Accelops 4.3 BETA Installation Guide

Including Installation and Configuration for Accelops Visual Analytics

December 2014

What's New in Release 4.3

This release adds features and functionality in several areas.

New Product

AccelOps Visual Analytics

This release enables AccelOps data to be visualized using Tableau Visual Analytics and Visual Analytics Desktop in conjunction with the AccelOps Report Server. Two kinds of AccelOps data can be visualized:

- Data residing in Configuration Management Database (CMDB) e.g. Incidents, Device attributes
- Any event database report result as long as it contains an aggregation condition e.g. GROUP BY

You can find full information in the Visual Analytics section of this wiki.

AccelOps Systems Features

New chart types for search result visualization

This release enables users to visualize query results within AccelOps using scatter plots, bubble charts, tree maps and heat maps. This complements existing visualization via pie charts, bar charts, trend charts, and geo maps. Scatter plots enable users to see correlations between

any pair of calculated measures (e.g. CPU and memory utilization, Sent and received bytes etc). Bubble charts add a third dimension to scatter plots to reflect the size of the added dimension, e.g. in a scatter plot containing CPU and memory utilization as the two dimensions, the third dimension could be total sent and received bits/sec. The tree map is a hierarchical tree-structured visualization that is often used to analyze dominating components of multidimensional data e.g. IPS signatures, network traffic etc. Heat maps show the calculated measure for two dimensions using a color grade that helps users to understand severity. These charts are available both in Analytics and Dashboard areas.

This topic is discussed here.

Visualization for profiled metrics and drill down from incidents

AccelOps creates statistical baselines (profiles) for a large number of use cases. While earlier releases showed this information in tabular form, this data can now be visualized. For a specific dimension (such as host), up to four measures can be visualized on a trending hour-by-hour basis for weekdays and weekends as a multi-series column chart. In general, the profiles can be visualized as a scatter plot. From an incident indicating excessive deviation from statistical measures, it is now possible to drill down into the baseline with one click.

This topic is discussed here.

Performance and Availability Monitoring

Ability to specify per-device threshold in rules

AccelOps has rules that trigger when certain thresholds are crossed. When the thresholds have to be fine-tuned on a per-device basis, rule conditions become complex and difficult to manage. This release solves this issue. Instead of explicit threshold values in rules, the thresholds are now defined as custom properties in which the user can choose to override the global thresholds by redefining the thresholds locally for a certain set of devices. Instead of hard-coding thresholds, rules are now written using a function that returns the appropriate values – local values if one is defined, global values otherwise. This approach keeps the number of rules the same, but allows users to set thresholds for any number of devices. Thresholds can be a simple number (e.g. CPU utilization) or a map (e.g. interface utilization for each interface, disk utilization for one or more disks).

This topic is covered here (see the section: "Thresholds as Custom Properties").

Enhanced custom command output monitoring

This release enhances the way custom performance monitor command outputs are parsed into events. Prior to release 4.3.1, command outputs are parsed as one line into one event. This does not include, for example, “show version” commands for Cisco IOS routers that can span multiple lines. Release 4.3.1 improves this situation – multiple lines can be parsed into one event.

This topic is covered here.

Windows custom command output monitoring

A Windows custom performance monitor can be used to bring PowerShell command outputs into AccelOps. Prior to release 4.3.1, command output was obtained via Telnet/SSH, but that is not natural for Windows, and the user had to install Cygwin Telnet/SSH in Windows systems. This release enhances the situation by using winexe client on AccelOps - any Windows shell commands, such as PowerShell, can be remotely run on Windows servers using WMI credentials. There is no need to install any software on Windows. Additionally, multi-line command outputs can be parsed into one event in AccelOps. This enhancement now enables customers to run PowerShell commands in Windows servers.

This topic is covered here.

Log Management and Security Incident Event Monitoring (SIEM)

Amazon Web Services CloudTrail monitoring

As more and more applications are deployed in the Cloud, monitoring user activity in the cloud is becoming increasingly important. For example, it is important to know when users are created, permissions are changed, virtual machines are spun up, network configurations are changed, or Virtual Private Clouds (VPCs) are created. This release enables AccelOps to efficiently collect, parse, report, and alert on Amazon Web Services activity via the AWS CloudTrail API.

This topic is discussed here.

Box.com file monitoring

Box.com is a cloud storage provider that is used by individuals as well as corporations to store and share files. This release enables AccelOps to monitor file activity within a Box.com account. AccelOps securely logs on to the Box.com account and monitors file creation, deletion, and modification activity within the account. More interestingly, for a specific file or all files in a folder, AccelOps can monitor file-sharing properties – is the file shared, is it password protected, is it preview/download enabled, and how many times was the file downloaded or viewed. If a particular file or directory contains confidential information, AccelOps can alert when any file in that directory was exposed to the outside or was viewed.

This topic is discussed here.

Okta Single Sign-On (SSO) integration via SAML 2.0

Oka is a cloud-based Single Sign-on (SSO) Service provider. This release enables AccelOps customers who are already authenticated in Okta to automatically log in to AccelOps without entering any credentials. AccelOps communicates via SAML 2.0 with Okta to verify user identity. In addition, AccelOps discovers all users defined in Okta (like Microsoft Active Directory) - the discovered users can be used in rule and report conditions and in notification policies. Finally, AccelOps collects Okta audit trails that can detect activity on the Okta web site such as account changes, logon activity, and other configuration changes.

This topic is discussed here.

Vendor default password usage detection

A common compliance requirement is to alert against the use of default vendor-defined credentials. This release enables AccelOps users to satisfy this requirement. AccelOps comes pre-built with a set of vendor and device specific default passwords. Users can add to this list. Whenever a device discovery succeeds with a credential from this list, an alert triggers.

This topic is discussed here.

Detect malware via file hash and user agent match

This release comes with a set of built-in well-known malware user agents and malware file hash signatures. Users can also import their own lists from outside sources. Since malware is known to use non-standard http user agents, AccelOps alerts when it sees a malware user agent, regular expression-based match from web server or web-proxy logs. If AccelOps is configured for file integrity monitoring, then it can alert when it detects a malicious file hash match in a monitored directory.

Malware hash is discussed here.

User agent is discussed here.

Detect communication via Anonymity Networks (Open Proxies and TOR nodes)

A compromised host or a user with malicious intent uses various techniques to hide their identity, with two common examples being proxies and TOR networks. This release comes with a set of built in well-known proxies and TOR networks. Users can also import their own lists from outside sources. Whenever AccelOps sees an IP address match from firewall logs or Netflow, an alert is created.

This topic is discussed here.

Device Support

- Cisco VoIP infrastructure monitoring - see here
    - Cisco VoIP phone discovery from Cisco Call Manager via SNMP
    - Cisco Unity Connection - discovery and performance monitoring via SNMP
    - Cisco Presence Server - discovery and performance monitoring via SNMP
    - Cisco Contact Center - discovery and performance monitoring via SNMP
    - Cisco Tandeberg VCS - discovery and performance monitoring via SNMP
    - Cisco Telepresence MCU - discovery and performance monitoring via SNMP
    - More detailed performance monitoring of Cisco Call Manager – SIP Trunk Status, Gateway Status, H323 Device Status, Voice mail Server Status, CTI Device Status, Media Device Status

    - Parse 1000+ syslog messages from Cisco Call Manager and RTMT and create rules corresponding to RTMT Alerts
- Oracle ACME Packet Controller - discovery and performance monitoring via SNMP
- Brocade SAN Switch - discovery and performance monitoring via SNMP
- Dell Force10 Switch - discovery and performance monitoring via SNMP - see here
- Dell PowerConnect switches - discovery and performance monitoring via SNMP - see here
- Nimble Storage - discovery and performance monitoring via SNMP
- Cisco WAPX WLAN Controllers - discovery and performance monitoring via SNMP
- MS SQL Server 2014 - discovery, performance monitoring, audit log collection via SNMP, WMI, JDBC
- Oracle Audit log parsing via syslog
- Wireless LAN Controller "module" on Fortinet firewalls.
- TrippLite Environmental Monitors
- IBM WebSphere monitoring via HTTP(S) instead of JMX - see here
- Arista switches and routers - discovery and performance monitoring via SNMP - see here
- VMware vShield - log parsing via syslog

Significant Enhancements

Migrate SVN to local disk

AccelOps uses SVN to store device configuration data and installed software information. Over time, this repository can grow and contain a very large number of files. Earlier releases hosted SVN over NFS, and network performance could become an issue over time. Since all accesses to SVN are via the Supervisor node, this release moves SVN to a Supervisor local disk on a separate logical drive. Fresh AccelOps 4.3.1 install automatically create a separate partition for storing SVN files. During AccelOps 4.3.1 upgrade process, a special pre-upgrade step is invoked to copy the SVN files over NFS to local disk. Actual upgrade does not begin unless existing SVN data has been copied over to the new disk - so the system continues to work during the pre-upgrade process.

Trigger event query optimization

Incidents are triggered by defined trigger events. When a user browses an incident in the graphical user interface, trigger events are shown, and incident notification emails can contain up to 10 trigger events. However, the AccelOps rule engine does not store raw events in memory, but only event identifiers, in an attempt to save memory. This means trigger events have to be retrieved from the event database by querying the event database. This query can be very expensive if the event is current, since the event may not have been indexed yet. This has been seen to create significant pressure on the AccelOps I/O system, especially if there is a sudden surge of incidents. This release addresses this issue by using an in-memory cache of raw messages for a short period of time.

Device location import

CMDB devices typically belong to private address spaces and their location is only known to the system administrators. There is now an easy way to input this information into AccelOps. Users can define locations by IP range or sub-net, and the location in CMDB will be instantly updated. The locations can be input manually via the graphical user interface, or imported from a file. In addition, devices can be searched by location in both the summary dashboard and CMDB.

This topic is discussed here.

Event dropping rule enhancement

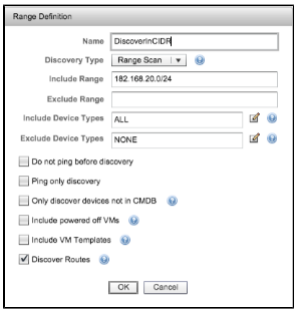
Devices are often chatty and send all kinds of uninteresting logs to AccelOps. Since online storage is expensive, it is often necessary to be able to efficiently drop events before they are processed or stored. This release enhances event dropping rule framework by:

- Including Source IP and Destination IP into the event dropping rule definition criteria
- Allowing two different actions: drop completely, or store but do not trigger rules
- Allowing the ability to automatically create drop rules from incidents in case the incident is a false positive, which is common in Network IPS event correlation scenarios

This topic is discussed here.

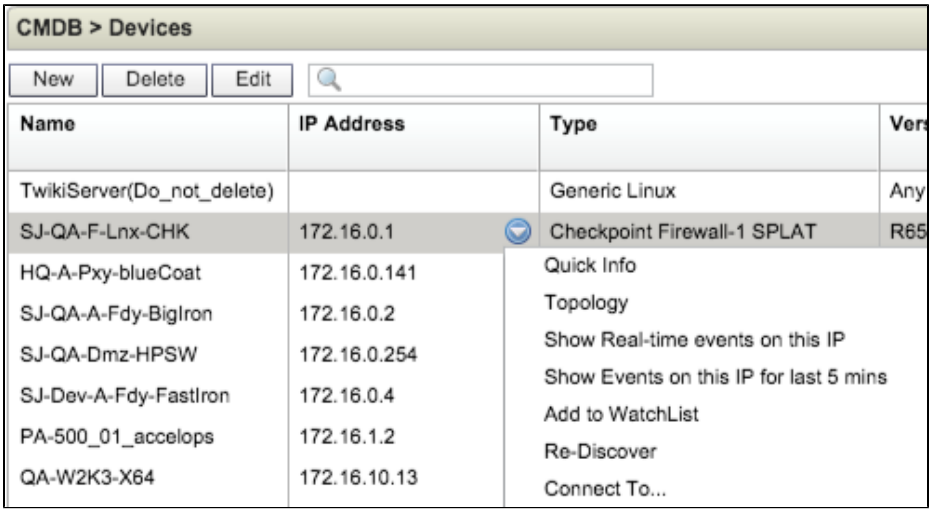
CIDR format for specifying discovery ranges

The test connectivity and discovery IP ranges can now be specified in CIDR notion as well.



Launch discovery from CMDB

Rediscovery can be directly launched from the CMDB page.



IP Address management enhancements

When allocating new addresses to hosts, it is often important to know the hosts that currently are assigned to addresses in a specific network segment. In prior releases, AccelOps discovered the network segments and showed only CMDB devices in that network segment. These do not include user devices such as laptops, workstations, mobile devices etc., since these devices do not necessarily belong in CMDB. Starting with this release, the Network Segment page also shows the hosts in the Identity and Location page belonging to the same network segment. Since AccelOps accurately learns all the IP addresses in a network via DHCP and IP ARP cache scan, administrators can correctly see every active host belonging to a specific network segment.

This topic is discussed here.

Critical interface selection usability enhancement

AccelOps allows users to mark interfaces as critical, and such interfaces are always monitored for utilization and up/down status. A common example is switch trunk ports, since a trunk port going down can cause a widespread network outage. Currently there is no easy way in AccelOps to select the trunk ports of all switches. Instead, the user has to traverse every switch and select trunk ports within that switch, which can be very tedious for a large network containing a large number of switches. This release provides a flattened view of the network interfaces so that a user can quickly select a large number of interfaces matching some search criteria. This enables administrators to mark all critical interfaces for a large network with only a few clicks.

This topic is discussed here.

CMDB Report extensions

CMDB Reports are extended to include

- Successful Performance Monitor Reports
- Failed Performance Monitor Reports
- Identity and Location Report
- Scheduled Report
- Devices not updated in last N days

Dynamic EPS Adjustment algorithm

AccelOps has an algorithm to re-distribute unused EPS at a collector to other collectors seeing an event spike. The algorithm is now adjusted to have the following property: A collector is now always guaranteed to have the events-per-second specified as "Guaranteed EPS." This EPS is never redistributed to other collectors. Only the excess EPS (defined as Overall EPS license minus the sum of all Guaranteed EPS) is redistributed on demand.

Incident table and Identity/Location table partitioning

In AccelOps CMDB, there are two tables that grow with time:

- Incident table
- Identity/Location table

The incident table grows as new incidents are created, while the Identity/Location table grows as new computers and users appear in the system or change location. As these tables grow, eventually the database may become full and read performance may suffer with corresponding growth in the table indices. In this release the following enhancements are made:

Incident Table Optimization:

- The incident table is partitioned by month, so recent queries access the current month and result in fast returns
- During migration to 4.3.1 release:
    - Data for the last three months is migrated to the new tables (based on Last Seen Time field)
    - All 'Active' incidents are migrated
    - Older incidents are archived. Scripts are provided for customer to migrate older incidents into 4.3.1 CMDB.
    - Scripts are provided to purge older incidents from 4.3.1 CMDB

Identity/Location Table Optimization:

- The Identity/Location table is partitioned by month, so recent queries access the current month and result in fast returns
- During migration to 4.3.1 release:
    - Data for the last three months is migrated to the new tables (based on Last Seen Time field)
    - Older entries are archived. Scripts are provided for customer to migrate older identity/location entries into 4.3.1 CMDB.
    - Scripts are provided to purge older identity/location entries from 4.3.1 CMDB

Paged control support for Microsoft Active Directory LDAP discovery

AccelOps discovers users in Microsoft Active Directory via LDAP protocol. By default, Microsoft LDAP search queries return up to 1000 entries per call (MaxPageSize limit - see Microsoft KB article). Earlier AccelOps releases required administrators to increase the MaxPageSize limit to a much higher number for user discoveries to work. This is generally inconvenient and may also cause resource issues on the server. This release enhances this situation. AccelOps LDAP discovery now uses the paged control version of the LDAP search API to fetch an arbitrarily large number of entries - 1000 at a time. Administrators are not required to increase the MaxPageSize limit beyond the default 1000.

Events when device performance monitoring status changes

AccelOps now generates audit events when the performance monitoring status of a job changes.

