



Archiware Pure

User Manual



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Document revision 06/17, Pure 1.0.0



1 Preface

1.1 About This Manual

This document describes the installation and configuration procedures for *Archware Pure*. You will also find examples and case studies for installing, managing and employing *Archware Pure* in a typical production environment.

1.2 Who Should Read This Document?

The information contained in this manual is intended for system administrators who will install and maintain *Archware Pure* as well as for users who will employ *Archware Pure* as a data protection system.

1.3 Software Description

Archware Pure is a software for protecting virtual machines by backing up the content of their virtual disks and allowing their easy recovery. Data is saved to a separate storage, preferably independent of the virtualization system, in order to increase the overall security and level of protection. *Archware Pure* is deployed as a virtual appliance, running within the virtualization system being protected and is designed to be replaceable at any time. In case of a failure within the virtualization system, a new *Archware Pure* instance can simply be downloaded and deployed. After importing the existing backup storage, previously protected virtual machines can easily be restored and work can be seamlessly continued.

1.4 Software Licensing

Archware Pure may freely be used for a period of 90 days and must be licensed thereafter.

1.5 Registration

You can register your *Archware Pure* software on Archware's web site. Upon correctly completing the form, you will receive an activation code. You have to create a license and enter this activation code to enable the functionality that it provides.

You may find further information regarding licensing in section 5.3.2 Software settings.

1.6 Technical Support

Contact information, software updates, technical documentation and information about the current support programs and options may be found on Archware's web site.



2 Installation

Archiware Pure is delivered as a ready to use virtual appliance and does not require software installation beyond the deployment of the virtual machine template in your virtualization environment.

2.1 System Requirements

- VMware vSphere 6.0 or later, any non-free edition¹
- VMware ESXi 6.0 Express Patch 4 (build number 3247720, 2015-11-25) or later
- vCenter Server 6.0 or later (optional)
- CPU: x86-64 processor
- Memory: 4 GB RAM
- Disk space: 10 GB, not including disk space used for the separate backup repository

The above are the minimum supported system requirements. Provisioning more processor power and memory to the *Archiware Pure*'s virtual appliance will help increase performance when using advanced options such as data de-duplication or when performing multiple parallel backups.

2.2 Other Deployment Considerations

Archiware Pure protects all types and versions of virtual machines supported by VMware. Because backup operations leverage VM snapshots and virtual disk hot-adding, virtual disks not supported by these mechanisms are automatically skipped from backup.²

In order for the *Archiware Pure* virtual appliance to be able to backup a virtual machine, it needs access to its virtual disks. This means that *Archiware Pure* can backup only those virtual machines whose disks reside on data stores visible by the ESXi host managing the *Archiware Pure* virtual appliance. Virtual machines residing on inaccessible data stores will be shown within the *Archiware Pure GUI* but their backup will always fail with the reason: “none of the disks were backed up”.

¹ This limitation is imposed by VMware as necessary vSphere APIs are disabled in free ESXi

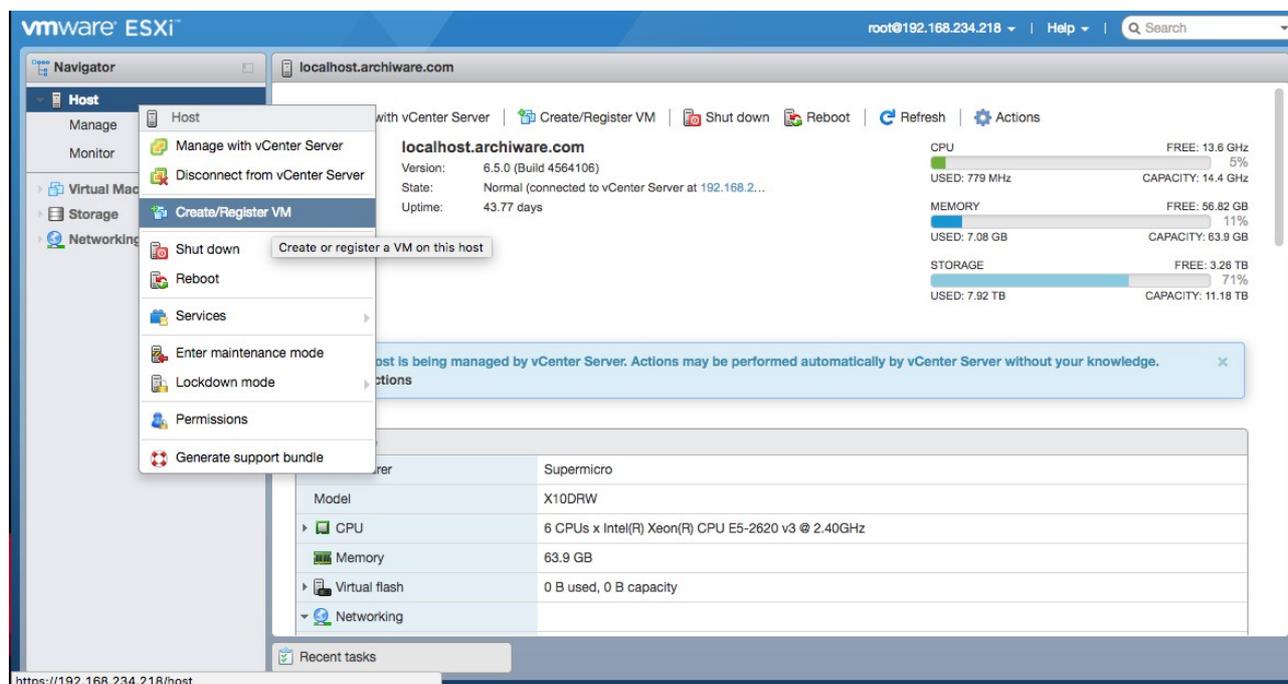
² VMware does not support snapshots of raw disks, RDM physical mode disks, independent disks, PCI vSphere Direct Path I/O devices, disks configured for bus sharing or disks that use iSCSI initiator in the guest operating system.

2.3 Deploying the Virtual Appliance

The Archiware Pure Virtual Appliance is preconfigured to meet the minimum hardware requirements for the CPU and RAM. However, disks to be used for the Backup Repository are not pre-configured and need to be configured after deploying the appliance.

To deploy the *Virtual Appliance* using the *VMware vSphere Web Client*, follow the steps illustrated below. For deployment through a vCenter server or on a standalone ESXi version 6.5 hosts, please follow the official VMware instructions for OVF and OVA Templates³. For standalone ESXi version 6.0 hosts, please follow the instructions for deployment using the *vSphere Client* (please note that *VMware* is phasing out the *vSphere Client* and as a result the latest instructions are for *vSphere 5.0*)⁴

1. Log in to the VMware ESXi web GUI, right click on the *Host* and select the *Create/Register VM* option from the context menu.

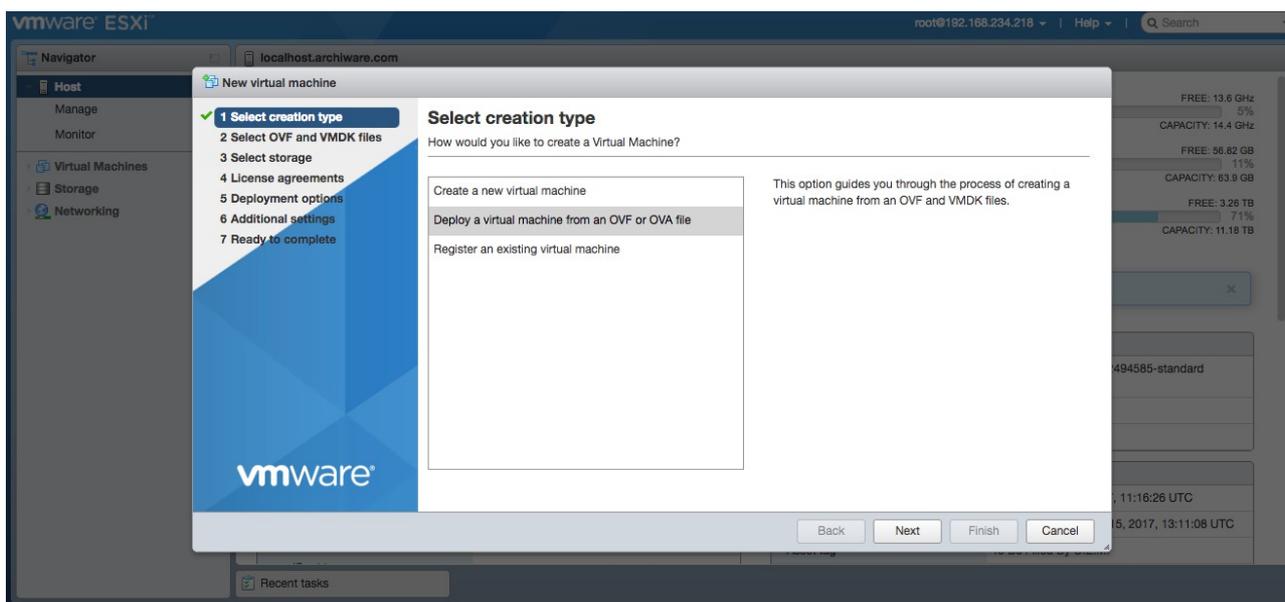


3 https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.vm_admin.doc/GUID-AFEDC48B-C96F-4088-9C1F-4F0A30E965DE.html

