partition-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOM-PartitionGet-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOM-PartitionSettings-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOMConfiguration-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOM-Custom-Recipient-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOMEnterpriseSettings-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOM-Group-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
<tr>
<td>masOMDirectoryService-Display</td>
<td>displaySpecifier</td>
<td>Moved, Changed</td>
<td></td>
</tr>
</tbody>
</table>
Comparing Object Attributes

To compare Active Directory objects attributes, do the following:

1. In the navigation pane, select a container.
2. In the preview pane, select an object.
3. On the Objects tab, select **Compare object attributes** or right-click an object and select **Compare object attributes**.
4. Review changed attributes.

To show unchanged attributes, select **Show unchanged attributes** at the top-right corner. To show system properties, select **Show system attributes**.

To restore an attribute, select it and click **Restore**. Multiple selection is also supported.
<table>
<thead>
<tr>
<th>NAME</th>
<th>BACKUP VALUE</th>
<th>PRODUCTION VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>adminContextMenu</td>
<td>1.08eb4f6a-6f1d-11d1-b0e0-00c04fd8d8...</td>
<td>1.08eb4f6a-6f1d-11d1-b0e0-00c04fd8d8...</td>
</tr>
<tr>
<td>adminPropertyPages</td>
<td>&lt;double-click to compare&gt;</td>
<td>&lt;double-click to compare&gt;</td>
</tr>
<tr>
<td>attributeDisplayNames</td>
<td>&lt;double-click to compare&gt;</td>
<td>&lt;double-click to compare&gt;</td>
</tr>
<tr>
<td>classDisplayName</td>
<td>外部安全性主體</td>
<td>外部安全性主體</td>
</tr>
<tr>
<td>cn</td>
<td>foreignSecurityPrincipal-Display</td>
<td>foreignSecurityPrincipal-Display</td>
</tr>
<tr>
<td>distinguishedName</td>
<td>cn=foreignSecurityPrincipal-Display, cn= foreignSecurityPrincipal-Display</td>
<td>CN=foreignSecurityPrincipal-Display,Cn=foreignSecurityPrincipal-Display</td>
</tr>
<tr>
<td>dSCorePropagationData</td>
<td>12/31/1900 4:00:00 PM</td>
<td>12/31/1900 4:00:00 PM</td>
</tr>
<tr>
<td>instanceType</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>nTSecurityDescriptor</td>
<td>O:5-1-5-21-2074619818-2207429758-41...</td>
<td>O:5-1-5-21-2074619818-2207429758-41...</td>
</tr>
<tr>
<td>objectCategory</td>
<td>cn=Display-Specifying, cn=Schema,cn=</td>
<td>CN=Display-Specifying,CN=Schema,CN=</td>
</tr>
<tr>
<td>objectClass</td>
<td>&lt;double-click to compare&gt;</td>
<td>&lt;double-click to compare&gt;</td>
</tr>
<tr>
<td>objectGUID</td>
<td>16d1a12-0a65-4567-9874-35a87c60c51d</td>
<td>16d1a12-0a65-4567-9874-35a87c60c51d</td>
</tr>
<tr>
<td>replPropertyMetaData</td>
<td>AQAAAAAAAAAAAMAAAAAAAAAAAAA...</td>
<td></td>
</tr>
<tr>
<td>showAdvancedViewOnly</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>sNINChanged</td>
<td>5625</td>
<td>5625</td>
</tr>
<tr>
<td>sNINCreated</td>
<td>5625</td>
<td>5625</td>
</tr>
</tbody>
</table>

Use Ctrl and Shift keys to select one or more attributes and click Restore to restore them into production environment.
Enabling Extended Logging

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the General Options.
2. On the General tab, select the Enable Extended logging checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Veeam Explorer for Microsoft SQL Server

Veeam Explorer for Microsoft SQL Server allows you to restore or export your Microsoft SQL databases and schema objects from backups created by Veeam Backup & Replication.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Microsoft SQL Server that comes as part of Veeam Backup & Replication 9.5 Update 4:

- Support for exporting database files as BAK.
- Support for RECOVERY, NORECOVERY, STANDBY options selection during restore.
- Support for publishing SQL databases to target SQL servers.
- Performance and stability Improvements.
Planning and Preparation

Continue with this section to learn how to configure your environment before start using Veeam Explorer for Microsoft SQL Server.
## System Requirements

This section lists system requirements for Veeam Explorer for Microsoft SQL Server.

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft SQL Server</td>
<td>For more information about supported versions of Microsoft SQL Server, see the VSS-Aware Applications subsection of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
</tbody>
</table>

**NOTE:**

AlwaysOn Availability Groups are supported for Microsoft SQL Server 2012 and higher.

Consider the following:

- By default, the `AUTO_CLOSE` option for SQL server databases is set to **False**. If `AUTO_CLOSE` is enabled, your databases might be skipped from processing.
- To restore database items from a SQL server VM that is running Microsoft Windows ReFS, the Veeam backup server or a management console must be installed on Microsoft Windows Server 2012 or higher.
- To restore data from a server that is running Microsoft Windows ReFS 3.x, the Veeam backup server or a management console must be installed on Microsoft Windows Server 2016.
- Nodes participating in AlwaysOn Availability Groups are supported, but using Availability Group Listeners as staging servers is not recommended.

### Staging SQL Server Requirements

Consider the following:

- Ensure that the staging SQL server has the same or later version as the original SQL server.
- A SQL server included in Microsoft SQL Server Failover Cluster cannot be used as a staging system.
- Mind domain trusts configuration when planning to add databases to the Veeam Explorer scope manually. For more information, see [Configuring Staging SQL Server](#).
- The following *Microsoft SQL Server Express Editions* can be used as a staging system:
  - *Microsoft SQL Server 2016 Express Edition.* For other higher versions.
  Both editions come as part of the Veeam Backup & Replication distribution package.
- A SQL server instance can be used as a staging system.
NOTE:

Databases that exceed 10 GB cannot be attached to the Microsoft SQL Server 2012/2016 Express Edition due to Express Edition limitations. For more information, see the following Microsoft articles:

- For Microsoft SQL Server 2012 Express Edition.
- For Microsoft SQL Server 2016 Express Edition
## Used Ports

The following table lists network ports that must be opened to manage inbound/outbound traffic.

### Backup

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Guest Interaction Proxy (Enterprise and Enterprise Plus editions)</td>
<td>Microsoft SQL Server VM Guest OS</td>
<td>TCP, UDP</td>
<td>135, 137-139, 445</td>
<td>To deploy the runtime coordination process on a VM guest OS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>49152 to 65535. For Microsoft Windows 2008 and higher.</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware processing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>6167</td>
<td>For Microsoft SQL Server transaction logs shipping</td>
</tr>
<tr>
<td>Microsoft SQL Server VM Guest OS</td>
<td>Veeam Backup Server / Guest Interaction Proxy (Enterprise and Enterprise Plus editions)</td>
<td>TCP</td>
<td>49152 to 65535. For Microsoft Windows 2008 and higher</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware processing</td>
</tr>
<tr>
<td>Log Shipping Server</td>
<td></td>
<td>TCP</td>
<td>2500 to 5000</td>
<td>For Microsoft SQL Server transaction logs shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The default port range used by the Veeam data mover service for data transfer over the network.</td>
</tr>
</tbody>
</table>
NOTE:
Configuring dynamic RPC range is not required when using default Microsoft Windows firewall settings as Veeam Backup & Replication automatically creates an associated firewall rule for the runtime process during installation. When using custom firewall settings or if application-aware processing fails with the *RPC function call failed* error, ensure configuring dynamic RPC ports manually. For more information, see this Microsoft article.

### Restore

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Standalone Console</td>
<td>Target Server / Staging Server</td>
<td>TCP, UDP</td>
<td>135, 445</td>
<td>To deploy the runtime coordination process on a target guest OS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>49152-65535. For Microsoft Windows 2008 and higher.</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a target guest OS. For more information, see this Microsoft article.</td>
</tr>
<tr>
<td>Microsoft SQL Server VM Guest OS</td>
<td>Target Server / Staging Server</td>
<td>TCP</td>
<td>1433, 1434</td>
<td>To communicate with the Microsoft SQL server that is installed on a VM during the application-item restore. For more information, see this Microsoft article.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UDP</td>
<td>1434</td>
<td>Utilized by the Microsoft SQL Server Browser service. For more information, see this Microsoft article.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>1025 - 1034</td>
<td>The default RPC range for the runtime component that is installed on a target or staging SQL server guest OS to support restore. Such a port range is only opened while application item restore is being performed.</td>
</tr>
<tr>
<td>Target Server / Staging Server</td>
<td>Mount server associated with the backup repository</td>
<td>TCP</td>
<td>3260 - 3270</td>
<td>The port range that is opened by Veeam Backup &amp; Replication to manage the iSCSI traffic during restore to the target VM. Such a port range is only opened while application item restore is being performed. For more information, see Mount Operations.</td>
</tr>
</tbody>
</table>
# Required Permissions

The following table lists required permissions for user accounts to back up and restore Microsoft SQL Server data.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Required Roles and Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup</td>
<td>For more information, see the Required Permissions section of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td>Restore</td>
<td>The account being used must be a member of the Local Administrator group and must be granted the sysadmin role on a target Microsoft SQL Server. For more information about Microsoft SQL Server roles, see this Microsoft article.</td>
</tr>
</tbody>
</table>
Required Backup Job Settings

When you create a backup job, make sure to enable the **application-aware image processing** option, as described in the **Specify Guest Processing Settings** section of the Veeam Backup & Replication user guide.

Configuring Transaction Logs

For more information about configuring transaction logs, see the **Transaction Log Settings: Microsoft SQL Server** section of the Veeam Backup & Replication User Guide.

Recovery Model

**NOTE:**

To be able to restore your data as of a point in time or as of a state before undesired transactions, make sure the recovery model for the database is set to **full** or **bulk-logged**.

The following table lists database logging models and applicable Veeam options.

<table>
<thead>
<tr>
<th>SQL DB Logging Model</th>
<th>Veeam Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Truncate logs</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Do not truncate logs</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Backup logs periodically</strong></td>
</tr>
<tr>
<td>Simple</td>
<td>Databases are skipped from processing.</td>
</tr>
<tr>
<td></td>
<td>Applicable option.</td>
</tr>
<tr>
<td></td>
<td>Databases are skipped from processing.</td>
</tr>
<tr>
<td></td>
<td>Log files do not grow (and do not need to be backed up).</td>
</tr>
<tr>
<td>Full</td>
<td>Applicable option. Veeam performs “backup to NUL” for log files on guest.</td>
</tr>
<tr>
<td></td>
<td>Applicable but not recommended to use without native or 3rd party means of log truncation or backup - otherwise, logs will increase in size.</td>
</tr>
<tr>
<td></td>
<td>Applicable option. Log backup files (.BAK) are copied from the temporary folder on SQL Server to Veeam repository. As soon as data is copied to target, BAK files are deleted from source.</td>
</tr>
<tr>
<td>Bulk-logged</td>
<td>Applicable option. Veeam performs “backup to NUL” for log files on guest.</td>
</tr>
<tr>
<td></td>
<td>Applicable but not recommended to use without native or 3rd party means of log truncation or backup - otherwise, logs will increase in size.</td>
</tr>
<tr>
<td></td>
<td>Applicable option. Log backup files (.BAK) are copied from the temporary folder on SQL Server to Veeam repository. As soon as data is copied to target, BAK files are deleted from source.</td>
</tr>
</tbody>
</table>
Considerations and Limitations

This section covers considerations and known limitations of Veeam Explorer for Microsoft SQL Server.

General

- When using the SQL Server Express edition as a staging system, consider that databases that exceed 10 GB cannot be attached to this SQL Server due to Express edition limitations. For more information, see Features Supported by the Editions of SQL Server 2012.
- SQL Server included in Microsoft SQL Server Failover Cluster cannot be used as a staging system.

Backup

- By default, system databases (master, model, msdb) are skipped from transaction log processing. These databases can be restored using file-level restore, as described in the Veeam Backup & Replication User Guide. If you want to exclude other databases from the transaction log processing, please refer to the How to exclude MS SQL Databases from SQL Log backup knowledge base article.
- Transaction log backup is not supported for Windows Server 2008 or earlier guests on Hyper-V 2012 R2.
- Transaction log backup requires at least one image-level backup of SQL Server. This means that the transaction log backup will not function after the full SQL Server restore is performed or for the newly appeared databases, until the first image-level VM backup is performed.
- If both Microsoft SQL Server and Oracle Server are installed on the same VM, which processed by a job with the log backup enabled for both applications, Veeam Backup & Replication will back up only Oracle transaction logs. Microsoft SQL Server transaction logs will not be processed.
- For the truncation of database transaction logs, make sure that Deny log on locally and Deny log on through Terminal Services are turned OFF for the account used for VM guest processing (these settings can be turned on, in particular, due to group policy).
- Currently, point-in-time restore and restore to the state before selected transaction is not supported for replica VMs and for restore points created by backup copy job.

Restore

- Veeam Explorer for Microsoft SQL Server does not support restore via PSDirect, VIX or Sphere API.
- Table-level recovery is supported only for database tables with no external dependencies.
- If you plan to restore an encrypted database using Veeam Explorer for Microsoft SQL Server, consider information provided in this Veeam Knowledge Base article.
- If you plan to restore database schema objects, consider that 'Replace' logic is not supported - that is, if an object with the same name exists in the production database and in the backup, then a backup object will not replace the existing one, but an object with a different name will be created instead, as described in the Restoring Database Schema and Data. Also, consider that when objects are renamed, relationships between them are not renamed.

Support for AlwaysOn Availability Groups

- AlwaysOn Availability Groups are supported for Microsoft SQL Server 2012 and later.
If you want to restore database from the AlwaysOn availability group node to the state prior to the selected transaction, all nodes of the group should be located in the same time zone.
Launching Application and Exploring Backups

You can launch Veeam Explorer for Microsoft SQL Server and explore the content of a backup file in any of the following ways:

- You can use the **Restore application item** option to explore backups created by Veeam Backup & Replication.
  
  For more information, see the Application Items Restore section of the Veeam Backup & Replication User Guide.

- You can go to **Start** and click **Veeam Explorer for Microsoft SQL Server** to launch the application as a standalone console. Then, add Microsoft SQL databases manually, as described in the Adding Standalone Microsoft SQL Databases section.

When launching from the **Start** menu, specify the following parameters:

- Specify the name or IP-address of a Veeam Backup & Replication server to which you want to connect.
- Specify the port number.
- Specify user credentials to connect to the server.
  
  The account must be a member of the **Local Administrator** group on a target server. To use your current account, select **Use Windows session authentication**.

To save the connection shortcut to your desktop, click **Save shortcut** in the bottom-left corner.
Understanding User Interface

Veeam Explorer for Microsoft SQL Server provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options.
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows information about the product.
- **Exit.** Closes the program.
Main Application Window

The main application window can be divided into three categories:

- The ribbon menu, which contains general program commands organized into logical groups.
- The navigation pane, which allows you to browse through the hierarchy of your SQL databases.
- The preview pane, which shows you the details about objects you have selected in the navigation area.
Understanding Mounting

When restoring your data, Veeam Explorer requires an additional mount point to be created to display SQL server transactions.

Mounting is performed by the Veeam Mount Service component which is deployed on a backup repository machine or any other machine you define in the backup job configuration settings.

During mounting, Veeam Mount Service retrieves a VM file system from the backup file, attaches it to the hard drive of a target machine and creates a mount point.

To mount a VM file system on to machines with the Microsoft Windows operating system, Veeam uses the iSCSI protocol. The original virtual machine or staging SQL server acts as an iSCSI initiator and a mount server that is associated with the backup repository acts as an iSCSI target. The iSCSI mount point is non-persistent and only exists during the recovery process.

NOTE:

When using fine-tune restore or point-in-time state restore, Veeam always uses a staging SQL server to mount the VM file system.
Understanding Veeam SQL Restore Service

The *Veeam SQL Restore Service* runtime component is used to support restore activities on a VM guest operating system during the restore session. It checks the valid rights assignments required for database restore, gets information about the databases and performs required file operations including database and transaction logs copy.

After the recovery session is ended, the service is stopped and removed from the guest operating system.

All service activities are logged to the `Veeam.SQL.Service_<timestamp>.log` file stored in the `Temp` folder which is located in the system directory.

The *Veeam SQL Restore Service* component requires the *Local System* account.

Inbound/outbound traffic management between Veeam Explorer for Microsoft SQL Server and the *Veeam SQL Restore Service* component is performed via the RPC protocol. For more information, see [Used Ports](#).

---

**NOTE:**

When restoring to the local server instance, *Veeam SQL Restore Service* component is not installed on the SQL server guest operating system.
Viewing Database Information

To get actual information about your databases, select a database in the navigation pane and review database info in the preview pane.
General Application Settings

Continue with this section to learn more about configuring required application settings and components.
Configuring Staging SQL Server

A staging SQL server is required in the following cases:

- When exporting data.
- When using the fine-tune feature.

For more information about requirements for a staging server, see Staging SQL Server Requirements

Consider the following:

- You cannot access a staging server that belongs to an untrusted domain.
- If a staging SQL server belongs to a trusted domain, only the SQL server authentication method is possible.
- If both a staging SQL server and machine hosting Veeam Explorer belong to the same domain, then both Windows and SQL Server authentication methods are possible.

To use Windows authentication, make sure to configure delegation settings as follows:

a) In Active Directory Users and Computers, select a staging SQL Server.

b) Open server’s properties and go to the Delegation tab.

c) Select Trust this computer for delegation to specified services only and Use any authentication protocol options for the cifs service on a computer with Veeam Explorer.

d) Restart the staging SQL server.

e) Select a domain user account you want to use when connecting to the staging SQL server, open its properties, go to the Account tab and make sure the Account is sensitive and cannot be delegated checkbox is not selected.

To configure a staging server, do the following:

1. Go to the main menu and click General Options.
2. Go to the SQL Server Settings tab.
3. Specify a SQL server you want to use as a staging system.
   Click Browse to select a server, as described in Browsing For Servers.
4. Specify the account to access the selected server.
5. Specify the account to access a SQL server instance.
To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server over the network.
Enabling Extended Logging

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the **General Options**.
2. On the **General** tab, select the **Enable Extended logging** checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Standalone Databases Management

Continue with this section to learn more about adding and removing Microsoft SQL databases.
Adding Standalone Databases

NOTE:
The addition of standalone SQL databases requires a staging SQL server to be configured upfront. For more information, see Configuring Staging SQL Server.

To add a standalone Microsoft SQL database manually, do the following:

1. On the Home tab, click Add Database.

2. Specify the location of a primary database file, a secondary database file and associated log files. If necessary, specify the BLOB store location.

Manually added databases will be displayed in the navigation pane under the Other SQL Server Databases node.
**Specify database files location**

**Primary database file:**
- C:\Users\Administrator\Desktop\sql\newBase2.mdf
  - [Browse...]

**Secondary database and log files:**

<table>
<thead>
<tr>
<th>FILE</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:\Users\Administrator\Desktop\sql\new</td>
<td>OK</td>
</tr>
</tbody>
</table>
  - [Browse...]

**BLOB stores:**

<table>
<thead>
<tr>
<th>FOLDER</th>
<th>STATUS</th>
</tr>
</thead>
</table>

[Add...]

[OK]  [Cancel]
Removing Standalone Databases

To remove a database from the application scope, right-click a database in the navigation pane and select Remove database or select a database and on the Home tab, click Remove Database.

NOTE:
You can only remove databases that have been added to the application scope manually.
Data Restore

Continue with this section to learn more about restoring Microsoft SQL databases.
Restoring Single Database

To restore a database, do the following:

1. In the navigation pane, select a database.
2. On the **Database** tab, select **Restore Database** > **Restore to another server** or right-click a database and select **Restore Database** > **Restore to another server**.
3. Proceed to **Specify Restore Point**.