1. User deleted a device or a collector:

```
<174>Nov 05 09:52:07
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[srcIpAddr]=1
92.168.20.164,[phCustId]=1,[sessionId]=11178d2aeae08e9c2babe2725fa1,[procName]=Ap
pServer,[hostName]=HQ-A-Pxy-blueCoat, [hostIpAddr]=172.16.0.141,
[eventSeverity]=PHL_INFO,[customer]=Super,[jobStatusType]=UserDeletedDevice,[user
]=admin, [phLogDetail]=Monitors on device were deleted due to device being
deleted
```

2. User disabled monitoring at a device level:

```
<174>Nov 05 09:53:58
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[srcIpAddr]=1
92.168.20.164,[phCustId]=1,[sessionId]=11178d2aeae08e9c2babe2725fa1,[procName]=Ap
pServer,[hostName]=ACCELOPS-W2K3B4,
[hostIpAddr]=192.168.64.124,[eventSeverity]=PHL_INFO,[custName]=Super,[jobStatusT
ype]=UserDisabledDevice,[user]=admin, [phLogDetail]=Monitoring device,
192.168.64.124, is  disabled by user
```

3. User enabled monitoring at a device level:

```
<174>Nov 05 09:54:38
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[srcIpAddr]=1
92.168.20.164,[phCustId]=1,[sessionId]=11178d2aeae08e9c2babe2725fa1,[procName]=Ap
pServer,[hostName]=ACCELOPS-W2K3B4,
[hostIpAddr]=192.168.64.124,[eventSeverity]=PHL_INFO,[custName]=Super,[jobStatusT
ype]=UserEnabledDevice,[user]=admin,[phLogDetail]=Monitoring device,
192.168.64.124, is enabled by user
```

4. User disabled a specific job:

```
<174>Nov 05 09:55:17
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[phCustId]=1,
[customer]=Super,[jobName]=System cpu
usage,[srcIpAddr]=192.168.20.164,[appTransportProto]=SNMP,[sessionId]=11178d2aeae
08e9c2babe2725fa1,[procName]=AppServer,[hostIpAddr]=192.168.64.124,[hostName]=ACC
ELOPS-W2K3B4,
[eventSeverity]=PHL_INFO,[jobStatusType]=UserDisabledJob,[user]=admin,[pullInteva
l]=180,[phLogDetail]=Protocol to monitor is disabled
```

5. User enabled a specific job:

```
<174>Nov 05 09:55:59
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[phCustId]=1,
[customer]=Super,[jobName]=System cpu usage,
[srcIpAddr]=192.168.20.164,[appTransportProto]=SNMP,[sessionId]=11178d2aeae08e9c2
babe2725fa1,[procName]=AppServer,[hostIpAddr]=192.168.64.124,[hostName]=ACCELOPS-
W2K3B4,
[eventSeverity]=PHL_INFO,[jobStatusType]=UserEnabledJob,[user]=admin,[pullInteval
]=180,[phLogDetail]=Protocol to monitor is enabled
```

6. User changed job polling interval:

```
<174>Nov 05 09:57:21
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[phCustId]=1,
[customer]=Super,[jobName]=System real memory usage,
[srcIpAddr]=192.168.20.164,[appTransportProto]=SNMP,[sessionId]=11178d2aeae08e9c2
babe2725fa1,[procName]=AppServer,[hostIpAddr]=192.168.64.124,[hostName]=ACCELOPS-
W2K3B4,[eventSeverity]=PHL_INFO,[jobStatusType]=UserChangedPollIntv,[user]=admin,
[pullInteval]=300,[phLogDetail]=Interval of protocol to monitor is changed
```

7. Discovery added a job for monitoring:

```
<174>Nov 05 10:05:14
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[phCustId]=1,
[customer]=Super,[jobName]=WMI Ping Status,
[appTransportProto]=WMI,[procName]=AppServer,[hostIpAddr]=192.168.64.124,
[hostName]=ACCELOPS-W2K3B4,
[eventSeverity]=PHL_INFO,[jobStatusType]=DiscoveryAdded,[user]=SYSTEM(su),[pullIn
teval]=120,[phLogDetail]=Monitor on device is added
```

8. Discovery removed a job for monitoring:

```
<174>Nov 05 10:12:08
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[phEventCategory]=2,[phCustId]=1,
[customer]=Super,[jobName]=Process Resource Usage via WMI,
[appTransportProto]=WMI,[procName]=AppServer,[hostIpAddr]=192.168.64.124,
[hostName]=ACCELOPS-W2K3B4,
[eventSeverity]=PHL_INFO,[jobStatusType]=DiscoveryRemoved,[user]=SYSTEM(su),[pull
Inteval]=180,[phLogDetail]=Status of protocol to monitor is changed
```

9. Performance Monitor module did not schedule a job:

```
<174>Nov 05 10:33:01
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[errReason]=Missing/Invalid WMI
credential for 192.168.20.207, PROC_RESOURCE,
[phEventCategory]=2,[phCustId]=1,[jobId]=1545818,[customer]=Super,[jobName]=Proce
ss Resource Usage via WMI,
[srcIpAddr]=192.168.64.153,[appTransportProto]=WMI,[sessionId]=13b348ad44270e0249
eafc9dfdc5,[procName]=AppServer,[hostIpAddr]=192.168.20.207,[hostName]=win-li5sip
p8s7s.accelops.net,[eventSeverity]=PHL_INFO,[jobStatusType]=DiscoveryNotScheduled
,[user]=1,[pullInteval]=180,[phLogDetail]=Monitor on device is not scheduled
```

10. Successful job:

```
<174>Nov 05 10:13:00
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[errReason]=,[phEventCategory]=2,
[phCustId]=1,[jobId]=1536112,[customer]=Super,[jobName]=Process Resource usage
via
SNMP,[srcIpAddr]=192.168.64.153,[appTransportProto]=SNMP,[sessionId]=128e159a35b9
f0f4cd71ca80222b,[procName]=AppServer,[hostIpAddr]=192.168.20.170,[hostName]=qa-w
in2008-217.accelops.net,[eventSeverity]=PHL_INFO,[jobStatusType]=ExecutionSuccess
,[user]=1,[pullInteval]=120,[phLogDetail]=Status of monitor is changed by Job
```

11. Failed job:

```
<174>Nov 05 10:15:00
[PH_AUDIT_DEV_MON_JOB_STATUS_CHANGE]:[custId]=1,[errReason]=Failed to get process
utilization in
executeGeneralProcResourceJobOpt,[phEventCategory]=2,[phCustId]=1,[jobId]=1536112
,[customer]=Super,[jobName]=Process Resource usage via SNMP,
[srcIpAddr]=192.168.64.153,[appTransportProto]=SNMP,[sessionId]=12ab68da5ca2cceab
2a69cbda16e,[procName]=AppServer,[hostIpAddr]=192.168.20.170,[hostName]=qa-win200
8-217.accelops.net,[eventSeverity]=PHL_INFO,[jobStatusType]=ExecutionFailed,[user
]=1,[pullInteval]=120,[phLogDetail]=Monitoring device failed
```

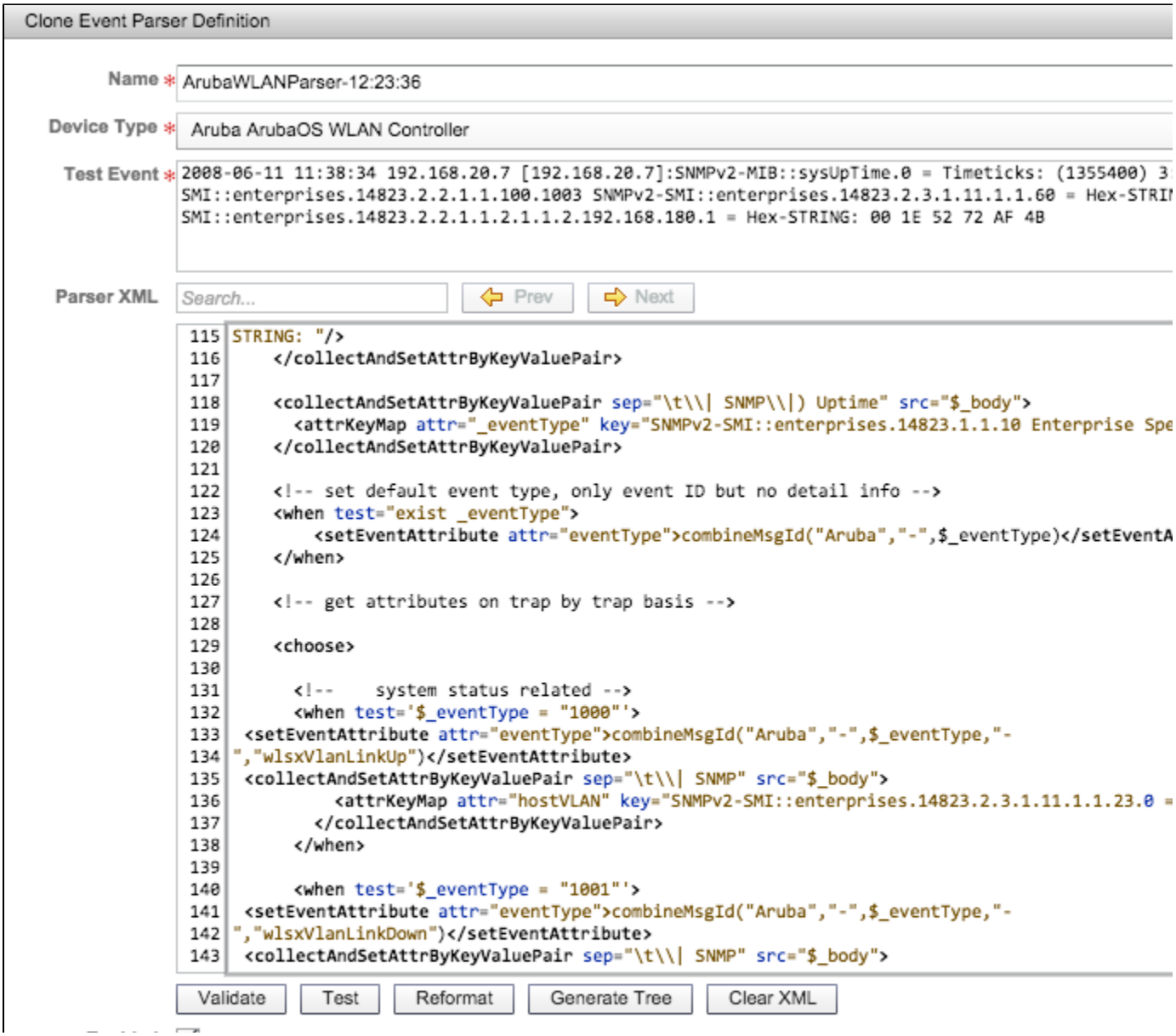
12. Job stays in “Discovered Added” state for more than 15 minutes and is not scheduled:

```
<174>Nov 05 10:55:57
[PH_AUDIT_DEV_MON_JOB_NOT_STARTED]:[custId]=1,[phEventCategory]=2,[phCustId]=1,[c
ustomer]=Super,[jobName]=ICMP Ping
Status,[appTransportProto]=PING,[procName]=AppServer,[hostIpAddr]=172.16.10.110,[
hostName]=HOST-172.16.10.110,[eventSeverity]=PHL_INFO,[jobStatusType]=DiscoveryAd
ded,[user]=SYSTEM(phDiscovery),[pullInteval]=120,[phLogDetail]=Monitoring job did
not start yet
```

Enhanced custom parser development graphical user interface

The custom parser development graphical user interface is enhanced to include the following:

1. Ability to search text within the XML file.
2. Add a line number in the XML file. When there is a Error in 'Validate' or 'Test', show the line number as a reference to help user fix the problem.
3. Allow user to reformat the text after block update for easy readability.
4. Allow an option to Clear XML in one shot to allow for bulk replace.
5. Color code the XML tags and text for easy readability.
6. Show the parsed fields in Test results in a nice tabular form.
7. Improve the scrolling/editing response for large XML files.
8. Show the XML in a tree form - allow cross-linking of the XML Tree and the text edit window.
9. Allow user to increase the size of the edit window.


Clone Event Parser Definition
Name *
ArubaWLANParser-12:23:36
Device Type *
Aruba ArubaOS WLAN Controller
Test Event *
2008-06-11 11:38:34 192.168.20.7 [192.168.20.7]:SNMPv2-MIB::sysUpTime.0 = Timeticks: (1355400) 3
SMI::enterprises.14823.2.2.1.1.100.1003 SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.60 = Hex-STRI
SMI::enterprises.14823.2.2.1.1.2.1.1.2.192.168.180.1 = Hex-STRING: 00 1E 52 72 AF 4B
Parser XML
Search...
Prev
Next
115 STRING: "/>
116 </collectAndSetAttrByKeyValuePair>
117
118 <collectAndSetAttrByKeyValuePair sep="\t\\| SNMP\\|) Uptime" src="$_body">
119 <attrKeyMap attr="_eventType" key="SNMPv2-SMI::enterprises.14823.1.1.10 Enterprise Spe
120 </collectAndSetAttrByKeyValuePair>
121
122 <!-- set default event type, only event ID but no detail info -->
123 <when test="exist _eventType">
124 <setEventAttribute attr="eventType">combineMsgId("Aruba","-",$_eventType)</setEventA
125 </when>
126
127 <!-- get attributes on trap by trap basis -->
128
129 <choose>
130
131 <!-- system status related -->
132 <when test='$_eventType = "1000"'>
133 <setEventAttribute attr="eventType">combineMsgId("Aruba","-",$_eventType,"-
134 ","wlsxVlanLinkUp")</setEventAttribute>
135 <collectAndSetAttrByKeyValuePair sep="\t\\| SNMP" src="$_body">
136 <attrKeyMap attr="hostVLAN" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.23.0 =
137 </collectAndSetAttrByKeyValuePair>
138 </when>
139
140 <when test='$_eventType = "1001"'>
141 <setEventAttribute attr="eventType">combineMsgId("Aruba","-",$_eventType,"-
142 ","wlsxVlanLinkDown"}</setEventAttribute>
143 <collectAndSetAttrByKeyValuePair sep="\t\\| SNMP" src="$_body">
Validate
Test
Reformat
Generate Tree
Clear XML

Fixed Issues and Minor Enhancements

General GUI

- Bug 7489: Created a CMDB report named "Active Dependent Rules" that tracks which rules depend on other rules. This helps users to tweak/enable/disable chained system rules
- Bug 8021: Added indices in ph_task and ph_alter tables in PostgreSQL - this improves the GUI experience when user visits Alert and Task tabs
- Bug 8054: Allow an option to search on 'Origin' field in every tab in Admin > Device Support area. This allows users to quickly see user defined Device/Application types, Event Types, Event Attribute Types, Parsers and Dashboard columns
- Bug 8165: Show VLAN as a column in Analytics > Identity and Location Report
- Bug 8181: Need to get result of scheduled report even if the report has no data
- Bug 8291: Allow user to unlock an AccelOps account
- Bug 8896: Allow scheduled reports to skip charts and only contain tables
- Bug 9266: Added "errReason" attribute to system event PH_REPORT_ACTION_STATUS - the attribute states why notification failed
- Bug 9670: CMDB Device shows under Scheduled Maintenance even after device removed from Schedule Maintenance Calendar
- Bug 9900: Expose Last Updated Time and Discover Method fields of a device for use in CMDB reports
- Bug 10083: Display a warning when user disables or deletes a rule that is referenced in other rules
- Bug 10172: Change the AccelOps GUI CMDB > Users so that all locally created users cannot edit the "domain" field
- Bug 10198: Removal of devices or organizations from CMDB sometimes display foreign key violation errors
- Bug 10250: Remove "Show Password" check box for credential
- Bug 10382: enhancement: allow HTML tags in custom e-mail templates
- Bug 10394: Allow bulk disabling for blocked IP in the CMDB through the GUI
- Bug 10450: Add 'Apply To' option to facilitate applying multiple authentication profiles to one or more users
- Bug 10563: Add an Export button for Related Incidents screen
- Bug 10830: Add locations view in summary dashboard
- Bug 11343: Long device names truncated on Widget dashboard
- Bug 11371: Allow import/ export of user defined watch list
- Bug 11498: A rule with CLEAR conditions becomes invalid after clone process - constraints between main and clear rules are not properly copied over
- Bug 11508: Ability to set locations for a large number of devices in one shot
- Bug 11596: Ability to add Notes to Rule exceptions. One should also be report on Rule exceptions.
- Bug 11597: Add Remediation section to Rule definition. Add this to default email template. Make this part of CMDB report. Add this to custom notification template.
- Bug 12583: User can not manually add important processes that have the same name but different process parameters
- Bug 12613: Columns on Amazon EC2 performance view should be same as EC2 dashboard
- Bug 12694: Provide an option to not have charts in exported PDF reports
- Bug 12698: Enable search on "Monitor Errors" and "Error Description" on Admin > Setup wizard > Monitor Change/Performance > Monitor Errors popup
- Bug 12760: Edit a Report Schedule and the Report automatically Runs
- Bug 12786: Make error message clearer for event dropping rule creation on grouped incidents

Platform

- Bug 9518: Glassfish log rotation is now configured for saving space - only keep 20 files and each of them max-sized 2000000 bytes.
- Bug 9828: EPS Pulling functionality has limitations that lead to dropping of events by collectors
- Bug 9938: Allow modular 'yum upgrades' for non-base-CentOS packages like JVM, Chrome, PostgreSQL, Glassfish
- Bug 10144: Do not overwrite customer's ssl.conf during upgrade
- Bug 11926: DNS caching code has performance issues
- Bug 12130: AccelOps uses rsyslog to receive our internally generated events. There is a throttle defined there (200 messages in 5 minutes interval). This will result message loss in high throughput situation like VoIP phone discovery, Layer 2 port mapping discovery etc. This throttle is removed since this is intra-computer communication and can handle much higher message rates.
- Bug 12538: Detailed events, rules and reports for performance monitoring status changes
- Bug 12584: Collectors sometimes fail to negotiate HTTP(S) connection to Super/Worker if ever they choose SSLV3 (because of poodle

vulnerability - possibly because of a man-in-the-middle device like a IPS or a firewall disallowing all SSLV3 negotiations.
- Bug 12585:The phMonitor module crashes when it sees a 3.7.6's rest_cache_api list entry in phoenix_config.txt
- Bug 12586: The configuration file phoenix_config.txt needs to be upgraded properly by maintaining user's changes from previous versions
- Bug 12644: Run script notification may fail if the raw message contains special XML characters
- Bug 12649: Updating Dynamic Watch List by incidents causes Application Server to run out of memory when there are many many-to-many relationships between incidents and dynamic watch lists
- Bug 12650: Full VM build does not 'yum update' packages as previously designed

Performance Monitoring / Event Pulling / Synthetic Transaction Monitoring (STM)

- Bug 9848: Packet transmission timeouts for SNMP v1 and v2 phoenix_config needs to be extended from 1 minute to 5 minutes
- Bug 11423: Add Custom command output monitoring via winexe for windows environments
- Bug 12066: Parse CVSS_BASE score for vulnerabilities into (vulnCvssBaseScore attribute)
- Bug 12213: Cisco IOS CPU can not be monitored in some cases with multiple CPUs - performance monitoring has to identify the control plane cpus
- Bug 12214: PerfMonitor module will stop sending PH_DEV_MON_PING_STAT events for a gateway if its immediate down steam device are down
- Bug 12387: NexPose vulnerability report XML parsing takes a long time
- Bug 12458: Checkpoint needs a resume event handler
- Bug 12561: Discovery never removes a PING job even if the device is not reachable by PING during discovery. This is done since a PING is fundamental for measuring up time. Only a user can manually disable PING jobs
- Bug 12601: Admin > Setup wizard > Monitor Change/Performance tab does not reflect the status of successful discovery after correcting device credentials.
- Bug 12604: Events are not picked up by parser module if Supervisor node is down for an extended period of time
- Bug 12625: For Qualys Vulnerability Scanner, Test connectivity succeeds, but the discover method and event pull methods are not set in discovery, resulting in no job creation for Java agent.
- Bug 12661: Don't trigger config change while getting config error
- Bug 12730: Allow pulling interval to be less than 1 minute to pull windows logs at a faster rate. Added a phoenix config entry of "wmi_pull_interval_scale" that can have a range from 1 (default) to 10. If users want to have a shorter interval for WMI event pulling, they can change it to 6 to make it 6 times faster; if the pulling interval in GUI is 1 minute, then events are pulled every 10 seconds.
- Bug 12754: Enhance custom command output monitoring to generate an event to indicate no matching lines for regular expression. This can be used to detect e.g. a process is down from running the top command. If the regular custom command output monitoring command is PH_DEV_MON_CUST_DF then AccelOps would generate PH_DEV_MON_CUST_DF_NOT_FOUND when the are no matching lines in the command output
- Bug 12787: Enhance performance monitoring status job upload to keep uploading if failed last time
- Bug 12801: Custom command output monitoring - deleted items are still monitored
- Bug 12803: Custom SNMP job monitoring sometimes fails to distinguish when one key is a prefix of the other; e.g. SNMPv2-SMI::enterprises.9.9.48.1.1.1.5.1 from SNMPv2-SMI::enterprises.9.9.48.1.1.1.5.16. So the obtained value for SNMPv2-SMI::enterprises.9.9.48.1.1.1.5.1 may be the value for SNMPv2-SMI::enterprises.9.9.48.1.1.1.5.16
- Bug 12804: Custom Performance Monitoring - when custom transforms are nested, the order may not be preserved resulting in wrong calculations. For example, if custom transforms are defined as "used = transform(used/1024)", "total = transform(total/1024)" and "memUtil = transform(used/total)", then the transforms must be calculated in the order used -> total -> memUtil. Earlier releases did not do this.