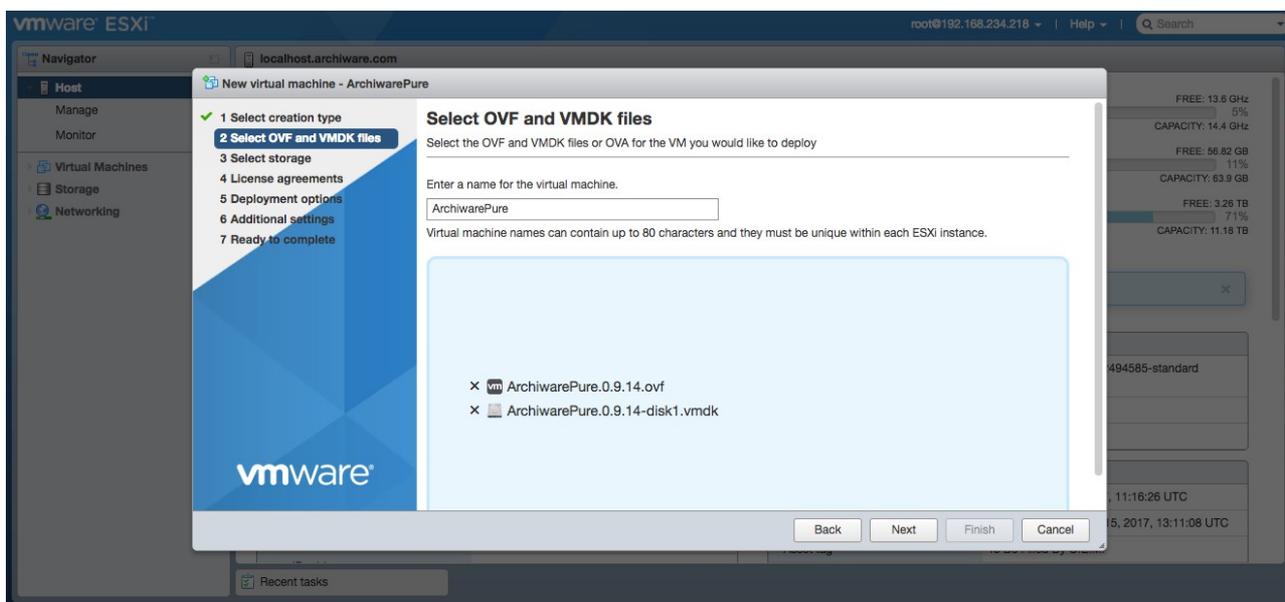
4 https://pubs.vmware.com/vsphere-50/index.jsp#com.vmware.vsphere.vm_admin.doc_50/GUID-AFEDC48B-C96F-4088-9C1F-4F0A30E965DE.html



2. Select the *Deploy a virtual machine from an OVF or OVA file* option and click *Next*.

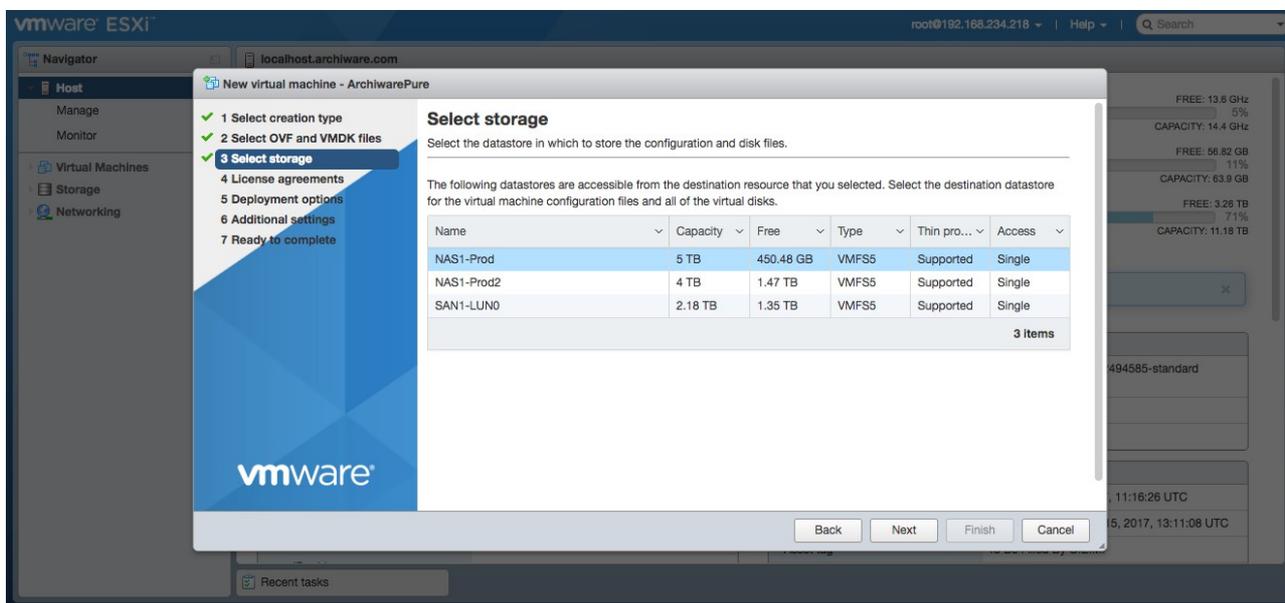


3. Enter a name for your *Archware Pure* virtual appliance. Click in the central area and select the previously downloaded *Archware Pure* template files. If you have downloaded the appliance as a single zip archive, please extract the content first. Be sure to select all the included files (*ArchwarePure.x.y.z.ovf*, *ArchwarePure.x.y.z.mf*, *ArchwarePure.x.y.z-disk1.vmdk*). Click *Next* to continue. Note: the *ArchwarePure.x.y.z.mf* file will not be shown in the ESXi web GUI.

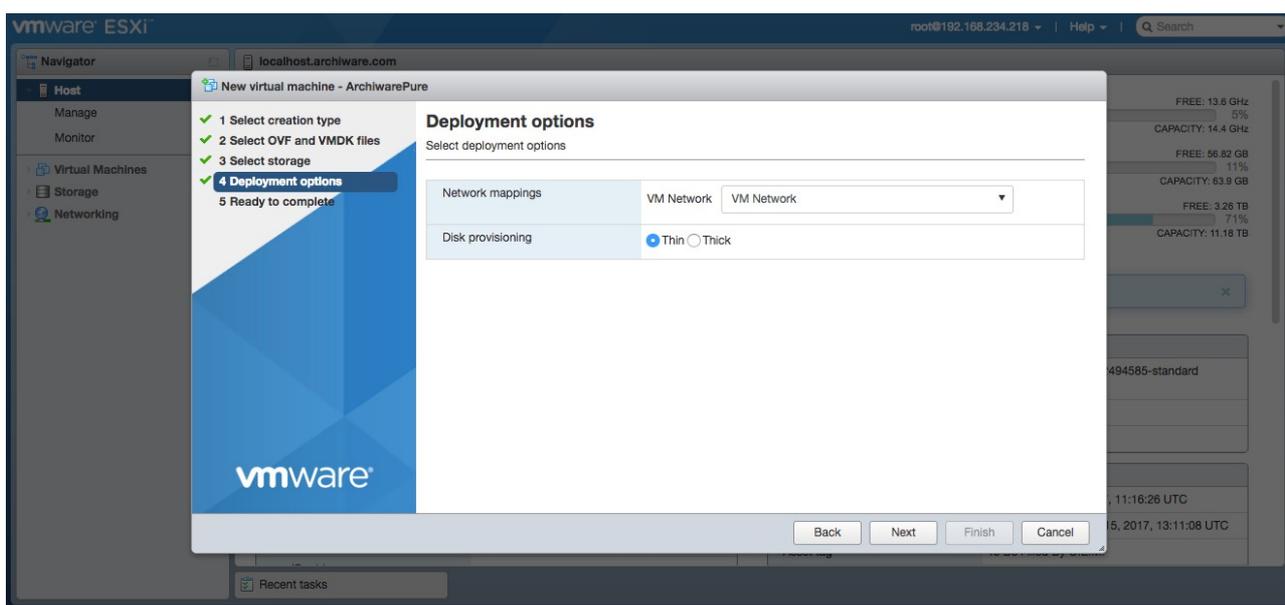




4. Select the datastore in which to store the *Archware Pure* virtual appliance configuration and disk files and click *Next*.