![Database navigation pane](image)

**Step 1. Specify Restore Point**

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.
**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see [Configuring Staging SQL Server](#).

---

**Step 2. Fine-tune Restore Point**

At this step of the wizard, select an operation prior to which you want to recover your database.

**NOTE:**

This step is only available if you have selected the **Perform restore to specific transaction** checkbox at the previous step.

---

**Restore Wizard**

**Specify restore point**

Specify point in time you want to restore the database to:

- [ ] Restore to the point in time of the selected image-level backup
- [ ] Restore to a specific point in time (requires transaction log backups)

![Timeline](#)

Tuesday, December 4, 2018 2:15 AM

- [ ] Perform restore to the specific transaction

Enables you to review major database transactions around the selected time, and restore the database to the moment in time right before the unwanted change.

---

**Fine-tune the restore point**

Select the undesired operation in the list below. The database will be restored to the state prior to transaction involving the selected operation.

<table>
<thead>
<tr>
<th>TIME</th>
<th>OPERATION</th>
<th>OBJECT</th>
<th>TYPE</th>
<th>ACCOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/4/2018 4:28 AM</td>
<td>Column added</td>
<td>PrimaryTable</td>
<td>Table</td>
<td>S-1-5-21-3905</td>
</tr>
<tr>
<td>12/4/2018 4:30 AM</td>
<td>Column added</td>
<td>PrimaryTable</td>
<td>Table</td>
<td>S-1-5-21-3905</td>
</tr>
</tbody>
</table>
TIP:

Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

Step 3. Specify Target SQL Server

At this step of the wizard, specify the following:

- A production SQL server name and/or SQL server instance to which you want to restore your database.
  
  Use the server_name\instance format. You can select a server or instance from the drop-down list or use the Browse button on the left, as described in Browsing for Servers.

- A name for the database that is being restored.

- The user account to connect to the target SQL server.
  
  Select the Use SQL Server authentication checkbox to use SQL authentication. If not selected, Veeam will use Windows authentication.

  Make sure the account you are using has been granted the sysadmin role on a target SQL server.

IMPORTANT!

Ensure that the administrative share (i.e., \myserver\ADMIN$) on a target machine is available. Read and Write are minimum required, Full Control is recommended.

![RESTORE WIZARD](image)

Specify target SQL Server connection parameters

- Server name: ALPHA
- Database name: System Collections, restored
- Specify user account to connect to server:
  - Use current account (EWS\Low\Administrator)
  - Use the following account:
    - User name: sa
    - Password: ************
- Use SQL Server authentication

When selecting the Use SQL Server authentication checkbox and providing your SQL server account, you will be asked to provide a target production server account at the next step, as shown below.
Browsing for Servers

To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server over the network.
Step 4. Specify AlwaysON Restore Options

If the specified target SQL server supports AlwaysOn Availability Groups, you will be offered to specify AlwaysOn restore options.

- To use the AlwaysOn capabilities for databases, select the **Add the database to the following group** checkbox and choose an availability group from the list. Databases will be restored to the primary server and then replicated to secondary nodes.
- If you do not plan to use the AlwaysOn capabilities when restoring databases, clear the **Add the database to the following group** checkbox.

Step 5. Specify Files Location

At this step of the wizard, specify database files location.

Click **Browse** to specify the path for the primary database file, secondary database and log files, as described in **Selecting Files**.

**NOTE:**

Make sure the account you are using has **Read** and **Write** permissions.
Selecting Files

In the Select File dialog, select a database file or folder for the database being restored and click OK.

Step 6. Specify the Recovery State

At this step of the wizard, select recovery state:

- **Default (RECOVERY)**
  Rolls back (undo) any uncommitted changes.

- **NORECOVERY**
  Skips the undo phase so that uncommitted or incomplete transactions are held open.
  This allows further restore stages to carry on from the restore point. When applying this option, the database will be in a *norecovery* state and inaccessible to users.

- **STANDBY**
  The database will be in *standby* state and therefore available for read operations. You can also provide a standby file with uncommitted transactions.

For more information on recovery modes, see this Microsoft article.
NOTE:
This step is unavailable if the **Add the database to the following group** checkbox is selected at the **Specify AlwaysON Restore Options** step.

**Specify recovery state**

- **Default (RECOVERY)**
  Leave the database ready to use by rolling back uncommitted transactions. Additional transaction logs cannot be restored.

- **NORECOVERY**
  Leave the database non-operational and do not roll back uncommitted transactions. Additional transaction logs can be restored.

- **STANDBY**
  Leave the database in read-only mode. Undo uncommitted transactions but save the undo actions in a standby file so that recovery effects can be reversed.

**Standby file**: Choose a file location or browse for the standby file.
Restoring Multiple Databases

To restore multiple databases, do the following:

1. In the navigation pane, select an instance or server.

2. On the Server/Instance tab, select Restore Database > Restore to another server or right-click a database and select Restore Database > Restore to another server.

3. Proceed to Specify Restore Point.

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.

  Use the slider control to choose a point you need.
Step 2. Specify Target SQL Server

At this step of the wizard, specify the following:

- A production SQL server name and/or SQL server instance to which you want to restore your database.
  
  Use the `server_name\instance` format. You can select a server or instance from the drop-down list or use the **Browse** button on the left, as described in Browsing for Servers.

- The user account to connect to the target SQL server.
  
  Select the **Use SQL Server authentication** checkbox to use SQL authentication. If not selected, Veeam will use Windows authentication.

  Make sure the account you are using has been granted the **sysadmin** role on a target SQL server.
IMPORTANT!
Ensure that the administrative share (i.e., `\myserver\C$`) on a target machine is available. **Read** and **Write** are minimum required permissions, **Full Control** is recommended.

When selecting the **Use SQL Server authentication** checkbox and providing your SQL server account, you will be asked to provide a target production server account at the next step, as shown below.
Browsing for Servers

To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server over the network.
Restoring Database Schema and Data

To restore database schema and data, do the following:

1. In the navigation pane, select a database.

2. On the Database tab, select Restore Schema > Restore database schema and data or right-click a database and select Restore schema > Restore database schema and data.

3. Proceed to Specify Restore Point.

**IMPORTANT!**

FILESTREAM must be enabled on a staging SQL server to restore file tables. For more information on enabling FILESTREAM, see this Microsoft article.

![Database Restore Interface](image-url)
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see Configuring Staging SQL Server.

### RESTORE WIZARD

**Specify restore point**

Specify point in time you want to restore the database to:

- **Restore to the point in time of the selected image-level backup**
- **Restore to a specific point in time (requires transaction log backups)**

<table>
<thead>
<tr>
<th>Time</th>
<th>1:19 AM</th>
<th>12/4/2018</th>
<th>3:11 AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:11 AM</td>
<td>12/4/2018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tuesday, December 4, 2018 2:15 AM

- **Perform restore to the specific transaction**
  
  Enables you to review major database transactions around the selected time, and restore the database to the moment in time right before the unwanted change.
Step 2. Fine-Tune Restore Point

At this step of the wizard, select an operation prior to which you want to recover your database.

**NOTE:**

This step is only available if you have selected the Perform restore to specific transaction checkbox at the previous step.

### TIP:

Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

### Step 3. Specify Target SQL Server Settings

At this step of the wizard, specify the following:

- A production SQL server name and/or SQL server instance to which you want to restore your database.
  
  Use the `server_name\instance` format. You can select a server or instance from the drop-down list or use the Browse button on the left, as described in Browsing for Servers.

- The user account to connect to the target SQL server.
  
  Select the Use SQL Server authentication checkbox to use SQL authentication. If not selected, Veeam will use Windows authentication.
  
  Make sure the account you are using has been granted the sysadmin role on a target SQL server.

- Click Browse to select a database to which you want to restore schema.
To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server over the network.
Step 4. Select Database Objects

At this step of the wizard, specify database objects you want to restore.

Use the **Object** and **Data** checkboxes to specify what database objects and data should be restored.

To display only specific objects, click **Filter** and select the object type.

---

**Select database objects**

<table>
<thead>
<tr>
<th>SCHEMA</th>
<th>NEW NAME</th>
<th>TYPE</th>
<th>OBJECT</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>dbo</td>
<td>backup...</td>
<td>Table</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>dbo</td>
<td>backup...</td>
<td>Table</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

---

Step 5. Specify Names for Objects

At this step of the wizard, specify a new name for the object.

To specify a new name, select a database and provide a new name.

To assign a default name to the object that already exists, click **Auto**. In this case, the `_new` suffix will be added.

---

**Specify names for objects**

<table>
<thead>
<tr>
<th>SCHEMA</th>
<th>NEW NAME</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>dbo</td>
<td>Backup Data_new</td>
<td>Table</td>
</tr>
<tr>
<td>dbo</td>
<td>BackupItems_new</td>
<td>Table</td>
</tr>
</tbody>
</table>
Step 6. Specify Directory Names for File Tables

At this step of the wizard, specify directory names for file tables.

The following options are available:

- **Preserve directory names if applicable (use autogenerated otherwise).**
  To use the original names.
  If such names already exist on a target server, Veeam will add _new suffix to each name. For example, <existing_name>_new.

- **Use the following directory names.**
  To provide a different name under the Directory Name column.

### RESTORE WIZARD

Specify directory names for file tables

<table>
<thead>
<tr>
<th>Database directory name</th>
<th>Example</th>
</tr>
</thead>
</table>

- **Preserve directory names if applicable (use autogenerated otherwise)**
- **Use the following directory names:**

<table>
<thead>
<tr>
<th>NAME</th>
<th>SCHEMA</th>
<th>DIRECTORY NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>BackupItems_new</td>
<td>dbo</td>
<td>BackupItems_new</td>
</tr>
</tbody>
</table>

Step 7. Specify Additional Restore Options

At this step of the wizard, specify additional restore options and click Restore.

- Select how the file groups should be restored for selected schema objects:
  - **Preserve filegroup**
    To preserve the file group state.
  - **Use the following filegroup**
    To select a file group on a target SQL server.

- Select how partitioned tables should be restored:
  - **Preserve partition schema**
    To restore tables to the original partition schema.
  - **Use the following partition schema**
    To select a partition schema on a target SQL server.
Use the following filegroup
To select a file group on a target SQL server.

Specify additional restore options

Filegroups:
- Preserve filegroup if applicable (use default otherwise)
- Use the following filegroup: PRIMARY

Partitioned tables:
- Preserve partition schema if applicable (use default otherwise)
- Use the following partition schema:
- Use the following filegroup: PRIMARY
Restoring Latest or Point-in-Time State

This section explains how to select a state as of which you want to restore your databases.

You can select either of the following states:

- *The latest available state*
  To restore your data as of the latest state in your backup file.

- *The point-in-time state*
  To restore your data as of the selected point-in-time state (requires log backup).

The data will be restored in the following manner:

- Database files will be copied to the original location and then mounted to the original SQL server.
- If a database with the same name already exists on a target SQL server, it will be replaced with the database from a backup file.

**Restore Point-in-Time State**

To restore your data as of the particular point-in-time state, do the following:

1. In the navigation pane, select a database, instance or a SQL server.
   You can select the root instance node to restore all the available databases at once.

2. On the Database tab, select *Restore Database > Restore point-in-time state to* `<server_name>|<instance_name>` or right-click a database and select *Restore Database > Restore point-in-time state to* `<server_name>|<instance_name>`.

3. Proceed to *Specify Restore Point*.

When restoring multiple databases, consider that depending on the database recovery model the following cases are possible:

- Some databases might be restored as of the different time interval.
- Some databases cannot be restored if there are no transaction logs available for the specified period.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.
NOTE:
The **Perform restore to the specific transaction** option is unavailable when restoring multiple databases.

**IMPORTANT!**
The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see [Configuring Staging SQL Server](#).

**Step 2. Fine-tune Restore Point**

At this step of the wizard, select an operation prior to which you want to recover your database.
NOTE:

This step is only available if you have selected the *Perform restore to specific transaction* checkbox at the previous step.

**TIP:**

Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

**Restore Latest State**

To restore your data as of the latest available state, do the following:

1. In the navigation pane, select a database, instance or a SQL server.
   
   You can select the root instance node to restore all the available databases at once.

2. On the Database tab, select Restore Database > Restore latest state to `<server_name>`\`<instance_name>` or right-click a database and select Restore Database > Restore latest state to `<server_name>`\`<instance_name>`.
Data Publishing

Publishing databases allows you to temporarily attach large SQL databases to the target Microsoft SQL server without having to actually restore them.

Publishing databases typically occurs faster than using standard restore features and might be convenient in certain cases, for example, when your time to perform disaster-recovery operations is limited.

During publishing, Veeam mounts VMs disks from the backup file to a target machine (under the \C:\VeeamFLR directory), retrieves required database files and attaches associated databases directly to your SQL server so that you can perform required operations using Microsoft SQL tools such as Microsoft SQL Management Studio.

Consider the following:

- Publishing multiple databases at the same time is not supported.
- You can publish the same database more than once.
  
  Mind that when a database that is already published is being republished with the same name, then all the changes that have been made to this database will be lost on a target SQL server, as it will be published anew.
- After you unpublish a database, Veeam Explorer detaches such a database from the target SQL server but the restore point will continue to remain on the target machine for the next 15 minutes.
- If a Veeam Explorer session has been terminated in any way other than by clicking Exit in the main menu (or by clicking the X button in the upper-right corner), then all the published databases will continue to remain attached to the target SQL server having the Recovery pending state.
- If published databases have been manually renamed via SQL tools (for example, in Microsoft SQL Management Studio), then Veeam will not be able to unpublish such databases properly. In this case, all the renamed databases will continue to remain attached to the target SQL server and you will have to remove them manually using the SQL tools.
- Databases cannot be published to a SQL cluster.
- Published databases are ignored during backup.
- Upon closing the Veeam Explorer console, all the published databases will be detached from the target SQL server automatically. The corresponding mount points will also be dismounted from under the C:\VeeamFLR directory.
Publishing to Specified Server

To publish a database to a specified server, do the following:

1. In the navigation pane, select a database.

2. On the Database tab, select Publish database > Publish to or right-click a database and select Publish database > Publish to.

3. Proceed to Specify Restore Point.

Once you complete the wizard steps, Veeam will create a new node, called Published databases, under which you can find all the databases that have been published during the current session of Veeam Explorer.
To work with published databases, open a SQL tool you prefer, for example, Microsoft SQL Management Studio and locate your published databases.

The figure below demonstrates a published database (System_Collection_Published) available in the Object Explorer window of your Microsoft SQL Management Studio console. This database is also being referenced by Veeam Explorer under its Published databases node.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to publish your database:

- Select the Restore to the point in time of the selected image-level backup option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the Restore to a specific point in time option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the Perform restore to specific transaction checkbox to obtain database files exactly as of the moment before undesired transactions.
IMPORTANT!

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see Configuring Staging SQL Server.

---

**Step 2. Fine-tune Restore Point**

At this step of the wizard, select an operation prior to which you want to publish your database.

**NOTE:**

This step is only available if you have selected the **Perform restore to specific transaction** checkbox at the previous step.

---

### Fine-tune the restore point

Select the undesired operation in the list below. The database will be restored to the state prior to transaction involving the selected operation.

<table>
<thead>
<tr>
<th>TIME</th>
<th>OPERATION</th>
<th>OBJECT</th>
<th>TYPE</th>
<th>ACCOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/4/2018 4:28 AM</td>
<td>Column added</td>
<td>PrimaryTable</td>
<td>Table</td>
<td>ALPHA\Admin</td>
</tr>
<tr>
<td>12/4/2018 4:30 AM</td>
<td>Column added</td>
<td>PrimaryTable</td>
<td>Table</td>
<td>ALPHA\Admin</td>
</tr>
</tbody>
</table>
TIP:
Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

Step 3. Specify Target SQL Server

At this step of the wizard, specify the following:

- A target SQL server name and/or SQL server instance to which you want to restore your database.
  
  Use the server_name\instance format. You can select a server or instance from the drop-down list or use the Browse button on the left, as described in Browsing for Servers.

- A new name for the database that is being published.

- The user account to connect to the target SQL server.
  
  Select the Use SQL Server authentication checkbox to use SQL authentication. If not selected, Veeam Explorer will use Windows authentication.
  
  Make sure the account you are using has been granted the sysadmin role on a target server.

IMPORTANT!

Ensure that the administrative share (i.e., \myserver\ADMIN$) on a target machine is available. Read and Write are minimum required, Full Control is recommended.

When selecting the Use SQL Server authentication checkbox and providing your SQL server account, you will be asked to provide a target server account at the next step, as shown below.
Browsing for Servers

To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server/instance that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server/instance over the network.
Publishing Latest or Point-in-Time State

This section explains how to select a state as of which you want to publish your databases.

You can select either of the following states:

- **The latest available state**
  To publish your data as of the latest state that is available in your backup file.

- **The point-in-time state**
  To publish your data as of particular point-in-time state that will allow you to revert the database to a state before an undesired transaction or before any point of failure. This feature requires a log backup.

Publishing Point-in-Time State

Publishing a point-in-time state allows you to obtain required database state and unroll specified transactions if needed.

To publish a database as of the point-in-time state, do the following:

1. In the navigation pane, right-click a database.
2. On the **Database** tab, select **Publish database > Publish point-in-time state to** `<server_name><instance_name>` or right-click a database and select **Publish database > Publish point-in-time state to** `<server_name><instance_name>`.
3. Proceed to **Specify Restore Point**.

Once completed, the database will be published with the same name as it was during the initial publishing session.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to publish your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.
IMPORTANT!

The Perform restore to specific transaction option requires a staging SQL server. For more information, see Configuring Staging SQL Server.

Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to publish your database.

NOTE:

This step is only available if you have selected the Perform restore to specific transaction checkbox at the previous step.
TIP:
Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database
Operation Selection section.

Publishing Latest State
During the current session of Veeam Explorer, you can republish the same database more than once. The
database will be published as of the latest available state in a backup file.
To publish a database as of the latest available state, do the following:
1.

In the navigation pane, right-click a database.

2. On the Database tab, select Publish database > Publish latest state to <server_name>\<instance_name>
or right-click a database and select Publish database > Publish latest state to
<server_name>\<instance_name>.
Once completed, the database will be published with the same name, as it was during the initial publishing
session.

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116 | Veeam Explorers Suite | User Guide | REV 3


Unpublishing Databases

Once you have done working with published SQL databases, you may want to unpublish (detach) these databases from the target SQL server.

Detachment occurs in the following manner:

- Upon closing the Veeam Explorer console, all the published databases will be detached from the target SQL server automatically. The corresponding mount points will also be dismounted from under the C:\VeeamFLR directory.
- On manual unpublishing, databases will be detached at once but the restore point will remain mounted on a target machine for the next 15 minutes.

To unpublish databases manually, do the following:

1. In the navigation pane, under the Published databases node, select a published database.
2. On the Publish tab, select Unpublish Database or right-click a database and select Unpublish database.

You can detach a single published database or all databases altogether by right-clicking the root Published databases node and selecting Unpublish databases or by using the Unpublish Databases command on the Publish tab.
Exporting as BAK

To save changes that have been made while working with your published database to a local computer, you can use the export feature. This feature will export modified databases as BAK, preserving all the changes that have been done during the publishing session.

To export a published database, do the following:

1. In the navigation pane, under the **Published databases** node, select a published database.

2. On the **Publish** tab, select **Export backup** or right-click a database and select **Export backup**.

2. Click **Browse** to specify the location to export your data.

   To compress data, select the **Enable compression** checkbox. Compression will be applied according to your SQL server configuration.
NOTE:
Compression is unavailable for Microsoft SQL Server 2005 and all Express Editions of Microsoft SQL Server.

Specify database export location

Specify export path:
C:\Users\Administrator\Desktop\System\Collections_Published.bak

Specify whether to perform compression, overriding the server-level default:
☑️ Enable compression

Compression significantly reduces the output file size, but prevents its import into SQL Server Express server due to the edition limitations.
Refreshing Database Status

While your databases are attached to a SQL server, Veeam Explorer synchronizes each published database state to verify databases availability. By default, synchronization occurs every five seconds.