Rule / Query / Report Engine

- Bug 8512: Turn off inaccurate system rule 'Windows Disk controller problem'
- Bug 9847: Add Identity and location to CMDB Report
- Bug 10996: Worker down rule did not trigger after license expires
- Bug 11008: RFE: when retrieving Triggered Events for an Incident in GUI or e-mail notification, search 60 minutes before and after Incident Time. This is fixed by the 'Trigger Event Query Optimization' feature
- Bug 12322: Increase per rule GROUP BY thresholds - per cust and over all customers
- Bug 12558: Improved cache miss handling for profile anomaly rule handling: The profiles for anomaly detection are stored in a SQLite database. When rule engine attempts to look up the average and standard deviation values for a particular key (e.g. IP address, port number etc), and an exact match is not found, then earlier releases picked up the lowest values for that profile in that database. This heuristic often causes unnecessary rule triggers. This release makes tightens the cache miss handling case - profile anomaly rules do not trigger for a key value if the average and standard deviation values are not found for that key value for that time period.
- Bug 12640: When performing analytical searches when individual countries from the country groups are referenced in filter conditions as objects, then no results are returned

Discovery

- Bug 10363: Disallow discovery via Virtual IP
- Bug 10533: Add ability to define IP subnets in the 172.16.16.0/22 type format
- Bug 11308: Foundry router becomes generic-generic
- Bug 11972: Telnet discovery of HP Procurve switches fails due to error in expect script

- Bug 12713: If host name contains unprintable characters like backspace(x08) and enquiry(x05), then parsing this XML causes app server to throw exceptions and run out of memory

Device Support

- Bug 9942: RFE: add performance monitoring for Cisco WAPX (lightweight) devices
- Bug 10006: RFE: add device support for Tripp lite UPS devices
- Bug 10307: Microsoft cluster services incorrectly assigned to Microsoft Exchange Application Group
- Bug 10362: Add support for (Oracle) Acme Packet Border Controller
- Bug 10366: Support for Dell Force 10 Networking devices

Parsing area

- Bug 8894: Cisco ASA parser: trailing white space in User attribute causing searches to miss events with condition User EQUALS 'string'
- Bug 10418: Parse username in Windows MSSQL Event 18453
- Bug 11351: Parse username in Win-Security-5145
- Bug 12485: Parse jitter field in Cisco VoIP CDR/CMR record
- Bug 12626: Snort events collected via database have wrong severity
- Bug 12641: Added more Symantec Anti-virus events
- Bug 12643: A null pointer exception can happen during pulling performance monitor config for discovery
- Bug 12656: Some FortiGate traffic logs do not parse if "status=" is missing in the logs
- Bug 12668: More Foundry switch logs to be parsed
- Bug 12714: Enhance McAfee EPO parser to parse more logs
- Bug 12716: Enhance Cisco IOS and NX-OS parser to parse more logs
- Bug 12757: Put Fortigate firewall DHCP messages into the identity and location section - so the IP to user and host name mapping shows up when FortiGate is acting as the DHCP server
- Bug 12765, 12767: Add a "Total Bit Rate" attribute for interface utilization and Netflow events - so user can quickly run 95th percentile on the total bandwidth for an interface

Data: System Rules/Reports

- Bug 8512: Turn off inaccurate system rule 'Windows Disk controller problem'
- Bug 10113: Added description for windows security events: 5142, 5143, 5144, 5168, 4985, 5145
- Bug 12660: Enhance "Heavy TCP Port Scan" rule to exclude Windows Security Firewall logs (Win-Security-5156), ASA/PIX Teardown events (ASA-302014, PIX-302014, FWSM-302014)
- Bug 12676: The event type group for JUNOS_KMD_VPN_DOWN_ALARM_USER event is incorrect

Fresh Installation

Must Read Prior to Install

Enterprise Deployment Scenarios

Scenario	Supervisor Node	Worker Node	Collector Node	NFS Server	Report Server	Visual Analytics Server	Description
AO-VA 1 node	x						This is the most basic single site enterprise deployment
AO-VA 1 node with Collectors	x		x				This is also an enterprise deployment covering multiple sites. Data collection is simplified by deploying a collector for the satellite sites.
AO-VA Cluster	x	x		x			This is the scalable enterprise deployment. NFS Server is required in the data sharing architecture between Supervisor and Worker nodes.
AO-VA Cluster with Collectors	x	x	x	x			This deployment adds collectors to the mix and is the most comprehensive enterprise deployment
AO-VA 1 node with additional Tableau Reporting	x				x	x	This is the most basic single site enterprise deployment with added capability for Reporting via Tableau or other Business Intelligence tools
AO-VA 1 node with Collectors and additional Tableau Reporting	x		x		x	x	This is also an enterprise deployment covering multiple sites with added capability for Reporting via Tableau or other Business Intelligence tools. Data collection is simplified by deploying a collector for the satellite sites.
AO-VA Cluster with additional Tableau Reporting	x	x		x	x	x	This is the scalable enterprise deployment with added capability for Reporting via Tableau or other Business Intelligence tools. NFS Server is required in the data sharing architecture between Supervisor and Worker nodes.
AO-VA Cluster with Collectors and additional Tableau Reporting	x	x	x	x	x	x	This deployment adds collectors to the mix and is the most comprehensive enterprise deployment with added capability for Reporting via Tableau or other Business Intelligence tools.

Service Provides Deployment Scenarios

Scenario	Supervisor Node	Worker Node	Collector Node	NFS Server	Report Server	Visual Analytics Server	Description
AO-SP 1 node	x						This is the most basic single site service provider deployment mostly suitable for Hosting providers. Organizations can be created by splitting up the IP address space.
AO-SP 1 node with Collectors	x		x				This is also a service provider deployment covering multiple sites. Data collection is simplified by deploying a collector for the satellite sites. Organizations can be added by assigning a collector to an organization and/or by splitting up the IP address space.
AO-SP Cluster	x	x		x			This is the scalable service provider deployment suitable for deployments with large compute and storage needs. NFS Server is required in the data sharing architecture between Supervisor and Worker nodes. Organizations can be created by splitting up the IP address space.
AO-SP Cluster with Collectors	x	x	x	x			This deployment adds collectors to the mix and is the most comprehensive service provider deployment. Organizations can be added by assigning a collector to an organization and/or by splitting up the IP address space.
AO-SP 1 node with additional Tableau Reporting	x				x	x	This is the most basic single site service provider deployment with added capability for Reporting via Tableau or other Business Intelligence tools.
AO-SP 1 node with Collectors and additional Tableau Reporting	x		x		x	x	This is also an service provider deployment covering multiple sites with added capability for Reporting via Tableau or other Business Intelligence tools. Data collection is simplified by deploying a collector for the satellite sites.

AO-SP Cluster with additional Tableau Reporting	x	x		x	x	x	This is the scalable service provider deployment with added capability for Reporting via Tableau or other Business Intelligence tools. NFS Server is required in the data sharing architecture between Supervisor and Worker nodes.
AO-SP Cluster with Collectors and additional Tableau Reporting	x	x	x	x	x	x	This deployment adds collectors to the mix and is the most comprehensive service provider deployment with added capability for Reporting via Tableau or other Business Intelligence tools.

Hardware Requirements

Hardware Requirements for Supervisor and Worker nodes

The AccelOps All-In-One Virtual Appliance can be installed using either storage configured within the ESX server or NFS storage.

> **Event Data Storage Requirements**
>
> The storage requirement shown in the Event Data Storage column is only for the `eventdb` data, but the `/data` partition also includes CMDB backups and queries. You should set the `/data` partition to a larger amount of storage to accommodate for this.

Note: Starting Release 3.6, the minimum memory requirements for Super and Worker Virtual Appliances have gone up from 8GB to 16GB

Overall EPS	Quantity	Host SW	Processor	Memory	OS/App and CMDB Storage	Event Data Storage (1 year)
1,500	1	ESXi (4.0 or later preferred)	4 Core 3 GHz, 64 bit	16 GB	200GB (80GB OS/App; 60GB CMDB; 60GB SVN)	3 TB
4,500	1	ESXi (4.0 or later preferred)	4 Core 3 GHz, 64 bit	16 GB	200GB (80GB OS/App; 60GB CMDB; 60GB SVN)	8 TB
7,500	1 Super 1 Worker	ESXi (4.0 or later preferred)	Super: 8 Core 3 GHz, 64 bit Worker: 4 Core 3 GHz, 64 bit	Super: 24 GB Worker: 16 GB	Super: 200GB (80GB OS/App; 60GB CMDB; 60GB SVN) Worker: 200GB (80GB OS/App)	12 TB
10,000	1 Super 1 Worker	ESXi (4.0 or later preferred)	Super: 8 Core 3 GHz, 64 bit Worker: 4 Core 3 GHz, 64 bit	Super: 24 GB Worker: 16 GB	Super: 200GB (80GB OS/App; 60GB CMDB; 60GB SVN) Worker: 200GB (80GB OS/App)	17 TB
20,000	1 Super 3 Workers	ESXi (4.0 or later preferred)	Super: 8 Core 3 GHz, 64 bit Worker: 4 Core 3 GHz, 64 bit	Super: 24 GB Worker: 16 GB	Super: 200GB (80GB OS/App; 60GB CMDB; 60GB SVN) Worker: 200GB (80GB OS/App)	34 TB
30,000	1 Super 5 Workers	ESXi (4.0 or later preferred)	Super: 8 Core 3 GHz, 64 bit Worker: 4 Core 3 GHz, 64 bit	Super: 24 GB Worker: 16 GB	Super: 200GB (80GB OS/App; 60GB CMDB; 60GB SVN) Worker: 200GB (80GB OS/App)	50 TB
Higher than 30,000	Consult AccelOps					

Hardware Requirements for Collector nodes

Model	Quantity	Host SW	Processor	Memory	OS/App Storage
Collector	1	ESX	2 Core 2 GHz, 64 bit	4 GB	40 GB

Hardware Requirements for Report Server nodes

Model	Quantity	Host SW	Processor	Memory	OS/App Storage	**Reports Data Storage (1 year)**
Report Server	1	ESX	8 Core 3 GHz, 64 bit	16 GB	200GB (80GB OS/App; 60GB CMDB)	?

Generic Steps during installation

- Import a Virtual Appliance into a VMware ESX Server
- Edit the VA hardware settings
- Start and Configure the AccelOps VA from the VMware Console
- Configuring the Timezone
- Register the Virtual Appliance and download license

Configuring NFS Server

This section details the steps for installing NFS server on CentOS Linux. For other operating systems, follow similar steps.

Step 1: Download and Install the Required Software packages

1. Log as root into CentOS 6.x
2. Download and Install NFS packages

Install NFS packages

```
yum install nfs-utils nfs-utils-lib
```

3. Run following startup scripts for the NFS server to start

Start NFS scripts

```
chkconfig nfs on
service rpcbind start
service nfs start
```

4. Check NFS service status, make sure 'nfsd' service is running.

NFS Status

```
service nfs status
```

Step 2: Export the Shared Directory

1. Create new Directory in the large Volume to share with the AccelOps clients (Supervisor and Workers) and change the access permissions to everyone.

Create Shared Directory

```
mkdir /accelops
chmod -R 777 /accelops
```

2. Edit /etc/exports file to share /accelops directory to AccelOps clients (Supervisor and Workers).

Export Shared Directory

```
vi /etc/exports

/accelops <Supervisor_IP_Address>(rw,sync,no_root_squash)
/accelops <Worker1_IP_Address>(rw,sync,no_root_squash)
/accelops <Worker2_IP_Address>(rw,sync,no_root_squash)
```

3. Save /etc/exports changes and restart NFS server

Restart NFS Server

```
service nfs restart
```

4. Check Shared directories

Check Shared directories

```
showmount -e localhost

Example:
Export list for localhost:
/accelops <Supervisor_IP_Address>,<Worker1_IP_Address>,<Worker2_IP_Address>
```

Installing in VMware ESX

Prerequisites for Installing AccelOps on ESX

The following are required prior to importing the AccelOps Virtual Appliance:

- Static IP address
  - Determine the static IP address and subnet mask for your virtual appliance.
- Enter the AccelOps host name within your local DNS server
- Proxy server information (IP address and port number)
  - The authenticated proxy server is not supported in this version of AccelOps. Turn off authentication on proxy server for this host or completely disable the proxy for this host.
- Determine the VMWare ESX Datastore location where the Virual Appliance image will be stored
- Determine the IP address of NFS mount point and NFS share name

Setting Network Time Protocol (NTP) for ESX

It is important that your Virtual Appliance has the accurate time in order to correlate events from multiple devices within the environment.

1. Log in to your VMWare ESX server.
2. Select your ESX host server.
3. Click the **Configuration** tab.
4. Under **Software**, select **Time Configuration**.
5. Click **Properties**.
6. Select **NTP Client Enabled**.
7. Click **Options**.
8. Under General, select **Start automatically**.
9. Under **NTP Setting**, click **Add...**.
10. Enter the IP address of the NTP servers to use.

> If you don't have an internal NTP server, you can access a publicly available one at http://tf.nist.gov/tf-cgi/servers.cgi

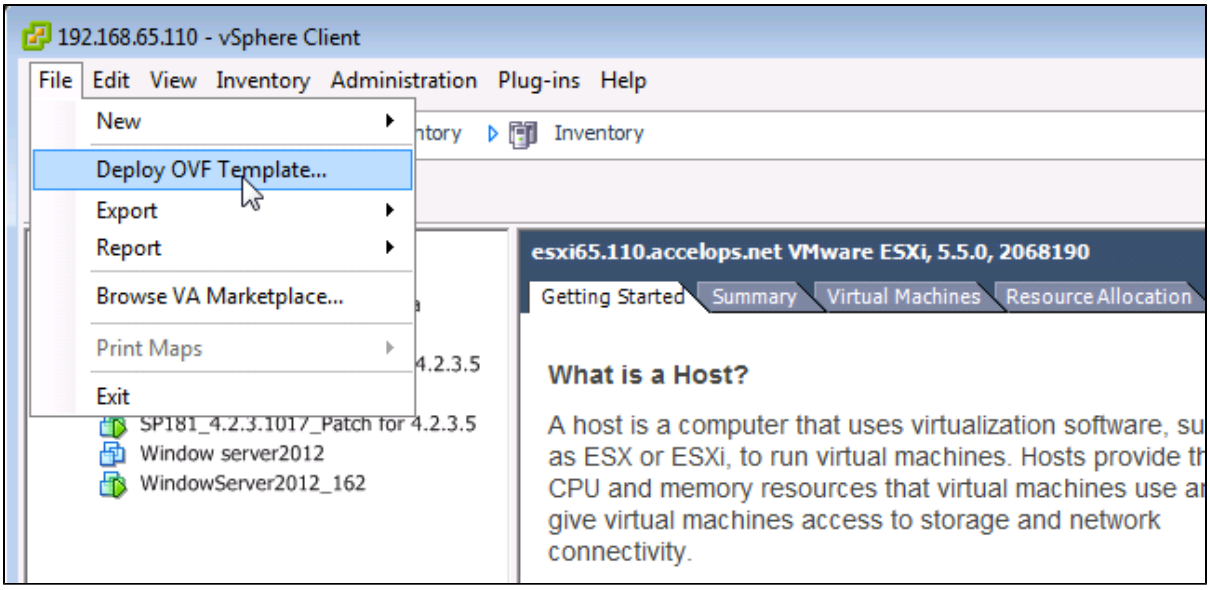
11. Click **Restart NTP service**.
12. Click **OK** to apply the changes.

