Veeam Availability Orchestrator Release Notes

This document provides last-minute information about Veeam Availability Orchestrator (VAO), including system requirements and relevant information on technical support, documentation, online resources and so on.

The current version of Veeam Availability Orchestrator is available from May 21st, 2019.

See next:

- System Requirements
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# System Requirements

This section describes hardware and software requirements for Veeam Availability Orchestrator.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
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</table>
| Hardware       | **VAO server:**  
|                | CPU: modern x64 processor, 3GHz x6 cores minimum (x16 cores recommended).  
|                | Memory: 16GB RAM minimum (40GB RAM recommended).  
|                | **Note:** The above requirements allow up to 50 Veeam Backup & Replication servers to be connected to the VAO server, with 100 VMs per server, with jobs scheduled to run daily.  
|                | **Microsoft SQL Server** to store VAO data:  
|                | CPU: modern x64 processor, 3GHz x4 cores minimum (6-8 cores recommended).  
|                | Memory: 16GB RAM minimum (32GB RAM recommended). |
| OS             | Only 64-bit versions of the following operating systems are supported:  
|                | • Microsoft Windows Server 2019  
|                | • Microsoft Windows Server 2016  
|                | • Microsoft Windows Server 2012 R2  
|                | • Microsoft Windows Server 2012  
|                | • Microsoft Windows Server 2008 R2 SP1  
|                | **Note:** You cannot install VAO on a machine running Microsoft Windows Server Core, or on a Domain Controller. |
| User Management| Windows domain-joined machine. |
| SQL Server     | Local or remote installations of the following versions of Microsoft SQL Server are supported:  
|                | • Microsoft SQL Server 2019  
|                | • Microsoft SQL Server 2017  
|                | • Microsoft SQL Server 2016 (2016 SP1 Express Edition is included in the setup)  
|                | • Microsoft SQL Server 2014  
|                | • Microsoft SQL Server 2012 (2012 SP4 Express Edition is included in the setup)  
|                | **Note:** It is not recommended to use the Express Edition in any production VAO deployments — it should only be used for product evaluation. |
| Additional Software | All components will be installed during setup.  
|                | For inline Report Template editing, Microsoft Word component of SP2 for Microsoft Office 2010 or later is required. |
| Veeam Software | If a standalone Veeam Backup & Replication server is used for replication task management, it must be version 9.5 Update 4 or later. However, it is recommended that you install version 9.5 Update 4a as it includes a number of important fixes related to VAO functionality. |
## Required Permissions

The accounts used for installing and using Veeam Availability Orchestrator must have the following permissions.

<table>
<thead>
<tr>
<th>Account</th>
<th>Required Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setup Account</strong></td>
<td>The account used for product installation must be a domain user who has the Local Administrator permissions on the target machine.</td>
</tr>
<tr>
<td><strong>VAO Service Accounts</strong></td>
<td>The accounts used to run VAO services, Veeam Backup &amp; Replication services and Veeam ONE services must have Local Administrator permissions on the VAO server. The accounts must also be granted the <em>Log on as a service</em> right. For more information on Windows security policy settings, see Microsoft Docs.</td>
</tr>
<tr>
<td><strong>VAO Agent Account</strong></td>
<td>The account used to install and run a VAO agent on a Veeam Backup &amp; Replication server must have both the local Administrator and the Veeam Backup Administrator permissions on the server.</td>
</tr>
<tr>
<td><strong>VAO User Accounts</strong></td>
<td>The accounts used to log in to the VAO UI must be granted the <em>Allow log on locally</em> right. For more information on Windows security policy settings, see Microsoft Docs.</td>
</tr>
<tr>
<td><strong>vCenter Server Permissions</strong></td>
<td>The account used to connect the vCenter Server to the VAO infrastructure must have administrative permissions. You can either grant the Administrator role to the account or configure more granular permissions. For more information, see Veeam Backup &amp; Replication Required Permissions and Veeam ONE Required Permissions.</td>
</tr>
<tr>
<td><strong>Microsoft SQL Server</strong></td>
<td>Different sets of Microsoft SQL permissions are required in the following cases:</td>
</tr>
<tr>
<td></td>
<td>• <strong>Installation</strong> (remote or local): the current account needs the <code>CREATE ANY DATABASE</code> permission on the SQL Server level. After the database is created, this account automatically gets a <em>db_owner</em> role and can perform all operations with the database.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Operation</strong>: the account used to run VAO services, Veeam Backup &amp; Replication services and Veeam ONE services requires the <em>db_owner</em> role, as well as permissions to execute stored procedures for the configuration databases on the Microsoft SQL Server. For more information, see Veeam Backup &amp; Replication Required Permissions and Veeam ONE Required Permissions.</td>
</tr>
<tr>
<td><strong>VAO Step Accounts</strong></td>
<td>The account used to run the <strong>Verify SharePoint</strong> step, must be assigned the <code>SharePoint_Shell_Access</code> role and must be a member of the <em>WSS_ADMIN_WPG</em> group on the processed VM. The account used to run the <strong>Verify Exchange Mailbox</strong> step, must be assigned the <code>ApplicationImpersonation</code> role on the processed VM.</td>
</tr>
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</table>
New in This Release

The following features and enhancements were introduced in Veeam Availability Orchestrator 2.0.