If something went wrong with published databases, the question mark will appear next to each of such databases, indicating the database unavailability or incorrect state. In the Database Info section, you will also see a notification message describing the problem.

To refresh a published database state manually, in the navigation pane, under the Published databases node, right-click a published database and select Refresh.
Data Export

Continue with this section to learn more about exporting Microsoft SQL databases.
Export as MDF

Continue with this section to learn more about exporting databases files as MDF.

Exporting Single Database

To export a single database to a custom location, do the following:

1. In the navigation pane, select a database.
2. On the Database (or Server/Instance) tab, select Export Database Files > Export to another folder or right-click a database and select Export Database Files > Export to another folder.
3. Proceed to Specify Restore Point.

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.
- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**
The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see [Configuring Staging SQL Server](#).

### Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to export your database.
NOTE:
This step is only available if you have selected the Perform restore to specific transaction checkbox at the previous step.

TIP:
Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

Step 3. Specify Files Location

At this step of the wizard, specify the destination directory paths for files being restored.
Click Browse to specify the path manually.
NOTE:
The account you are using must have sufficient permission level to access the selected directory (Read and Write as minimum recommended).

Exporting Multiple Databases

To export all the databases to a custom location, do the following:

1. In the navigation pane, select a server or instance.
2. On the Server/Instance tab, select Export Files > Export to another folder or right-click a database and select Export Files > Export to another folder.
3. Proceed to Specify Restore Point.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.

  Use the slider control to choose a point you need.
NOTE:
The Perform restore to the specific transaction option is unavailable when exporting multiple databases.

Step 2. Specify Database Files Location

At this step of the wizard, specify the path to the destination directory to which you want your files to be exported.
Exporting Latest or Point-in-Time State

Continue with this section to learn more about exporting your data as of a latest or point-in-time state.

Export Point-in-time State

To export the data as of a point-in-time state, do the following:

1. In the navigation pane, select a database, server or instance.
   You can select the root instance node to export all the available databases at once.

2. On the Database (or Server/Instance) tab, select Export Files > Export point-in-time state to Desktop<db_name> or right-click a database and select Export Files > Export point-in-time state to Desktop<db_name>.

3. Proceed to Specify Restore Point.

---

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the Restore to the point in time of the selected image-level backup option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the Restore to a specific point in time option to obtain database files as per specified point in
time.

Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see **Configuring Staging SQL Server**.

---

**Step 2. Fine-tune Restore Point**

At this step of the wizard, select an operation prior to which you want to export your database.
NOTE:
This step is only available if you have selected the **Perform restore to specific transaction** checkbox at the previous step.

---

TIP:
Veeam Explorer for Microsoft SQL Server database operations are listed in the **SQL Server Database Operation Selection** section.

---

**Export Latest State**

To export the data as of the latest available state, do the following:

1. In the navigation pane, select a database or instance.
   
   You can select the root instance node to export all the available databases at once.

2. On the **Database** (or **Server/Instance**) tab, select **Export Files > Export latest state to Desktop\<db_name>** or right-click a database and select **Export Files > Export latest state to Desktop\<db_name>**.
Database Info

Name: System Collections
Backup created: 12/4/2018 4:32 AM
Recovery model: Full
Read-only: No
Available Restore Period

Database Files
Primary database file
C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\DATA\Database_3.mdf
Secondary database and log files
MSSQL\DATA\Database_3_log.1df

Export latest state to Desktop\System Collections
Export point-in-time state to Desktop\System Collections...
Export to another folder...
Export as BAK

Continue with this section to learn more about exporting databases files as BAK.

IMPORTANT!
To export database files as BAK, make sure to configure a staging SQL server, as described in Configuring Staging SQL Server.

Exporting Single Database

To export a single database, do the following:

1. In the navigation pane, select a database.
2. On the Database (or Server/Instance) tab, select Export Backup > Export to another folder or right-click a database and select Export Backup > Export to another folder.
3. Proceed to Specify Restore Point.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.

  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see Configuring Staging SQL Server.

---

Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to export your database.
NOTE:
This step is only available if you have selected the **Perform restore to specific transaction** checkbox at the previous step.

### TIP:
Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

### Step 3. Specify Database Export Location

At this step of the wizard, specify the path to the destination directory.

You can select **Enable Compression** checkbox to reduce the output file size.
NOTE:
Compression is unavailable for Microsoft SQL Server 2005 and all Express Editions of Microsoft SQL Server.

Exporting Multiple Databases

To export all the databases, do the following:

1. In the navigation pane, select a server or instance.
2. On the Server/Instance tab, select Export Backup > Export to another folder or right-click a database and select Export Backup > Export to another folder.
3. Proceed to Specify Restore Point.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.

  Use the slider control to choose a point you need.
NOTE:
The Perform restore to the specific transaction option is unavailable when exporting multiple databases.

Step 2. Specify Database Export Location

At this step of the wizard, specify the path to the destination directory.

You can select Enable Compression checkbox to reduce the file size.

NOTE:
Compression is unavailable for Microsoft SQL Server 2005 and all Express Editions of Microsoft SQL Server.
Exporting Latest or Point-in-Time

Continue with this section to learn more about exporting your data as of a latest or point-in-time state.

Exporting Point-in-time State

To export the data as of a point-in-time state, do the following:

1. In the navigation pane, select a database, server or instance.
   You can select the root instance node to export all the available databases at once.

2. On the Database (or Server/Instance) tab, select Export Backup > Export point-in-time state to Desktop\<db_name> or right-click a database and select Export Backup > Export point-in-time state to Desktop\<db_name>.

3. Proceed to Specify Restore Point.

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the Restore to the point in time of the selected image-level backup option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.
- Select the Restore to a specific point in time option to obtain database files as per specified point in
time.

Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see **Configuring Staging SQL Server**.

**Specify restore point**

Specify point in time you want to restore the database to:

- [ ] Restore to the point in time of the selected image-level backup
- [x] Restore to a specific point in time (requires transaction log backups)

![Slider control for selecting restore point]

**Tuesday, December 4, 2018 4:20 AM**

- [ ] **Perform restore to the specific transaction**

  Enables you to review major database transactions around the selected time, and restore the database to the moment in time right before the unwanted change.
Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to export your database.

**NOTE:**

This step is only available if you have selected the *Perform restore to specific transaction* checkbox at the previous step.

**Export Latest State**

To export the data as of the latest available state, do the following:

1. In the navigation pane, select a database or instance.
   
   You can select the root instance node to export all the available databases at once.

2. On the **Database** (or **Server/Instance**) tab, select *Export Backup > Export latest state to Desktop\<db_name>* or right-click a database and select *Export Backup > Export latest state to Desktop\<db_name>*.
Database Schema and Data Export

Topics in this section provide information on how to export your database schema and data using the Veeam Explorer for Microsoft SQL Server abilities.

**NOTE:**
Exporting multiple databases schema and data is not supported.

**Exporting to Custom Location**

To export database schema and data, do the following:

1. In the navigation pane, select a database.
2. On the Database (or Server/Instance) tab, select Export Schema > Export database schema and data or right-click a database and select Export Schema > Export database schema and data.
3. Proceed to Specify Restore Point.
TIP:
To import data tables, use the standard SQL server `bcp.exe` utility. For more information, see this Microsoft article.

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

The **Perform restore to specific transaction** option requires a staging SQL server. For more information, see Configuring Staging SQL Server.

---

**EXPORT WIZARD**

Specify restore point

Specify point in time you want to restore the database to:

- Restore to the point in time of the selected image-level backup
- Restore to a specific point in time (requires transaction log backups)

4:26 AM 12/4/2018

4:32 AM 12/4/2018

**Perform restore to the specific transaction**

Enables you to review major database transactions around the selected time, and restore the database to the moment in time right before the unwanted change.

---

Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to export your database.
NOTE:
This step is only available if you have selected the **Perform restore to specific transaction** checkbox at the previous step.

**TIP:**
Veeam Explorer for Microsoft SQL Server database operations are listed in the SQL Server Database Operation Selection section.

**Step 3. Select Database Objects**

At this step of the wizard, select database objects to restore.

To display only specific objects, click **Filter** and select an object type you want to be shown in the list.
Step 4. Specify Names for Objects

At this step of the wizard, specify the name to be assigned to the object.
To specify a new name, select a database and provide a new name.
To assign a default name with the _new suffix, click Auto.

Step 5. Specify Destination Folder

Specify the destination folder to which you want to export selected database schema objects.
Using 1-Click Export

Veeam Explorer for Microsoft SQL Server allows you to quickly export database schema state as of the current restore point.

To export database schema to the default location, do the following:

1. In the navigation pane, select a database.

2. On the Database tab, select Export Schema > Export database schema state of <date_time> to Desktop\<db_name> or right-click a database and select Export Schema > Export database schema state of <date_time> to Desktop\<db_name>.
## SQL Database Operations

The following table lists SQL server database operations and their corresponding display names that appear in the fine-tune dialog.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Operation</th>
<th>Display Format</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created[/Modified] &lt;table_name&gt; Table &lt;table ID&gt; &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;table_name&gt; Table &lt;table ID&gt; &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Column added &lt;table_name&gt; Table &lt;table ID&gt; &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>INSERT INTO</td>
<td>&lt;date_time&gt; Inserted row &lt;table_name&gt;[/table_ID] Table &lt;initiator&gt;</td>
<td>Table name will not be displayed for deleted table, only table ID will be shown.</td>
</tr>
<tr>
<td></td>
<td>DELETE FROM</td>
<td>&lt;date_time&gt; Deleted row &lt;table_name&gt;[/table_ID] Table &lt;initiator&gt;</td>
<td>Table name will not be displayed for deleted table, only table ID will be shown.</td>
</tr>
<tr>
<td></td>
<td>UPDATE</td>
<td>&lt;date_time&gt; Modified &lt;table_name&gt;[/table_ID] Table &lt;initiator&gt;</td>
<td>Table name will not be displayed for deleted table, only table ID will be shown.</td>
</tr>
<tr>
<td></td>
<td>TRUNCATE</td>
<td>&lt;date_time&gt; Truncated Table &lt;initiator&gt;</td>
<td>Table name and ID will not be displayed for deleted table.</td>
</tr>
<tr>
<td></td>
<td>BULK INSERT</td>
<td>&lt;date_time&gt; Inserted row &lt;table_name&gt;[/table_ID] Table &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>View</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;view_name&gt; View &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;view_name&gt; Table &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;view_name&gt; View &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;index_name&gt; Index &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;index_name&gt; Index &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>Action</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ALTER</td>
<td>&lt;date_time&gt;</td>
<td>Modified &lt;index_name&gt; Index &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;procedure_name&gt; Procedure &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;procedure_name&gt; Table &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;procedure_name&gt; Procedure &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;function_name&gt; Function &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;function_name&gt; Table &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;function_name&gt; Function &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Schema</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;schema_name&gt; Schema &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;schema_name&gt; Schema &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;schema_name&gt; Schema &lt;initiator&gt;</td>
<td>Schema cannot be detected.</td>
</tr>
<tr>
<td>User</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;user_name&gt; User &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;user_name&gt; User &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;user_name&gt; User &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td>Trigger</td>
<td>CREATE</td>
<td>&lt;date_time&gt; Created &lt;trigger_name&gt; Trigger &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DROP</td>
<td>&lt;date_time&gt; Deleted &lt;trigger_name&gt; Trigger &lt;initiator&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTER</td>
<td>&lt;date_time&gt; Modified &lt;trigger_name&gt; Trigger &lt;initiator&gt;</td>
<td></td>
</tr>
</tbody>
</table>
Veeam Explorer for Oracle

Veeam Explorer for Oracle allows you to restore Oracle databases and Data Guard from backups created by Veeam Backup & Replication.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Oracle that comes as part of Veeam Backup & Replication 9.5 Update 4:

- Support for Oracle Data Guard restore.
- Support for restore of backups created with the RMAN plug-in.
- Support for restore of backups created with the RMAN plug-in directly to RAC.
- Support for non-application enabled backups restore as of specified point in time.
- Performance and stability Improvements.
Planning and Preparation

Continue with this section to learn how to configure your environment before start using Veeam Explorer for Oracle.
System Requirements

This section lists system requirements for Veeam Explorer for Oracle.

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle on Windows OS / Oracle on Linux OS</td>
<td>For more information on supported operating systems, see the VSS-Aware Applications subsection of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
</tbody>
</table>
# Used Ports

The following table lists network ports that must be opened to manage inbound/outbound traffic.

## Backup

### Oracle on Windows

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Veeam Backup Server</strong></td>
<td><strong>Oracle Server Guest OS</strong></td>
<td>TCP, UDP</td>
<td>135, 137-139, 445</td>
<td>To deploy the runtime coordination process on a VM guest OS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>49152 to 65535 (for Microsoft Windows 2008 and higher)</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware processing. For more information, see this Microsoft article.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>6167</td>
<td>[For archived logs shipping.] Used by the runtime coordination process on a VM guest OS from which archived logs are collected.</td>
</tr>
<tr>
<td><strong>Oracle Server VM Guest OS</strong></td>
<td><strong>Veeam Backup Server</strong></td>
<td>TCP</td>
<td>49152 to 65535 (for Microsoft Windows 2008 and higher)</td>
<td>Dynamic RPC port range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware processing.</td>
</tr>
<tr>
<td><strong>Log Shipping Server</strong></td>
<td>TCP</td>
<td>2500 to 5000</td>
<td>[For archived logs shipping.] Utilized for data transfer over the network.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
Configuring dynamic RPC range is not required when using default Microsoft Windows firewall settings. When using custom firewall settings or if application-aware processing fails with the *RPC function call failed* error, make sure to configuring dynamic RPC ports manually. For more information, see this Microsoft article.
## Oracle on Linux

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server</td>
<td>Oracle on Linux Server Guest OS</td>
<td>TCP</td>
<td>22</td>
<td>The default SSH port that is used as a control channel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>2500 - 5000</td>
<td>The default port range for managing data transmission.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>6167</td>
<td>[For archived logs shipping.] Used by the runtime process on the VM guest OS from which archived logs are collected.</td>
</tr>
<tr>
<td>Oracle Server VM Guest OS</td>
<td>Log Shipping Server</td>
<td>TCP</td>
<td>2500 - 5000</td>
<td>[For archived logs shipping.] The default range of ports used for managing data transfer over the network.</td>
</tr>
</tbody>
</table>

## Restore

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Standalone Console</td>
<td>Oracle on Windows Server</td>
<td>TCP</td>
<td>49152-65535</td>
<td>Recommended dynamic RPC port range for Microsoft Windows 2008 and higher. For more information, see this Microsoft article.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>1025 - 1034</td>
<td>The default port range for the runtime component installed on VM guest to support restore operations. Port is opened only during application item restore.</td>
</tr>
<tr>
<td></td>
<td>Oracle on Linux Server</td>
<td>TCP</td>
<td>22</td>
<td>The default SSH port used as a control channel.</td>
</tr>
<tr>
<td>Backup Repository Server</td>
<td>Oracle on Linux Server</td>
<td>TCP</td>
<td>2500 - 5000</td>
<td>The default port range for managing data transfer during restore to the original (remote) VM on the target Oracle on Linux server.</td>
</tr>
</tbody>
</table>

Make sure to open the following ports when using a staging Oracle server.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Target VM or Staging Oracle Server</td>
<td>Veeam Explorer for Oracle</td>
<td>TCP</td>
<td>3260 - 3270</td>
<td>The port range that is opened by Veeam Backup &amp; Replication to manage the iSCSI traffic during restore to the target VM. Such a port range is only opened while application item restore is being performed.</td>
</tr>
</tbody>
</table>
## Required Permissions

The following table lists required permissions for user accounts to back up and restore Oracle data.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Required Roles and Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Backup</strong></td>
<td>For more information, see the <a href="#">Required Permissions section of the Veeam Backup &amp; Replication User Guide</a>.</td>
</tr>
<tr>
<td><strong>Restore / Accessing Staging Server</strong></td>
<td>To restore data, make sure to configure user accounts as follows:</td>
</tr>
<tr>
<td></td>
<td>- When restoring to a Windows-based VM, the account must be a member of the <em>Local Administrator</em> group. In addition, if <em>ASM</em> is used, then such an account must be a member of the <em>ORA_ASMADMIN</em> group (for Oracle 12 and higher).</td>
</tr>
<tr>
<td></td>
<td>- When restoring to a Linux-based VM, the account must be a Linux user and have membership in the following groups: <em>OSASM</em> [if <em>ASM</em> is used] (typically <em>asmadmin</em>), <em>OSDBA</em> (typically <em>dba</em>), <em>Oracle Inventory group</em> (typically <em>oinstall</em>).</td>
</tr>
</tbody>
</table>
Required Backup Job Settings

When you create a backup job, make sure to enable the application-aware image processing option, as described in the Specify Guest Processing Settings section of the Veeam Backup & Replication user guide.

If your backups were created without application-aware image processing, you can explore them, as described in Exploring non-Application Enabled Backups.

The application-specific information is retrieved according to the following:

- If the application-aware image processing option is enabled, Veeam Explorer obtains application-specific Oracle database information from the Oracle VM backup metadata located in the Veeam backup server configuration database.
- If the application-aware image processing option is disabled, Veeam Explorer requires a staging Oracle server to mount a selected image-level Oracle VM backup (with databases and redo logs) and collect required information using the guest scan and Oracle infrastructure analysis.

IMPORTANT!
Make sure to have your database in the OPEN state during backup. Otherwise, the following warning message will appear in the backup job session: "Oracle database instance state is not valid for property collection".
Considerations and Limitations

This section covers considerations and known limitations of Veeam Explorer for Oracle.

General

- 32-bit Oracle running on 64-bit operating systems is not supported.
- Oracle XE on Linux is not supported.
- Oracle Real Application Clusters (RAC) is only supported for backups created with the RMAN plug-in.
- Veeam Explorer for Oracle operation in the standalone mode is not supported: it can be installed and launched only with Veeam backup server or with Veeam backup standalone console.

Backup

- When backing up Oracle on Linux server, application-aware processing operations may appear with Success status in the job session data, though the process of detecting Oracle on Linux system had failed (for example, due to the failure of connection to server via SSH).

Mount

- If planning to restore Oracle on Linux, consider that mount using fuse is not supported on kernel versions 4.0.0 - 4.1.33 due to its known issue. To work around this limitation, upgrade the kernel to version 4.1.37 or higher.
- If a Windows 2003 server is used for mount operations (for example, as a staging system), it requires Microsoft iSCSI Initiator service to be installed; if this service is not found, an error message like the following will be displayed:
  
  "ExplorerManagementService: Failed to wait for OIB mounted. MountID <ID>, Timeout <timeout> (sessionID <ID>). Microsoft sSCSI Initiator service is not installed."

Restore

- Veeam Explorer for Oracle does not support restore via PSDirect, VIX or Sphere API.
- 1-Click restore to the original Oracle server from the storage snapshots is not supported, as the original server may not be detected properly in that case. So, the corresponding menu command will be unavailable for such database backup. As a work-around, you can use the Restore to another server command to start the Restore Wizard and specify the necessary target directly at its step 3.
- Restore to selected point in time and to selected transaction is not supported for replicas and backups stored to DR site by backup copy job, as well as for backups stored to cloud repository, as such repositories cannot be used as a destination for archived logs backup in current version of Veeam Backup & Replication.
- Database restore to current restore point is supported for restore points created by Veeam backup job, replication job, for VeeamZIP, as well as for imported backup and storage snapshot.
- If OS authentication on Oracle server is disabled on target, then databases with enabled ASM cannot be restored.
- If OS authentication on Oracle server is disabled on staging system, user will be unable to view the list of transaction and perform restore to selected transaction in case of database with enabled ASM.
- Database restore may fail if backed up Oracle server version and target server version have different patch levels.
Launching Application and Exploring Backups

For more information on how to launch Veeam Explorer for Oracle, see Exploring Oracle Backups section.