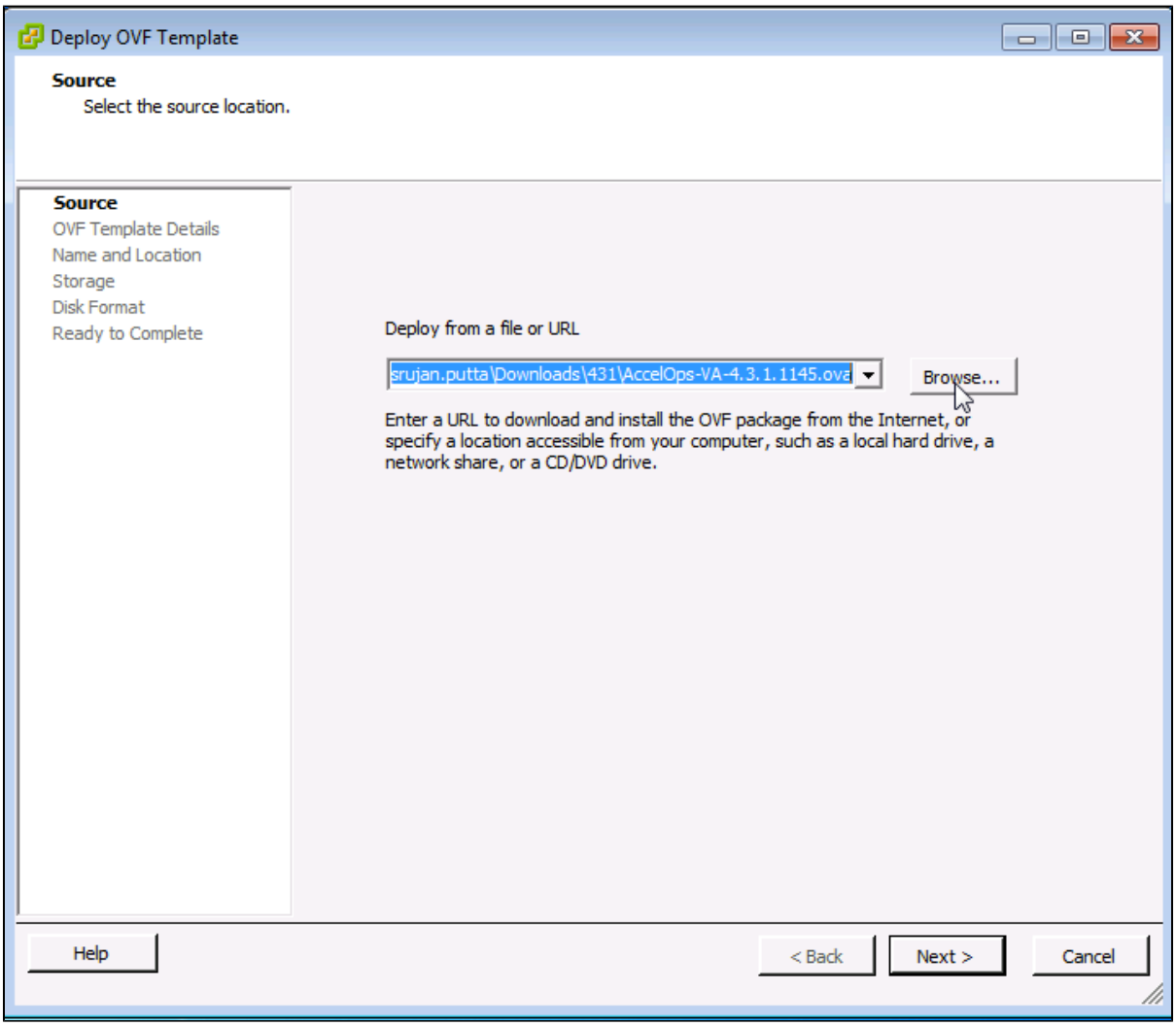
Installing a Supervisor node

Section 1: Import a Supervisor image into VMware ESX server

Step 1: Begin importing Supervisor

1. Download Supervisor OVA package from AccelOps image server
2. Log into VMware vSphere Client
    a. Click on File -> Select Deploy OVF Template
    b. Click on Browse button to choose OVA file
    c. Locate Supervisor .ova file (Example: AccelOps-VA-4.3.1.1145.ova)

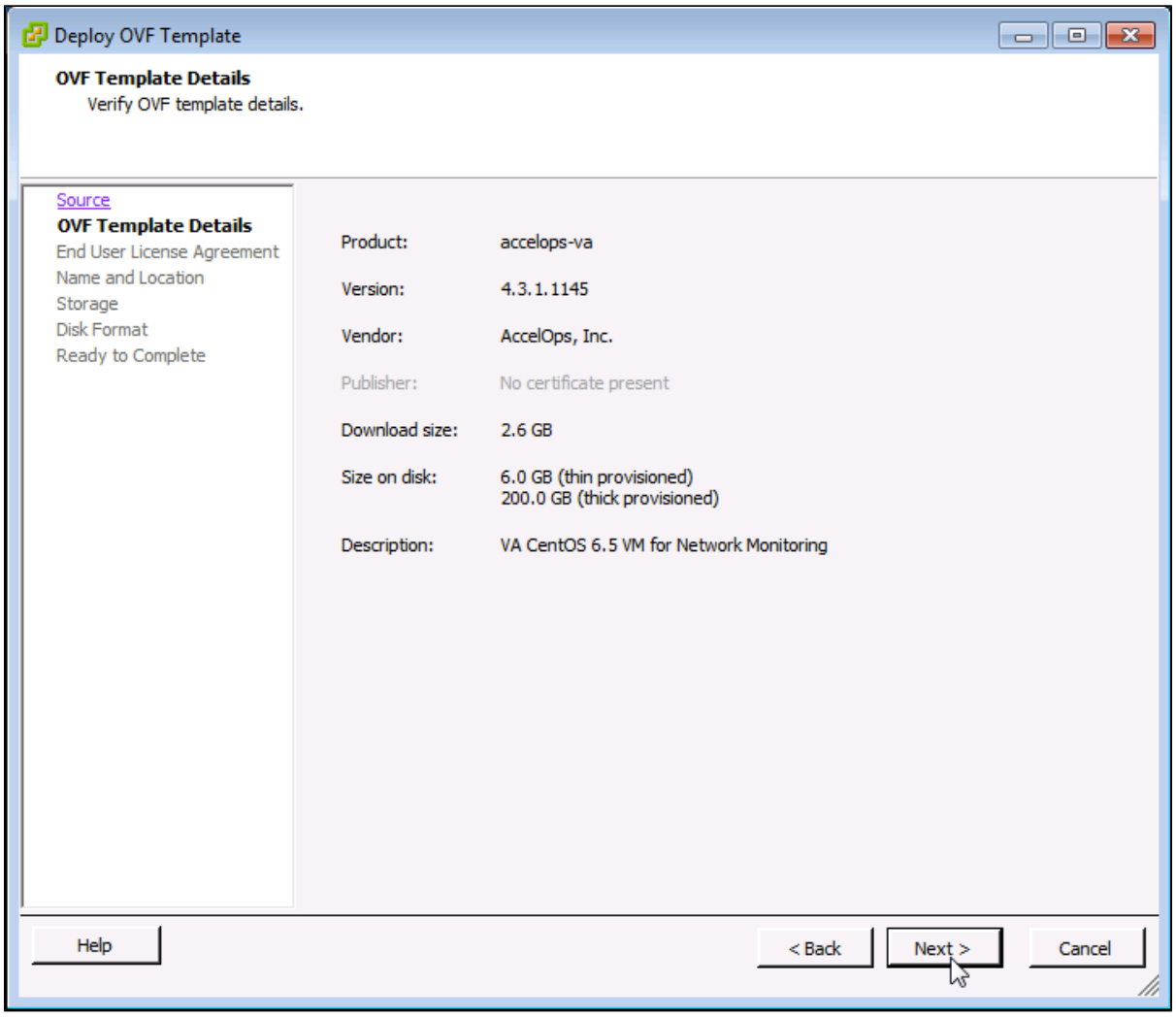




Step 2: Review the Virtual Appliance details

OVF Template details will tell you how big the file is to import and how mush disk space it will take up in your selected ESX server.

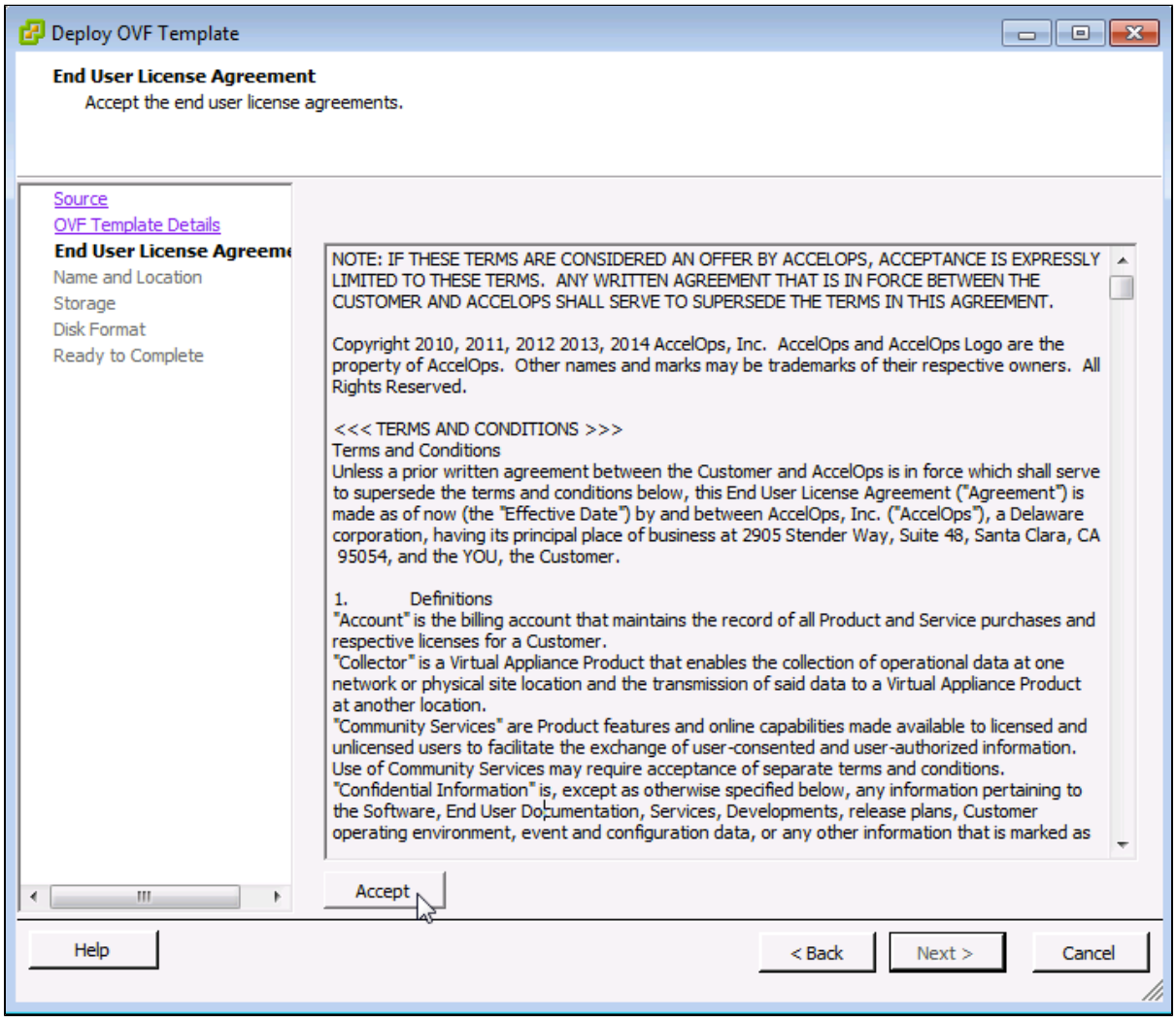
1. Click the 'Next' button



Step 3: End User License Agreement

To continue you must accept the End User License Agreement.

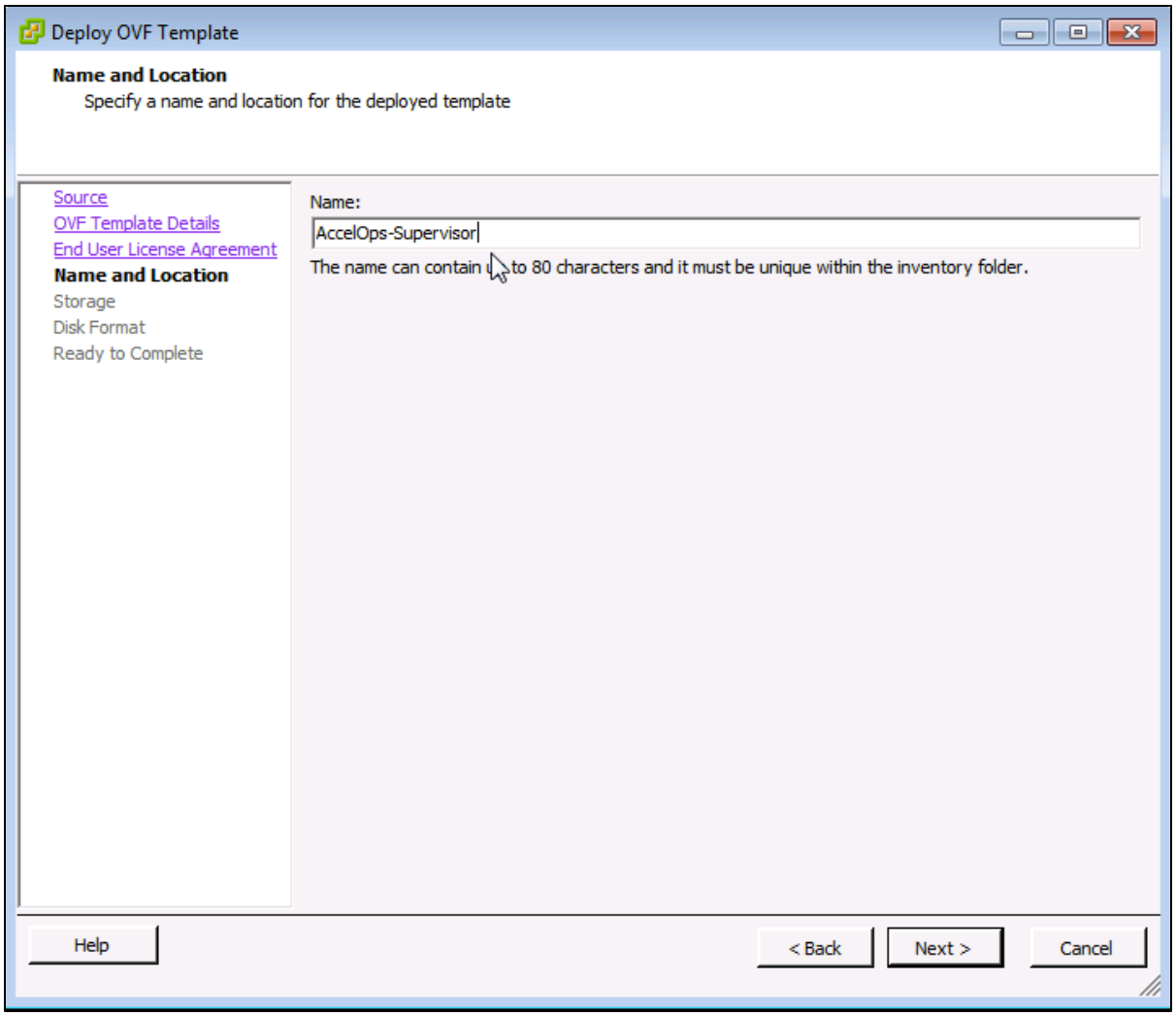
1. Click on 'Accept' button on License Agreement
2. Click on 'Next' button



Step 4: Name and Location

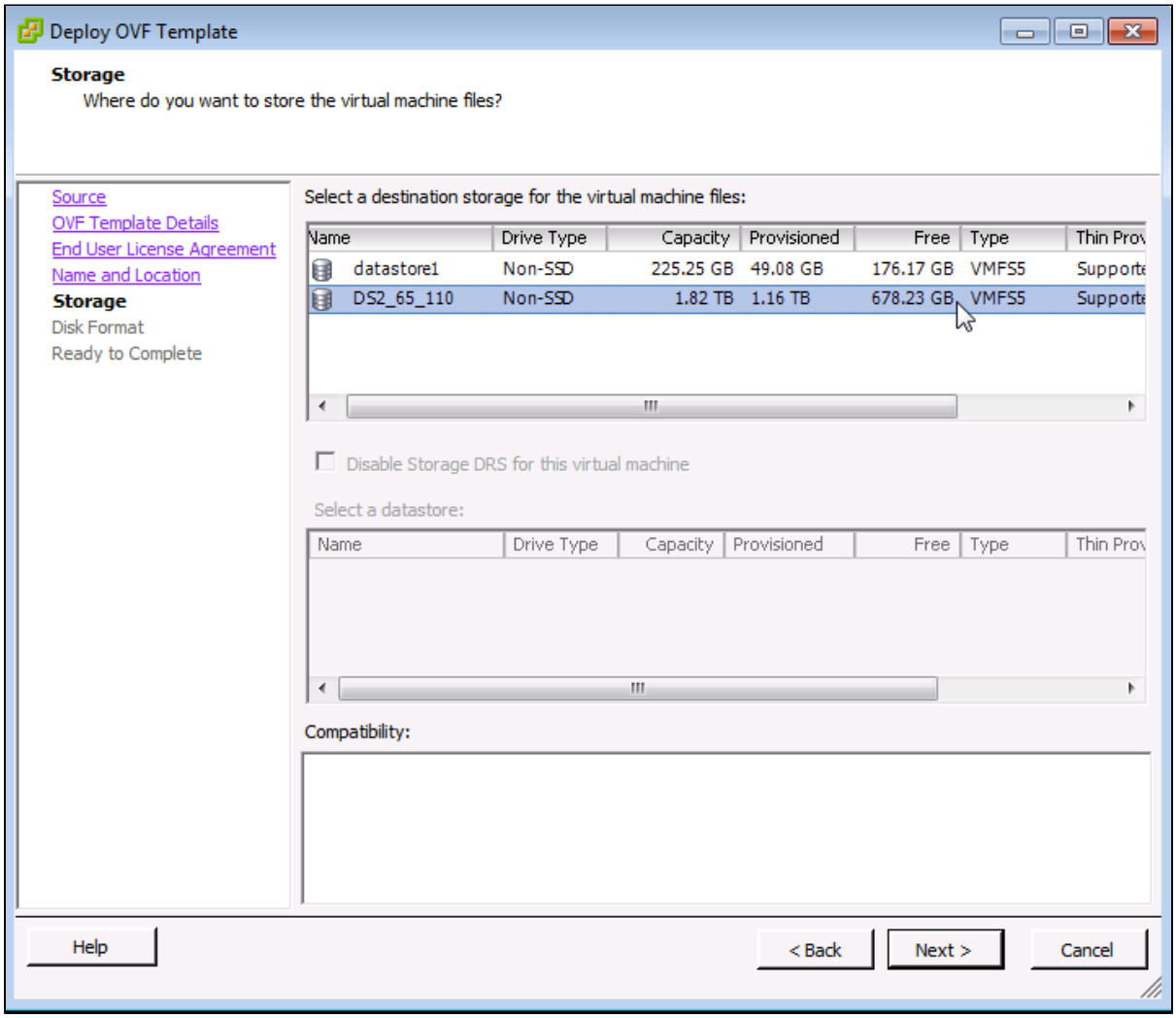
Enter a name for the Virtual Appliance that is being imported. This name is independent of the host name and is only visible within the ESX environment.