Simplified VAO architecture

To manage your production infrastructure, you no longer have to install additional VAO instances — you will only need a single VAO server deployed in the DR site, and you will connect production VI servers directly to this server.

Delegation of plan management and plan components is achieved using Scopes in VAO 2.0.

VAO scopes

VAO now controls access to its functionality with the help of Scopes. A scope defines what operations users can perform and what range of data is available to them in the VAO UI.

For a scope, VAO Administrators can assign user roles and limit the number of plan components available in the VAO UI to users from that scope.

Restore plans

VAO 2.0 allows you to create Restore Plans that use VM backup files to recover your production workloads. Any virtual machines that were backed up using Veeam Backup & Replication can be recovered as part of an orchestrated plan, which includes VM heartbeat, network, and application verification, with advanced reporting. All the features of VAO 1.0 for replica failover are now implemented for restore-from-backup.

Recovery locations

Before you run a restore plan, you can choose whether to recover VMs to the original location or to a new location.

Recovery Locations are groups of target resources (Compute, Storage and Network) used by VAO to orchestrate recovery. Recovery locations are automatically populated via vSphere Tags using the embedded Veeam ONE server and its Business View engine.

Failback to specified location

Before you run a failback operation, you can choose whether to recover VMs to the original or to a new location. If you select a new recovery location, VAO will copy and start VM replicas in this location.

RTO and RPO for orchestration plans

When you build an orchestration plan, you can define your Recovery Time Objective (RTO) and Recovery Point Objective (RPO) for the plan:

- While running a readiness check, VAO will verify whether the actual plan RPO meets the desired RPO value by checking the timestamp of restore points. If the RPO is not met, VAO will log a warning in the Readiness Check Report.
- When testing an orchestration plan, VAO will verify if test runtime is within the acceptable limit for the target RTO. If not, VAO will log a warning in the DataLab Test Report.
Context help

To help new users understand essential VAO concepts, the VAO UI shows context-related pop-up messages. These messages contain basic introductory information and provide links to the online VAO documentation.

Extended management of credentials

The VAO UI now allows you to override passwords for credentials obtained from connected Veeam Backup & Replication servers, and to add any domain and non-domain accounts (in any format).

Handling VMs deleted in vCenter Server

If a VM orchestrated by an existing VAO plan is removed from the vCenter Server inventory, you will still be able to perform recovery actions for the VM unless you delete the VM replica and all the VM backup files as well. However, you can manually remove such a VM from the plan if required.

This feature prevents situations when an important VM is removed from the inventory by accident or as a result of bad intentions.

Testing plans in different modes

When you test an orchestration plan, you have an option not only to verify that VM backups are ready-to-use, but also to check that the recovery location to which the VMs will be restored is available and has enough resources to support the recovery process. In both cases though, VAO will run all verification steps added to the plan to make sure that the plan will be able to complete successfully.

Connecting to VM console

While testing and running an orchestration plan, you can connect directly to the console of any VM being recovered. This requires vCenter permissions to allow web console view to be opened, and the current user will also require credentials to log into the guest OS running on the VM.

Localized Veeam default template

VAO now includes 8 instances of the default template that come in the following languages: English, Japanese, Chinese, Russian, Portuguese, French, Spanish, German. Note that only the Template file is available in different languages; the additional tables and data generated at report runtime will still contain English.

Dynamic variables in reports

When customizing a Veeam default template, you can include a number of plan properties in your customization. These variables will be dynamically inserted into the final report when it is generated.

VAO allows you to insert the following dynamic variables in the template: ~Created, ~TimeZone, ~PlanType, ~PlanName, ~PlanDescription, ~PlanContactName, ~PlanContactEmail, ~PlanContactTel, ~Site, ~SiteScopeName, ~SiteDescription, ~SiteContactName, ~SiteContactEmail, ~SiteContactTel, ~ServerName, ~VmsInPlan, ~GroupsInPlan, ~ReportType, ~TargetRTO and ~TargetRPO.
Known Issues and Limitations in v2.0

This section lists issues known in Veeam Availability Orchestrator 2.0.