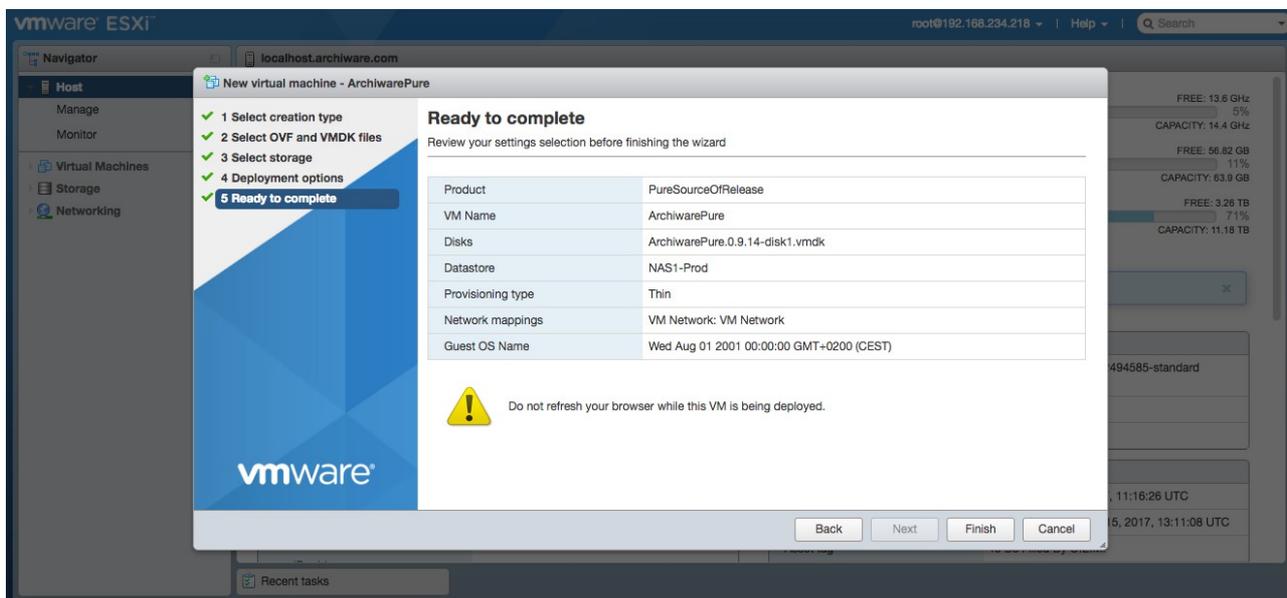


5. Choose the VM Network to which the appliance will be assigned as well as the disk provisioning type. The *Archware Pure* appliance comes with a thin disk with 50GB of provisioned size. Because this disk is not vital for performance, it can be deployed as thin in order to save storage space. Click *Next* to proceed.





6. Review your settings and click *Finish* to start the deployment process.





2.4 Configuring storage

Before *Archiware Pure* can be used for virtual machine backups, it is necessary to configure at least one storage location as the *Backup Repository* where the backup data of the protected virtual machines will be saved. Although *Archiware Pure* supports all storage options supported by VMware, even to configure virtual disks on the same datastore where the VMs to be protected are deployed, we strongly suggest using a dedicated external storage for the added security. For best performance, we recommend configuring a SAN LUN in *raw device mapping mode*.

Due to VMware limitations, RDM disks must be configured on the SCSI controller 0 so as not to interfere with *Archiware Pure* operations. When adding new virtual disks through the VMware GUI, controller 0 is selected by default. It is possible to configure up to 14 virtual disks as *Backup Repositories*.

Please consult the official VMware instructions on adding hard disks to a virtual machine.⁵

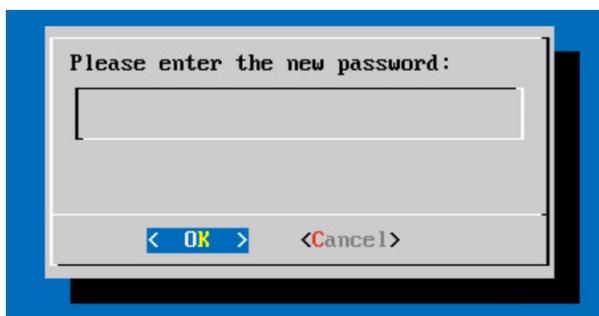
⁵ https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.vm_admin.doc/GUID-79116E5D-22B3-4E84-86DF-49A8D16E7AF2.html

3 Configuring the Virtual Appliance

3.1 Configuring the access password

For security reasons, the *Archware Pure* appliance does not have a preconfigured default password and does not accept external SSH connections until manually enabled.

After a successful deployment (and powering on the VM) it is necessary to configure the *Archware Pure* appliance using its console menu, accessing it through the VMware GUI⁶. On first access, a new password configuration prompt is shown. This password will be used as the *root* password for the *Virtual Appliance* and also as the login password for the *Archware Pure* web GUI. Please enter the desired password and confirm it by re-typing it again when prompted.



⁶ Right-click the *Archware Pure* VM in the VMware inventory and select *Open Console* option from the on-screen menu.



3.2 Using the console menu

After successfully configuring the password, the console menu is shown. It presents basic information about the appliance's version as well as the web address through which the *Archware Pure* GUI can be accessed.

Note: When accessing the *Archware Pure* GUI, make sure to enter the complete URL, including the `https://` part. Http access is disabled for security reasons.

```
Welcome to ARCHIWARE PURE Server Appliance

PURE Version: 0.9.19
OS Appliance: GNU/Linux 4.4.0-64-generic

To manage your appliance please browse to:
https://192.168.234.115

PURE Console Menu
-----
1) Configure Network IP Address
2) Reset Password
3) Date and Time Properties
4) Start SSH Server
5) Stop SSH Server
6) Import Backup Pools

p) Restart Archiware Pure
r) Reboot Pure VM
s) Shutdown Pure VM
x) Exit to shell
Enter a number:
```

Through the console menu, you can perform the following actions:

1) Configure Network IP Address – this option opens the Linux NetworkManager tool to allow configuring the appliance's network settings.

2) Reset Password – Sets the new password for the appliance and for the GUI.

3) Date and Time Properties – Allows changing Date, Time and Timezone.

4) Start SSH Server – For security reasons, SSH access to the appliance is disabled by default. This option temporarily enables SSH access to the appliance and is automatically switched off when the appliance is rebooted.

5) Stop SSH Server – Selecting this option will immediately disable SSH access to the appliance.

6) Import Backup Pools – Use this option to discover and import existing *Archware Pure* backup pools created by other *Archware Pure* instances. Before a repository can be imported, its underlying virtual disk must be attached to the *Archware Pure*'s VM via the VMware GUI.

p) Restart Archiware Pure – Restarts the Archiware Pure software without rebooting the appliance.



r) Reboot Pure VM – Restarts the whole Archware Pure virtual machine.

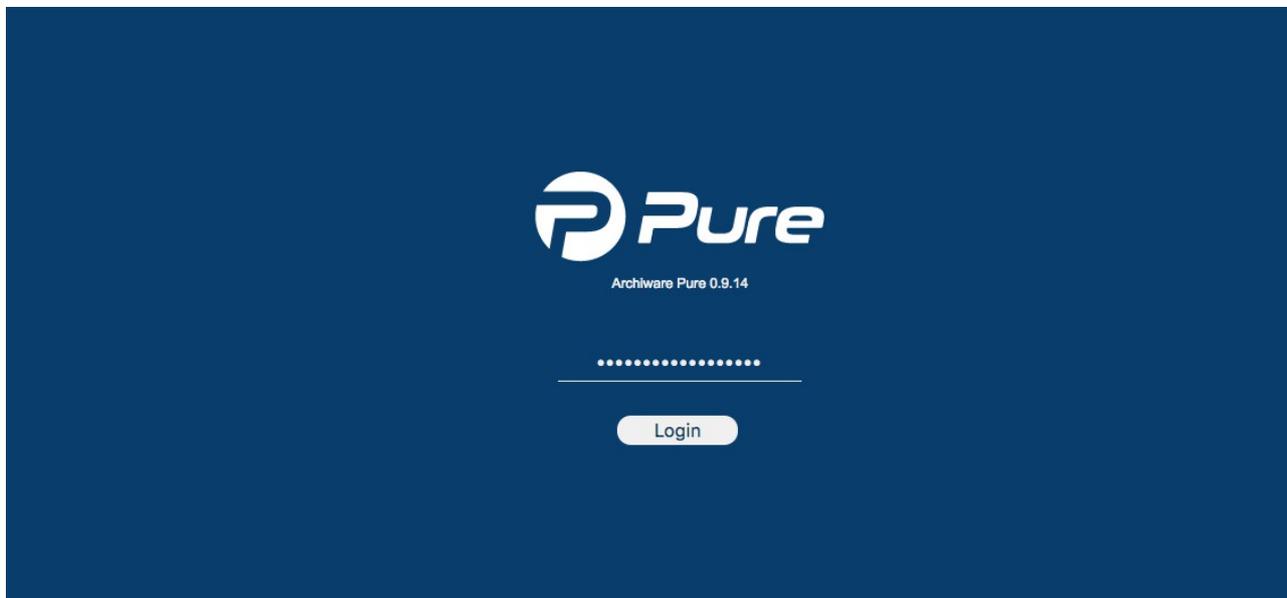
s) Shut down Pure VM – Powers off the Archware Pure virtual machine.

x) Exit to shell – Exits the console menu into a Linux shell. When in the shell, use the shell's 'exit' command to return back to the console menu.



