Contents

Chapter 1 • Overview of SAS vApp Ledger .................................................. 1
  What is a vApp? ...................................................................................... 1
  What Is SAS vApp Ledger? ................................................................. 1
  About the SAS vApp Ledger Interface ................................................. 1

Chapter 2 • Administering Machines ......................................................... 3
  View the Machines List ...................................................................... 3
  View Information about a Specific Machine ....................................... 4
  Apply Updates to a Machine ............................................................... 5

Chapter 3 • Administering Jobs and Services .............................................. 7
  View Information about Jobs ............................................................... 7
  Manage Jobs ......................................................................................... 7
  Apply Configuration Changes ............................................................ 8
  Start and Stop SAS Services .............................................................. 8

Chapter 4 • Viewing User Information ........................................................ 9
  Viewing the User List .......................................................................... 9
  Viewing Detailed User Information ....................................................... 10
Overview of SAS vApp Ledger

What is a vApp?
A virtual application, or vApp, provides a convenient way to use software without the complexity of having to install the software products yourself. The software products in the vApp have already been installed and configured and are run by using virtualization software, such as Oracle VirtualBox, VMware Player, or VMware Fusion. Having a vApp reduces or eliminates the effort needed to install, configure, and maintain complex groups of software and bundles them together in a single, easy-to-use file.

In SAS user documentation and user interfaces, the term environment is often used as a synonym for a running vApp.

What Is SAS vApp Ledger?
SAS vApp Ledger is software that you use to manage the configuration of a vApp across one or more virtual machines. Administrators can use SAS vApp Ledger to apply software updates to a machine, apply vApp configuration changes, and start and stop application services. SAS vApp Ledger collects information about a running vApp so that administrators and calling programs can retrieve the information when needed.

About the SAS vApp Ledger Interface
The SAS vApp Ledger interface consists of the following pages.
Home contains an icon for each SAS application in the environment that the current user can access, based on the user’s assigned roles. To start an application, click the icon.
My Applications
is the same as the Home page.

Machines
lists the virtual machines that are used by the environment. From this page, you can do the following:
- view detailed information about a machine
- apply pending software updates to a machine

For details, see Chapter 2, “Administering Machines,” on page 3.

Note: Do not use the Machines page to add, delete, or modify machine information.

Jobs
displays the ID, description, entry time, wait time, duration, and current state of vApp administration jobs. From this page, you can do the following:
- manage jobs
- apply vApp configuration changes
- start or stop SAS services

For details, see Chapter 3, “Administering Jobs and Services,” on page 7.

Users
lists all users who have a SAS user identity in the environment’s metadata. From this page, you can access additional pages with details about individual user accounts. For details, see “Viewing the User List” on page 9.

Note: Do not use these pages to add, remove, or delete users unless you are directed to do so by SAS Technical Support.

Note: SAS vApp Ledger contains additional pages, including Properties, Resource Types, Resources, and Licenses. These pages are accessible only to administrators of the infrastructure on which the vApp is deployed (for example, administrators of the SAS Cloud). Those administrators should refer to the SAS vApp Ledger: Infrastructure Administrator’s Guide.

Note: In some cases, SAS vApp Ledger does not highlight the tab for the currently selected page. The name of the currently selected page appears at the end of the URL in the browser’s address bar.
Administering Machines

View the Machines List

To view a list of all of the virtual machines that are used by your SAS environment, click the Machines tab. A page similar to the following is displayed:

The following information is displayed for each machine:

- **IP Address**: specifies the machine's Internet Protocol address.
- **Entry Time**: specifies the date and time that the machine was added to your environment.
- **Roles**: specifies the machine's roles in the environment. Typical roles include the following:
  - **compute** for machines with compute servers (such as a SAS Workspace Server)
  - **metadata** for machines with a SAS Metadata Server
  - **midtier** for machines with SAS middle-tier servers and services
State indicates the current state of the machine, such as \texttt{init} (initializing) or \texttt{running}.