**NOTE:**
Consider that Veeam Explorer for Oracle does not support the standalone mode and cannot be launched from the **Start** menu.
Understanding User Interface

Veeam Explorer for Oracle provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options.
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows information about the product.
- **Exit.** Closes the program.
Main Application Window

The main application window can be divided into three categories:

- The ribbon menu, which contains general program commands organized into logical groups.
- The navigation pane, which allows you to browse through the hierarchy of your backup files.
- The preview pane, which shows you the details about objects you have selected in the navigation area.
Understanding Mounting

When restoring your data, Veeam Explorer requires an additional mount point to be created to display the list of available transactions.

Mounting is performed by the Veeam Mount Service component which is deployed on a backup repository machine or any other machine you define in the backup job configuration settings. For more information on configuring mount server settings, see the Mount Server Settings section of the Veeam Backup & Replication user guide.

During mounting, Veeam Mount Service retrieves a VM file system from the backup file, attaches it to the hard drive of a target machine and creates a mount point.

Mounting is done as follows:

- To mount a VM file system on machines with the Microsoft Windows operating system, Veeam uses the iSCSI protocol.
  The original virtual machine or the staging server acts as an iSCSI initiator and the mount server that is associated with the backup repository acts as an iSCSI target. The iSCSI mount point is non-persistent and only exists during the recovery process.
- To mount a VM file system on machines with Linux, Veeam uses fuse.

NOTE:
When using fine-tune restore, Veeam always uses a staging Oracle server to mount the VM file system.
Understanding Veeam Oracle Restore Service

The *Veeam Oracle Restore Service* runtime component is used to support restore activities on a VM guest operating system during the restore session. It checks the valid rights assignments required for database restore, gets information about the databases and performs required file operations including database and transaction logs copy.

After the recovery session is ended, the service is stopped and removed from the guest operating system.

All service activities are logged to the `Veeam.Oracle.Service_<timestamp>.log` file stored in the `Temp` folder, which is located in the system directory. If you have enabled extended logging mode, as described in [this knowledge base article](#), the log data will be stored in the Veeam Oracle Explorer log.

The *Veeam Oracle Restore Service* component requires the **Local System** account.

Inbound/outbound traffic management between Veeam Explorer for Oracle and the *Veeam Oracle Restore Service* component is performed via the RPC protocol.
Viewing Database Information

To view Oracle database information, select a database or Data Guard in the navigation pane and review its properties in the preview pane.

Viewing Oracle Database Information

The following figure demonstrates the standalone database information view.

If the current restore point was created with Oracle Automatic Storage Management (ASM), file paths will be displayed with the ‘+’ prefix.
Viewing Oracle Data Guard Information

The following figure demonstrates the Data Guard information view.

**NOTE:**

Both standalone Oracle databases and Oracle Data Guard might have different available restore periods or do not have them at all.
General Application Settings

Continue with this section to learn more about configuring required application settings and components.
Configuring Staging Oracle Server

This section explains how to configure a staging Oracle server which is required if you want to use a point-in-time restore to revert the database to a state before an undesired transaction or before a point of failure.

A staging server is also required when exploring backups created without application-aware image processing. For more information, see Exploring Oracle Backups.

Consider the following:

- A staging server must have the same Oracle version as both the source and target Oracle servers.
- If you plan to restore databases with Automatic Storage Management enabled, both staging and target servers must have ASM enabled.
- Oracle Database Express Edition cannot be used as a staging system.

For Windows-based VM

To configure a staging server for Windows-based machines, do the following:

1. Go to the main menu and click **General Options**.
2. Go to the **Oracle** tab and specify the server name to which you want to connect.
3. Specify a user account to connect to the Oracle server that you want to use as a staging system.
4. Specify the path to the **Oracle Home** folder.
   - Click **Browse** to find the associated folder automatically.
For Linux-based VM

To configure a staging server for Linux-based machines, do the following:

1. Go to the main menu and click **General Options**.
2. Go to the **Oracle** tab and specify the server name and SSH port.
3. Specify a user account to connect to the Oracle server that you want to use as a staging system. The account must be a member of the **dba** group.
   
   To use a private key, select the **Private key is required for this connection** checkbox and click **Browse** to specify the key.

4. Specify the path to the **Oracle Home** folder.

To elevate your account to **root** and to add it to **sudoers**, click **Advanced** and select the option you need; if necessary, enter the root password and click **OK**.
Enabling Extended Logging

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the General Options.
2. On the General tab, select the Enable Extended logging checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Exploring Oracle Backups

Continue with the section to learn more about:

- Exploring Application-Enabled Backups
- Exploring non-Application Enabled Backups
- Exploring RMAN Backups
Exploring Application-Enabled Backups

For more information about exploring backups created with application-aware image processing, see the Restoring Application Items section of the Veeam Backup & Replication user guide.
Exploring non-Application Enabled Backups

If a backup file you are exploring was created without application-aware image processing, the heuristic analysis must be performed to mount required restore points and find existing Oracle databases in these points.

IMPORTANT!

The heuristic analysis requires a staging Oracle server to be configured up front. For more information, see Configuring Staging Oracle Server.

To explore backups created without application-aware image processing, do the following:

1. Open the Veeam Backup & Replication console, go to the Home tab, select Application Item > Oracle (or Windows) and go through the Restore wizard steps.
2. Select a restore point to explore and finalize subsequent steps of the wizard.
3. Proceed to Specify Target Server.

Step 1. Specify Target Server

At this step of the wizard, specify valid user credentials to access the target Oracle server.

Windows-Based Oracle Server

For a Windows-based Oracle server, specify the following:
- The production Oracle server name.
- A user account under which you want to connect to your production Oracle server.

The user account must be a member of the local Administrator group and have sysdba rights. Make sure this account is granted appropriate permissions to access Oracle databases. Read and Write are minimum required, Full Control is recommended.

### Linux-Based Oracle Server

- The production Oracle server name and the port number.
- A user account under which you want to connect to your production Oracle server.

The user account must be a member of the dba group.

To use a private key, select the Private key is required for this connection checkbox and click Browse to specify the key.
You can use the native Veeam Explorer abilities to elevate your account to root and add it to the sudoers file. To do this, click Advanced and select corresponding checkboxes.

**Step 2. Specify Heuristic Settings**

At this step of the wizard, specify the following:

- **Oracle Home.** To attach a database, apply log files (if required) and make a consistency check of the database.

- **Heuristic analysis settings:**
  - **Current restore point analysis.** To search for available Oracle databases within the selected restore point only.
  - **Extended analysis.** To search for available Oracle databases within multiple restore points. Typically, Veeam scans three restore points; the current restore point, which you select when opening Veeam Explorer, and two other restore points that come before and after the current restore point.

Once analysis is complete, Veeam will load available Oracle databases to the program scope automatically.
Exploring RMAN Backups

For more information about exploring backups created with Veeam Plug-in for Oracle RMAN, see the Restore with Veeam Backup & Replication Console section of the Veeam Plug-ins for Enterprise Applications user guide.
Data Restore

Continue with this section to learn more about restoring Oracle databases and Data Guard.

**IMPORTANT!**

To restore Oracle databases, ensure you have a bash shell installed on a target Oracle server.
Restoring Database and Data Guard

This section explains how to restore Oracle databases and Oracle Data Guard back to the production environment.

IMPORTANT!

When restoring Data Guard to another server using the feature described in this section, the database from Data Guard will be recovered as a standalone Oracle database preserving no Data Guard infrastructure. To restore Data Guard infrastructure as a whole, use either a latest state restore, or point-in-time restore. For more information, see Restoring Latest State and Restoring Point-in-Time State respectively.

To restore your data, do the following:

1. In the navigation tree, select a database or Data Guard.
2. On the Home tab, select Restore Database > Restore to another server or right-click a database or Data Guard and select Restore to another server.
3. Proceed to Specify Restore Point.
Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.

- Select the **Restore to a specific point in time** option to obtain database files as per specified point in time.
  Use the slider control to choose a point you need.

- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

**IMPORTANT!**

- The **Restore to a specific point in time** option is only available if archived log backups exist. For more information, see *Required Backup Job Settings*.

- The **Perform restore to the specific transaction** option requires a staging Oracle server. For more information, see *Configuring Staging Oracle Server*.

---

**RESTORE WIZARD**

Specify restore point

Specify point in time you want to restore the database to:

- Restore to the point in time of the selected image-level backup
- Restore to a specific point in time (requires redo log backups)

9:56 AM 12/4/2018
12:31 AM 12/5/2018

Tuesday, December 4, 2018 5:02 PM

- Perform restore to the specific transaction
  Enables you to review major database transactions around the selected time, and restore the database to the moment in time right before the unwanted change.
Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to recover your database.

<table>
<thead>
<tr>
<th>Time</th>
<th>Operation</th>
<th>Object</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/4/2018 11:02 AM</td>
<td>Truncate</td>
<td>SYSORA_TEMP_1_DS_420067</td>
<td>Table</td>
</tr>
<tr>
<td>12/4/2018 11:02 AM</td>
<td>Drop</td>
<td>SYSORA_TEMP_1_DS_420067</td>
<td>Table</td>
</tr>
<tr>
<td>12/4/2018 1:01 PM</td>
<td>Create</td>
<td>FROM</td>
<td>Unknown</td>
</tr>
<tr>
<td>12/4/2018 1:01 PM</td>
<td>Alter</td>
<td>BEGIN</td>
<td>Database</td>
</tr>
<tr>
<td>12/4/2018 1:01 PM</td>
<td>Alter</td>
<td>END</td>
<td>Database</td>
</tr>
<tr>
<td>12/4/2018 5:02 PM</td>
<td>Create</td>
<td>FROM</td>
<td>Unknown</td>
</tr>
<tr>
<td>12/4/2018 5:02 PM</td>
<td>Alter</td>
<td>BEGIN</td>
<td>Database</td>
</tr>
<tr>
<td>12/4/2018 5:02 PM</td>
<td>Alter</td>
<td>END</td>
<td>Database</td>
</tr>
</tbody>
</table>

Step 3. Specify Target Server

At this step of the wizard, specify valid user credentials to access the target Oracle server.

**Windows-Based Oracle Server**

For a Windows-based Oracle server, specify the following:

- The production Oracle server name.
- A user account under which you want to connect to the target Oracle server.

The user account must be a member of the local Administrator group and have sysdba privileges.

Make sure this account is granted appropriate permissions to access Oracle databases; Read and Write are minimum required, Full Control is recommended.
NOTE:
To be able to copy archived logs to the target server, the account should be granted sufficient permissions to access the administrative share.

**Linux-Based Oracle Server**

For a Linux-based Oracle server, specify the following:

- The production Oracle server name and the port number.
- A user account under which you want to connect to your production Oracle server.
  
  The user account must be a member of the **dba** group.
  
  To use a private key, select the **Private key is required for this connection** checkbox and click **Browse** to specify the key.
You can use the native Veeam Explorer abilities to elevate your account to root and add it to the sudoers file. To do this, click Advanced and select corresponding checkboxes.

### Advanced Settings

<table>
<thead>
<tr>
<th>Non-root account handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ Elevate specified account to root</td>
</tr>
<tr>
<td>☑ Add account to the sudoers file automatically</td>
</tr>
<tr>
<td>☑ Use su if sudo is unavailable</td>
</tr>
<tr>
<td>Root password: 1234567890</td>
</tr>
</tbody>
</table>

You can use the native Veeam Explorer abilities to elevate your account to root and add it to the sudoers file. To do this, click Advanced and select corresponding checkboxes.

### Step 4. Specify Oracle Settings

At this step of the wizard, choose the location to restore your database:

- **Restore to the original location.** To restore a database back to the original location.
- **Restore to alternative location.** To restore a database to a custom location

Specify **Oracle Home**, **Global Database Name** and **Oracle SID**. To locate Oracle Home folder, click Browse and select a folder you want to use.

**NOTE:**

You will be asked to provide a password to access target Oracle Home folder if required. Applicable to Oracle 12c and higher.
Step 5. Specify Database Files Location

At this step of the wizard, specify database file location.

To edit the path, click the path row and provide the location you want to use.
Restoring Latest or Point-in-Time State

This section explains how to select a state which is going to be applied when restoring Oracle databases or Data Guard, including a point-in-time restore to revert the database to a state before an undesired transaction or before a point of failure.

The behavior in case of a latest or point-in-time state restore is as follows:

- Data Guard will be restored starting from a primary node. Once a primary node is restored, Veeam will use it to restore all the standby nodes from Data Guard.
- Database files will be copied to the original location and then mounted to the original Oracle Home.
- Databases from the backed up ASM group will be restored back to the original ASM group.
- All the existing databases on a target server will be replaced with that of the backup file.

**IMPORTANT!**

Restoring a latest or point-in-time state to the original Oracle server from storage snapshots is not supported. Use the **Restore to another server** command to start the restore wizard and specify the target server explicitly.

Restoring Point-in-Time State

To restore your Oracle databases or Data Guard as of the point-in-time state, do the following:

1. In the navigation pane, select a database or Data Guard.
2. On the **Home** tab, select **Restore Database > Restore point-in-time state to <server_name>** or right-click a database or Data Guard and select **Restore point-in-time state to <server_name>**.
3. Proceed to **Specify Restore Point**.
IMPORTANT!

When restoring to point-in-time, make sure that ARCHIVELOG mode is enabled.

Step 1. Specify Restore Point

At this step of the wizard, select a state, as of which you want to restore your database:

- Select the **Restore to the point in time of the selected image-level backup** option to obtain database files as per moment when the current restore point of a VM was created by the backup or replication job.
- Select the **Restore to a specific point in time** option to obtain selected database files as per selected time interval of the current restore point. Use the slider control to choose a time interval you need.
- Select the **Perform restore to specific transaction** checkbox to obtain database files exactly as of the moment before undesired transactions.

IMPORTANT!

- The **Restore to a specific point in time** option is only available if archived log backups exist. For more information, see **Required Backup Job Settings**.
- The **Perform restore to the specific transaction** option requires a staging Oracle server. For more information, see **Configuring Staging Oracle Server**.
Step 2. Fine-tune Restore Point

At this step of the wizard, select an operation prior to which you want to recover your database.
Restoring Latest State

To restore Oracle databases or Data Guard and apply the latest available state, do the following:

1. In the navigation pane, select a database or Data Guard.

2. On the **Home** tab, select **Restore Database > Restore latest state to <server_name>** or right-click a database and select **Restore latest state to <server_name>**.
Restoring Oracle RMAN Backups

This section explains how to restore backups created with Veeam Plug-in for Oracle RMAN. For more information, see the Veeam Plug-in for Oracle RMAN section of the Veeam Plug-ins for Enterprise Applications user guide.

To restore Oracle RMAN backups, do the following:

1. In the navigation tree, select a database.
2. On the Home tab, select Restore Database > Restore or right-click a database and select Restore.
3. Proceed to Specify Recovery Type.

Step 1. Specify Recovery Type

At this step of the wizard, select a recovery type:

- **Recover database to specific point in time**
  To restore databases as of the latest available state.

- **Restore data files to specific point in time**
  To restore only datafiles as of the specific point-in-time state without applying log files.

- **Recover from previously restored datafiles**
  To apply log files to restored datafiles.
Step 2. Specify Target Server

At this step of the wizard, specify valid user credentials to access the target Oracle server.

Windows-Based Oracle Server

Specify a user account under which you want to connect to the target Oracle server.

The user account must be a member of the local Administrator group and have sysdba privileges.

Make sure the account is granted appropriate permissions to access Oracle databases; Read and Write are minimum required, Full Control is recommended.
Linux-Based Oracle Server

For a Linux-based Oracle server, specify the following:

- The production Oracle server port number.
- Valid user credentials to access your production Oracle server.
  The user account must be a member of the **dba** group.
  To use a private key, select the **Private key** option and click **Browse** to specify your key.

You can use the native Veeam Explorer abilities to elevate your account to **root** and add it to the **sudoers** file. To do this, click **Advanced** and select corresponding checkboxes.

```
Advanced Settings

Non-root account handling

- Elevate specified account to root
  - Add account to the sudoers file automatically
  - Use su if sudo is unavailable

Root password: **************
```

Step 3. Specify Point-in-Time

At this step of the wizard, select a point-in-time state as of which you want to restore your data.

The following options are available:

- **Recover to the current point in time.** To restore data as of the latest available point-in-time state.
- **Recover to the following point in time:**
  - **Date.** Select a date as of which you want to restore the data.
  - **SCN.** Specify SCN (System Change Number).
  - **Sequence.** Specify the sequence.

**TIP:**
Consider reading this Oracle article to learn more.

Step 4. Specify Database Files Location

At this step of the wizard, specify the location to which you want to restore your data.

The following options are available:

- **Restore files to default location.** To restore database files to the default location that is taken from a backup file.
- **Restore files to the following location.** To restore database files to a custom location.
  
  Specify a folder to which you want to recover your data. If the specified folder does not exist, it will be created.
Step 5. Configure Channel Allocation

At this step of the wizard, specify channels allocation.

Channels are used to restore data in multiple threads per session. Using multiple threads allows to reduce the amount of time needed to complete restore sessions. For more information about allocating channels, see this Oracle article.

The following options are available:

- **Use the default channel configuration.** To use the default channel configuration, which is defined in the RMAN plug-in settings.

- **Allocate the following number of channels.** To specify the number of channels to be used when restoring your data.
Veeam Explorer for Microsoft Exchange

Veeam Explorer for Microsoft Exchange allows you to restore or export Microsoft Exchange objects from backups created by Veeam Backup & Replication and Veeam Backup for Microsoft Office 365.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Microsoft Exchange that comes as part of Veeam Backup & Replication 9.5 Update 4 and Veeam Backup for Microsoft Office 365 3.0:

- Support for Microsoft Exchange items compare.
- Restore summary dialog that shows summary information about restore and export session results.
- Support for browse and restore of items from the Versions sub-folder of the Recoverable Items folder.
- Performance and stability Improvements.
Planning and Preparation

Continue with this section to learn how to configure your environment before start using Veeam Explorer for Microsoft Exchange.
# System Requirements

This section lists system requirements for Veeam Explorer for Microsoft Exchange.

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microsoft Exchange</strong></td>
<td>For more information about supported versions of Microsoft Exchange, see:</td>
</tr>
<tr>
<td></td>
<td>• The <a href="#">VSS-Aware Applications</a> subsection of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td></td>
<td>• The <a href="#">System Requirements</a> section of the Veeam Backup for Microsoft Office 365 User Guide.</td>
</tr>
</tbody>
</table>

Consider the following:

- To work with database files, Veeam Explorer for Microsoft Exchange requires a dynamic link library `ese.dll` supplied with Microsoft Exchange. The `ese.dll` file must be of the same version as Microsoft Exchange in which database files were created.
- To restore mailbox items from a server running Microsoft Windows ReFS, the Veeam backup server or a management console must be installed on the Microsoft Windows Server 2012 or higher.
- To restore mailbox items from a server running Microsoft Windows ReFS 3.x, Veeam backup server or a management console must be installed on the Microsoft Windows Server 2016.
- To restore data that was backed up by Veeam Backup for Microsoft Office 365 v1.5 via PowerShell, make sure to install Windows PowerShell 2.0 or higher.
- Restore of mailbox datastore from backups created by Veeam Agent for Microsoft Windows 2.0 (and higher) requires integration with Veeam Backup & Replication to be set up, as described in the [Using with Veeam Backup & Replication](#) section of the Veeam Agent for Microsoft Windows User Guide.
- A server that hosts Veeam Explorer for Microsoft Exchange must be a member of the same domain, as the source Exchange server.
Used Ports

The following table lists network ports that must be opened to manage inbound/outbound traffic.