1. Enter a Supervisor name and Click on 'Next' button



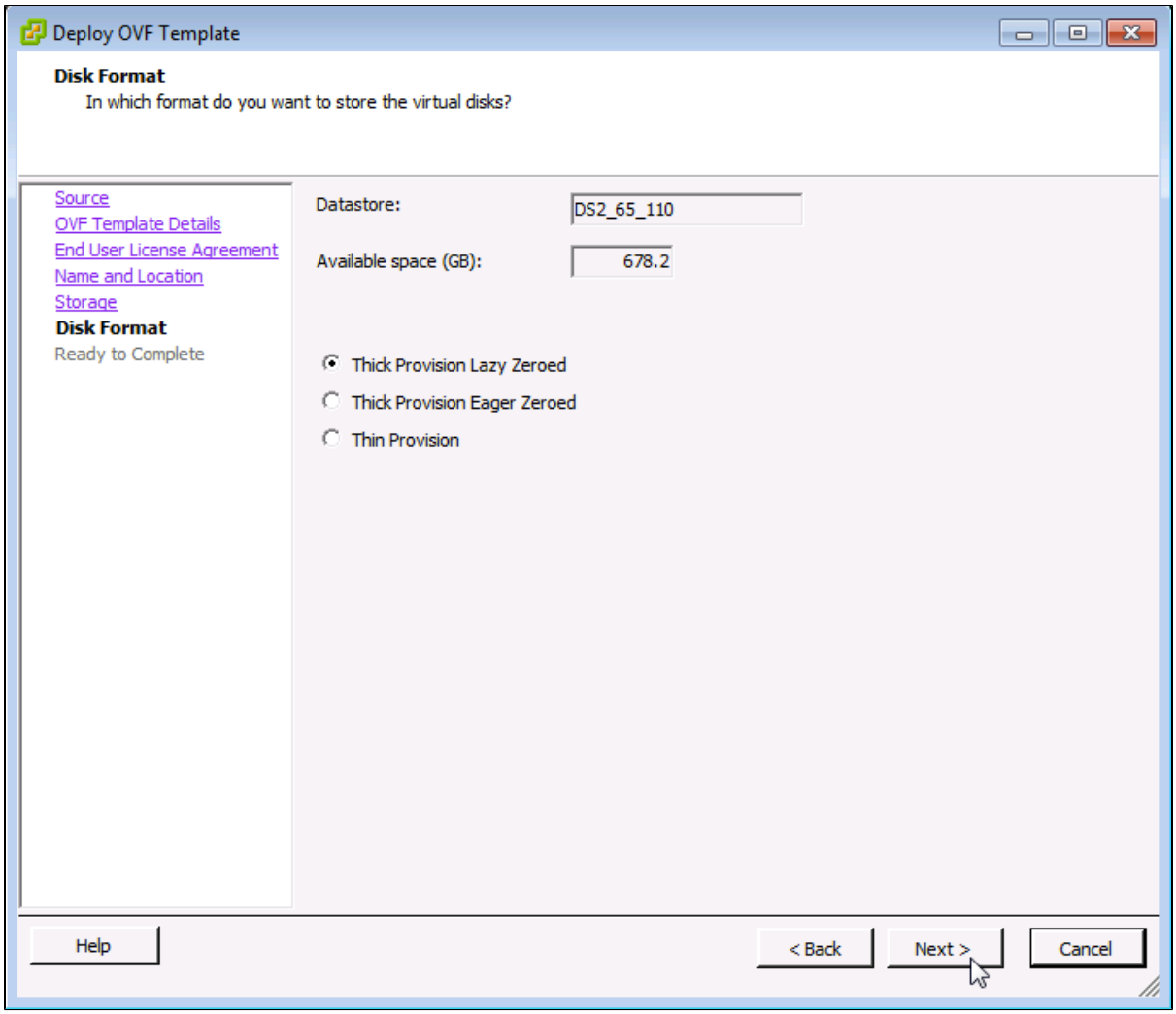
Step 5: Storage

1. Select the desired storage location(Data store) and Click on 'Next' button



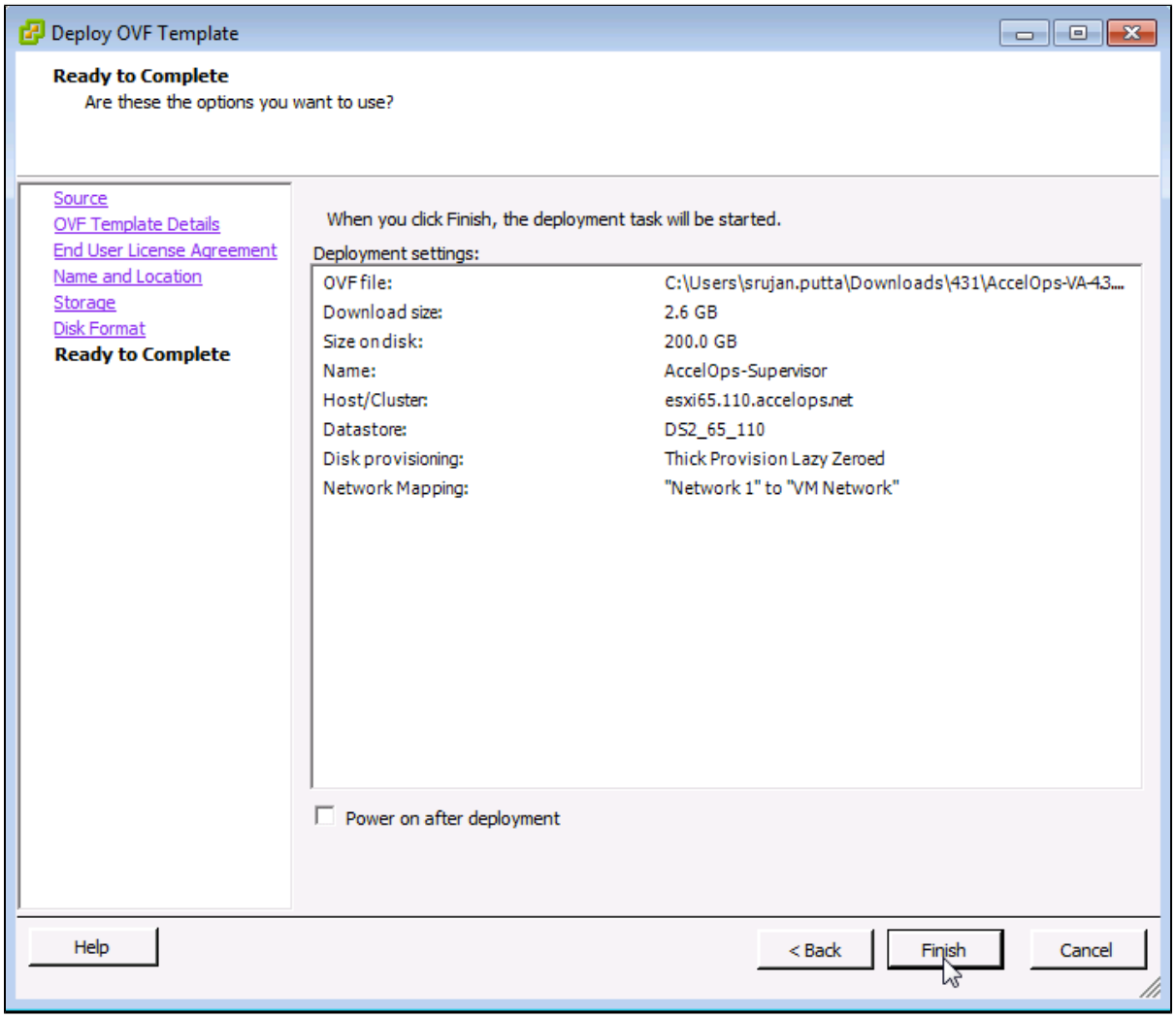
Step 6: Disk Format

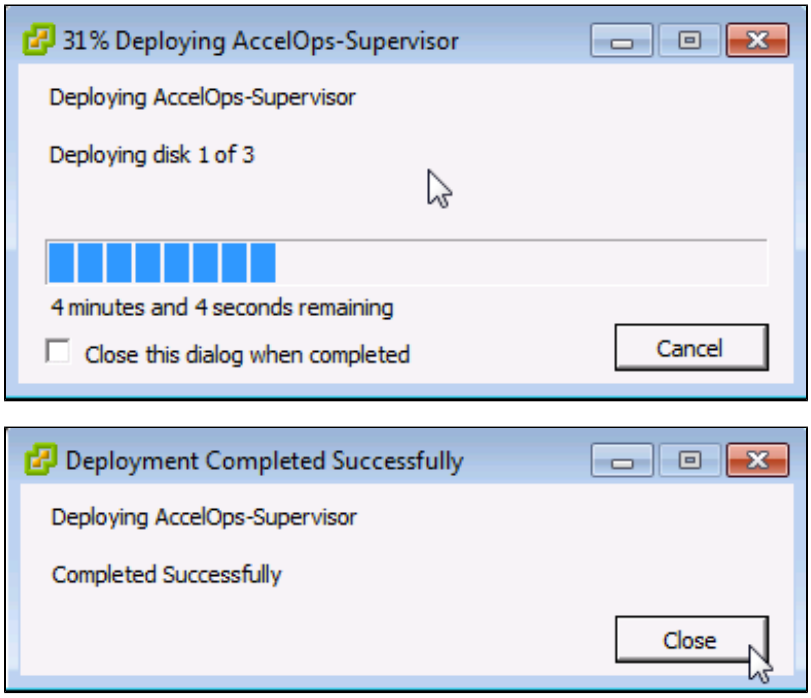
1. Select the Disk format as 'Thick Provision Lazy Zeroed' (recommended) and Click on 'Next' button



Step 7: Ready to Complete

1. Review the Supervisor resources and Click on 'Finish' button to begin importing Virtual Appliance
2. Virtual Appliance import will takes 7 to 10mins to complete. Do not turn off or reboot the system during this time.


Deploy OVF Template
Ready to Complete
Are these the options you want to use?
Source
OVF Template Details
End User License Agreement
Name and Location
Storage
Disk Format
Ready to Complete
When you click Finish, the deployment task will be started.
Deployment settings:
OVF file: C:\Users\srujan.putta\Downloads\431\AccelOps-VA-4.3...
Download size: 2.6 GB
Size on disk: 200.0 GB
Name: AccelOps-Supervisor
Host/Cluster: esxi65.110.accelops.net
Datastore: DS2_65_110
Disk provisioning: Thick Provision Lazy Zeroed
Network Mapping: "Network 1" to "VM Network"
Power on after deployment
Help
< Back
Finish
Cancel

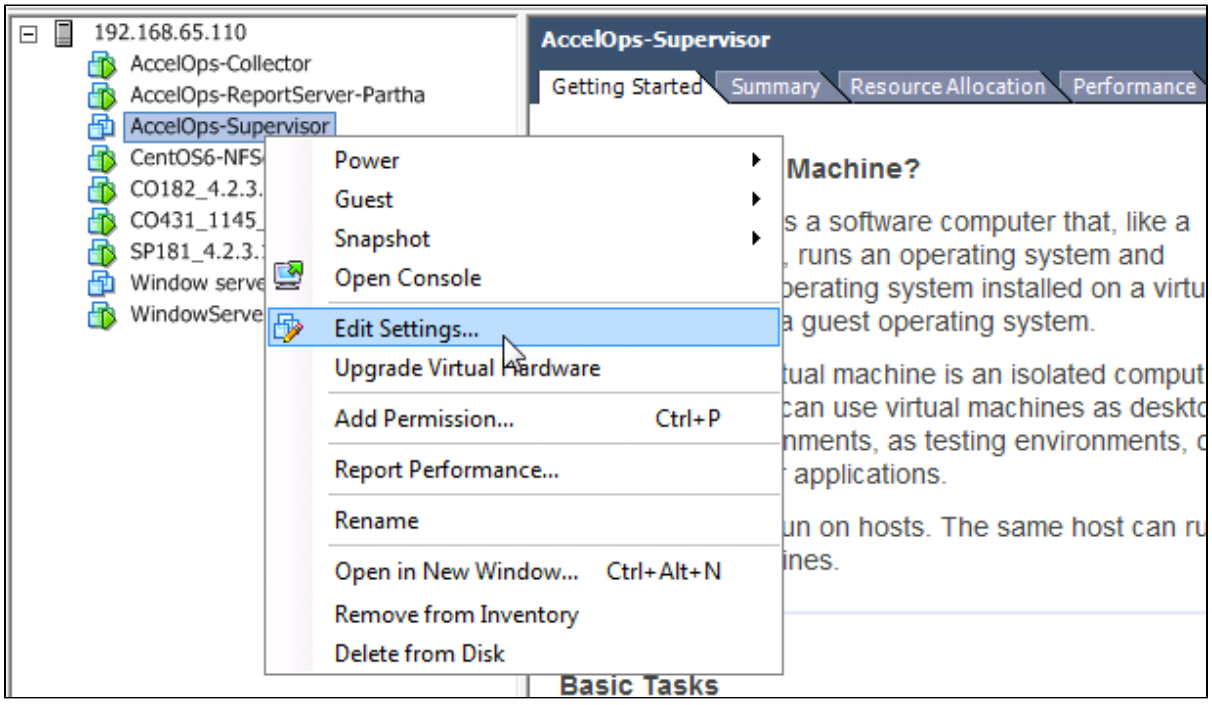


Section 2: Edit the Supervisor hardware settings

Prior to starting the Supervisor f or the first time it is required to make some modifications to the hardware setting for the Virtual Appliance.

Step 1: Edit Settings

1. From the VMware vSphere client, Select the imported Supervisor Virtual appliance
2. Right mouse click and select Edit Settings

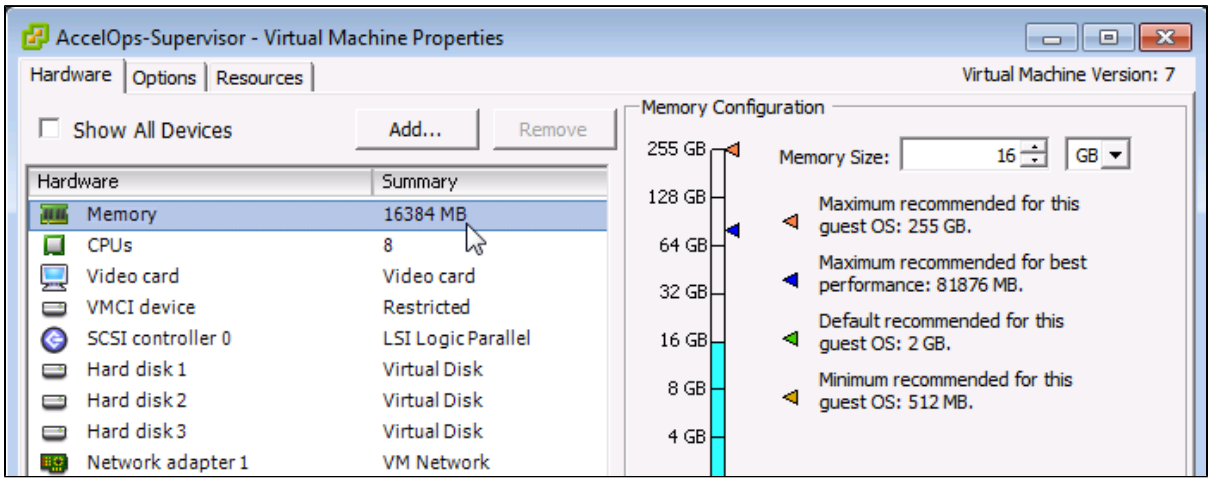


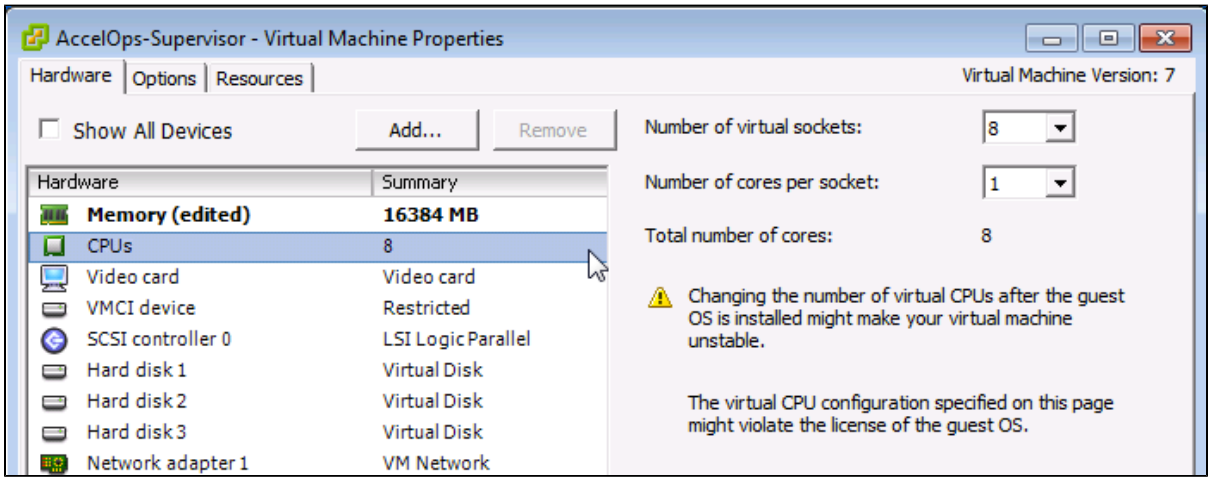
Step 2: Verify Allocated Memory

1. On Hardware tab, Click on Memory and verify the memory to at least 16 GB

> **Allocate more memory for large deployments**
>
> For large deployments you should allocate at least 24GB of memory. See the section on Supervisor Hardware requirements in the topic Must Read Prior to Install for more information.

2. Click on CPUs, verify the CPU cores to at least 8 cores





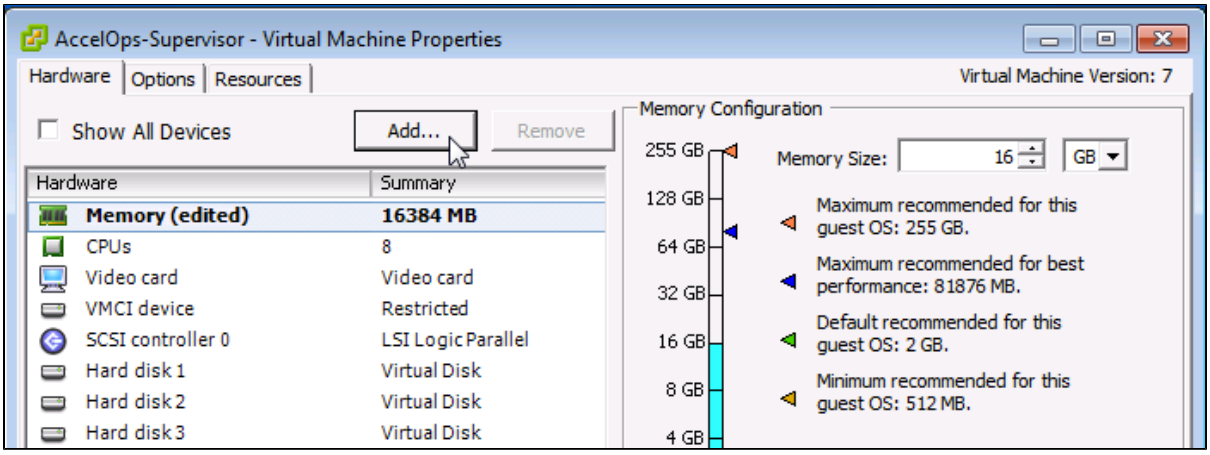
Section 3: Select mount point to Store Events data

The AccelOps Supervisor can be installed using either storage configured within the ESX server or NFS storage.