3.3 Accessing the Archware Pure web GUI

The *Archware Pure* web GUI can be accessed by navigating to the URL indicated in the *Appliance's* console (“https://<Appliance IP address>/login”).



3.4 Initial Setup Wizard

When starting the GUI for the first time, the *Initial Setup Wizard* will guide you through the initial configuration. The *Wizard* will allow you to review the *End User License Agreement*, enter the license key, configure a backup repository and add an infrastructure server to the configuration.



The screenshot shows the 'INITIAL SETUP' page of the Archware Pure web interface. The left sidebar contains the 'Pure' logo and 'App Configuration'. The main content area has a header 'INITIAL SETUP' and a welcome message: 'Welcome to the Archware pure initial Setup wizard.' Below this, it explains the wizard's purpose and lists four steps: 1. Review the end user license agreement, 2. Enter the license key, 3. Configure a backup repository, and 4. Add an infrastructure server. At the bottom right, there are '« Previous' and 'Next »' navigation buttons. The top right shows the date '11.Apr 13:04' and a 'Logout' button.

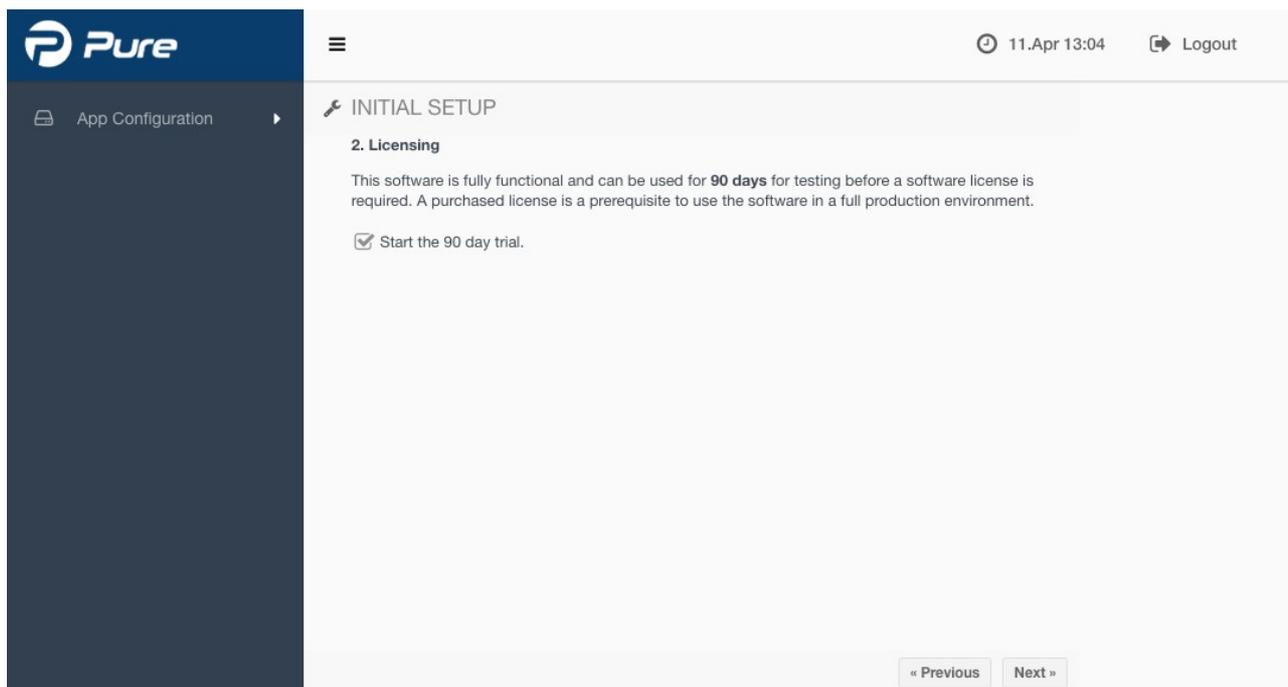
3.4.1. License Agreement

Please carefully read and accept the *End User License Agreement*.

The screenshot shows the '1. License Agreement' step of the Archware Pure web interface. The left sidebar is the same as in the previous screenshot. The main content area has a header 'INITIAL SETUP' and a sub-header '1. License Agreement'. It instructs the user to 'Read and accept the End User License Agreement to continue.' A text box contains the 'Beta Testing End User License Agreement (EULA)', which details the legal agreement between Archware GmbH and the licensee. Below the text box, there are two radio button options: 'Yes, I accept the terms of the license agreement.' (which is selected) and 'No, I do not accept the terms of the license agreement.' At the bottom right, there are '« Previous' and 'Next »' navigation buttons. The top right shows the date '11.Apr 13:04' and a 'Logout' button.

3.4.2. Licensing

Please enter a valid license key or start your 90-day trial.



3.4.3. Backup Repository

The Backup Repository is the central storage location for the saved data and for the backup configuration. It consists of at least one drive and can be extended later on. We highly recommend using only RAID storage to avoid data loss.

Please select the volume where you would like to store the Backup Repository.

Note: If no disks appear in the list, please make sure that you have correctly added at least one virtual disk to the *Archiware Pure Virtual Appliance*. Please consult the official VMware instructions on adding hard disks to a virtual machine.⁷

⁷ https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.vm_admin.doc/GUID-79116E5D-22B3-4E84-86DF-49A8D16E7AF2.html



Pure

App Configuration



INITIAL SETUP

3. Backup Repository

The backup repository is the central storage location for the saved data and for the backup configuration. It consists of at least one drive and can be extended later on. We highly recommend to use only RAID storage to avoid data loss.

Please select a volume with enough disk space for the default repository.

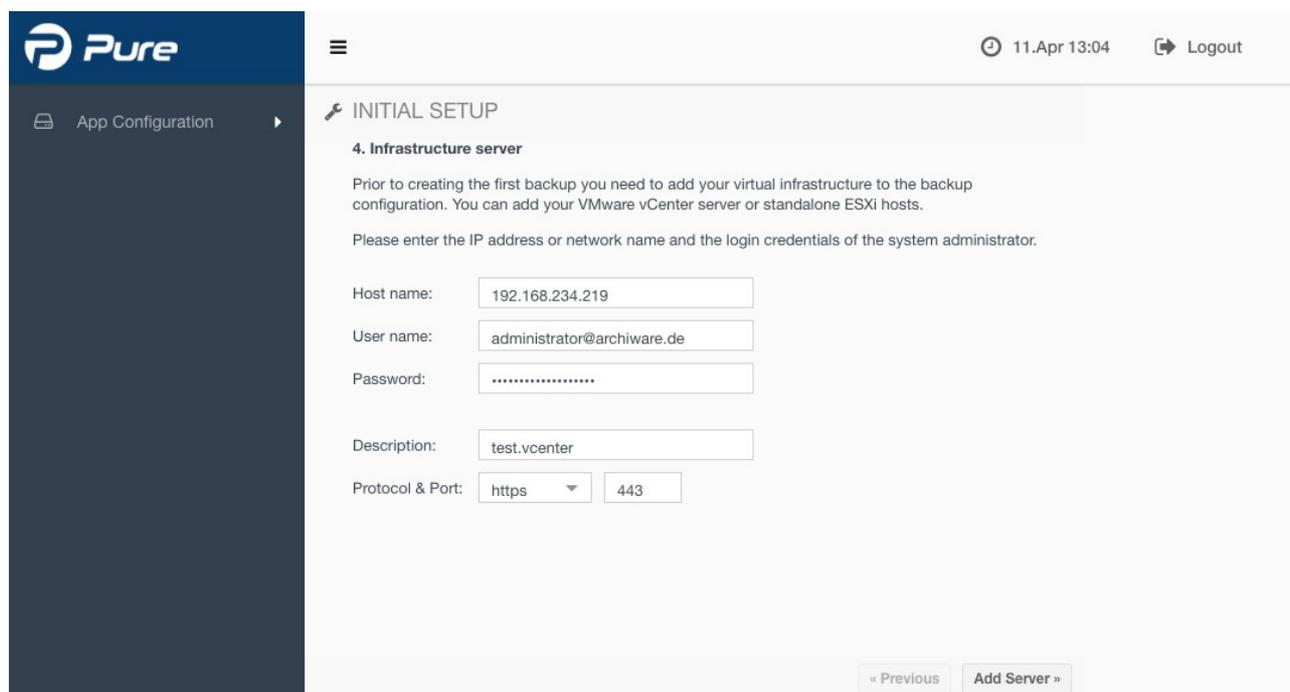
sdb - 4.88 TB

Note: Additional volumes can be added at a later time using the Repository configuration option.