VAO UI issues when running lab test

When you test a plan, the following issues may occur in the VAO UI:

- VAO calculates the completion percentage wrong and displays the test lab execution progress bar incorrectly
- Lab group states are shown incorrectly
- Plan states are shown incorrectly

To resolve the issues, try reloading the page by pressing F5.

Unable to uninstall VAO from Apps & features

If you try to remove Veeam Availability Orchestrator from the Apps & features list, you will get the following error: “This file does not have a program associated with it for performing this action.”

To work around the issue, uninstall VAO using Control Panel as described in the Veeam Availability Orchestrator Deployment Guide, section Uninstalling Veeam Availability Orchestrator.

Failback to specified location ignores Failback Timeout parameter

When running failback operations, VAO does not process the Failback Timeout parameter value correctly. Regardless of the value you specify, VAO will infinitely wait for the step to complete. You will have to halt the plan manually if required.

VM web console connection fails

After you restart the Veeam Availability Orchestrator Service, VAO may fail to open the VM console and may display the Connection Failure error. To resolve the issue, close the console and try opening it several minutes later.

Toolbar controls disabled on Plan Details / Lab Details pages

In some cases, after a plan changes its state, the VAO UI fails to update toolbar buttons on the Plan Details / Lab Details pages and the buttons remain disabled. To resolve the issue, refresh the page.

No upgrade from VAO 1.0

Upgrade from Veeam Availability Orchestrator version 1.0 to version 2.0 is not supported. To learn how to manually migrate VAO 1.0 deployment to version 2.0, see this Veeam KB article.

Issues restoring VMs contained in VMware vApps

Currently, VAO is unable to restore VMs contained in a VMware vApp to the source’s original location. To resolve the issue, choose a different location.
Supported storage types

Restore plans created in VAO 2.0 can orchestrate recovery from backup files stored only in repositories of the following storage types:

- Direct-attached storage (both Microsoft Windows and Linux)
- Network-attached storage (SMB shares)
- Deduplicating storage appliances (Dell EMC Data Domain, ExaGrid, HPE StoreOnce and Quantum DXi)

**NOTE:**
If you plan to run DataLab tests using deduplicating storage appliances, note the limitations described in this Veeam KB article).

VAO does not support the following storage types:

- Tape storage
- Replicating storage infrastructure

**Restored VMs placed in root resource pools and VM folders**

When VAO restores VMs to a recovery location which has Instant VM Recovery enabled, VMs are added to the root resource pool or the root VM folder. To resolve the issue, move VMs to the required resource pool or folder manually.

**Restored lab group VMs not connected to isolated network**

When starting a DataLab test, VAO is unable to connect lab group VMs which are recovered from backups to the isolated lab network if the source VM networks do not exist on the vSphere host where the lab is running.

**Some vSphere Distributed Switches not displayed in recovery location resources**

VAO can discover only those vSphere Distributed Switches that are connected to at least one ESXi host managed by VAO. Only in this case you will be able to add such a DVS to network resources when configuring recovery locations in VAO UI.

**Data collection issues when connecting standalone ESXi hosts**

Even though VAO does not support direct connections to ESXi hosts, VAO UI still allows you to do that. However, keep in mind that VAO functionality will be significantly limited in this case. For example, the VAO server will not be able to collect information on network configuration for such hosts and to discover VMs registered on the hosts.

**Infrastructure configurations with vCloud Director not supported**

If you have a VMware vCloud Director server added to your backup infrastructure, VAO will not be able to process VMs managed by vCenter Servers connected to this server.

To work around the issue, it is recommended to remove the VMware vCloud Director server from the backup infrastructure and connect the required vCenter Servers directly.
Known Issues and Limitations in v1.0

Installing Veeam ONE Monitor Client and VAO Server separately

By default, all VAO Server components are installed all together on a single machine. If you want to install Veeam ONE Monitor Client separately on a Windows Desktop OS, run the .msi file available in the VAO installation folder by the following path:

- `<VAO>\monitor\veeam_monitor_cln_x64.msi` for 64-bit OS
- OR-
- `<VAO>\monitor\veeam_monitor_cln_x86.msi` for 32-bit OS

If you want to install Veeam ONE Monitor Client separately on a Windows Server OS, simply launch the VAO setup wizard, and follow the instructions provided in the Veeam Availability Orchestrator Deployment Guide, section Installation Procedure.