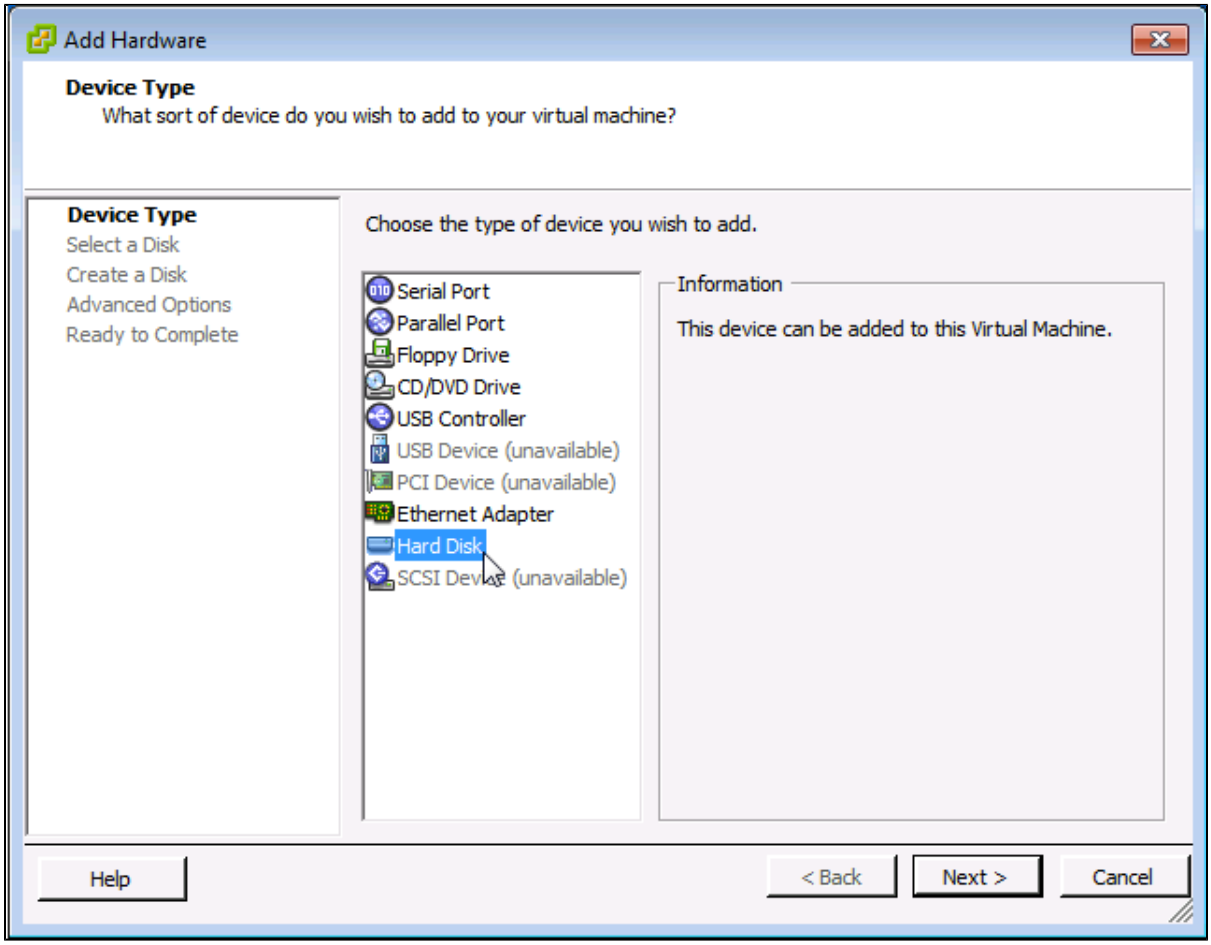
> **Note**
>
> Skip Step 1 if you decided to use NFS storage to store the events data. Else, continue Step 1 to create local disk to store the events data.

Step 1: Adding an Additional Hard Disk to store the Events data

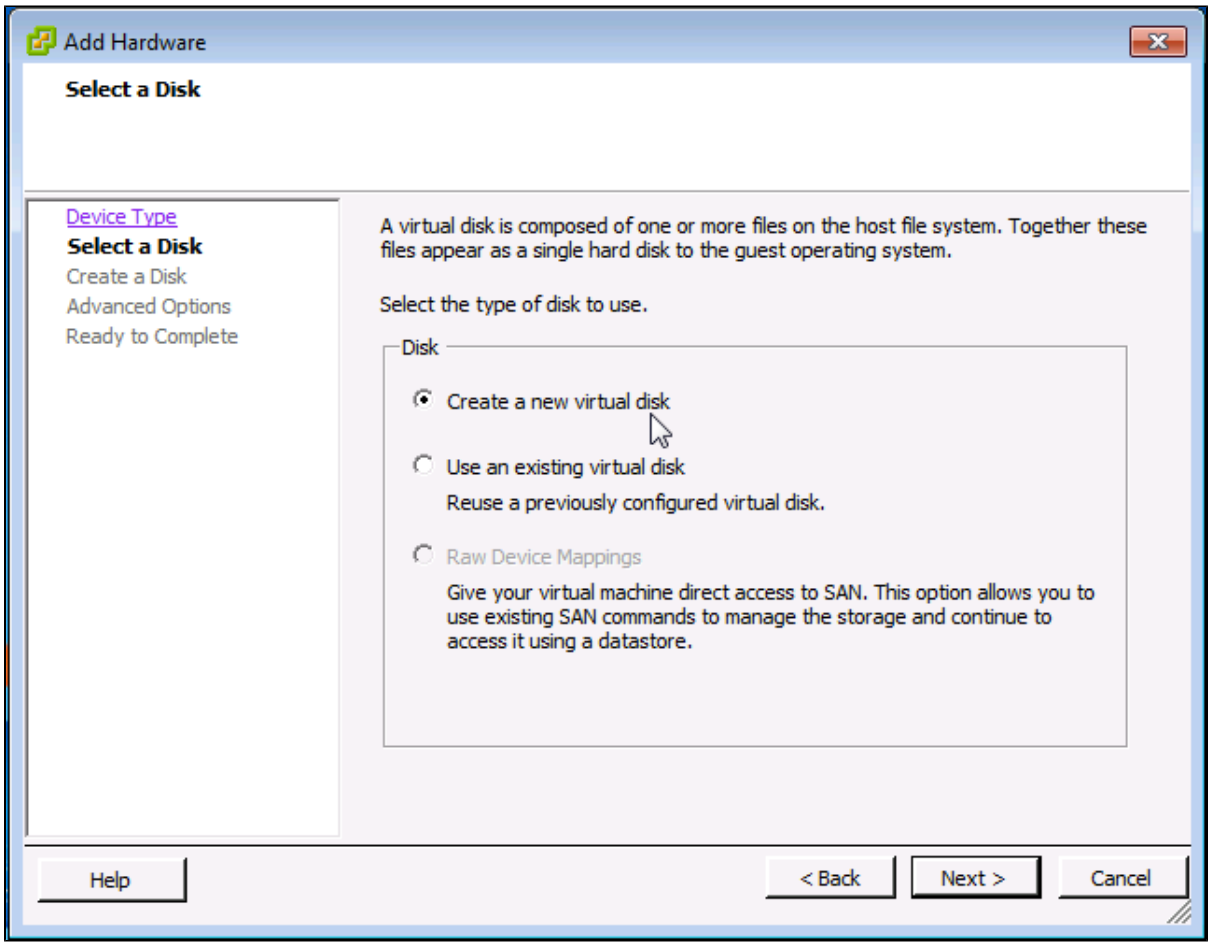
1. On Hardware tab, Click on the 'Add' button



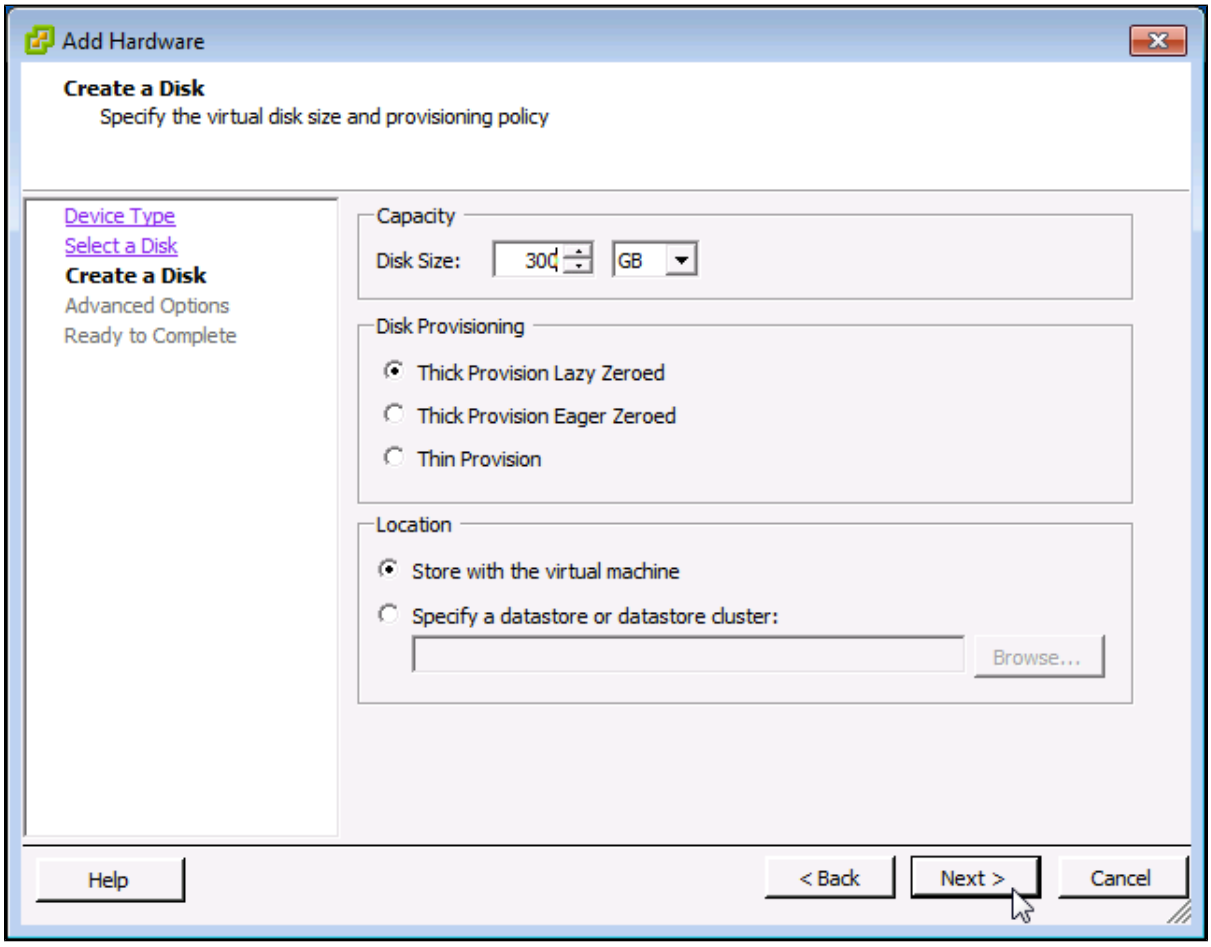
2. On Hardware pop-up, Select 'Hard Disk' and click on 'Next' button



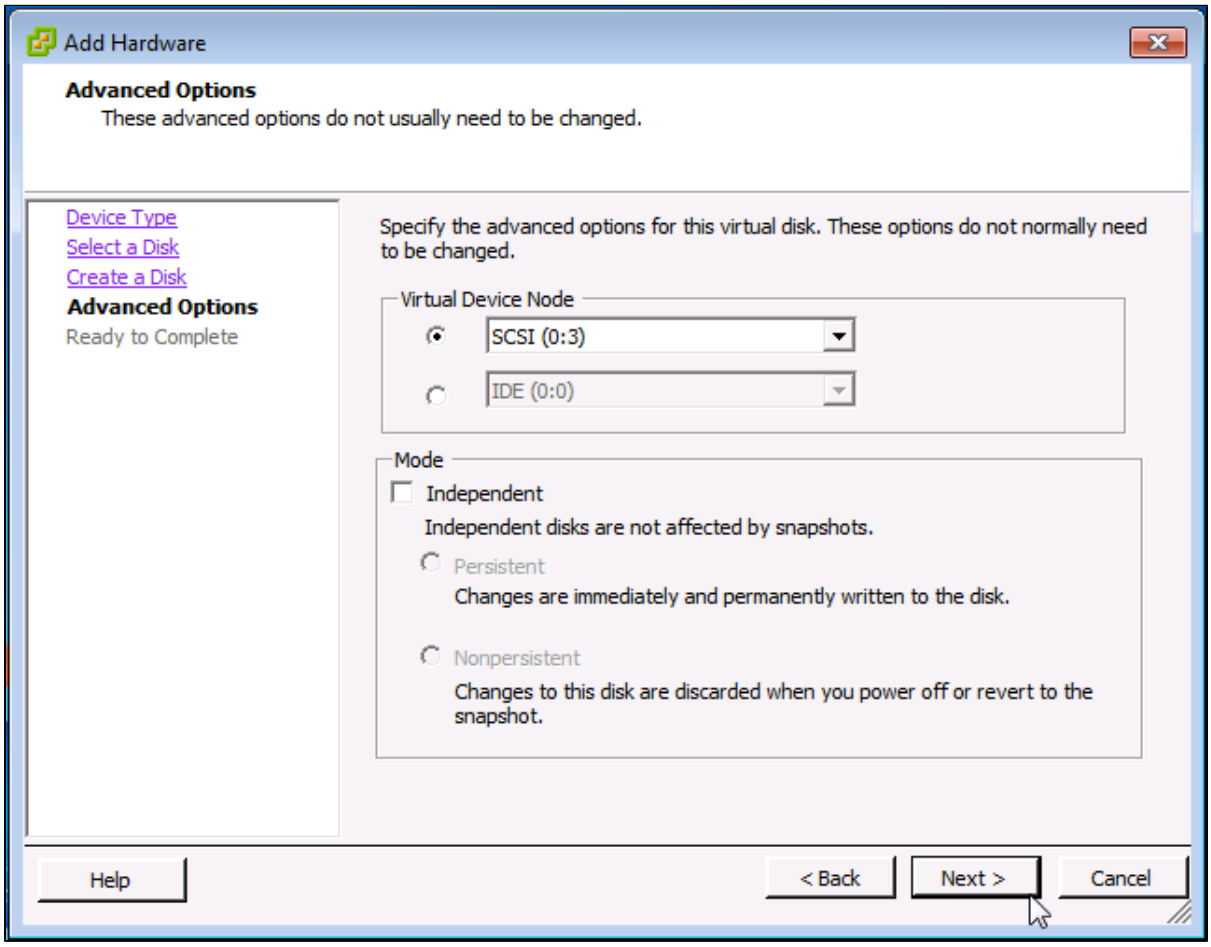
3. Select 'Create a new virtual disk' and click on 'Next' button



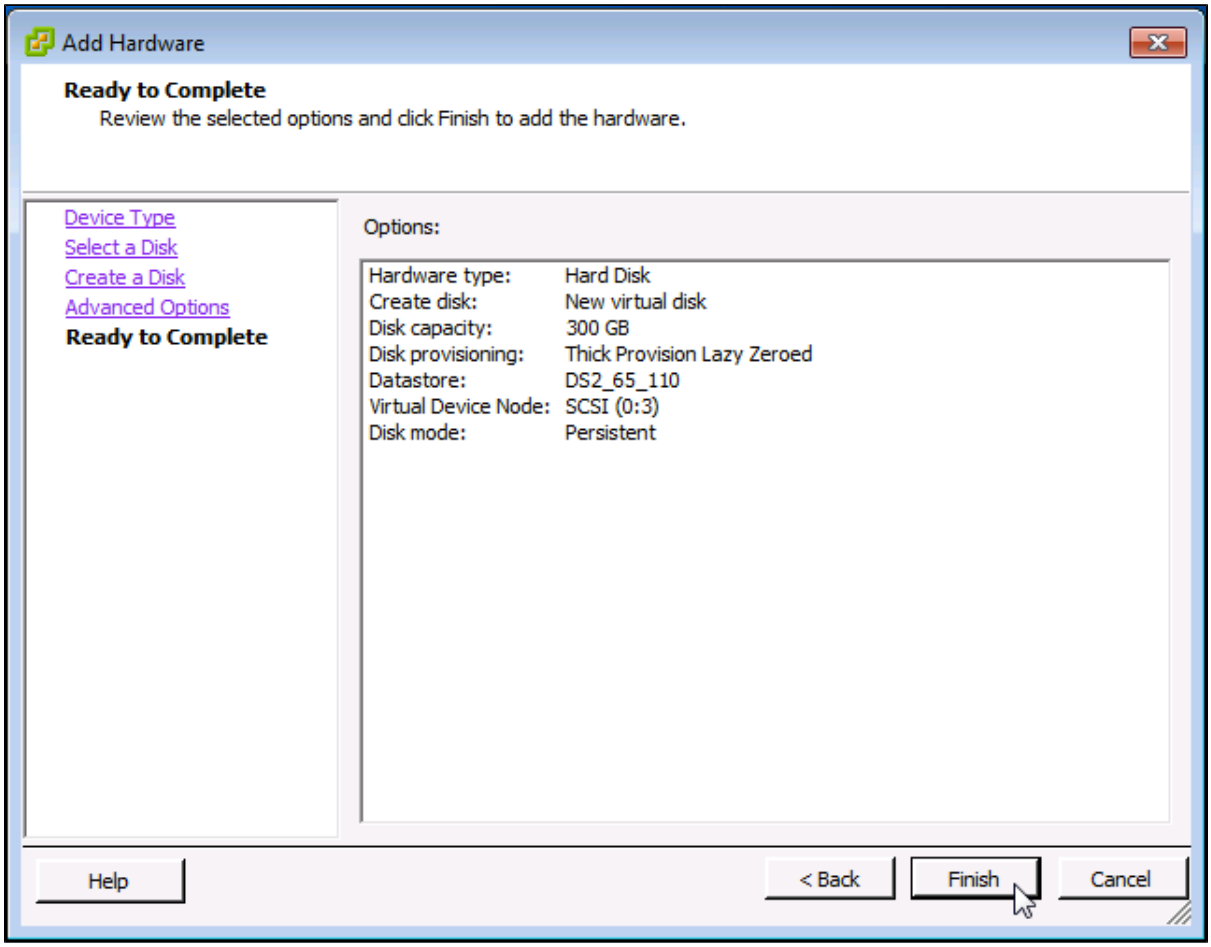
4. Enter the Disk size and click on 'Next' button
   Refer to Hardware Requirements for Report Server nodes