3.4.4. Infrastructure Server

Please configure the connection parameters for your virtual infrastructure.

Although *Archware Pure* can protect multiple vCenter or ESXi servers, please make sure that the vCenter server that manages the *Archware Pure Virtual Appliance's* ESXi host is configured first. In case of a standalone ESXi installation, please configure the parameters for the ESXi host managing the *Archware Pure Virtual Appliance*. For information on configuring additional vCenter or ESXi hosts, please see 5.2.2 Configuring Infrastructure Servers.



The screenshot shows the Archware Pure web interface. The top navigation bar includes the Archware logo, a menu icon, the date and time '11.Apr 13:04', and a 'Logout' button. The left sidebar shows 'App Configuration' with a right-pointing arrow. The main content area is titled 'INITIAL SETUP' and contains a section for '4. Infrastructure server'. Below this section, there is explanatory text and a form with the following fields:

- Host name:
- User name:
- Password:
- Description:
- Protocol & Port:

At the bottom right of the form area, there are two buttons: '« Previous' and 'Add Server »'.

Note: In order to enable the backup of a vCenter virtual appliance, it is necessary to add both the vCenter server and its managing ESXi host to the list of configured servers. If the ESXi server is not configured, the vCenter virtual appliance VM will not be shown in the list of virtual machines. Please see 5.2.2 Configuring Infrastructure Servers on how to add additional infrastructure servers.



3.4.5. Completing the Initial Setup

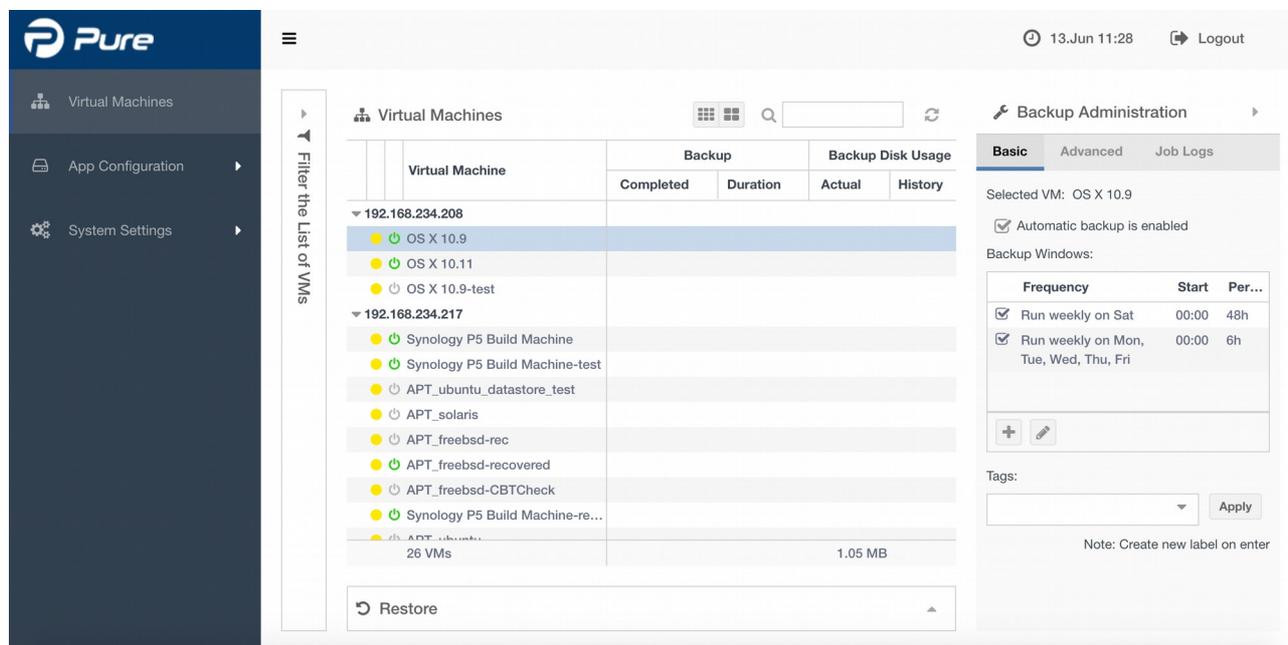
After the *Initial Setup Wizard* has finished, please click *Reload* to exit the *Wizard* and reload the configuration.

The screenshot displays the Pure user interface. On the left is a dark blue sidebar with the Pure logo and a menu item 'App Configuration'. The main content area has a top header with a clock icon, the date '11.Apr 13:04', and a 'Logout' button. Below the header, the page title is 'INITIAL SETUP'. The main text reads: 'The wizard has completed the configuration. By default, all the virtual machines from a vCenter or ESXi server are automatically added to the default backup window. This behavior is designed to ensure that all the virtual machines get backed up. **Note:** If after reloading the browser your inventory is empty, please verify that the network parameter and the user credentials specified for the vCenter or ESXi server are correct. Click "Reload" to exit the wizard and to reload the browser configuration.' At the bottom right of the main content area, there are two buttons: '« Previous' and 'Reload »'.



4 Backing Up Virtual Machines

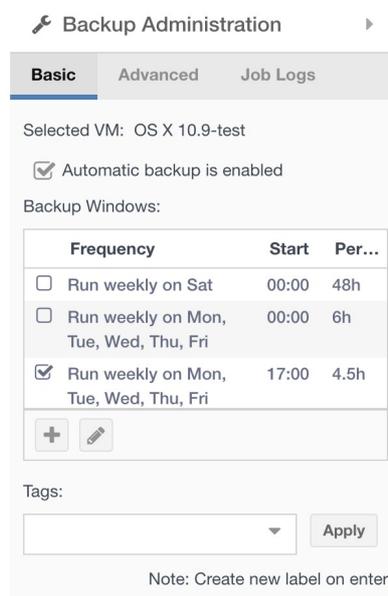
Archiware Pure is designed with simplicity and ease of use in mind. Once properly configured, it will automatically back up and keep all the discovered VMs protected.



4.1 Automatic Backups

Each VM is assigned one or more backup windows – i.e. time slots when the automatic backup is allowed to be executed, typically during hours of lower demand on the resources. Each VM will enter the backup queue at the beginning of its backup window. Depending on various parameters including when the last backup of the VM was done, how many VMs may be concurrently backed up and how much load may be imposed on the storage, the VM may stay in the queue until its turn to actually be backed up arrives or until the backup window closes. No backup or verify operation will start outside of the backup window, even if the particular VM does not get backed up on that occasion. In a properly configured system with a sufficiently large backup window, all of the VMs configured to be backed up will be backed up or will alternate, rotate, and be backed up on consecutive occasions. Once a backup is started for a specific VM, it will be run to completion, even if the operation extends outside the allocated window.

Archiware Pure comes preconfigured with two default backup windows: one set to last for 6 hours, starting every midnight Monday to Friday, and the other lasting the whole weekend (48 hours duration, starting on Saturday 00:00).





Note: Because the very first backup for each VM needs to transfer the entire content of all its virtual disks, it is possible that not all the VMs will fit inside the default backup window. Subsequent backups will use Changed Block Tracking information, which significantly decreases the backup time.

Additional backup windows may be configured by clicking on the “+” icon and selecting the desired start time and duration. Note that backup windows cannot overlap.

Warning: A *Backup* operation will automatically consolidate and remove all existing VMWare snapshots of the *Virtual Machine* that is being backed up. If you temporarily need to keep snapshots of a VM, please make sure to disable automatic backups in the *Backup Configuration* side panel.

4.2 Verify

Backup consistency is ensured through an automatic *Verify* process, where the backed up content is compared, byte by byte, with the actual virtual disk content of the VM. Verifications of the machines that are queued for backup are automatically queued to be run after all the backups are completed. The VM that has not been verified for the longest will be verified first. In the course of a verification, detected mismatches are corrected to render a consistent backup snapshot.

Note: Please ensure a sufficiently large backup window to enable verify to run for all the VMs scheduled in that window.

4.3 Manual Backup and Verify

Backup and verify operations can also be run on demand by clicking on the icon left of the desired VM and selecting the *Start Backup Now*.