**Backup**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Guest Interaction Proxy (Enterprise and Enterprise Plus editions)</td>
<td>Exchange Server VM Guest OS</td>
<td>TCP, UDP</td>
<td>135, 137 to 139, 445</td>
<td>To deploy the runtime coordination process on a VM guest OS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TCP</td>
<td>6005 to 65535</td>
<td>The dynamic RPC range that is used by the runtime coordination process which is deployed on a VM guest OS for application-aware processing (when working over the network). Note that Exchange 2010 or higher (in particular, Client Access) expands standard Windows dynamic RPC port range to provide a better scalability. For more information, see this Microsoft article.</td>
</tr>
</tbody>
</table>

**NOTE:**

Configuring dynamic RPC range is not required when using default Microsoft Windows firewall settings as Veeam Backup & Replication automatically creates an associated firewall rule for the runtime process during installation. When using custom firewall settings or if application-aware processing fails with the *RPC function call failed* error, ensure configuring dynamic RPC ports manually. For more information, see this Microsoft article.

**Restore**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Backup Server / Standalone Console</td>
<td>Microsoft Exchange 2003/2007 CAS Server</td>
<td>TCP</td>
<td>80, 443</td>
<td>WebDAV connections</td>
</tr>
<tr>
<td></td>
<td>Microsoft Exchange 2010/2013/2016 CAS Server</td>
<td>TCP</td>
<td>443</td>
<td>Microsoft Exchange web services connections</td>
</tr>
</tbody>
</table>
Required Permissions

The following table lists required permissions for user accounts to back up and restore Microsoft Exchange data.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Required Roles and Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup</td>
<td>For more information, see:</td>
</tr>
<tr>
<td></td>
<td>- The Required Permissions section of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td></td>
<td>- The Required Permissions section of the Veeam Backup for Microsoft Office 365.</td>
</tr>
<tr>
<td>Restore to Microsoft Office 365 and on-premises Microsoft Exchange from backups created by Veeam Backup &amp; Replication and Veeam Backup for Microsoft Office 365</td>
<td>To restore data to Microsoft Office 365 and on-premises Microsoft Exchange, make sure to configure user accounts as follows:</td>
</tr>
<tr>
<td></td>
<td><strong>Restore to a Public Folder</strong></td>
</tr>
<tr>
<td></td>
<td>- The account being used must own a mailbox on a target Microsoft Exchange server.</td>
</tr>
<tr>
<td></td>
<td>- The account must be assigned the Organization Management role on a target Microsoft Exchange server. See Assigning Organization Management Role.</td>
</tr>
<tr>
<td></td>
<td>- To restore In-Place Hold Items to the original location:</td>
</tr>
<tr>
<td></td>
<td>- If the In-Place Hold Items folder already exists, make sure the account being used can create, modify and delete items. If the In-Place Hold Items folder does not exist, the account being used must be able to create folders under the All Public Folders root node.</td>
</tr>
<tr>
<td></td>
<td><strong>Restore to a Mailbox</strong></td>
</tr>
<tr>
<td></td>
<td>- If the account owns a mailbox, make sure it has Full Access.</td>
</tr>
<tr>
<td></td>
<td>- If the account does not own a mailbox, then access must be granted through impersonation. See Granting Full Access.</td>
</tr>
</tbody>
</table>

Examples

Assigning Organization Management Role

To assign the Organization Management role, use the following cmdlet.

```
Add-RoleGroupMember "Organization Management" -Member "<user_account>"
```

Granting Full Access

To grant Full Access to the account that owns a mailbox, use the following cmdlet.

```
Add-MailboxPermission -Identity "<target_mailbox>" -User "<user_account>" -AccessRights FullAccess -InheritanceType All
```

To grant Full Access to the account that do not own a mailbox (i.e. through impersonation), use the following cmdlet.
Recalling Given Permissions

To recall given access level, run either of the following cmdlet.

```
Remove-ManagementRoleAssignment "<role_name>"
Remove-ManagementRoleAssignment -Identity <role_name>
```
Required Backup Job Settings

When you create a backup job, make sure to enable the application-aware image processing option, as described in the Specify Guest Processing Settings section of the Veeam Backup & Replication user guide.

**NOTE:**

By default, Exchange transaction logs will be truncated upon successful backup. To keep transaction logs for further processing by a third-party application, select the Exchange server VM from the list, click Edit and on the General tab select Perform copy only.

Support for Database Availability Groups (DAG)

Veeam Backup & Replication supports any configuration of DAGs. In particular, having all the databases active on a single node or with the active databases on each node. Transaction logs will be truncated on all DAG members.

For more information and recommendations, see the following articles:

- How to virtualize and protect Exchange 2016
- Veeam Knowledge Base article
Considerations and Limitations

This section covers considerations and known limitations of Veeam Explorer for Microsoft Exchange.

General

For Microsoft Outlook 2016 the preliminary releases, like Insider releases or releases provided through Monthly Channel Updates are not supported; Veeam supports only RTM/GA versions of the product. For more information, see this Microsoft article.

**NOTE:**

Opening databases created with Exchange Server 2016 CU5 or higher on a machine running Windows 2008 might fail when using the corresponding version of the `ese.dll` file. To solve this, do any of the following:

- Install Veeam Backup & Replication (either a server or console) on the machine with any Windows OS higher than Windows 2008 and run Veeam Explorer.
- Alternatively, configure Veeam Explorer to use `ese.dll` version as of Exchange 2016 CU4 or earlier and obtain database files manually using file-level restore and Veeam Backup Browser.

Restore

- Veeam Explorer for Microsoft Exchange does not support restore via PSDirect, VIX or Sphere API.
- Sending objects that exceed 3MB in size may fail. To fix this issue, install this Microsoft update.
- Multiple restore is not supported for public folders. Use usual (per-object) restore instead.
- If you want to restore In-Place Hold Items or Litigation Hold Items to the original location, consider the following:
  
  - In-Place Hold Items restore is not supported for On-Premises Exchange Server 2013 due to EWS limitations.
  - To restore In-Place Hold Items of Exchange 2016 mailboxes, these mailboxes must have In-Place Hold enabled and applied at least once with DiscoveryHolds system folder creation. Otherwise, restore will fail with the following error:
    "Failed to restore In-Place Hold Items. Restore of In-Place Hold Items into Exchange 2013 is not supported".

  For information on enabling In-Place Hold and Litigation Hold, see this Microsoft article.
Launching Application and Exploring Backups

You can launch Veeam Explorer for Microsoft Exchange and explore the content of a backup file in any of the following ways:

- You can use the **Restore application item** option to explore backups created by Veeam Backup & Replication.
  
  For more information, see the Application Items Restore section of the Veeam Backup & Replication User Guide.

- You can use the **Explore** option to explore backups created by Veeam Backup for Microsoft Office 365.
  
  For more information, see the Data Restore section of the Veeam Backup for Microsoft Office 365 user guide.

- You can go to **Start** and click **Veeam Explorer for Microsoft Exchange** to launch the application as a standalone console. Then, add Microsoft Exchange databases manually, as described in the Standalone Databases Management section.

When launching from the **Start** menu, specify the following parameters:

- Specify the name or IP-address of a Veeam Backup & Replication server to which you want to connect.
- Specify the port number.
- Specify user credentials to connect to the server.

  The account must be a member of the **Local Administrator** group on a target server. To use your current account, select **Use Windows session authentication**.

To save the connection shortcut to your desktop, click **Save shortcut** in the bottom-left corner.
Understanding User Interface

Veeam Explorer for Microsoft Exchange provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options.
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows information about the product.
- **Exit.** Closes the program.
Main Application Window

The main application window can be divided into three categories:

- The ribbon menu, which contains general program commands organized into logical groups.
- The navigation pane, which allows you to browse through the hierarchy of your backup files.
- The preview pane, which shows you the details about objects you have selected in the navigation area.
Browsing, Searching and Viewing Items

Continue with this section to learn more about:

- Browsing your backup content
- Opening Messages
- Searching for objects in a backup file
- Using advance search

Browsing

To view the content of a backup file, you use the navigation pane which shows you the database structure containing your Exchange objects.

After you select an object in the navigation pane, you can see its content in the preview pane.
Opening Messages

To open a message, right-click a message in the preview pane and select Open.

Searching

The search mechanism allows you to find items matching specified search criteria.

To search for required items, do the following:

1. In the navigation pane, select an object in which you want to find your data.
2. Type in a search query using the search field at the top of the preview pane.

NOTE:
To find the exact phrase, use double quotes. For example, “Office 365”.

You can narrow your search results by specifying various search criteria using the criteria:value format. You can also use logical upper-cased operators such as AND, OR and NOT along with wildcard characters such as * and ?.
Using Advanced Find Capabilities

The Advanced Find mechanism allows you to define your search criteria more precisely.

For example, to find messages, the subject of which is Report, do the following:

1. In the preview pane, select a node and click Advanced Find.
2. In the Define search criteria section, select Category > All fields.
3. In the Field list, select Subject.
4. In the Condition list, select Contains.
5. In the Value field, specify a substring to look for.
6. Click Start.

To remove a filter, click the cross mark on the left. To remove all configured filters, click Reset.
General Application Settings

Continue with this section to learn more about configuring required application settings and components.
Configuring Extensible Storage Engine

To work with database files, Veeam Explorer for Microsoft Exchange requires a special dynamic link library `ese.dll`, which is shipped with Microsoft Exchange.

The `ese.dll` file must be of the same version as the Microsoft Exchange application with which your database files have been created.

**NOTE:**

When restoring a VM that was backed up with application-aware image processing, the `ese.dll` file will be located automatically.

The following versions of Microsoft Exchange are supported:

- Microsoft Exchange 2019
- Microsoft Exchange 2016
- Microsoft Exchange 2013
- Microsoft Exchange 2010 SP1, SP2 and SP3

To specify the path to the `ese.dll` file, do the following:

1. Go to the main menu and click the General Options.
2. Go to the Extensible Storage Engine tab.
3. Click the link next to the Microsoft Exchange version and specify the path to the `ese.dll` file.

   The file can be found on the Microsoft Exchange Server distribution CD at `X:\Setup\ServerRoles\Common\ese.dll` or, in the installation directory of the Microsoft Exchange server.

To see estimated size of the Outlook database file, select the **Show size estimation in status bar** checkbox.
## Options

<table>
<thead>
<tr>
<th>Extensible Storage Engine</th>
<th>SMTP Settings</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exchange Server</strong></td>
<td><strong>Status</strong></td>
<td></td>
</tr>
<tr>
<td>Microsoft Exchange 2010</td>
<td>✓ Configured</td>
<td></td>
</tr>
<tr>
<td>Microsoft Exchange 2013</td>
<td>✗ Not configured</td>
<td></td>
</tr>
<tr>
<td>Microsoft Exchange 2016 or later</td>
<td>✗ Not configured</td>
<td></td>
</tr>
</tbody>
</table>

- Show PST size estimation in status bar

Enabling this option will require a longer time to build the item list.

[OK] [Cancel] [Apply]
Configuring SMTP Settings

To send Microsoft Exchange items as attachments, you must configure SMTP server settings.

To configure SMTP settings, do the following:

1. Go to the main menu and click **General Options**.

2. Go to the **SMTP Settings** tab, select the **Configure SMTP settings** checkbox and specify the following:
   - A DNS name or IP address of the mail server.
   - The SMTP port.
   - A sender email address. This address will appear in the **From** field when sending Exchange items.
   - Select the **Use authentication** checkbox if your SMTP server requires SMTP authentication for outgoing traffic and provide valid credentials.
   - Select the **Enable SSL security** checkbox to enable SSL data encryption.

3. Click **Send** to send a test email message.

4. Click **Apply**.
**Enabling Extended Logging**

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the **General Options**.
2. On the **General** tab, select the **Enable Extended logging** checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Standalone Databases Management

Continue with this section to learn more about adding and removing Microsoft Exchange databases.

Veeam Explorer for Microsoft Exchange supports adding databases created with the following Microsoft Exchange versions:

- Microsoft Exchange Server 2019
- Microsoft Exchange Server 2016
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2010 SP1, SP2 or SP3
Adding Microsoft Exchange Stores

This section explains how to add Microsoft Exchange Databases manually.

**IMPORTANT!**

Before adding databases, ensure that Veeam Explorer for Microsoft Exchange has access to the `ese.dll` file. For more information, see Configuring Extensible Storage Engine.

To manually add a Microsoft Exchange database file (.edb) to the application scope, do the following:

1. On the **Home** tab, click **Add Store** > **Microsoft Exchange mailbox database** or right-click the **All Stores** node and select **Microsoft Exchange mailbox database**.
2. Click **Browse** to specify the path to the .edb file and Exchange logs folder.

**NOTE:**

Consider that if a database is in *Dirty State*, you will have to recover it by applying log files. Click **Recover** and wait until log files are applied, then re-add the database. Ensure that the **Write** permission is granted to the account being used.
Adding Veeam Backup for Microsoft Office 365 Server

You can use the built-in Veeam Explorer abilities to connect to another Veeam Backup for Microsoft Office 365 server and add its databases to the Veeam Explorer for Microsoft Exchange scope.

To connect to the Veeam Backup for Office 365 server that stores Microsoft Office 365 organization data, do the following:

1. On the **Home** tab, click **Add Store > Veeam Backup for Office 365 server** or right-click the **All Stores** node in the navigation pane and select **Add Veeam Backup for Office 365 server**.

2. Specify connection settings under which to connect to the Veeam Backup for Microsoft Office 365 server and click **Connect**.

![Veeam Backup for Microsoft Office 365 connection dialog](image)
Adding Veeam Backup for Microsoft Office 365 Service Provider

Veeam Explorer for Microsoft Exchange allows you to add Microsoft Office 365 organization backups located on server providers servers.

**IMPORTANT!**

Consider the following:

- Both Veeam Explorer for Microsoft Exchange and Veeam Backup and Replication must be installed on the same machine.
- At least one service provider must be added to Veeam Backup and Replication, as described in Connecting to Service Providers.

To add Office 365 databases, do the following:

1. From the Start menu, launch Veeam Explorer for Microsoft Exchange.
2. On the toolbar, click Add Store > Veeam Backup for Microsoft Office 365 Service Provider or use the corresponding context menu command.
3. In the drop-down menu, select a tenant account to which you want to connect.
   The list of available tenants depends on added service providers.
4. Provide your Microsoft Office 365 organization credentials.
5. Click Connect.

You can also select a point-in-time state as of which you want to load an organization database. For more information, see Specifying Point in Time.
Specifying Point in Time

When you connect to the service provider server, you may want to select a particular state as of which to add an organization database to the Veeam Explorer for Microsoft Exchange scope.

To select a state, do the following:

1. After you select Veeam Backup for Microsoft Office 365 Service Provider and provide required credentials, click **Specify point in time**.

2. Specify a point in time state:
   - **Use latest available state**. To load data as of the latest backup state.
   - **Use the following point in time**. To load data as of the selected point in time.
     To select a state, use the calendar control.

3. To load items that have been deleted by the user, select **Show items that have been deleted by user**.

4. To load all versions of items that have been modified by the user, select **Show all versions of items that have been modified by user**.

![Specify point in time interface](image-url)
Removing Standalone Databases

Veeam Explorer for Microsoft Exchange allows you to remove an Exchange store from the application scope when you no longer need it.

To remove a store from the application scope, right-click a store in the navigation pane and select **Remove Store**.
Data Restore

Continue with this section to learn more about restoring Microsoft Exchange data.

**NOTE:**

To use an internet proxy server to restore backups created by Veeam Backup for Microsoft Office 365, make sure to provide appropriate proxy server address and the port number. For that, go to the **Control Panel > Internet Options Connections** tab, click **LAN Settings**, select the **Use a proxy server for your LAN** checkbox and specify a proxy server you want to use. Credentials for such a proxy (if needed) will be taken from the **Control Panel > Credential Manager > Windows Credentials** console.

Consider that this functionality is only available in Veeam Explorer for Microsoft Exchange that comes as part of Veeam Backup for Microsoft Office 365 distribution package.
Restoring Single Mailbox

To restore a mailbox, do the following:

1. In the navigation pane, select a mailbox.
2. On the **Mailbox** tab, select **Restore Mailbox** > **Restore to** or right-click a mailbox and select **Restore to**.
3. Proceed to **Specify Target Mailbox and Domain Account**.

### Step 1. Specify Target Mailbox and Domain Account

At this step of the wizard, specify the account to connect to the target Exchange server.

You can use your current account or provide another account using either of the following formats:

- For On-Premises Exchange, use the `domain\username` format.
- For Exchange Online, use the `<username>@<organization>.onmicrosoft.com` format.
Step 2. Specify Target Mailbox Server and Folder

At this step of the wizard, specify the target mailbox server and a folder to which you want to recover your data. Consider the following when restoring folders and items:

- If the specified folder does not exist on a target server, it will be created under the root mailbox node which is being restored. When restoring public folders, security permissions will be restored to their original settings.

- Hard deleted items from public folders will be restored to the original location.

- Hard deleted items from the mailbox (shown in the Permanently Deleted Items folder) by default, will be restored to the original location. You can also specify a different location — if it does not exist, it will be created.

- To restore Online Archive mailbox items, make sure the corresponding Online Archive mailbox is configured on a target server. Online Archive mailbox items can be restored to the original folder (for example, Online Archive - User1 > Drafts) or to a different folder — if it does not exist on target, it will be created.
Step 3. Specify Restore Options

At this step of the wizard, specify restore options.

To prevent certain folders from being recovered, click the **Exclude folders** link and select folders to exclude.

Specify the restore options:

- **Changed items**
- **Missing items**

Flag restored items:
- **Mark restored items as unread**
Restoring Multiple Mailboxes

To recover multiple mailboxes, do the following:

1. In the navigation pane, select a mailbox store.
2. On the Home tab, select Restore Mailboxes or right-click a container and select Restore mailboxes.
3. Proceed to Specify Connection Settings for the Target.

Step 1. Specify Connection Settings for the Target

Depending on the organization type, the first step of the credentials dialog may differ:

- For On-Premises Exchange
- For Exchange Online

For On-Premises Exchange

When restoring to On-Premises Exchange server, specify a Global Catalog server and authentication credentials. You can use your current account or specify another one in the domain\username format. For more information on required permissions, see Required Permissions.
Step 2. Select Mailboxes to Restore

At this step of the wizard, select mailboxes you want to restore.

To see the corresponding email addresses for each selected mailbox in the list, click Resolve selected mailboxes.

To access Active Directory, the account you are using must be included to the domain Administrators or Organization Management group.
NOTE:
If the account you are using is a member of the Authenticated Users group but the Read permission has not been granted, then such an account will not be able to properly handle Exchange system mailboxes restore.

**Step 3. Specify Target Mailbox Server**

At this step of the wizard, specify a target mailbox server to which you want to recover your data.

**NOTE:**
This step is only available when restoring data back to on-premises organizations.

**RESTORE WIZARD**

**Specify target mailbox server**

Specify the mailbox server (CAS) to restore the selected items to:

exchange2013
Step 4. Select Restore Options

At this step of the wizard, specify the restore options.

When restoring multiple mailboxes, select the Finish the restore of recent items before restoring the remaining items checkbox and set the value in the Restore items for the last <N> days first field — to restore multiple mailboxes in "chunks", when most recent items in the backup will be processed first.

To prevent certain folders from being recovered, click the Exclude folders link and select folders to exclude.
Restoring Folders and Items

This section explains how to restore folders and items back to the production environment.

Consider the following when restoring *In-Place Hold Items* and *Litigation Hold Items* to the original mailbox system folders:

- Restore of In-Place Hold Items is not supported for Exchange Server 2013 due to Exchange limitations.
- *In-Place Hold Items* of Exchange 2016 mailboxes must have *In-Place Hold* enabled and applied at least once with the *DiscoveryHolds* folder creation. For more information, see this Microsoft article.

To restore a folder or mailbox item, do the following:

1. In the navigation pane, select a folder or mailbox item.
2. On the *Folder/Items* tab, select **Restore Folder/Item > Restore to** or right-click a folder/item and select **Restore to**.
3. Proceed to **Specify Target Mailbox and Domain Account**.
Step 1. Specify Target Mailbox and Domain Account

At this step of the wizard, specify the account to connect to the target Exchange server.