Is External indicates whether the machine is external or internal to your SAS environment. A value of \texttt{true} indicates that the machine is accessed by your environment but is outside of your environment. A value of \texttt{false} indicates that the machine is used only by your environment.

Note: The \textbf{Edit Machines} button is for future use. This feature is not currently functional.

---

View Information about a Specific Machine

To view information about a specific machine, click its IP address in the first column of the machines list. A page similar to the following is displayed:

This page contains the following information:

- The machine’s IP address, the machine’s entry (\texttt{Added to vApp}) date and time, the machine’s roles, and whether the machine is internal or external to your environment.
- The machine’s identity, which is a unique identifier.
- A detailed list of the machine’s installed components, physical specifications, configuration properties, counters, and metrics. This information might be useful in troubleshooting issues that occur in the environment.

From this page, you can do the following:

- Return to the machines list by clicking \textbf{All Machines}. 
Apply pending software updates to the machine by clicking Updates. For details, see “Apply Updates to a Machine” on page 5.

View legal notices that are associated with open-source software installed on the machine by clicking Notices. After viewing the notices, click Back to IP address to return to the machine information page.

Note: The Surveys button is for future use. This feature is not currently functional.

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### Apply Updates to a Machine

To use SAS vApp Ledger to apply software updates to a machine:

1. Make sure that users have logged off from all SAS applications on the machine.

2. As a best practice, stop the SAS services on the machine. Click the Jobs tab, and then click Stop SAS Services.

3. On the Machines tab, click the IP address of the machine that you want to update.

4. On the machine's detail page, click Updates.

   If the machine has pending updates, the following message is displayed:
   
   Updates are available for this system.

5. Click the Update button next to the message.

   The message Updating system to latest appears, followed by the message System update job launched Refresh machine details.

   Note: Do not refresh the Machines page and do not navigate to another page until the update is complete.

When the update is complete, a message appears indicating success. SAS vApp Ledger then starts a second job to apply configuration changes. This job appears on the Jobs page as Converge machine IP-address. Job completion indicates that the changes have been successfully applied. The job also starts any non-running services.
Administering Jobs and Services

View Information about Jobs

To view the ID, description, entry time, wait time, duration, and current state of vApp administration jobs in the environment, click the Jobs tab. A page similar to the following is displayed:

From this page, you can do the following:

- manage jobs
- apply vApp configuration changes
- start or stop SAS services

Manage Jobs

On the Jobs page, you can take the following actions to manage a job:

- Remove a job from the list by clicking Delete.
Note: **Delete** does not cancel the job. If the job is currently running, it continues to run to completion even though it has been removed from the list.

Mark a job as abandoned by clicking **Abandon**. The next waiting job begins to execute. The job remains on the list until you delete it.

Note: **Abandon** does not cancel the job.

---

### Apply Configuration Changes

The message **vApp configuration changes have not been applied** might appear below the menu bar, as shown in the following example:

![SAS® vApp Ledger v3 State running](image)

This message means that changes to the vApp configuration, properties, or resources are pending. To apply the changes, click the **Apply configuration changes** button next to the message.

A job called **Converge machine IP-address** is added to the jobs list. Use the **Jobs** page to monitor the status.

**TIP** Press the F5 key to refresh the page with the latest state for the job.

Job completion indicates that the changes have been successfully applied. The job also starts any non-running services.

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### Start and Stop SAS Services

To start or stop all of the SAS services in the vApp:

1. Click the **Jobs** tab.
2. Click **Start SAS Services** or **Stop SAS Services**.

   A job called **Start machine** or **Stop machine** is added to the jobs list. When all of the services have successfully started or stopped, **completed** appears in the State column.