Case-sensitive SQL Server database not supported for VAO

When you follow the VAO installation wizard as described in the Veeam Availability Orchestrator Deployment Guide, you have an option to use an existing Microsoft SQL Server instance to host the VAO database. When choosing the instance, keep in mind that VAO does not support case-sensitive SQL Server databases.

Cannot open VAO UI in Microsoft Edge

When you try to launch VAO UI using the Microsoft Edge browser, you get the network error 0x800c0019. This is a known Microsoft issue. Try reloading the page by pressing Ctrl + F5, or use any other web browser.

Windows authentication recommended for VAO SQL database

To let Veeam Availability Orchestrator connect to the Microsoft SQL Server instance that hosts the VAO database, you must specify authentication credentials during VAO Server installation. However, if you change the password later, you will not be able to modify the provided credentials, and VAO will fail to connect to the SQL Server instance.

To work around the issue, it is recommended to use Windows Authentication when choosing credentials to connect to the Microsoft SQL Server.

Connection Failure error displayed occasionally

When browsing VAO UI, you may get the “Connection failure” error. This is a known issue, and it is recommended to ignore the error since it does not affect VAO performance.

Local accounts not supported for VAO Roles

When you perform initial configuration for the VAO server, the Initial Configuration Wizard allows you to add users that will be assigned the Administrator role for the server. Please keep in mind that you cannot assign the role to a local Administrator. You cannot add local Administrators to any of the user groups provided by VAO. Only domain accounts are supported.
Two-way trust required for VAO roles across domains

VAO controls access to its functionality with the help of user roles. A user role defines what operations a user can perform and what scope of data is available to the user in the VAO UI. The list of users and user groups can be edited using the Users and Scopes tab of the Administration section of the VAO UI. However, you will not be able to add users or user groups from domains with one-way trust relationships, and VAO will display the following error: "The VAO service account cannot access domain <n>. This may be due to insufficient domain trusts or security restrictions."

VAO agent repair process fails

On the VAO Agents tab of the Administration section of the VAO UI you have an option to Repair a failed VAO agent installed on a Veeam Backup & Replication server. However, when you try to do that, you may get the following error: "Repair failed -> The specified service has been marked for deletion".

You will encounter this error in case the VAO agent is locked by another service running on the server. To work around the issue, log in to the server and make sure that:

1. The Microsoft Management Console, Task Manager and Process Explorer are closed. If any of these applications is running, close it.
2. The Veeam Orchestrator Agent Management Service (VaoAgentSvc), Veeam Orchestrator Agent for Backup (VAOBackupAgent), Veeam Orchestrator Agent for Enterprise Manager (VAOEmAgent) have been deleted or have the StartUpType value set to Enabled.

If any of the services has the StartUpType value set to Disabled, restart the server.

Then try repairing the VAO agent again.

VAO installation process not supported on Domain Controller

It is not recommended to install VAO components on domain controllers. When you try to install VAO on a machine with the Domain Controller role, the domain controller cannot validate specified agent credentials, and the installation process fails.

VAO orchestration plans fail to complete

vCenter Server connection issue

If you connect a vCenter Server to a standalone Veeam Backup & Replication server, you must also connect the same vCenter Server to the VAO server. Otherwise, Veeam ONE will fail to map VM inventory correctly, VAO will be unable to locate VM backups and replicas when running orchestration plans, and the plans will fail to complete.

Veeam ONE data collection issue

Another reason why Veeam ONE will fail to map VM inventory correctly is that, by design, Veeam ONE collects historical data from the newly connected Veeam Backup & Replication servers for the previous week only. In this case VAO will also be unable to locate VM backups and replicas when running orchestration plans.

To resolve the issue, run backup and replication jobs that has not been run for more than one week.

Orchestration plan configuration issue

An orchestration plan may also fail to complete in case you choose the Ping VM Network, Check VM Heartbeat, Process Replica VM, Restore VM or any of Verify steps to be performed for VMs in the plan, but specify a wrong execution order for these steps. In this case, for each of these steps, the plan readiness check will report that the step sequence is configured incorrectly and will display an error similar to the following: "It is required to run Process Replica VM before this step".
For a failover plan to perform successfully, the *Process Replica VM* step must be executed first. For a restore plan to perform successfully, the *Restore VM* step must be executed first.

**VM Power Actions step fails to run during recovery**

If you connect a vCenter Server to Veeam Availability Orchestrator and then use a different name when configuring the *Power VM Actions* step for a VM in an orchestration plan, VAO will not be able to process the step and will return the "VM not found" error.

A similar issue may occur if you connect a vCenter Server, add the *VM Power Actions* step to an orchestration plan and specify the name of a host managed by the vCenter Server as the *vCenter Name* step parameter value. In this case, VAO will not be able to process the step. To resolve the issue, specify the name of the connected vCenter Server as the *vCenter Name* step parameter value when configuring the step.