You can use your current account or provide another account using either of the following formats:

- For On-Premises Exchange, use the domain\username format.
- For Exchange Online, use the <username>@<organization>.onmicrosoft.com format.

### RESTORE WIZARD

Specify target mailbox and domain account

- **Mailbox:**
  - aaron.brown@esdomain.com

Specify user account to connect to Exchange service:

- Use current account (EPSILON\Administrator)
- Use the following account:
  - **Username:** asDomain\administrator
  - **Password:** **********

To connect with an account enabled for multi-factor authentication (MFA), use an app password instead of a user password.

### Step 2. Specify Target Mailbox Server and Folder

At this step of the wizard, specify the target mailbox server and a folder to which you want to recover your data.

Consider the following when restoring folders and items:

- If the specified folder does not exist on a target server, it will be created under the root mailbox node which is being restored. When restoring public folders, security permissions will be restored to their original settings.
- Hard deleted items from public folders will be restored to their original location.
- Hard deleted items from the mailbox (shown in the Permanently Deleted Items folder) by default, will be restored to the original location. You can also specify a different location — if it does not exist on target, it will be created.
- To restore Online Archive mailbox items, make sure the corresponding Online Archive mailbox is configured on a target server. Online Archive mailbox items can be restored to the original folder (for example, Online Archive > User1 > Drafts) or to a different folder — if it does not exist on target, it will be created.
Step 3. Specify Restore Options

At this step of the wizard, specify restore options.

- **Specify the restore options**
  - **Restore the following items:**
    - Changed items
    - Missing items
  - **Flag restored items:**
    - Mark restored items as unread
Using 1-Click Restore

Use the 1-Click Restore feature to quickly recover users mailboxes back to the production environment:

1. In the navigation pane, select a mailbox.

2. On the Mailbox tab, select Restore to `<original_mailbox_name>` or right-click a folder/item and select Restore to `<original_mailbox_name>`.

When using the 1-Click Restore feature, Veeam Explorer for Microsoft Exchange recovers objects according to the following:

- Original Exchange server, original folder and original mailbox name will be restored.
- Both changed and missing items will be restored.
- Restored items will be marked as unread.
- No folders will be excluded.

**NOTE:**

1-Click restore feature is only available when you run Veeam Explorer for Microsoft Exchange on a computer within the same forest to which a backup of the Microsoft Exchange database belongs.
Data Export

Continue with this section to learn more about exporting Microsoft Exchange data.

**IMPORTANT!**

Consider the following:

- Export is only available if you have a 64-bit version of Microsoft Outlook 2019, Microsoft Outlook 2016, Microsoft Outlook 2013 or Microsoft Outlook 2010 installed on a computer running Veeam Explorer for Microsoft Exchange.
- To avoid conflicts during export, make sure to exclude *.pst files from the indexing scope. Oftentimes conflicts may occur due to a file you are exporting is being indexed at the same time. When exporting to shared folders, exclude Outlook files or disable Windows search on the destination computer.
Exporting to Custom Location

To export objects to the custom location, do the following:

1. In the navigation pane, select a folder or in the preview pane, select an item.
2. On the Folder/Items tab, select Export Folder/Item > Export to .pst file or right-click a folder/item and select Export to .pst file.
3. Specify the name and location for the new .pst file.
4. Select the **Save only items containing keywords** checkbox and enter keywords to export only those items that match specified criteria.

   Veeam Explorer for Microsoft Exchange will check for specified keywords in all message fields — that is, **From**, **To**, **Subject** and **Body**.

**NOTE:**

The **Save only items containing keywords** feature is unavailable when exporting items.
Using 1-Click Export

Veeam Explorer for Microsoft Exchange allows you to quickly export mailbox store data as .pst files.

NOTE:
Export operations require Microsoft Outlook to be installed on a computer running Veeam Explorer for Microsoft Exchange.

Depending on the object type you want to export, do the following:

- To export a folder, select it in the navigation pane and on the Folder tab, click Export Folder > Export to <default_location>\<original_folder_name>.pst or use the corresponding context menu command.

- To export an item, select it in the navigation pane and on the Items tab, click Export items > Export to <default_location>\<original_folder_name>.pst or use the corresponding context menu command.
To export a mailbox, select it in the navigation pane and on the Mailbox tab, click Export mailbox > Export to <default_location>\<original_mailbox_name>.pst or use the corresponding context menu command.
To export a mailbox store or all stores added to the scope, select a store or select the All Stores node and click Export on the Home tab.
Receiving Export Reports

Veeam Explorer for Microsoft Exchange can deliver detailed reports on export results.

The following table lists fields of an export report.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performed by</td>
<td>Shows by which component a report has been generated.</td>
</tr>
<tr>
<td>Version</td>
<td>Veeam Explorer for Microsoft Exchange build number.</td>
</tr>
<tr>
<td>Percent complete</td>
<td>Total number of items included in the .pst file in per cents.</td>
</tr>
<tr>
<td>Started by</td>
<td>Shows by which user account a report has been generated.</td>
</tr>
<tr>
<td>Start time, End time</td>
<td>Report creation time.</td>
</tr>
<tr>
<td>Root</td>
<td>The relative path to the object within the mail database.</td>
</tr>
<tr>
<td>Path</td>
<td>The path to the database file.</td>
</tr>
<tr>
<td>Export type</td>
<td>Shows the export type.</td>
</tr>
<tr>
<td>Stores</td>
<td>A datastore that contains exported items.</td>
</tr>
<tr>
<td>Mailboxes to search</td>
<td>A mailbox that contains exported items.</td>
</tr>
<tr>
<td>Mailboxes searched successfully, Mailboxes not searched successfully</td>
<td>Results for Mailboxes to search.</td>
</tr>
<tr>
<td>Size</td>
<td>Total size of exported items.</td>
</tr>
<tr>
<td>Items</td>
<td>Shows the number of exported items.</td>
</tr>
<tr>
<td>Errors</td>
<td>Shows how many error have occurred during the export.</td>
</tr>
</tbody>
</table>

When exporting only search results, consider the following:

- The title of a report will be shown as **Email export completed partially**.
- The **Percent complete** field shows how many items from the search scope matched the specified search keywords.
- The **Keyword hits** field show:
  - **Keyword**. A search criteria.
  - **Hits**. The number of exported items that matched the specified search keywords.
  - **Mailboxes**. The number of mailboxes comprising the search scope.
Data Compare

This section explains how to compare data in a backup file with that of the production state.

To compare data, do the following:

1. In the navigation pane, select an object and click Compare with Production on the toolbar.
2. Proceed to Specify Credentials to authorize yourself in the production environment.
   Authorization is only required when the account you are using does not have sufficient privileges to access the production environment.
3. After the authorization process is complete (if required), click Show Changed Items Only on the toolbar to view only those items that have been changed.

To view the details on what exactly has changed since the last backup, right-click an item and select Compare item properties. The discrepancies will be shown in the Compare Message Properties Window. If both objects are equal, nothing will be displayed.

To show unchanged objects, select Show unchanged properties in the top-right corner. To show system properties, select Show system properties.

Double-click Body to see the body message.

To compare a single item, right-click an item and select Compare item properties.

<table>
<thead>
<tr>
<th>NAME</th>
<th>BACKUP</th>
<th>PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachments (No changes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recipients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To</td>
<td><a href="mailto:Aaron.Brown@asdomain.local">Aaron.Brown@asdomain.local</a></td>
<td><a href="mailto:Aaron.Brown@asdomain.local">Aaron.Brown@asdomain.local</a></td>
</tr>
<tr>
<td>To</td>
<td><a href="mailto:Jane.Summers@asdomain.local">Jane.Summers@asdomain.local</a></td>
<td><a href="mailto:Jane.Summers@asdomain.local">Jane.Summers@asdomain.local</a></td>
</tr>
<tr>
<td>Properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td>&lt;double click to open&gt;</td>
<td>&lt;double click to open&gt;</td>
</tr>
</tbody>
</table>
Step 1. Specify Credentials

Depending on the organization type, the first step of the credentials dialog will be different:

- For On-Premises Exchange
- For Exchange Online

For On-Premises Exchange

When comparing data with On-Premises Exchange organization, specify a Global Catalog server and valid access credentials.

You can use your current account or specify another one in the *domain\username* format. For more information on required permissions, see Required Permissions.

```
RESTORE WIZARD

Specify Global Catalog server and credentials

Domain: tech.local

Specify user account to connect to Active Directory domain and Exchange Server:
- [ ] Use current account (EPSILON\Administrator)
- [x] Use the following account:

Username: Administrator
Password: *********
```

For Exchange Online

When comparing with Exchange Online organizations, specify the account to connect to the target Exchange server.

You can use your current account or provide another one in the `<username>@<organization>.onmicrosoft.com` format.
Specify Exchange Server credentials

Specify user account to connect to Exchange Server:

- Use current account (GAMMA/Administrator)
- The following account

User name: Administrator@abc.onmicrosoft.com
Password: ************
Step 2. Specify Target Mailbox Server

At this step of the wizard, specify the target mailbox server.

NOTE:
This step is only available when comparing data with On-Premises organizations.

Specify target mailbox server

Specify the mailbox server (CAS) to restore the selected items to:

exchange2013
Saving Microsoft Exchange Items

Veeam Explorer for Microsoft Exchange allows you to save any item as Microsoft Exchange Mail Document (.msg) files.

Saving to Custom Location

To save items to a custom location, do the following:

1. In the navigation pane, select an item.
2. On the Items tab, select **Save Items > Save to .msg file** or right-click a folder/item and select **Save to .msg file**.
1-Click Save

To save your Exchange data, do the following:

1. In the navigation pane select a folder containing required items.
2. In the preview pane, select items.
   Use the Search field to find particular items.
3. On the Items tab, select Save Items > Save to <folder_name> or right-click a folder/item and select Save to <folder_name>.

   A <folder_name> name depends on the latest location that was used when saving items.
Sending Microsoft Exchange Items

Veeam Explorer for Microsoft Exchange allows you to send Exchange items to specified recipients via email.

**TIP:**
Before sending documents, make sure to configure SMTP settings, as described in Configuring SMTP Settings. The amount of data you can send at a time depends on your SMTP server configuration.

To send items, do the following:

1. In the navigation pane select a folder.
2. In the preview pane, select items to send.
   
   Use the **Search** field to find particular items.
3. On the **Items** tab, select **Send Items** > **Send to** or right-click a folder/item and select **Send to**.
4. Provide a recipient address.
   
   The **From** field is filled automatically based on the address you have provided when configuring SMTP settings. To edit the message body, click **More Details**.
Sent by Veeam Explorer for Microsoft Exchange
Veeam Explorer for Microsoft SharePoint

Veeam Explorer for Microsoft SharePoint allows you to restore or export Microsoft SharePoint objects from backups created by Veeam Backup & Replication and Veeam Backup for Microsoft Office 365.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Microsoft SharePoint that comes as part of Veeam Backup & Replication 9.5 Update 4 and Veeam Backup for Microsoft Office 365 3.0:

- Support for farm solution.
- Support for custom lists templates.
- Support for list view restore.
- Performance and stability improvements.
Planning and Preparation

Continue with this section to learn how to configure your environment before start using Veeam Explorer for Microsoft SharePoint:
System Requirements

This section lists system requirements for Veeam Explorer for Microsoft SharePoint.

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft SharePoint</td>
<td>For more information about supported versions of Microsoft SharePoint, see:</td>
</tr>
<tr>
<td></td>
<td>▪ The VSS-Aware Applications subsection of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td></td>
<td>▪ The System Requirements section of the Veeam Backup for Microsoft Office 365 User Guide.</td>
</tr>
</tbody>
</table>

**NOTE:**

Consider the following:

- To restore SharePoint content database items from a server running Microsoft Windows ReFS, the Veeam backup server or a management console must be installed on the Microsoft Windows Server 2012 or later.
- To restore from a server running Microsoft Windows ReFS 3.x, Veeam backup server or a management console must be installed on the Microsoft Windows Server 2016.
# Used Ports

The following table lists network ports that must be opened to manage inbound/outbound traffic.

## General

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veeam Explorer for Microsoft SharePoint</td>
<td>SQL Server</td>
<td>TCP</td>
<td>1433,1434 and other</td>
<td>To communicate with Microsoft SQL servers hosting content databases. Exact port numbers depend on the configuration of a Microsoft SQL server. For more information, see <a href="https://example.com">this Microsoft article</a>.</td>
</tr>
<tr>
<td>SharePoint Web Application</td>
<td>As recommended by Microsoft</td>
<td>As recommended by Microsoft</td>
<td></td>
<td>For more information on recommended port numbers and protocols for SharePoint web application, see <a href="https://example.com">this Microsoft article</a>. To discover ports currently used by your SharePoint web application, follow the steps described in <a href="https://example.com">this Microsoft article</a>.</td>
</tr>
</tbody>
</table>

**NOTE:**

To restore database items or lists to a server that is running in a DMZ, the SharePoint web application ports will be used.

## iSCSI Traffic

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Protocol</th>
<th>Port</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Server / Staging Server</td>
<td>Veeam Backup Server / Standalone Console</td>
<td>TCP</td>
<td>3260 - 3270</td>
<td>Used by iSCSI initiator to connect to the iSCSI target.</td>
</tr>
</tbody>
</table>
Required Permissions

The following table lists required permissions for user accounts to back up and restore Microsoft SharePoint data.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Required Roles and Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup</td>
<td>For more information, see:</td>
</tr>
<tr>
<td></td>
<td>• The Required Permissions section of the Veeam Backup &amp; Replication User Guide.</td>
</tr>
<tr>
<td></td>
<td>• The Required Permissions section of the Veeam Backup for Microsoft Office 365. User Guide.</td>
</tr>
<tr>
<td>Restore to on-premises Microsoft SharePoint from backups created by Veeam Backup &amp; Replication and Veeam Backup for Microsoft Office 365</td>
<td>To restore data to on-premises SharePoint, make sure to configure user accounts as follows:</td>
</tr>
<tr>
<td></td>
<td>• The account must be granted Full Control to connect to the target SharePoint server.</td>
</tr>
<tr>
<td></td>
<td>• The account must be assigned either the Site Administrator or System Account role to restore user permissions.</td>
</tr>
<tr>
<td></td>
<td>• If permissions of items being restored are inherited from the parent one, the account must be granted Full Control.</td>
</tr>
<tr>
<td></td>
<td>• If permissions of items being restored are not inherited from the parent one and items being restored replace the existing ones, the account must be granted Contribute and Full Control.</td>
</tr>
<tr>
<td>Restore to Microsoft Office 365 from backups created by Veeam Backup for Microsoft Office 365</td>
<td>To restore data to SharePoint Online, make sure to configure user accounts as follows:</td>
</tr>
<tr>
<td></td>
<td>• The account must be granted the SharePoint Administrator role.</td>
</tr>
<tr>
<td></td>
<td>• The account must be granted the Site Collection Administrator role.</td>
</tr>
</tbody>
</table>

Consider the following:

- The current account can only be used to access a local staging server. To connect to a remote server, use appropriate authentication credentials to access that server.
- The account requires the sysadmin fixed server role on a staging Microsoft SQL server.
- For ADFS as an authentication provider:
  - When using Windows Authentication, you can use both your current account or provide another account.
  - When using Forms Authentication, the current account cannot be used.
Required Backup Job Settings

When you create a backup job, make sure to enable the application-aware image processing option, as described in the Specify Guest Processing Settings section of the Veeam Backup & Replication user guide.
Staging SQL Server

To perform Microsoft SharePoint items recovery, Veeam Explorer requires a Microsoft SQL server to be used as a staging system.

The server you are going to use as a staging system must conform to the following:

- A staging system must have the same or later version of Microsoft SQL Server that hosts restored Microsoft SharePoint databases.
- Microsoft SQL Server that is included in Microsoft SQL Server Failover Cluster cannot be used as a staging system.
- Nodes participating in AlwaysOn Availability Groups are supported. However, using Availability Group Listeners as staging servers is not recommended.

**NOTE:**

You can use Microsoft SQL Server 2012/2016 Express editions which are shipped with the Veeam Backup & Replication distribution package. Consider that due to Express edition limitations, the maximum database size that can be attached is 10GB. For more information, see this Microsoft article.

Remote BLOB Stores Support

A BLOB store must either be included in the SharePoint backup created by Veeam Backup & Replication or Veeam Agent for Microsoft Windows (for automated discovery) or stored on a local machine running Veeam Explorer (for manual discovery).

**IMPORTANT!**

Third-party RBS providers are not supported in the current version.

Make sure the staging SQL Server configuration meets the following requirements:

1. **FILESTREAM** must be enabled on a database server, as described in the following articles:
   - For SQL Server 2017 for Windows, see this Microsoft article.
   - For SQL Server 2016, see this Microsoft article
   - For SQL Server 2014, see this Microsoft article
   - For SQL Server 2012, see this Microsoft article
   - For SQL Server 2008R2, see this Microsoft article

2. **RBS Client Library** must be installed on the database server. For Microsoft SQL Server 2014 and later, the Remote Blob Store setup is included in the installation media. For other versions you can use the corresponding Microsoft SQL Server Remote Blob Store installation package (RBS.msi) available at the Microsoft website:
   - For SQL Server 2012, see this Microsoft article
   - For SQL Server 2008R2, see this Microsoft article
Considerations and Limitations

This section covers considerations and known limitations of Veeam Explorer for Microsoft SharePoint.

Status Recovery Limitations

Consider the following when planning documents/list items recovery:

- If a document/item was in *Check Out* state when the backup was created, item’s last version will not be restored to the target SharePoint and will be available for viewing only. Previous versions (if any) will be restored.

- If the *Declare this item as a record* action was originally applied to list item, the corresponding status will not be preserved. Instead, the restored item status will be set in accordance with the target list/library content approval workflow.

- Original status *On Hold* will not be restored

Restoring Documents, Libraries and Lists

- Versioning settings of SharePoint lists are not preserved during restore.

- Restoring Generic List and Pages Library may fail with the "*No content type 'XXX' found in web YYY*" error.

- *Modified By* field of restored documents is updated with the account performing restore.

- Some *Rating Settings of Discussion* lists values are not restored.

- Restore via PSDirect, VIX or Sphere API is not supported.

Restoring List Items

Consider that when restoring a list item, Veeam Explorer works in the following way:

- Deletes an existing item

- Creates item’s latest version anew using data from the backup.

- Checks whether it is declared as a record.

- If the check is a success, the process finishes.

- If not, the created version is deleted and item versions are restored sequentially.

- Restore via PSDirect, VIX or Sphere API is not supported.

This logic leads to several peculiarities of list item restore, as described below.

If a list or list items column is used as a lookup column in the dependent list, consider that restoring an item from the source list causes corresponding items deletion in the dependent list.

If a lookup column in the dependent list has the enforced relationship behavior set to *Cascade Delete*, then restoring an item from the source list may cause item deletion in the dependent list due to Microsoft implementation. For more information, see this Microsoft article.

To prevent this issue, it is recommended to turn off enforced relationship behavior. As a work-around, you can roll-back the SharePoint database using Veeam Explorer for Microsoft SQL Server (as described in the
corresponding section of this guide) or roll-back the whole SharePoint server VM to the desired state using any Veeam Backup & Replication recovery option.

The following limitations should also be considered:

- If a lookup column in the dependent list has the enforced relationship behavior set to Restrict Delete, then item restore with Veeam Explorer will fail.
- If an .ASPX page references an item using ItemID, this reference may fail to restore (as the item will be created anew with a different ItemID).
- If a list item cannot be deleted (for example, site's "Welcome" page), consider that restore process will recover all versions of the item sequentially without deletions, adding them to Version History.
- Restored Issue list items are assigned new Issue ID.
- Restore of Time Card list is not supported.