5 Archiware Pure web GUI

Virtual Machine ↑	Backup		Backup Disk Usage		Backup/Restore Job Progress
	Completed	Duration	Actual	History	
▼ 192.168.234.217					
✔ APT_freebsd	12.Jun 17:07	0 min 10 s	16.8 GB	0.043 GB	
⊙ APT_freebsd-CBTCheck					
✔ APT_freebsd-cbt_test	12.Jun 17:03	0 min 04 s	14.0 GB	0.002 GB	
✔ APT_freebsd-rec	12.Jun 17:03	0 min 03 s	14.0 GB	0.002 GB	
✔ APT_freebsd-recovered	12.Jun 17:01	0 min 10 s	16.0 GB	0.043 GB	
✔ APT_solaris	12.Jun 17:01	0 min 03 s	3.4 GB	0.002 GB	
✔ APT_ubuntu	12.Jun 17:01	0 min 03 s	5.7 GB	0.002 GB	
⊙ APT_ubuntu_datastore_test					
✔ APT_win7	12.Jun 17:03	0 min 03 s	20.0 GB	0.002 GB	
✔ Synology P5 Build Machine	12.Jun 17:03	0 min 14 s	19.7 GB	0.184 GB	
✔ Synology P5 Build Machine-cb...	12.Jun 17:03	0 min 04 s	34.1 GB	0.002 GB	
✔ Synology P5 Build Machine-re...	12.Jun 17:02	0 min 32 s	32.2 GB	2.859 GB	
✔ Synology P5 Build Machine-test	12.Jun 17:01	0 min 20 s	28.0 GB	2.010 GB	
27 VMs		00:13:55	496.83 GB	32.42 GB	

The *Archiware Pure* web GUI consists of three main views, accessible through a menu located at the left hand side:

Virtual Machines – this is the central area of interest as it handles backup and restore administration, shows the list of all discovered VMs with their current status and state of the backup/verify/restore operations

App Configuration – this section contains settings that manage the most important aspects of *Archiware Pure* operation, such as configuration of Backup repositories, Infrastructure servers, Daily reports and General backup preferences

System Settings – this section contains settings not directly related to backup and restore operations, such as configuration of the email server, software updates and licensing.

Another point of interest is the top area, common for all three views, that contains the collapse/expand sidebar button, the current date and time information and the logout button.



5.1 Virtual Machines View

The Virtual Machines view shows a list of all the discovered virtual machines, their statuses and information on their backup/verification times and disk usage.

It consists of :

1. The Central area
2. A collapsible *Backup Administration* panel (right)
3. A collapsible *Filter the List of VMs* panel (left)
4. A collapsible *Restore* panel (bottom)

5.1.1. The Central area

Virtual Machine	Backup		Verify		Backup Disk Usage		Next Backup Starts Between		Backup/Restore Job Progress
	Completed	Duration	Completed	Durat...	Actual	History	Start	End	
192.168.234.208									
OS X 10.11	26.Jun 13:30	0 min 06 s	24.Jun 06:30	21 min 41 s	28.7 GB	0.004 GB	26.Jun 18:45	26.Jun 23:45	Job is pending ...
OS X 10.9-test	26.Jun 13:30	0 min 06 s	24.Jun 06:36	18 min 54 s	40.7 GB	0.004 GB	26.Jun 18:45	26.Jun 23:45	Job is pending ...
OS X 10.9	26.Jun 13:34	2 min 07 s	24.Jun 05:15	29 min 42 s	21.7 GB	1.380 GB	26.Jun 18:45	26.Jun 23:45	Verifying: 4.91 GB of 40.61 GB
192.168.234.217									
wo Zenter							26.Jun 18:45	26.Jun 23:45	
Synology P5 Build Machine-cb...	26.Jun 13:30	0 min 05 s	24.Jun 06:09	23 min 17 s	34.1 GB	0.004 GB	26.Jun 18:45	26.Jun 23:45	Job is pending ...
APT_freebsd-recovered	26.Jun 13:30	0 min 23 s	26.Jun 13:42	5 min 46 s	16.0 GB	0.061 GB	26.Jun 18:45	26.Jun 23:45	
APT_solaris	26.Jun 13:30	0 min 05 s	26.Jun 13:56	4 min 03 s	3.4 GB	0.004 GB	26.Jun 18:45	26.Jun 23:45	
W2016	26.Jun 13:59	23 min 43 s	24.Jun 05:12	40 min 55 s	29.0 GB	23.780 GB	26.Jun 18:45	26.Jun 23:45	Verifying: 5.08 GB of 80.00 GB
Synology P5 Build Machine-re...	26.Jun 13:34	1 min 53 s	24.Jun 05:56	29 min 56 s	34.1 GB	3.366 GB	26.Jun 18:45	26.Jun 23:45	Job is pending ...
APT_win7	26.Jun 13:30	0 min 05 s	26.Jun 14:28	12 min 45 s	20.0 GB	0.004 GB	26.Jun 18:45	26.Jun 23:45	
APT_freebsd	26.Jun 13:30	0 min 23 s	26.Jun 14:02	5 min 42 s	16.8 GB	0.059 GB	26.Jun 18:45	26.Jun 23:45	
30 VMs		00:42:38		07:27:29	545.82 GB	73.73 GB			

The Central view lists all the discovered VMs per host and their status. The list is collapsible per host and can be searched by VM name (top right corner).

When a VM is selected, a button (...) appears immediately to the left of the VM status icons. When clicked, it opens a pop-up menu with the following options:

- **Start Backup Now:** to immediately execute backup or verify operation for this VM
- **Enabled Auto Backup:** to toggle the automatic backup setting for this VM

Additionally, for each VM it is possible to toggle between a detailed and a simplified information view. Detailed information displays backup and verify completion time and duration, backup disk usage, next backup window information and the progress of the current backup/verify/restore operation. The simplified information view omits the verify completion time and duration and the next backup window details.

The refresh button can be found in top right corner, it is used to manually force a refresh



of the VM list and information.

5.1.2. Filter the List of Vms

This panel allows narrowing down the displayed list of the VM-s using these categories:

Filter the List of VMs	
☑ Status	
<input type="checkbox"/>	● Backup completed
<input type="checkbox"/>	✔ Backup & verify completed
<input type="checkbox"/>	❗ Last backup or restore failed
<input type="checkbox"/>	⚠ Backup completed with warn...
<input type="checkbox"/>	🔄 Backup running
<input type="checkbox"/>	🔄 Restore running
<input type="checkbox"/>	⌛ Job pending
<input type="checkbox"/>	● Backup is enabled
<input type="checkbox"/>	● Backup disabled
<input type="checkbox"/>	● VM is offline
🏷 Tags	
<input type="checkbox"/>	Linux machine
<input type="checkbox"/>	vCenter
📅 Backup Windows	
<input type="checkbox"/>	Run weekly on Sat 00:00 48h
<input type="checkbox"/>	Run weekly on 00:00 6h

- Status: based on backup settings and state of the backup or restore; each VM always has exactly one status
- Tags: can be manually set (one or more) for each VM (see 5.1.3 Backup Administration for more info); selecting one or more tags lists only the VM-s that have at least one matching tag assigned
- Backup Windows: contains a list of all the defined Backup Windows (see 5.1.3 Backup Administration for more info)



5.1.3. Backup Administration

This panel allows configuration of the parameters related to the VM backup. It consists of three tabs - Basic, Advanced and Job Logs.

Basic tab

Enables/disables automatic backup for this and all the selected VMs

Shows a list of all the available backup windows with a checkbox to enable each for the selected VM(s). New backup windows can be created by clicking the + button and the existing backup windows can be modified by clicking the pen button. The backup window creation and modification screen also controls whether the verify is executed or not.

Note: newly created or modified backup windows will also become available for all the other VMs. If after deselecting a backup window, no VM is left using that particular window, it is automatically removed when Pure gets restarted.

Note: for Pure to optimally function, backup windows need to be sufficiently large to allow verify to be started for at least one of the VMs.

Note: The initial backup of a VM will take significantly more time since it needs to back up the whole VM data. Subsequent backups will be significantly faster, leaving more time for verify.

Shows the tags assigned to this VM. Tags are an optional field and each VM can have an arbitrary number of custom tags to enable easier grouping and displaying of similar VMs. To create a new tag, simply enter the desired text and press Enter to finish. Click on the Apply button to save and assign defined tags. Tags are deleted by pressing 'x' icon on the right of each tag.

The screenshot shows the 'Backup Administration' panel with the 'Basic' tab selected. It displays the 'Selected VM: OS X 10.9-test' and a checked checkbox for 'Automatic backup is enabled'. Below this is a table of 'Backup Windows' with columns for Frequency, Start, and Per... (Period). The table contains three entries: 'Run weekly on Sat' (00:00, 48h), 'Run weekly on Mon, Tue, Wed, Thu, Fri' (00:00, 6h), and 'Run weekly on Mon, Tue, Wed, Thu, Fri' (17:00, 4.5h). The third entry is checked. Below the table are '+', 'edit', and 'x' icons. At the bottom, there is a 'Tags:' section with a text input field, a dropdown arrow, and an 'Apply' button. A note at the bottom right says 'Note: Create new label on enter'.