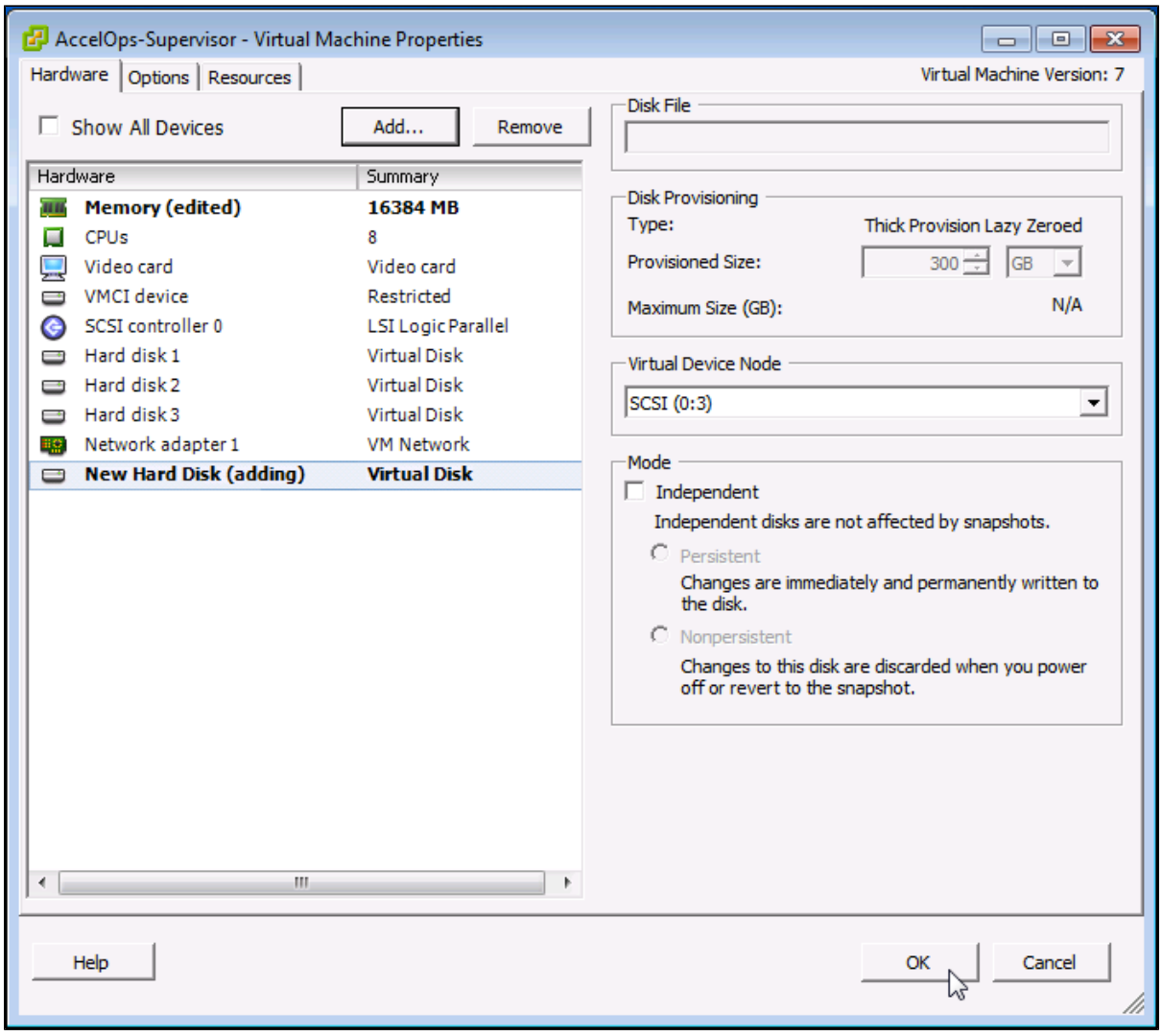
5. Ensure that 'Independent' is not checked and click on 'Next' button



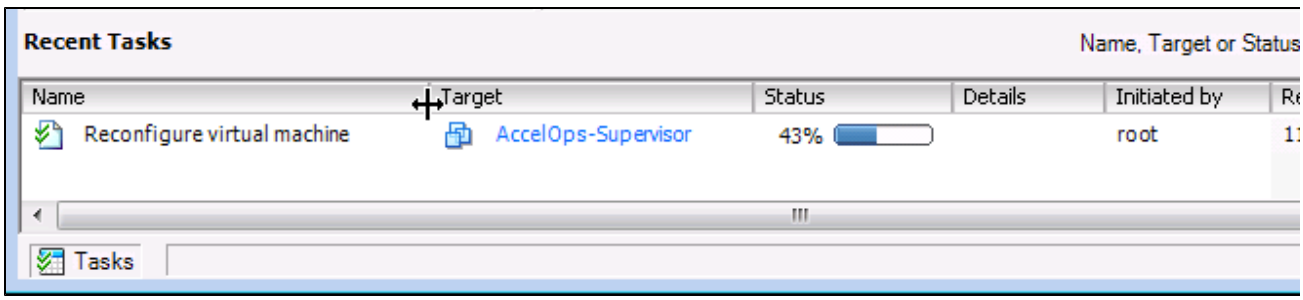
6. Confirm the Options are correct and click the 'Finish' button



7. Click 'OK' on Virtual Machine properties pop-up



8. Wait for until Adding Disk task complete on vSphere client



Note

Skip Step 2 if you choose Step 1 to store the AccelOps event data in local Hard disk. Else, continue Step 2 to create NFS mount point to store the events data.

Step 2: Create new NFS mount point to store the Events data

1. Log into NFS server, Create new directory to store Events data
2. Refer to NFS documentation to check NFS directory permission

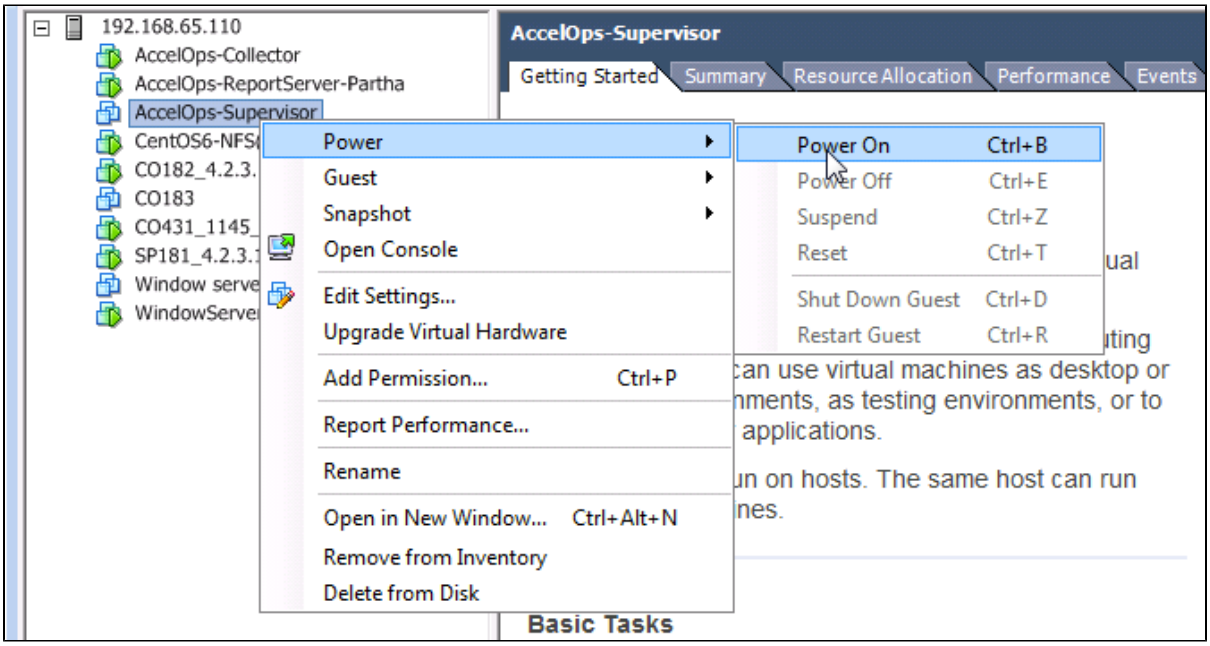
Section 4: Configure the Supervisor from the VMware Console

Note

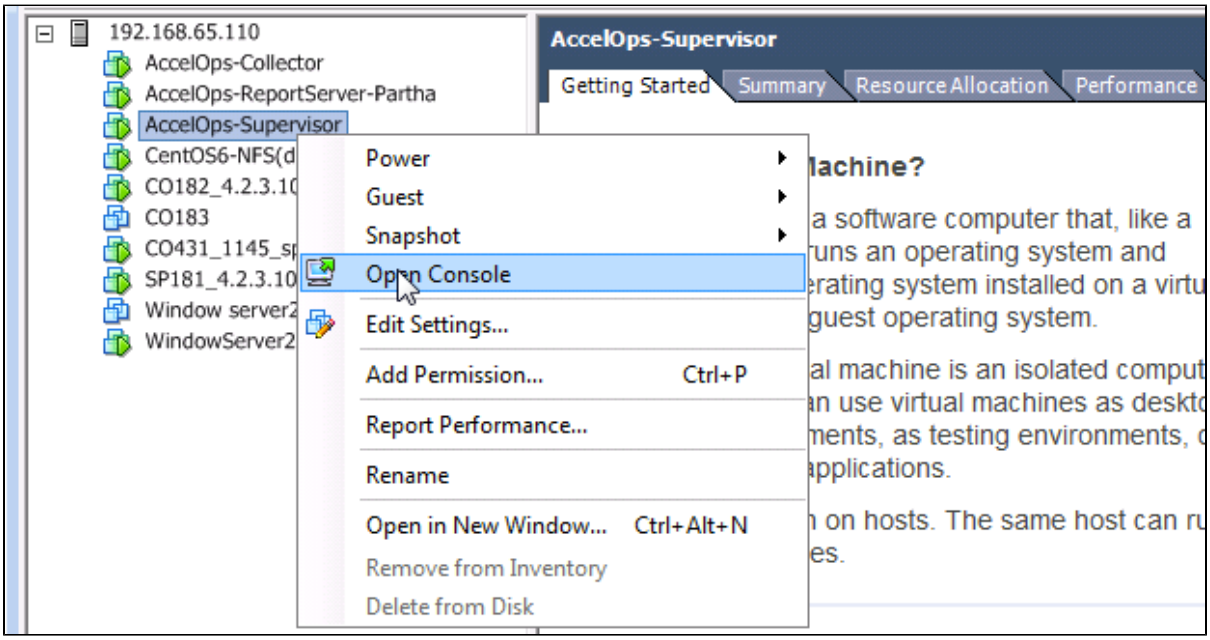
While in the VM console window do not press any control keys during the installation. Doing so might cause the installation to stop and not to precede any further. For example Ctrl – C or Ctrl – Z. If this occurs you must erase the Supervisor and start over from the beginning.

Step 1: Start Supervisor

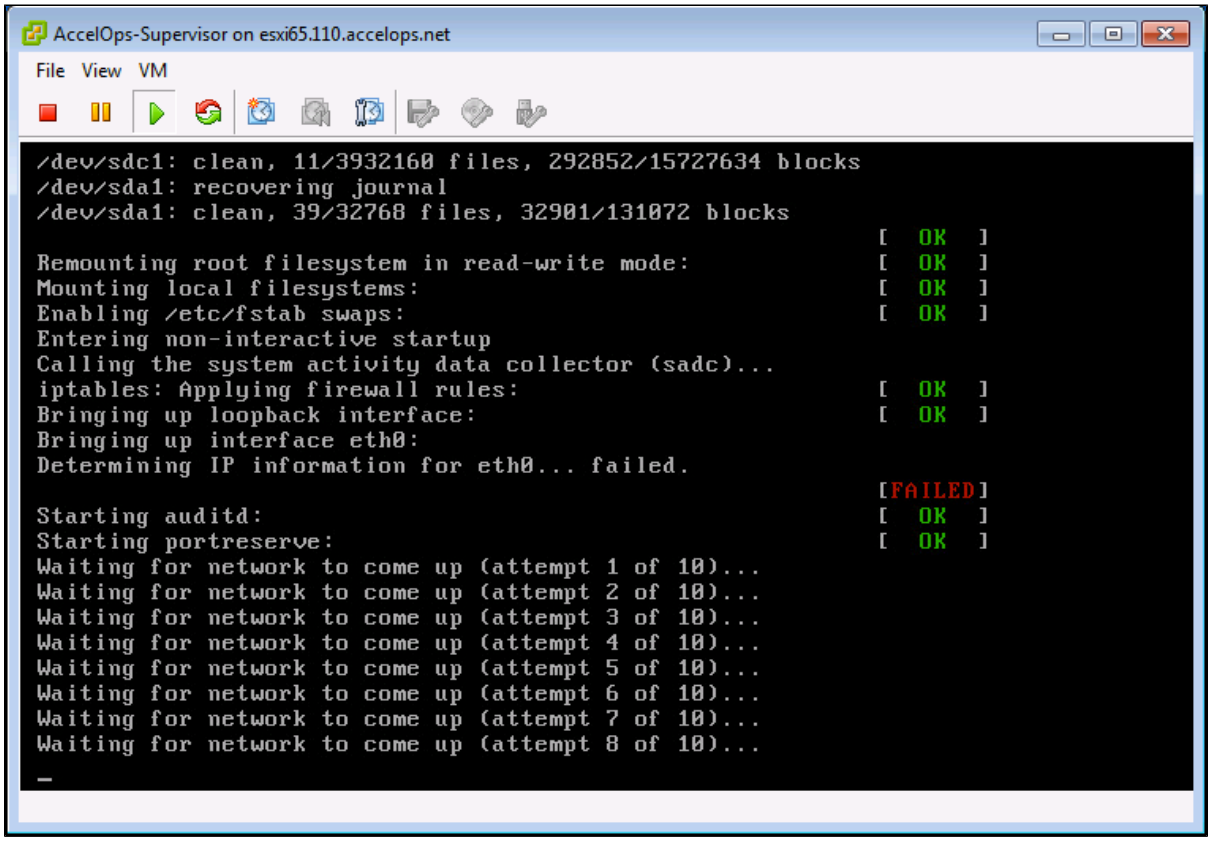
1. From the VMware vSphere client, Select recently imported Supervisor Virtual appliance and Power On (Right click > Power > Power On)



2. Open Supervisor VM Console (Right click > Open Console)



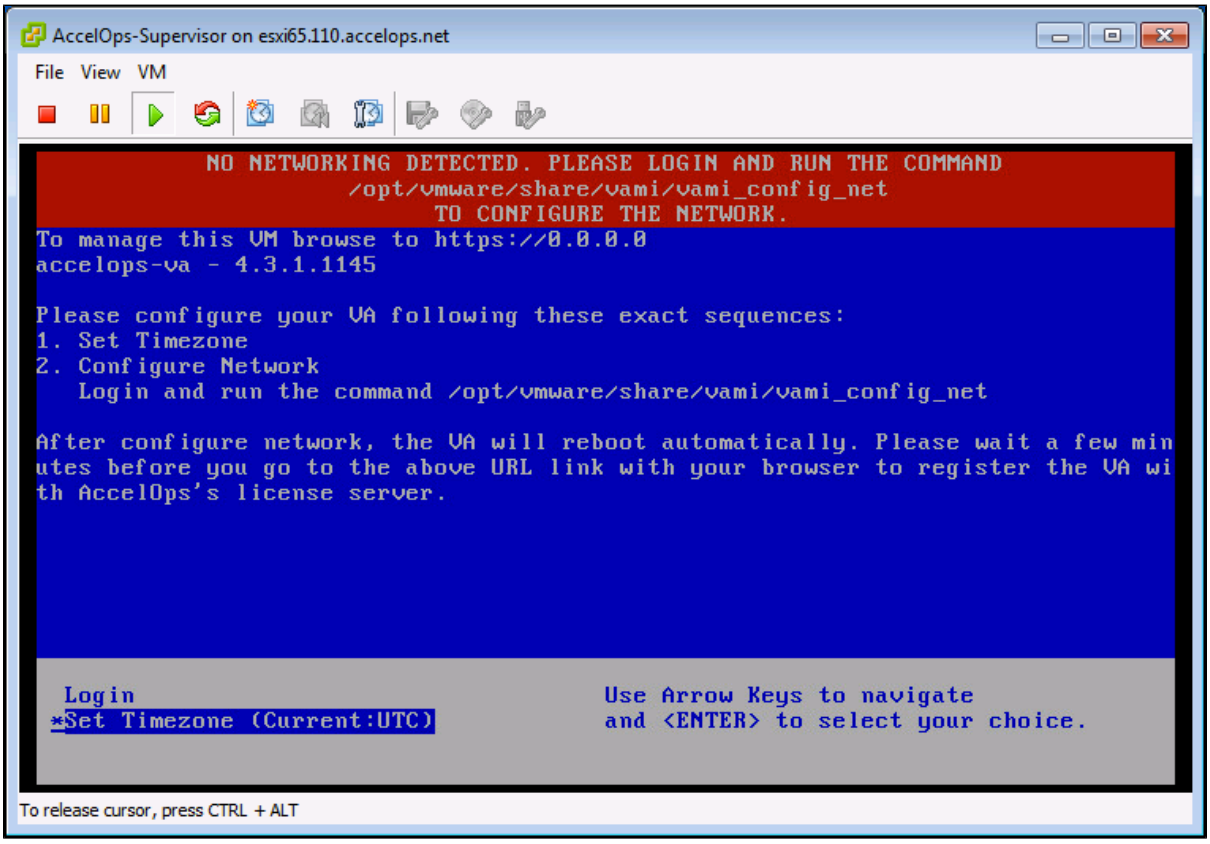
3. Network eth0 Failed message may appear on the screen during the loading, but this is to be expected the first time the AccelOps Supervisor is started.