**Restoring List Items with Links (Attachments)**

Consider the following when planning for the recovery of list items with links (attachments):

- If the retention policy for target list/document library was configured to Declare record automatically, only the last version of the item will be restored to target list/library. Target retention policy settings will be applied to restored item (Declare record). However, links (attachments) will not be restored.
- Alternatively (with different retention policy settings), all versions of the original item will be restored to target list/library; item links (attachments) will be restored only if such item does not exist on target SharePoint.
- If Declare this item as a record action was originally applied to list item, such item will not be restored.
- Restore via PSDirect, VIX or Sphere API is not supported.

**Restoring Surveys**

Consider the following limitations when planning for the recovery of surveys, survey questions and responses:

- Survey item(s) can be restored to a new survey, created automatically by Veeam Explorer for Microsoft SharePoint in the specified destination instead of the previously deleted survey. However, if a new survey is created by user from scratch (not replacing a deleted one) – items cannot be recovered to such a survey.
- A survey can be restored to an existing target survey only if that target survey includes at least one item (question) same as survey questions stored in the content database.
- If a survey question was not answered completely in the source survey, after restore the response status in the target survey will be set to Completed, anyway.
- When restoring a single response to a survey, target response item with the same number will be deleted and restored item will be placed in the target survey after the last numbered response. For example, if the target survey has responses #1-15 and you try to restore a response that used to be #6 on source – then target response #6 will be deleted and restored response will be assigned #16.
- Restore via PSDirect, VIX or Sphere API is not supported.

**Restoring Sites**

- If you plan to restore SharePoint site pages, consider that Veeam Explorer does not support recovery of
items which are not stored in the SharePoint content database (in particular, pages, page references and items based on default templates). Such items cannot be restored (neither by Restore nor by Save menu option), except for data from Wiki Content (text and images) which is stored in the database. Thus, site pages containing only text and/or images can be restored and displayed properly.

NOTE:
Consider the following:

- In case you attempt to restore such items, the following error message will be logged: "Item <item> is skipped: restoration of items based on SharePoint default template is not supported."
- In case you attempt to save such items, the following error message will be logged: "Unable to save document <item>. Document content is not available."
- Web features restore is not supported for SharePoint 2010 sites.

Export and Import

- Importing exported Picture Library may result in IDs changed for some items.
- Importing exported Project Tasks list does not preserve column order.
- Importing exported SharePoint list does not preserve Validation Settings.

Data Type Limitations

Consider the column (field) data type when planning for the recovery of your SharePoint libraries/lists:

- If source column (field) data type was set to Lookup, but the referenced list/library was deleted, such columns (fields) will not be restored even if you recover that referenced list. The reason is that if referenced list is deleted, the reference (link) to that list is no longer valid.
- If source column (field) data type was set to Managed Metadata, such columns (fields) will not be restored.

Workflow-related Considerations

You may need to restore the item(s) originally belonging to a list with no content approval required, to another list. If you try to restore such item(s) to a list that requires content approval, item version and status will be modified in the following way:

a. If a target list is configured to include major versions only - then all versions of restored item will become major (despite the original versioning); item status will be set to Pending.

b. If a target list is configured to include both major and minor versions - then all versions of restored item will become minor (despite the original versioning); item status will be set as follows:
   - If the last version (original) was major – status will be set to Pending
   - If the last version was minor – status will be set to Draft

Also, consider the following when planning for the recovery of list items (with or without content approval originally required):

a. If the retention policy for target list/document library is configured to Declare record automatically, only the last version of the item will be restored to target list/library. Target retention policy settings will be applied to restored item (Declare record).
Besides, if **Require content approval for submitted items** was enabled for the original list, then after recovery item status will be set to **Pending**.

b. Alternatively (with different retention policy settings), all versions of the original item will be restored to target list/library. Besides, if **Require content approval for submitted items** was enabled for the original list, then after recovery item status in the content approval workflow will be also restored, except for the states listed (see "Status Recovery Limitations" above).
Launching Application and Exploring Backups

You can launch Veeam Explorer for Microsoft SharePoint and explore the content of a backup file in any of the following ways:

- You can use the Restore application item option to explore backups created by Veeam Backup & Replication.
  
  For more information, see the Application Items Restore section of the Veeam Backup & Replication User Guide.

- You can use the Explore option to explore backups created by Veeam Backup for Microsoft Office 365.
  
  For more information, see the Data Restore section of the Veeam Backup for Microsoft Office 365 user guide.

- You can go to Start and click Veeam Explorer for SharePoint to launch the application as a standalone console. Then, add Microsoft SharePoint databases manually, as described in the Standalone Databases Management section.

When launching from the Start menu, specify the following parameters:

- Specify the name or IP-address of a Veeam Backup & Replication server to which you want to connect.
- Specify the port number.
- Specify user credentials to connect to the server.

  The account must be a member of the Local Administrator group on a target server. To use your current account, select Use Windows session authentication.

To save the connection shortcut to your desktop, click Save shortcut in the bottom-left corner.
Understanding User Interface

Veeam Explorer for SharePoint provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options.
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows information about the product.
- **Exit.** Closes the program.
Main Application Window

The main application window can be divided into three categories:

- The ribbon menu, which contains general program commands organized into logical groups.
- The navigation pane, which allows you to browse through the hierarchy of your backup files.
- The preview pane, which shows you the details about objects you have selected in the navigation area.
Browsing, Searching and Viewing Items

Continue with this section to learn more about:

- Browsing your backup content
- Viewing objects properties and open files
- Searching for objects in a backup file
- Using the advance search capabilities

Browsing

To view the content of a backup file, you use the navigation pane which shows you the database structure containing your site items such as libraries and subsites.

After you select an object in the navigation pane, you can see its content in the preview pane.

Viewing Properties and Opening Files

To view object properties, right-click an object in the preview pane and select View Properties.

To open a document using an associated application, right-click a document in the preview pane and select Open.
Searching

The search mechanism allows you to find items matching specified search criteria.

To search for required items, do the following:

1. In the navigation pane, select an object in which you want to find your data.
2. Type in a search query using the search field at the top of the preview pane.

**NOTE:**

To find the exact phrase, use double quotes. For example, "media player".

You can narrow your search results by specifying various search criteria using the `criteria:value` format.

For example, to find all items that require approval in the list of decisions, you can use the following search query: `status:pending approval`.

You can also use logical upper-cased operators such as **AND**, **OR** and **NOT** along with wildcard characters such as * and ?. The search criteria are similar to those used for searching in Microsoft SharePoint. For more information, see this Microsoft article.
Using Advanced Find Capabilities

The Advanced Find mechanism allows you to define your search criteria more precisely.

For example, to find an object that starts with the word Media, do the following:

1. In the preview pane, select a content node and click Advanced Find.
2. In the Define search criteria section, select Category > Document fields.
3. In the Field list, select File Name.
4. In the Condition list, select Starts With.
5. In the Value field, specify a file name.
6. Click Start.

To remove a filter, click the cross mark next to it. To remove all configured filters, click Reset.
CONTENT DATABASES

- **Databases**
  - WSS_Content.mdf
    - Development
      - Subsites
      - Document Libraries
      - Libraries
      - Sources
      - Content
      - Contacts
      - Documents
      - Form Templates
      - Site Assets
      - Site Pages
      - Sources
      - Styles Library

Find items that match these criteria:

- **File Name** starts with mdsC

Define search criteria:

- **Category:** Frequently-used Fields
- **Field:** Anniversary

- **Condition:** between
  - **Value:** Monday, December 10, 2018

Search results in Databases/WSS_Content.mdf/Development

<table>
<thead>
<tr>
<th>NAME</th>
<th>CREATED BY</th>
<th>CREATED</th>
<th>MODIFIED BY</th>
<th>MODIFIED</th>
<th>VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDS Cipher</td>
<td>System Account</td>
<td>12/7/2018 6:04:44 PM</td>
<td>System Account</td>
<td>12/7/2018 6:04:44 PM</td>
<td></td>
</tr>
<tr>
<td>MDS Cipher</td>
<td>System Account</td>
<td>12/7/2018 6:04:44 PM</td>
<td>System Account</td>
<td>12/7/2018 6:04:44 PM</td>
<td></td>
</tr>
<tr>
<td>MDS Cipher</td>
<td>System Account</td>
<td>12/7/2018 6:04:45 PM</td>
<td>System Account</td>
<td>12/7/2018 6:04:45 PM</td>
<td></td>
</tr>
</tbody>
</table>
General Application Settings

Continue with this section to learn more about configuring required application settings and components.
Configuring Staging SQL Server

To perform Microsoft SharePoint items recovery, Veeam Explorer requires a Microsoft SQL server to be used as a staging system.

Consider the following when configuring a staging SQL server:

- If a SQL server belongs to an untrusted domain, connection will not be possible.
- If a SQL server belongs to a trusted domain, only the SQL Server authentication method is available.
- If both a SQL server and the machine running Veeam Explorer belong to the same domain, then both Windows and SQL Server authentication methods are possible.

To use Windows authentication, make sure to configure the following delegation settings:

a) In Active Directory Users and Computers, select the necessary staging SQL server.

b) Open its properties and select the Delegation tab. Select Trust this computer for delegation to specified services only and Use any authentication protocol options for the cifs service on a computer with Veeam Explorer.

c) Restart the staging SQL Server.

d) Select a user account to connect to the staging SQL server. Also, select its properties on the Account tab and make sure the Account is sensitive and cannot be delegated checkbox is cleared.

To configure a staging server, do the following:

1. Go to the main menu and click General Options.
2. Go to the SQL Server Settings tab.
3. Specify a SQL server you want to use as a staging system.
   - Click Browse to select a server, as described in Browsing For Servers.
4. Specify the account to access the selected SQL server.
5. Specify the account to access a SQL server instance.
To browse for a server, do the following:

- On the **Local Servers** tab, select a local SQL server that is located on a machine with Veeam Explorer.
- On the **Network Server** tab, select a SQL server over the network.
Configuring Custom Lists

Veeam Explorer for Microsoft SharePoint supports obtaining custom list templates from backups created by Veeam Backup & Replication.

The actual information about templates is stored directly in a backup file and obtained automatically so that you can view the custom list data without having to perform any additional operations.

**NOTE:**

Configuring custom lists is not required when working with backups created by Veeam Backup for Microsoft Office 365.

To see templates with their corresponding names and features, go to the main menu > General Options and click the link under the STATUS column which also comprises the total number of available templates.

You can select **Automatically update custom list templates from backups** to automatically update existing templates. Also, you can select **Warn me if attached database has new custom list templates** to be notified if the database contains new templates other than those you already have.

See the figure below showing you what custom list templates are available.
To remove templates, click **Clear**.

**Importing Templates Manually**

To import existing templates from the Microsoft SharePoint server manually, do the following:

1. Go to the main menu, select **General Options > Custom Lists** and click **Update**.
2. Specify the path to Microsoft SharePoint templates, select the language and click **OK**. The language set in the drop-down list depends on the installed language packages on a SharePoint server.

**Importing Templates Using Ribbon Menu**

**NOTE:**

Available only for Microsoft SQL Server databases and requires a staging SQL server. For more information on configuring a staging server, see Configuring SQL Server Settings.

To import existing templates from the Microsoft SharePoint server using the ribbon menu, do the following:

1. In the navigation pane, select a SQL database.
2. Click **Custom List Template** on the ribbon menu or right-click a SQL database and select **Custom list templates settings**.

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Veeam Explorers Suite | User Guide | REV 3
3. Choose how you want your templates to be applied:
   
a) Select **Use global custom list settings** to apply global list templates to the select database.

b) Select **Use the following custom list settings** to apply the templates to the selected database only.

   When using the latter option, specify the path to the Microsoft SharePoint templates, select the language and click **OK**. The language set in the drop-down list depends on the installed language packages on a SharePoint server.
Configuring SMTP Settings

To send Microsoft SharePoint items as attachments, you must configure SMTP server settings.

To configure SMTP settings, do the following:

1. Go to the main menu and click **General Options**.

2. On the **SMTP Settings** tab, select the **Configure SMTP settings** checkbox and specify the following:
   - DNS name or IP address of the mail server.
   - SMTP communication port.
   - The sender email address. This address will appear in the **From** field when sending SharePoint items.
   - Select **Use authentication** checkbox if your SMTP server requires SMTP authentication for outgoing mail and provide valid credentials.
   - Select **Enable SSL security** checkbox to enable SSL data encryption.

3. Click **Send** to send a test email message.

4. Click **Apply**.
Enabling Extended Logging

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the General Options.
2. On the General tab, select the Enable Extended logging checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Standalone Databases Management

Continue with this section to learn more about adding and removing Microsoft SharePoint databases.
Adding Microsoft SharePoint Databases

Continue with this section to learn more about the addition of Microsoft SharePoint databases to the application scope manually.

When you add standalone Microsoft SharePoint databases to the application scope, Veeam attaches such a database to the staging SQL server, creating a temporary Microsoft SharePoint content database from which you can recover your items.

To manually add new Microsoft SharePoint databases to the application scope, do the following:

1. Click **Add Database > Microsoft SharePoint Databases** on the toolbar or right-click the root **Database** node and select **Add database**.

2. Specify the location of the Microsoft SharePoint primary content database file (.mdf). The secondary database and the transaction log file (.ldf) will be added as well.
   
   To add remote BLOB stores, click **Add** next to the **Remote BLOB Stores** section.

3. Click **OK**.

![ADD DATABASE](image)
Adding Veeam Backup for Microsoft Office 365 Databases

To manually add databases that store Microsoft Office 365 organization data, do the following:

1. Click Add Database > Veeam Backup for Microsoft Office 365 Databases or right-click the root Database node and select Veeam Backup for Microsoft Office 365 databases.
2. Specify the database file location and log directory.
3. Click Open.

NOTE:
Make sure you have disabled the Veeam Backup Proxy for Microsoft Office 365 service when adding local databases. You can stop this service by using the services.msc console. If you try to add a database having this service still in progress, you will receive an error message and will not be able to access the database due to database lock.
Adding Veeam Backup for Microsoft Office 365 Server

You can use the built-in Veeam Explorer abilities to connect to another Veeam Backup for Microsoft Office 365 server and add its databases to the Veeam Explorer for Microsoft SharePoint scope.

To connect to another Veeam Backup for Microsoft Office 365 server remotely, do the following:

1. Click Add Database > Veeam Backup for Microsoft Office 365 Server on the ribbon menu or use the corresponding context menu command.
2. Specify connection settings under which to connect to the Veeam Backup for Microsoft Office 365 server and click Connect.

![Add Database dialog box](image-url)
Adding Veeam Backup for Microsoft Office 365 Service Provider

Veeam Explorer for Microsoft SharePoint allows you to add Microsoft Office 365 organization backups located on server providers servers.

**IMPORTANT!**

Consider the following:

- Both Veeam Explorer for Microsoft SharePoint and Veeam Backup and Replication must be installed on the same machine.
- At least one service provider must be added to Veeam Backup and Replication, as described in Connecting to Service Providers.

To add Office 365 databases, do the following:

1. From the **Start** menu, launch Veeam Explorer for Microsoft SharePoint.
2. On the toolbar, click **Add Database > Veeam Backup for Microsoft Office 365 Service Provider** or use the corresponding context menu command.
3. In the drop-down menu, select a tenant account to which you want to connect.
   - The list of available tenants depends on added service providers.
4. Provide your Microsoft Office 365 Organization credentials.
5. Click **Connect**.

You can also select a point-in-time state as of which you want to load an organization database. For more information, see **Specifying Point in Time**.

![Veeam Backup for Microsoft Office 365](image-url)
Specifying Point in Time

When you connect to the service provider server, you may want to select a particular state as of which to add an organization database to the Veeam Explorer for Microsoft SharePoint scope.

To select a state, do the following:

1. After you select **Veeam Backup for Microsoft Office 365 Service Provider** and provide required credentials, click **Specify point in time**.

2. Specify a point in time state:
   - **Use latest available state**. To load data as of the latest backup state.
   - **Use the following point in time**. To load data as of the selected point in time.
     To select a state, use the calendar control.

3. To load items that have been deleted by the user, select **Show items that have been deleted by user**.

4. To load all versions of items that have been modified by the user, select **Show all versions of items that have been modified by user**.

![Specifying Point in Time](image-url)
Removing Standalone Databases

Veeam Explorer for Microsoft SharePoint allows you to remove Microsoft SharePoint databases from the application scope when you no longer need it.

To remove a database from the application scope, right-click a database in the navigation pane and select Remove SharePoint database.
Data Restore

Continue with this section to learn more about restoring Microsoft SharePoint data.

NOTE:

To use an internet proxy server to restore backups created by Veeam Backup for Microsoft Office 365, make sure to provide appropriate proxy server address and the port number. For that, go to the Control Panel > Internet Options Connections tab, click LAN Settings, select the Use a proxy server for your LAN checkbox and specify a proxy server you want to use. Credentials for such a proxy (if needed) will be taken from the Control Panel > Credential Manager > Windows Credentials console.

Consider that this functionality is only available in Veeam Explorer for Microsoft Exchange that comes as part of Veeam Backup for Microsoft Office 365 distribution package.
Restoring Microsoft SharePoint Document Libraries and Lists

To restore document libraries and lists, do the following:

1. In the navigation pane, select a library or list.
2. On the Library tab, select Restore Library/Restore List or right-click an object and select Restore Library/Restore List.
3. Proceed to Specify Target SharePoint.

Step 1. Specify Credentials

At this step of the wizard, specify target server credentials. The credentials dialog might be different and depends upon the organization type you are restoring from.

Specifying Credentials for Office 365 Organizations

Specify authentication credentials to access your Microsoft Office 365 organization and click Next.
Specifying Credentials for SharePoint Organizations

Specify authentication credentials to access your on-premises SharePoint organization and click Next.

Restoring from Microsoft SQL Database

When restoring from a Microsoft SQL database, provide the following:

- The site URL to which you want to recover your site.
- Authentication credentials.
NOTE:
When recovering Microsoft SharePoint sites from a Microsoft SQL database, you will be taken directly to the Specify Restore Options step.

Step 2. Specify Target List
At this step of the wizard, specify whether to restore items to the original list or choose another one.
If a document library or list that is being restored does not exist, Veeam will create it automatically.

Step 3. Specify Restore Options
At this step of the wizard, specify restore options and click Restore.
The restore options are as follows:

- **Changed items.** Allows you to recover data that has been modified in your production environment.
- **Missed items.** Allows you to recover missed items.
- **Restore permissions.** Allows you to recover permissions. If not selected, the permissions for the recovered document library or list will be set as follows:
  - If the library (or list) does not exist on target, it will be created inheriting permissions from the parent object.
  - If the library (or list) already exists on target, permissions will be preserved.
- **Restore list view.** Allows you to recover your list views.
- **History restore options.** Allows you to select a version:
  - **Overwrite.** To overwrite data in the production environment by recovering only the latest version of the document from the backup.
  - **Merge.** To merge an existing version of the document with that of a backup version.
  If not selected, all the versions in the production environment will be replaced with the corresponding data from the backup file.

**NOTE:**

The **Send a notification by e-mail to the users with permission to the file** checkbox is only available when restoring data from backups created by Veeam Backup for Microsoft Office 365 for Microsoft Online organizations.
Restoring Microsoft SharePoint Documents and List Items

To restore documents and list items, do the following:

1. In the navigation pane, select a document or list item.
3. Proceed to Specify Target SharePoint.

Step 1. Specify Credentials

At this step of the wizard, specify target server credentials. The credentials dialog might be different and depends upon the organization type you are restoring from.

Specifying Credentials for Office 365 Organizations

Specify authentication credentials to access your Microsoft Office 365 organization and click Next.
Specifying Credentials for SharePoint Organizations

Specify authentication credentials to access your On-Premises SharePoint organization and click Next.

Restoring from Microsoft SQL Database

When restoring from a Microsoft SQL database, provide the following:

- The site URL to which you want to recover your site.
- Authentication credentials.
NOTE:
When recovering Microsoft SharePoint sites from a Microsoft SQL database, you will be taken directly to the Specify Restore Options step.