Frequency	Start	Per...
<input type="checkbox"/> Run weekly on Sat	00:00	48h
<input type="checkbox"/> Run weekly on Mon, Tue, Wed, Thu, Fri	00:00	6h
<input checked="" type="checkbox"/> Run weekly on Mon, Tue, Wed, Thu, Fri	17:00	4.5h



Advanced tab

Shows the list of disks that are available for backup and allows enabling or disabling of particular disks from backup. Disabling a non crucial disk(s) from backup will save storage space and backup time, both for the automatic and for the manual backups. However, keep in mind that disks that were not enabled for backup will not be available for restore.

Note: The list of virtual disks will show only those disks that are available for backup. Because backup operations leverage VM snapshots and virtual disk hot-adding, virtual disks not supported by these mechanisms will be omitted from the list.⁸

Shows the currently configured and allows changing of the backup retention time. This settings determines the number of days the backup data will be retained in the repository before the space is reused for new backups.

Note: To change the default backup retention time automatically applied to newly discovered virtual machines, see 5.2.4 Preferences.

The screenshot shows the 'Backup Administration' interface with the 'Advanced' tab selected. It displays the 'Selected VM: APT_freebsd-recovered' and a table of 'Virtual disks to backup'. The table has columns for 'Label', 'Size', and 'File'. Two disks are listed, both checked for backup. The total size is 16.00 GB. Below the table, the 'Backup retention time' is set to 7 days.

	Label ↑	Size	File
<input checked="" type="checkbox"/>	Hard disk 1	8.00 GB	[NAS1-Prod] APT_freebsd-recovered/APT_freebsd-recovered.vmdk
<input checked="" type="checkbox"/>	Hard disk 2	2.00 GB	[NAS1-Prod] APT_freebsd-recovered/APT_freebsd-recovered_2.
		16.00 GB	

Backup retention time: 7 days ▼

Job Logs tab

Allows selecting a backup job from a drop-down menu and viewing its detailed log information. Job logs contain step by step rundown of the backup process and will display such info as job statistics and possible backup errors.

⁸ VMware does not support snapshots of raw disks, RDM physical mode disks, independent disks, PCI vSphere Direct Path I/O devices, disks configured for bus sharing or disks that use the iSCSI initiator in the guest operating system.



5.1.4. Restore

All the restore operations are accessible through the *Restore* panel. Depending on the desired operation, choose one of the available tabs:

- Restore VM – to restore an entire virtual machine from the backed up data
- Restore File – to select a single file from one of the backed up virtual disks and download it directly to your workstation

Restore VM

Restore

Restore VM Restore File

The following steps guide you through the process of restoring a virtual machine to a selected point in time:

1. Choose a virtual machine to be restored: OS X 10.9
2. Select a point in time to restore: 12-Jun-2017 12:34
3. Select the disk(s) to restore: All disk(s)
4. Choose the destination host: 192.168.234.208
5. Choose the destination resource pool: /Resources
6. Select the target datastore: NAS1-Prod
7. Change the virtual machine's name: OS X 10.9-recovered

The *Restore VM* operation creates a new virtual machine on the chosen target host, with the same configuration and virtual disk content as that of the selected backed up VM at the selected point in time. In order to avoid possible configuration collisions, such as IP configuration, the newly restored virtual machine is not automatically powered on upon completion.

A restore VM operation can be started from the *Restore* tab. It consists of 7 steps:

1. Choose a virtual machine to be restored: the VM can be chosen from a drop-down menu or by selecting the desired VM in the main window.
2. Select a point in time to restore: after a VM is selected, this drop-down menu shows all the available points in time, i.e. backups from which the VM can be restored.
3. Select the disk(s) to restore: by default, all the disks available at the point in time



selected in step 2 will be restored. If some disk(s) are not required to be restored, the *All disk(s)* checkbox has to be deselected and the desired disk(s) selected from the drop-down menu. Please note that that menu shows only the disk(s) that were backed-up at the particular point in time selected in step 2. If the desired disk does not appear in the list, a different point in time must be selected in step 2.

4. Choose the destination host: by default this is automatically set to the original host, but can be changed to any available host by selecting it from the drop-down menu.
5. Choose the destination resource pool: by default this is automatically set to the original resource pool, but can be changed to any available resource pool by selecting it from the drop-down menu.
6. Select the target datastore: by default this is automatically set to the original datastore, but can be changed to any available datastore by selecting it from the drop-down menu.
7. Change the virtual machine's name: by default this is automatically set to the original name with an added '-recovered' suffix, but can be changed to any desired name provided that a VM with the same name does not already exist on the selected host.

After following all these steps, click *Start Restore* to begin the restore operation. Restore progress can be tracked in the central view (depending on the browser window size, you may need to collapse the Restore panel first).



Restore File

Restore

Restore VM **Restore File**

The following steps guide you through the process of selecting a single file from a virtual machine at a point in time and downloading it to your computer:

1. Choose a virtual machine:

2. Select a point in time:

3. Select a file to download ↑

	Modification Date	Size
▼ Hard disk 1		40.61 GB
▶ Apple boot		619.89 MB
▼ Apple HFS/HFS+		39.68 GB
▶ Applications		
▼ bin		
<input checked="" type="checkbox"/> bash	24-Sep-2014 11:24	
<input type="checkbox"/> cat	24-Sep-2014 11:24	
<input type="checkbox"/> chmod	24-Sep-2014 11:24	
<input type="checkbox"/> cp	24-Sep-2014 11:24	
<input type="checkbox"/> csh	24-Sep-2014 11:32	
<input type="checkbox"/> date	24-Sep-2014 11:24	
<input type="checkbox"/> dd	24-Sep-2014 11:24	
<input type="checkbox"/> df	24-Sep-2014 11:24	

Restore File operation allows browsing the content of backed up virtual disks and downloading a single file directly to your workstation.

Restoring of a single file is a straightforward operation: First select the VM that has the required file and then choose the desired point in time to browse for files.

Only the disks that were part of the backup at that point in time are shown. Expanding each disk shows its partitions and their sizes. Supported partitions can then be further expanded and browsed for the desired file to download. When the file is located, mark it and press download to initiate the download process. The file will be downloaded to the download location determined by your web browser.

Note: *Archware Pure* currently supports the following file systems for *Restore File* operations: HFS+, NTFS, FAT32, ExFAT, UFS2, ext2, ext3, ext4, Btrfs



5.2.2. Configuring Infrastructure Servers

The screenshot displays the 'INFRASTRUCTURE SERVER' configuration page in the Archiware Pure web interface. The page header shows the time as 12.Jun 13:32 and a 'Logout' button. The sidebar on the left contains navigation options: Virtual Machines, App Configuration, Repository, Servers, Reporting, Preferences, and System Settings. The main content area is titled 'INFRASTRUCTURE SERVER' and includes a note: 'Prior to creating the first backup you need to add your virtual infrastructure to the backup configuration. You can add your VMware vCenter server or standalone ESXi hosts. Note: In case the vCenter server is to be backed up, the hosting ESXi must also be added.' Below this is a table with two columns: 'Server' and 'Type'. The table contains two entries: 192.168.234.219 (vcenter) and 192.168.234.217 (esxi). To the right of the table is a configuration form for the selected server. The form includes a checked checkbox for 'Infrastructure server is enabled', fields for 'Host name' (192.168.234.217), 'User name' (root), 'Password' (masked with dots), 'Description' (vCenter ESXi), and 'Protocol & Port' (https and 443). An 'Apply' button is located at the bottom right of the form.

Server	Type
192.168.234.219	vcenter
192.168.234.217	esxi

Infrastructure server is enabled

Host name: 192.168.234.217

User name: root

Password:

Description: vCenter ESXi

Protocol & Port: https 443

Archiware Pure can be configured to protect virtual machines managed by multiple vCenter or ESXi servers. The only prerequisite is that the server managing the *Archiware Pure Virtual Appliance* has access to the datastores where the VMs to be protected reside.

A new Infrastructure server can be added by clicking the “+” button and entering the corresponding connection parameters:

Host name: FQDN or IP address of the vCenter or the ESXi

User name and password: of the account used to connect to the vCenter or the ESXi

Protocol and port: used for connection (https or http)

Description: optional parameter

After all the required fields are entered, click the *Apply* button to save the configuration.