Note: If a start operation is not successful, you might need to click **Restart SAS Services** instead.
Viewing User Information

Viewing the User List

The Users page lists all of the users in the environment, as shown in the following example:

<table>
<thead>
<tr>
<th>Name</th>
<th>Email (also used as login id)</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>sasadm</td>
<td><a href="mailto:sasadm@example.com">sasadm@example.com</a></td>
<td>SASAdministrators, META: Unrestricted Users Role</td>
</tr>
<tr>
<td>sasctrl</td>
<td><a href="mailto:sasctl@example.com">sasctl@example.com</a></td>
<td>SAS System Services, SAS General Servers</td>
</tr>
<tr>
<td>webanen</td>
<td><a href="mailto:webanen@example.com">webanen@example.com</a></td>
<td>BI Web Services Users</td>
</tr>
<tr>
<td>sassearch</td>
<td><a href="mailto:sassearch@example.com">sassearch@example.com</a></td>
<td>META: Unrestricted Users Role</td>
</tr>
<tr>
<td>sas</td>
<td><a href="mailto:sas@example.com">sas@example.com</a></td>
<td></td>
</tr>
<tr>
<td>John.Bain</td>
<td><a href="mailto:John.Bain@example.com">John.Bain@example.com</a></td>
<td>Visual Analytics Users, SASUSERS, BI Web Services Users</td>
</tr>
<tr>
<td>Rose.Jones</td>
<td><a href="mailto:Rose.Jones@example.com">Rose.Jones@example.com</a></td>
<td>Visual Analytics Users, SASUSERS, BI Web Services Users</td>
</tr>
</tbody>
</table>

The list includes all users who have a user identity on the environment’s SAS metadata server. It includes standard users (such as sasadm) that were created by default when the environment was created, as well as users that were added by environment administrators. The following information is displayed for each user:

- the user name that is to be stored in SAS metadata to uniquely identify the user’s metadata identity.
- the user’s e-mail address, which is used to log on to the environment.
- the groups that the user should be a member of in SAS metadata, based on the roles that the user is assigned to in the vApp. This property is updated...
when the user is assigned to or removed from a vApp role. When a converge
machine job is run, the user is added to these groups if the user is not
already a member.

Viewing Detailed User Information

To view detailed information about users, click Edit users on the Users page. The page that is displayed includes only those users that have been added by
environment administrators, as shown in this example:

CAUTION! The far right column (not shown) contains buttons for deleting,
removing, and adding users. Do not use these buttons unless you are directed
to do so by SAS Technical Support. To maintain user information, see the
documentation that is provided for your vApp.

To display a full page of information for an individual user, click the user’s name
in the first column. A page similar to the following is displayed:

This page displays the following details:
Type

the content type identifier that is associated with the user resource type.

absentgroups

the groups that the user is to be explicitly excluded from in SAS metadata, based on the roles that the user is assigned to in the vApp. This property is updated when the user is assigned to or removed from a vApp role. When a converge machine job is run, the user is removed from these groups if the user is found to be a member.

e-mail

the user’s e-mail address, which is used to log on to the environment.

ensure

the intended state of this resource. For users, this property can have the following values:

present indicates that the user is valid and should exist in metadata. The ensure property is set to this value when a user is added to the ledger. When a converge machine job is run, this value causes the user to be added to metadata if the user does not already exist.

absent indicates that the user should not exist in metadata. The ensure property is set to this value when the ledger receives a delete transaction for the user. When a converge machine job is run, this value causes the user to be deleted from metadata if the user is found to be present.

Note: Users with a value of absent are not displayed in the list.

Note: For resource types other than users, the ensure field might have different values.

gid

the user’s local group ID on the environment’s virtual machines. To ensure consistent permission settings, the user’s gid is the same on all of the virtual machines. If a gid is not specified, vApp Ledger generates it automatically.

groups

the groups that the user should be a member of in SAS metadata, based on the roles that the user is assigned to in the vApp. This property is updated when the user is assigned to or removed from a vApp role. When a converge machine job is run, the user is added to these groups if the user is not already a member.

password

represents the user’s password. Asterisks are displayed instead of the actual password.

uid

the user’s local user ID on the environment’s virtual machines. To ensure consistent permission settings, the user’s uid is the same on all of the virtual machines. If a uid is not specified, vApp Ledger generates it automatically.
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