Step 2. Specify Target Location

At this step of the wizard, specify whether to restore items to the original list or choose another one.

NOTE:
When restoring documents or lists, both must be presented in your production environment.
Step 3. Specify Restore Options

At this step of the wizard, specify restore options and click **Restore**.

The restore options are as follows:

- **Changed items.** Allows you to recover data that has been modified in your production environment.
- **Missed items.** Allows you to recover missed items.
- **Restore permissions.** Allows you to recover permissions. If not selected, permissions for the recovered document library or list will be set as follows:
  - If the library (or list) does not exist on target, it will be created inheriting permissions from the parent object.
  - If the library (or list) already exists on target, permissions will be preserved.
- **History restore options.** Allows you to select a version:
  - **Overwrite.** To overwrite data in the production environment by recovering only the latest version of the document from the backup.
  - **Merge.** To merge an existing version of the document with that of a backup version.

If not selected, all the versions in the production environment will be replaced with the corresponding data from the backup file.

**NOTE:**

The **Send a notification by e-mail to the users with permission to the file** checkbox is only available when restoring data from backups created by Veeam Backup for Microsoft Office 365 for Microsoft Online organizations.
Restoring Microsoft SharePoint Sites

To restore sites, do the following:

1. In the navigation pane, select a site.
2. On the Site tab, select Restore Site or right-click an object and select Restore Site.
3. Proceed to Specify Credentials.

**NOTE:**

Sites can only be restored to the existing site collection. Creating a new collection is not supported.

---

**Step 1. Specify Credentials**

At this step of the wizard, specify target server credentials. The credentials dialog might be different and depends upon the organization type you are restoring from.

**Specifying Credentials for Office 365 Organizations**

Specify authentication credentials to access your Microsoft Office 365 organization and click Next.
Specifying Credentials for SharePoint Organizations

Specify authentication credentials to access your On-Premises SharePoint organization and click Next.

Restoring from Microsoft SQL Database

When restoring from a Microsoft SQL database, provide the following:

- The site URL to which you want to recover your site.
- Authentication credentials.
NOTE:
When recovering Microsoft SharePoint sites from a Microsoft SQL database, you will be taken directly to the **Specify Restore Options** step.

### Step 2. Specify Target Site

At this step of the wizard, specify whether to restore the site back to the original location or choose a site alias you want to use.

**NOTE:**
This step is unavailable when recovering Microsoft SharePoint sites from a Microsoft SQL database.

### Step 3. Specify Restore Options

At this step of the wizard, specify restore options and click **Restore**.

The restore options are as follows:

- **Changed items.** Allows you to recover data that has been modified in your production environment.
- **Missed items.** Allows you to recover missed items.
- **Restore permissions.** Allows you to recover permissions. If not selected, permissions will be inherited from the parent site.
- **Restore subsites.** Allows you to recover subsites. If not selected, sites that are being restored, will contain only document libraries and lists.
- **History restore options.** Allows you to select a version:
  - **Overwrite.** To overwrite data in the production environment by recovering only the latest version of the document from the backup.
  - **Merge.** To merge an existing version of the document with that of a backup version.
If not selected, all the versions in the production environment will be replaced with the corresponding data from the backup file.

**NOTE:**

The **Send a notification by e-mail to the users with permission to the file** checkbox is only available when restoring data from backups created by Veeam Backup for Microsoft Office 365 for Microsoft Online organizations.
Data Export

Continue with this section to learn more about exporting and importing Microsoft SharePoint data.

NOTE:
Export is unavailable when restoring data from backups created by Veeam Backup for Microsoft Office 365.
Exporting Microsoft SharePoint Data

Veeam Explorer for SharePoint allows you to export SharePoint document libraries and lists.

The exported content will be saved as a set of XML files and can be imported to another SharePoint database using PowerShell cmdlets, as described in Importing Microsoft SharePoint Data.

To export SharePoint data, do the following:

1. In the navigation pane, select a library or list.
2. On the Library tab, select Export Library/Export List or right-click an object and select Export Library/Export List.
3. Specify the output directory and click OK.

**NOTE:**

Export of items is not supported in the current version.
Importing Microsoft SharePoint Data

To import document library or list, use either of the following PowerShell cmdlets:

- For PowerShell snap-in, use the following command.

```
Add-PsSnapin Microsoft.SharePoint.PowerShell
Import-SPWeb -Identity "http://<web_server_name>/sites/<destination_site>" -Path "C:\<export_folder>" -NoFileCompression -IncludeUserSecurity
```

- For SharePoint Management Shell, use the following command.

```
Import-SPWeb -Identity "http://<web_server_name>/sites/<destination_site>" -Path "C:\<export_folder>" -NoFileCompression -IncludeUserSecurity
```

where:

- `<web_server_name>` — destination web server;
- `<destination_site>` — destination web site;
- `<export_folder>` — source folder containing exported library/list content.

To get extended help on the `Import-SPWeb` command, use the following command.

```
Get-Help Import-SPWeb -full
```
Saving Microsoft SharePoint Documents and Libraries

Veeam Explorer for Microsoft SharePoint allows you to save your libraries and library documents to a specified location.

To save a Microsoft SharePoint library or library documents, do the following:

1. In the navigation pane, select a library.

2. On the Library tab, select Save Library > Save files or Save Library > Save as ZIP or right-click an object and select Save Library > Save files or Save Library > Save as ZIP.

To save documents from a library, select a document in the preview pane and click Save Document > Save files or Save Document > Save as ZIP.
Sending Microsoft SharePoint Documents and Libraries

Veeam Explorer for Microsoft SharePoint allows you to send libraries or library documents to the specified recipients via email.

**TIP:**
Before sending documents, make sure to configure SMTP settings, as described in Configuring SMTP Settings. The amount of data you can send at a time depends on your SMTP server configuration.

To send Microsoft SharePoint library or library documents, do the following:

1. In the navigation pane, select a library to send.
2. On the **Library** tab, select **Send Library** or right-click an object and select **Send Library**.
3. Provide a recipient address.

   The **From** field is filled automatically based on the address you have provided when configuring SMTP settings. To edit the message body, click **More Details**.
Veeam Explorer for Microsoft OneDrive for Business

Veeam Explorer for Microsoft OneDrive for Business allows you to restore Microsoft OneDrive data from backups created by Veeam Backup for Microsoft Office 365.
What's New

The following new features and enhancements have been implemented in Veeam Explorer for Microsoft OneDrive for Business that comes as part of Veeam Backup & Replication 9.5 Update 4 and Veeam Backup for Microsoft Office 365 3.0:

- Support for shared links.
- Performance and stability Improvements.
Planning and Preparation

Veeam Explorer for Microsoft OneDrive for Business comes as part of the Veeam Explorer for Microsoft SharePoint installation package and has the same system requirements.
Launching Application and Exploring Backups

You can launch Veeam Explorer for Microsoft OneDrive for Business and explore the content of a backup file in any of the following ways:

- You can use the **Explore** option to explore backups created by Veeam Backup for Microsoft Office 365. For more information, see the **Data Restore** section of the Veeam Backup for Microsoft Office 365 user guide.
- You can go to **Start** and click **Veeam Explorer for Microsoft OneDrive for Business** to launch the application as a standalone console. Then, add Microsoft OneDrive databases manually, as described in the **Standalone Databases Management** section.

When launching from the **Start** menu, specify the following parameters:

- Specify the name or IP-address of a Veeam Backup for Microsoft Office 365 server to which you want to connect.
- Specify the port number.
- Specify user credentials to connect to the server.
  - The account must be a member of the **Local Administrator** group on a target server. To use your current account, select **Use Windows session authentication**.

To save the connection shortcut to your desktop, click **Save shortcut** in the bottom-left corner.

![Veeam Explorer for Microsoft SharePoint](image)

Type in a backup server name or IP address, backup service port number, and user credentials to connect with:

- **MyTargetVSServer**: `0392`
- **OLM\administrator**
- **Password**
- **Use Windows session authentication**

**Save shortcut**  Connect  Close
Understanding User Interface

Veeam Explorer for Microsoft OneDrive for Business provides you with the convenient user interface that allows you to perform required operations in a user-friendly manner.

Main Menu

The main menu comprises the following features:

- **General Options.** Allows you to configure program options. See [Performing Initial Configuration Settings](#).
- **Help.**
  - **Online help.** Opens the online web help page.
  - **About.** Shows current product information.
- **Exit.** Closes the program.

Main Application Window

The main application window might be divided into three categories:

1. The ribbon menu, which contains general program commands organized into logical groups.
2. The navigation area, which allows you to browse through the hierarchy of your backup files.
3. The preview pane, which shows you the details about objects you have selected in the navigation area.
Browsing, Searching and Viewing Items

Continue with this section to learn more about:

- Browsing your backup content
- Viewing objects properties and open files
- Searching for objects in a backup file
- Using the advance search capabilities

Browsing

To view the content of a backup file, you use the navigation pane which shows you the database structure containing your OneDrive documents.

After you select an object in the navigation pane, you can see its content in the preview pane.
Viewing Properties and Opening Files

To view object properties, right-click an object in the preview pane and select View Properties.

To open a document using an associated application, right-click a document in the preview pane and select Open.

Searching

The search mechanism allows you to find items matching specified search criteria.

To search for required items, do the following:

1. In the navigation pane, select an object in which you want to find your data.
2. Type in a search query using the search field at the top of the preview pane.

**NOTE:**

To find the exact phrase, use double quotes. For example, “Attachments”.

You can narrow your search results by specifying various search criteria using the criteria:value format. You can also use logical upper-cased operators such as AND, OR and NOT along with wildcard characters such as * and ?.
Using Advanced Find Capabilities

The Advanced Find mechanism allows you to define your search criteria more precisely. For example, to find an object that starts with the word Attachme, do the following:

1. In the preview pane, select a content node and click Advanced Find.
2. In the Define search criteria section, select Category > Document fields.
3. In the Field list, select File Name.
4. In the Condition list, select Starts With.
5. In the Value field, specify a file name.
6. Click Start.

To remove a filter, click the cross mark next to it. To remove all configured filters, click Reset.
## Search Criteria Definition

### Define search criteria

**Category:** Frequently-used fields

**Field:** Anniversary

**Condition:** Between

**Value:** Monday, December 10, 2018 to Monday, December 10, 2018

### Search Results

<table>
<thead>
<tr>
<th>Name</th>
<th>Created By</th>
<th>Created</th>
<th>Modified By</th>
<th>Modified</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document.doc</td>
<td>Administrator</td>
<td>5/30/2018 5:01:16 PM</td>
<td>Administrator</td>
<td>5/30/2018 5:01:16 PM</td>
<td>1.0</td>
</tr>
</tbody>
</table>
General Application Settings

Continue with this section to learn more about configuring required application settings and components.
Enabling Extended Logging

Log files are used to troubleshoot a variety of different situations when certain processes may have gotten the unexpected results while being executed.

By default, logs are collected in the default mode. In certain cases, you may need to enable the extended logging mode to collect logs that contain more details on specific operations.

To configure extended logging mode, do the following:

1. Go to the main menu and click the **General Options**.
2. On the **General** tab, select the **Enable Extended logging** checkbox.
3. Go back to the application, perform necessary actions and then review the logs to see the details.
Configuring SMTP Settings

To send Microsoft OneDrive items as attachments, you must configure SMTP server settings.

To configure SMTP settings, do the following:

1. Go to the main menu and click **General Options**.

2. On the **SMTP Settings** tab, select the **Configure SMTP settings** checkbox and specify the following:
   - DNS name or IP address of the mail server.
   - SMTP communication port.
   - The sender email address. This address will appear in the From field when sending OneDrive items. See **Sending Microsoft OneDrive Documents**.
   - Select **Use authentication** checkbox if your SMTP server requires SMTP authentication for outgoing mail and provide valid credentials.
   - Select **Enable SSL security** checkbox to enable SSL data encryption.

3. Click **Send** to send a test email message.

4. Click **Apply**.
Standalone Databases Management

Continue with this section to learn more about adding and removing OneDrive for Business databases.
Adding Veeam Backup for Microsoft Office 365 Databases

To manually add databases that store Microsoft Office 365 organization data, do the following:

1. Click **Add Org > Veeam Backup for Microsoft Office 365 Databases** on the ribbon menu or use the corresponding context menu command.

2. Specify the database file location and log directory.

3. Click **Open**.

![ADD DATABASE](image-url)
Adding Veeam Backup for Microsoft Office 365 Server

You can use the built-in Veeam Explorer abilities to connect to another Veeam Backup for Microsoft Office 365 server and add its databases to the Veeam Explorer for Microsoft OneDrive for Business scope.

To connect to another Veeam Backup for Microsoft Office 365 server, do the following:

1. Click **Add Org > Veeam Backup for Microsoft Office 365 Server** on the toolbar or use the corresponding context menu command.

2. Specify connection settings under which to connect to the Veeam Backup for Microsoft Office 365 server and click **Connect**.
Adding Veeam Backup for Microsoft Office 365 Service Provider

Veeam Explorer for Microsoft OneDrive for Business allows you to add Microsoft Office 365 organization backups located on service providers servers.

**IMPORTANT!**

Consider the following:

- Both Veeam Explorer for Microsoft OneDrive for Business and Veeam Backup and Replication must be installed on the same machine.
- At least one service provider must be added to Veeam Backup and Replication, as described in Connecting to Service Providers.

To add Office 365 databases, do the following:

1. From the **Start** menu, launch Veeam Explorer for Microsoft OneDrive for Business.
2. On the toolbar, click **Add Org > Veeam Backup for Microsoft Office 365 Service Provider** or use the corresponding context menu command.
3. In the drop-down menu, select a tenant account to which you want to connect.
   The list of available tenants depends on added service providers.
4. Provide your Microsoft Office 365 organization credentials.
5. Click **Connect**.

You can also select a point-in-time state as of which you want to load an organization database. For more information, see Specifying Point in Time.
Specifying Point in Time

When you connect to the service provider server, you may want to select a particular state as of which to add an organization database to the Veeam Explorer for Microsoft OneDrive for Business scope.

To select a state, do the following:

1. After you select **Veeam Backup for Microsoft Office 365 Service Provider** and provide required credentials, click **Specify point in time**.

2. Specify a point in time state you want to open.
   
   The following options are available:
   
   - **Use latest available state.** Select this option to load the latest backup state.
   - **Use the following point in time.** Select this option if you want to load a particular state of your database. For example, as of a month ago.

   To select a state, use the calendar control.

3. To load items that have been deleted by the user, select **Show items that have been deleted by user**.

4. To load all versions of items that have been modified by the user, select **Show all versions of items that have been modified by user**.
Removing Standalone Databases

Veeam Explorer for Microsoft OneDrive for Business allows you to remove an organization from the application scope when you no longer need it.

To remove an organization from the application scope, right-click an organization in the navigation pane and select **Remove organization**.
Restoring Microsoft OneDrive Data

Veeam Explorer for Microsoft OneDrive for Business allows you to restore users OneDrives or certain documents and/or folders of the selected OneDrive.

**NOTE:**

To use an internet proxy server to restore backups, make sure to provide appropriate proxy server address and the port number. For that, go to the **Control Panel > Internet Options Connections** tab, click **LAN Settings**, select the **Use a proxy server for your LAN** checkbox and specify a proxy server you want to use. Credentials for such a proxy (if needed) will be taken from the **Control Panel > Credential Manager > Windows Credentials** console.

To restore data, do the following:

1. Select an object.

2. On the ribbon menu or using the corresponding context menu command, click **Restore OneDrive** or **Restore Document/Folder** when restoring documents/folders and **Restore OneDrives** when restoring OneDrives of the selected organization or group.

3. Select either:
   - **Overwrite** — to completely overwrite existing OneDrive data.
   - **Keep** — to preserve existing data and recover items with the **RESTORED** prefix (**RESTORED-<file_name>.ext**).
4. Specify Office 365 credentials to access the target server and click **Restore**.
Copying Microsoft OneDrive Data

Veeam Explorer for Microsoft OneDrive for Business allows you to copy OneDrive data to the same or different user.

To copy OneDrive data, do the following:

1. Select an object.
2. On the Folder tab, select **Copy OneDrive/Copy Folder/Copy Document** or right-click an object and select **Copy OneDrive/Copy Folder/Copy Document**.
3. Proceed to **Specify Credentials**.
Step 1. Specify Credentials

At this step of the wizard, specify target server credentials. The credentials dialog might be different and depends upon the organization type you are restoring from.

Specifying Credentials for Office 365 Organizations

Specify valid credentials to access your Microsoft Office 365 organization and click Next.

![Specify Office 365 credentials dialog](image)

Specifying Credentials for SharePoint Organizations

Specify valid credentials to access your On-Premises SharePoint organization and click Next.

![Specify on-premises organization credentials dialog](image)
Step 2. Specify Target User

At this step of the wizard, specify the destination user to which you want to copy your data.

You can select either of the following options:

- **Restore to original user.** To restore data back to the original user.
- **Restore to the following user.** To restore data to a custom user.

To select a user, click **Browse.**
Step 3. Specify Target Folder

At this step of the wizard, specify the target directory to which you want to copy your data.
Step 4. Specify Restore Options

At this step of the wizard, specify restore options and click Restore.

The restore options are as follows:

- **Changed items.** Allows you to restore data that has been modified in your production environment.
- **Missed items.** Allows you to restore missed items.
- **Restore shared access.** Allows you to restore shared access.
- **History restore options.** Allows you to select a version:
  - **Overwrite.** To overwrite data in the production environment by recovering only the latest version of the document from the backup.
  - **Merge.** To merge an existing version of the document with that of a backup version.

If not selected, all the versions in the production environment will be replaced with the corresponding data from the backup file.
Saving Microsoft OneDrives

Veeam Explorer for Microsoft OneDrive for Business allows you to save OneDrive content to the specified location.

To save data, do the following:

1. Select OneDrive.

2. On the Home tab, select Save OneDrives > Save files/Save OneDrive > Save files or right-click an object and select Save OneDrives > Save files/Save OneDrive > Save files.

Select Save as ZIP to save OneDrive documents and/or folders as ZIP.

3. Select OneDrive accounts to save.
4. Specify a directory to save OneDrive data and click **Finish**.

Specify destination path

Specify folder path:

C:\Users\Administrator\Desktop

[Browser...]

Save
Saving Microsoft OneDrive Documents and Folders

Veeam Explorer for Microsoft OneDrive for Business allows you to save your documents and folders located on users OneDrives to a specified location.

To save a document or folder, do the following:

1. Select a folder or document.
2. On the Home tab, select Save Document > Save files/Save Folder > Save files or right-click an object and select Save Document > Save files/Save Folder > Save files.

Select Save as ZIP to save OneDrive documents and/or folders as ZIP.

3. Specify the destination folder and click Select Folder.
Sending Microsoft OneDrive Documents

Veeam Explorer for Microsoft OneDrive for Business allows you to send OneDrive documents to specified recipients via email.

TIP:
Before sending documents, make sure to configure SMTP settings, as described in Configuring SMTP Settings. The amount of data you can send at a time depends on your SMTP server configuration.

To send OneDrive documents via email, do the following:

1. Select OneDrive or a document.
2. On the Document tab, select Send OneDrive/Send Document or right-click an object and select Send OneDrive/Send Document.
3. Provide a recipient address.

The From field is filled automatically based on the address you have provided when configuring SMTP settings. To edit the message body, click More Details.
<table>
<thead>
<tr>
<th>From:</th>
<th><a href="mailto:Administrator@tech.local">Administrator@tech.local</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>To:</td>
<td><a href="mailto:recipient@tech.local">recipient@tech.local</a></td>
</tr>
<tr>
<td>Subject:</td>
<td>OneDrive Documents Recovery</td>
</tr>
</tbody>
</table>

File details:

by Veeam Explorer for Microsoft OneDrive for Business.