Once entered, the infrastructure server cannot be removed, but it can be disabled (and enabled) by toggling *Infrastructure server is enabled* checkbox

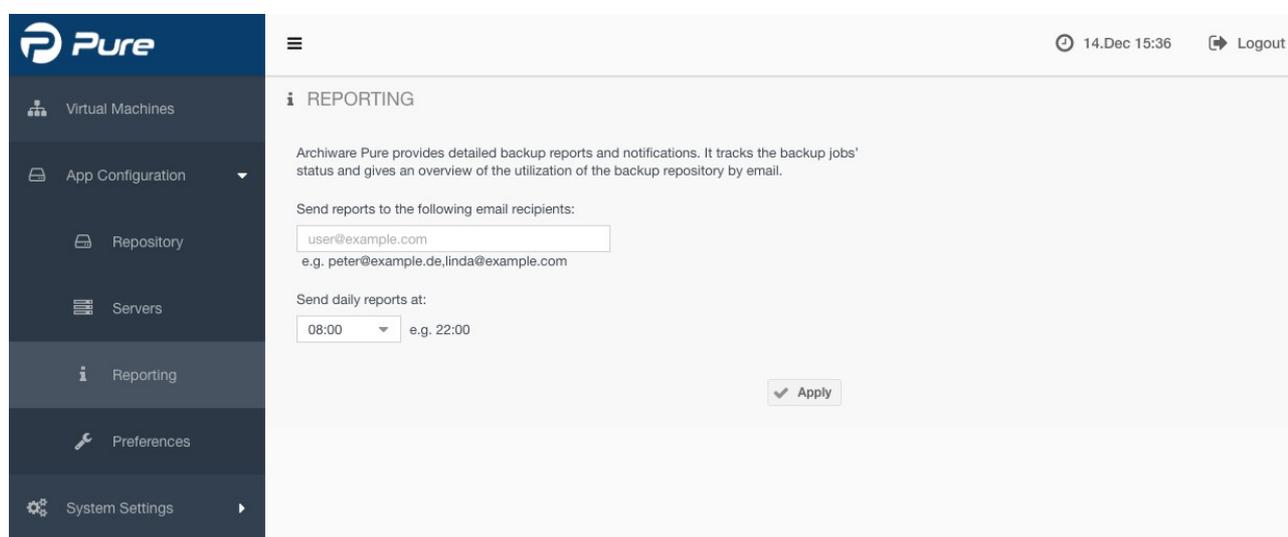
Note: For vSphere installations managed by a vCenter server, it is strongly recommended that *Archiware Pure* be configured to connect to this vCenter server. Additional connections to managed ESXi hosts can also be configured, but they will not be employed as long as the vCenter connection is available. The exception is the ESXi host where the vCenter virtual appliance resides, which has to be configured in order to enable backups

of the vCenter virtual machine itself.

Note: When configuring an *Infrastructure Server*, if the given user belongs to a vSphere role other than *Administrators*, please ensure that the corresponding user has sufficient vSphere privileges to execute all the operations required for backup.

Note: In order to enable normal operation in environments with vSphere lockdown mode enabled, user names configured for access to ESXi servers will automatically be added to the VMWare's *Exception Users List*.¹⁰

5.2.3. Reporting



Archware Pure can be configured to automatically email a detailed daily backup report. If you wish to receive daily reports, please configure the email recipients and the required report generation time. In case of the multiple recipients, please separate the individual email addresses with commas and without spaces.

Note: In order for *Archware Pure* to be able to send daily reports, *Email server* settings need to be configured. Please see 5.3 System settings.

¹⁰ <https://docs.vmware.com/en/VMware-vSphere/6.0/com.vmware.vsphere.security.doc/GUID-88B24613-E8F9-40D2-B838-225F5FF480FF.html>



5.2.4. Preferences

The screenshot shows the Archware Pure web interface. On the left is a dark sidebar with navigation items: Virtual Machines, App Configuration, Repository, Servers, Reporting, Preferences (highlighted), and System Settings. The main content area is titled 'GENERAL PREFERENCES' and contains the following text and controls:

- GENERAL PREFERENCES**
- The General Preferences tab contains fundamental settings that affect the overall behavior of Archware Pure.
- Archware Pure automatically recognizes new virtual machines in the infrastructure.
 - Automatic backup of newly discovered VMs
- The retention time is the number of days the data is available for restore after being backed up. This default is applied to each VM when first configured.
 - 7 days Backup retention time
- The Archware Pure backup repository consists of one or more drives. For each disk, a limit on the number of simultaneous backup jobs can be set. This default is applied to each repository drive when first configured.
 - 1 Number of simultaneously running backup jobs
-

The *Preferences* tab contains fundamental settings that affect the overall behavior of *Archware Pure*. Each of these settings can be individually overridden for selected virtual machines or backup repositories, allowing you to fine tune the configuration to your specific needs.

The settings that can be adjusted are:

Automatic backup of newly discovered VMs

This setting determines whether *Archware Pure* should automatically schedule newly discovered virtual machines for backup. Each new VM will be assigned to the primary backup repository and assigned the default backup window schedule.

Backup retention time

This settings determines the number of days the backup data is to be retained in the repository before reusing the space for new backups.

Note: Backed up data will remain available to be restored even after the retention time is exceeded as long as no new backups are run.

Note: The latest backup is always maintained and is not subject to the retention time.

Number of simultaneously running backup jobs

This setting determines how many backup jobs will concurrently be run for each backup repository. If there are multiple virtual machines to be backed up within a backup window, only this number of backups will be executed at the same time. All the other jobs remain in the queue until the next job slot becomes available.

Note: This setting is applied to newly added backup repositories only. To change this setting for an existing repository, please see 5.2.1 Configuring Backup Repositories.

Click *Apply* for any of the above changes to become active



5.3 System settings

5.3.1. Email

The screenshot shows the 'EMAIL SERVER' configuration page in the Archware Pure interface. The sidebar on the left contains the following items: Virtual Machines, App Configuration, System Settings, Email (highlighted), and Software. The main content area has a header with the Archware Pure logo, a menu icon, and the date/time '15.Dec 16:25' and a 'Logout' button. The 'EMAIL SERVER' section includes the following fields and options:

- Sender (Reply To) email:
- Outgoing mail server:
- Use SMTP Authentication:
- Port to connect to:
- For the authentication optional username and password:
 - Username:
 - Password:

At the bottom of the form are two buttons: 'Send Test Mail' and 'Apply'.

In order to enable *Archware Pure* to send daily email reports, the email server settings need to be configured first. Please provide the following parameters:

Sender email – the email address to be used as a sender

Outgoing mail server – the FQDN or IP address of your mail server. In case a FQDN name is entered, please make sure the name can be resolved to an IP address.

Use SMTP Authentication – enter the desired type of encryption TLS/SSL/NONE

Port to connect to – by default this port is related to the encryption type and is preset to the default port for each encryption type. If required, it can be manually set to a desired value.

Username & Password – enter valid login credentials for the selected email server

After configuring the email server settings click *Apply* to save the configuration.

To ensure that the entered email settings are correct and that emails can be sent, use the *Send Test Mail* function and fill in the email recipient when prompted.



5.3.2. Software settings

The screenshot displays the 'Software settings' page in the Archiware Pure interface. On the left is a dark sidebar with navigation items: Virtual Machines, App Configuration, System Settings, Email, and Software. The main content area is light gray and contains three sections: LICENSING, UPDATE, and SUPPORT. The LICENSING section has a 'License Registration' button and a 'Get a Quote' button. The UPDATE section shows 'Installed version: 0.9.20' and 'Release date: Wed 14.Jun.2017 15:40' with a 'Check for Updates' button. The SUPPORT section has a 'Download Support Data' button. At the top right, there is a clock icon, the date '27.Jun 11:49', and a 'Logout' button.

The *Software settings* view allows you to register and license *Archiware Pure*, perform software updates and download the support data.

Licensing

To allow testing the product, *Archiware Pure* will run for 90 days before a software license is required. Once a license is purchased, click on the *License Registration* button to start the *License Registration Wizard* and register your copy of the software.

Use the *Get a Quote* button and fill in the form to receive a quote for a *Pure* license from *Archiware*

Update

The *Update* section displays information about the currently installed *Archiware Pure* version and allows checking for new updates online. Because the *Archiware Pure Virtual Appliance* could be placed behind a firewall, without direct Internet access, the update process is separated into several steps:

1. Using the *Download* button, the *update package* can be downloaded to your PC
2. With the *Select* button, select the downloaded *update package*. With the *Upload* button, transfer the package to the *Archiware Pure Virtual Appliance*
3. Open the *Archiware Pure Virtual Appliance* console menu through the *vSphere Client* and initiate the update process.

Note: The update process will restart *Archiware Pure* and any active backup or restore



tasks will consequently be interrupted. Please make sure that there are no active jobs at the time of the update.

Support

In order to aid customer support, *Archware Pure* can collect and pack the necessary support data to be forwarded to the support staff if requested. The support package contains the *Archware Pure*'s log files, configuration, selected OS logs and the *vSphere*'s inventory and configuration. Click on the *Download Support Data* button to prepare and download a zip archive to be attached to your support ticket, if requested by the *Archware* support staff.