**Plan Execution Report displays warning for Protect VM Group step**

You may encounter a situation when you connect a vCenter Server to Veeam Availability Orchestrator and some of hosts managed by this server become unavailable (for example due to a host failure). In this case VAO will not be able to execute the *Protect VM Group* step for VMs that run on the failed hosts. Moreover, the Plan Execution Report will display warnings for the *Protect VM Group* step executed for VMs that run on available hosts.

**New VMs do not appear in failover plans**

If you add new VMs to a VM group, these VMs will not be added to a failover plan that contains the VM group until the plan enters the *VERIFIED* or *NOT VERIFIED* state. This applies to all other stable and active states that the plan may acquire.

For more information on plan states, see the Veeam Availability Orchestrator User Guide, section *Working with Orchestration Plans*.

**Most recent restore point will be used if multiple backups or replicas of a VM exist**

If you have created multiple backup or replication jobs for one VM, and each job has its own target location, you will not be able to select which backup or replica to use when running VAO orchestration plans. By design, VAO will recover the VM that has the most recent restore point.

**‘Prepare DC for Test Lab’ step required for domain controllers in Veeam DataLab**

A common use case for lab groups is to provide domain controllers for the test environment. If there are domain controllers in a lab group, it is essential to add the *Prepare DC for Test Lab* step when configuring the group. This step ensures the VM reboots to exit DSRM and therefore functions correctly as a domain controller in the lab.

If you do not add the *Prepare DC for Test Lab* step, VAO will start the lab, but will not be able to test orchestration plans in that lab.
In-guest scripts fail to run during recovery if source VM still powered on

If a plan includes steps that require in-guest scripts to run on virtual machines being recovered, you may get the following error: "RPC error: There are no more endpoints available from the endpoint mapper."

To resolve the issue, add the Shutdown Source VM step to the plan. This will power off source VMs during the recovery process, and the in-guest scripts will be able to run on VMs successfully.

Plan Execution Report shows incorrect timestamps

For every group, VM, and step included in an orchestration plan, the Plan Execution Report should record the processing start time and duration. However, the report tends to display the timestamps incorrectly.

Cannot open VAO UI after reinstallation process

If you reinstall VAO using existing databases as described in the Veeam Availability Orchestrator Deployment Guide, you will not be able to launch VAO UI using the same browser that you used before.

To resolve the issue, clear cookies from the web browser.

Custom scripts in pre- and post-plan actions run on embedded Veeam Backup & Replication server

By design, custom scripts required to run when processing pre- and post-plan steps are executed on the embedded Veeam Backup & Replication server.

Protect VM Group step requires Template job in Veeam Backup & Replication server

To protect a VM after failover, you must configure a template backup job on the Veeam Backup & Replication server that processes the VM. Otherwise, VAO will not be able to locate the recovered VM, and the Protect VM Group step will fail to complete.

Modified report template is inaccessible

When you edit a report template, save it first before closing. If you try closing the file before you save it, MS Word will offer you to save changes, but it will lock the file for up to 10 minutes.

VAO ignores configured lab group execution order

When you start on-demand plan testing, configure test scheduling or launch a DataLab, you have an option to define the order in which lab groups required to support the test environment will be executed. However, as soon as the plan testing process runs, VAO will ignore the specified order and will execute groups in the order they have been included in the lab during its creation (or configuration).
Technical Documentation References

If you have any questions about Veeam Availability Orchestrator, you may use the following resources:

- Community forums: https://forums.veeam.com/

Technical Support

Veeam offers email and phone technical support for customers on maintenance and during the official evaluation period. For better experience, please provide the following when contacting Veeam Customer Support:

1. Version information for the product and all infrastructure components
2. Error message and/or accurate description of the problem you are having
3. Log files

For your convenience, VAO UI allows you to collect logs for each VAO component separately, or all together. To do that:

1. Switch to the Administration section.
2. Navigate to Logs.
3. Select a check box next to the server where the VAO component runs.
4. Click Download Logs.
   
   Logs will be saved locally in the default download folder.

TIP:

If you want to create an anonymized log file that contains all configuration and statistical information on your VAO deployment, download the VAO Infrastructure data log. The log file will be used by VAO product management to improve the solution. No information will be shared outside of Veeam at any time. To see what information was added to the log, navigate to the folder used to store files you download and open the XML log file.

To submit your support ticket or obtain additional information please visit https://www.veeam.com/support.html. Before contacting technical support, consider searching for a resolution on Veeam community forums at https://forums.veeam.com/.

Company Contacts

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