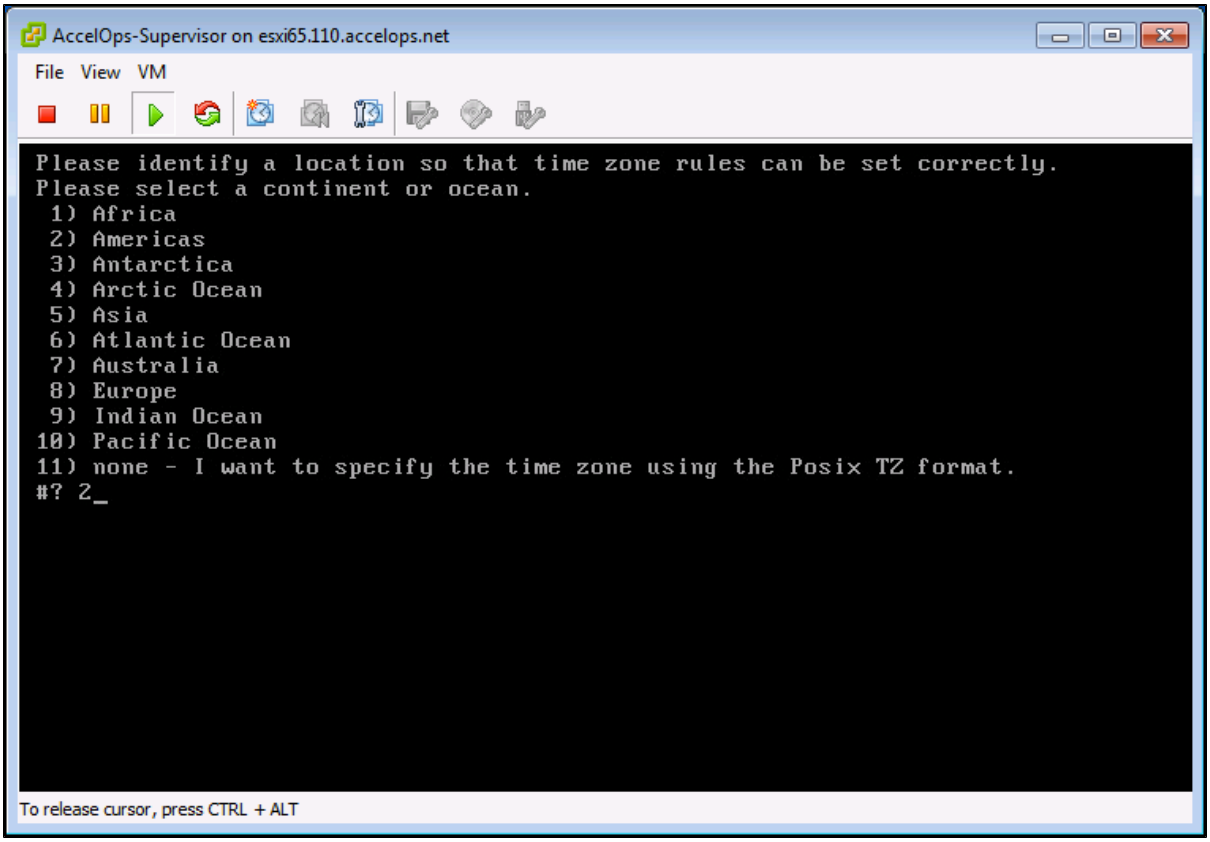
Step 2: Configure the Timezone

It is important to select the correct time zone that you are located in.

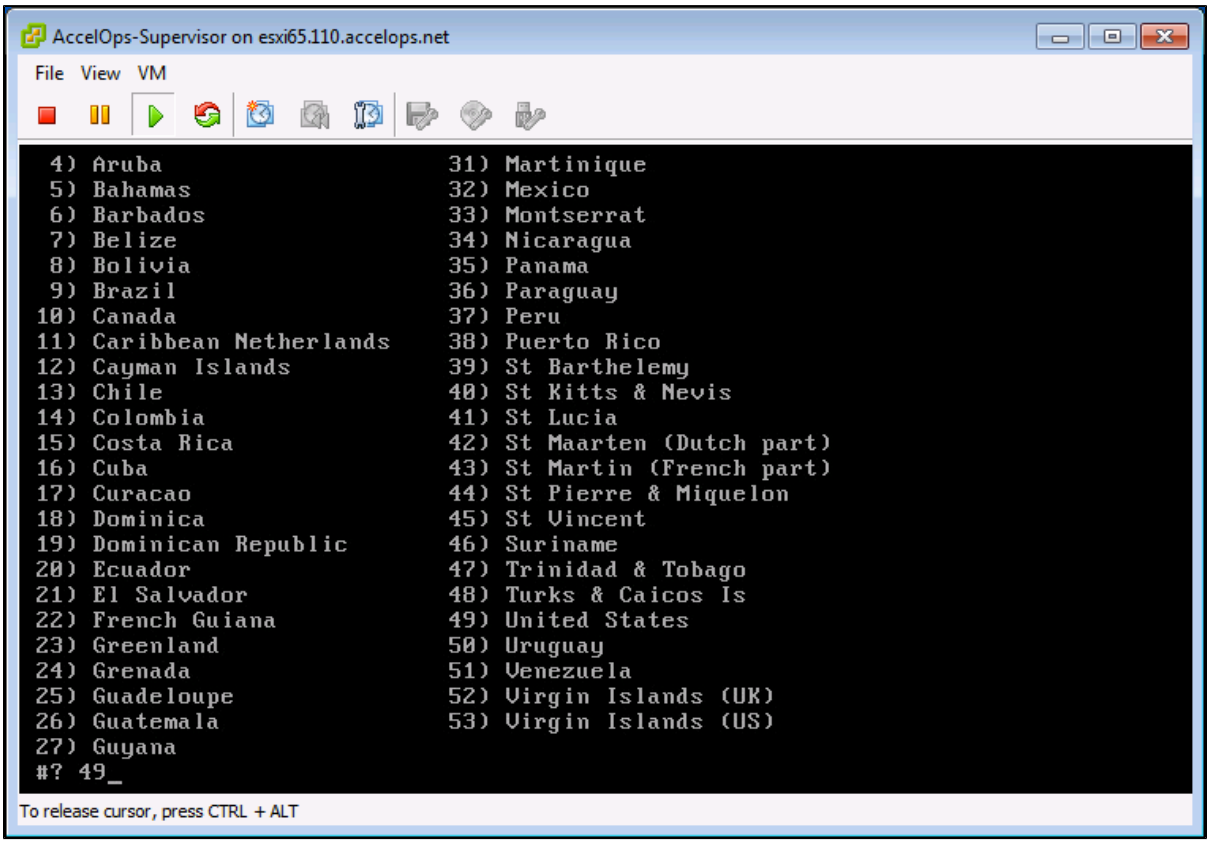
1. On VM console, Select 'Set Timezone' and press the 'Enter' key



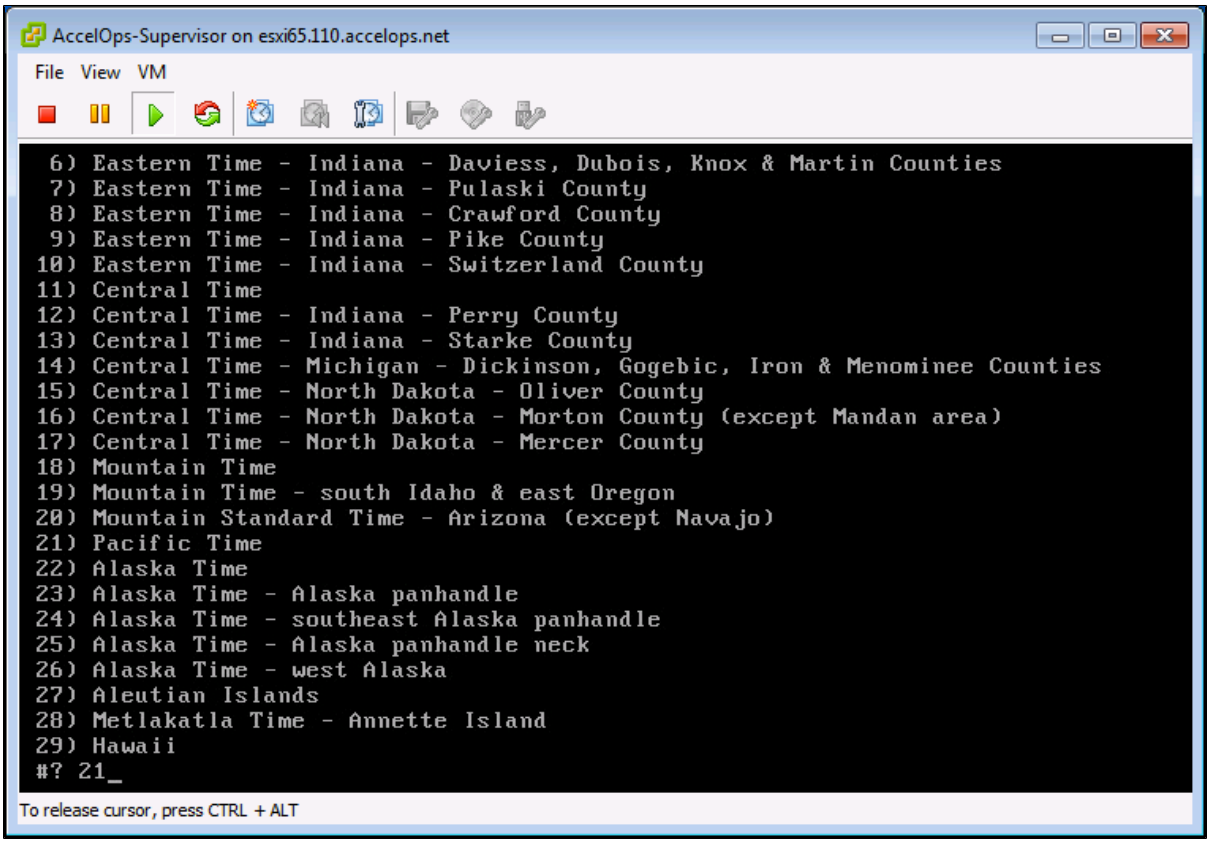
2. Select your Location and press the 'Enter' key



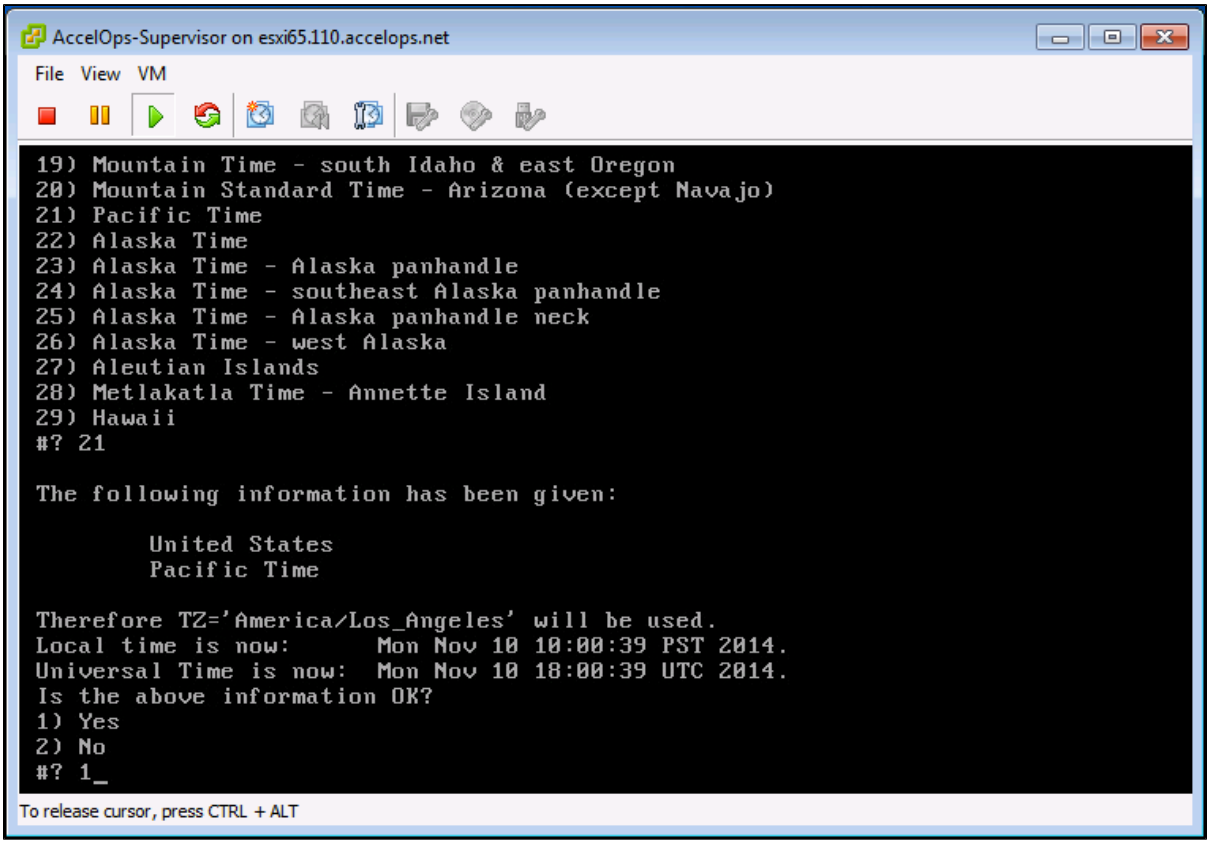
3. Select your Country and press the 'Enter' key



4. Select your Timezone and press the 'Enter' key

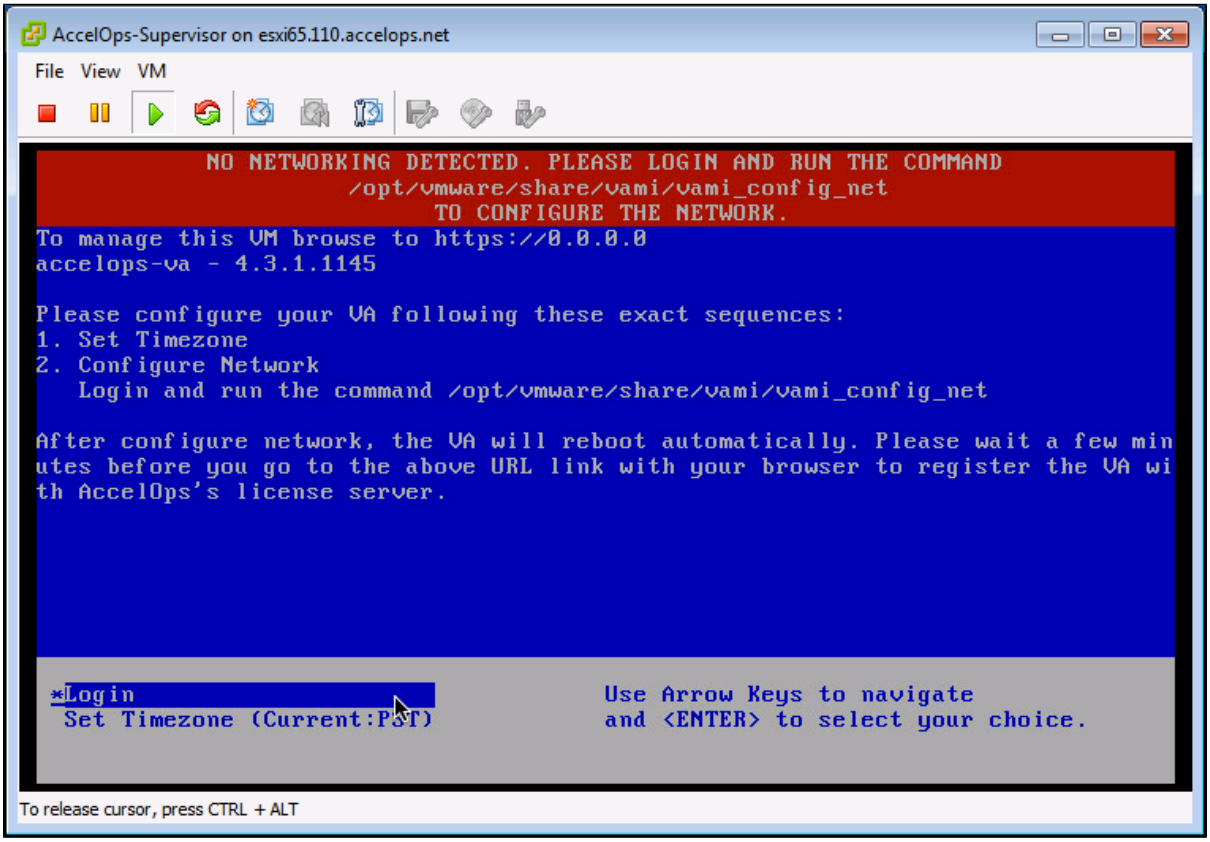


5. Review and Confirm your Timezone selection

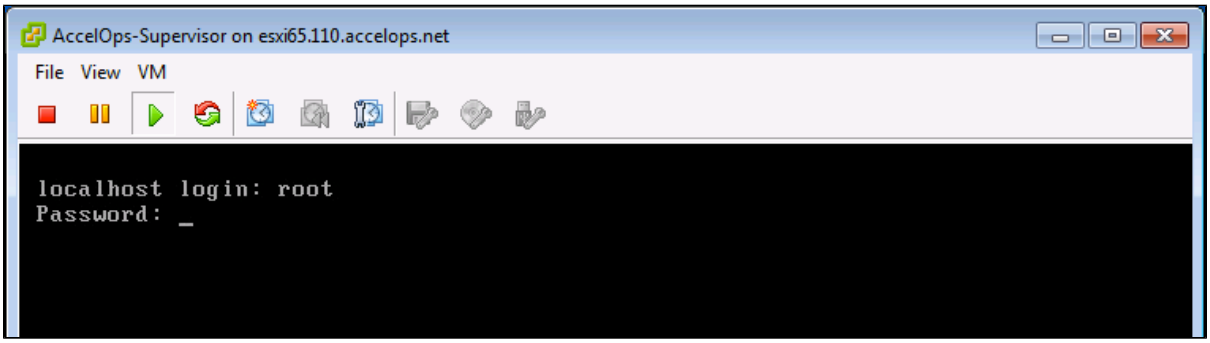


Step 3: Configure the Network

1. On VM console, Select 'Login' and press the 'Enter' key



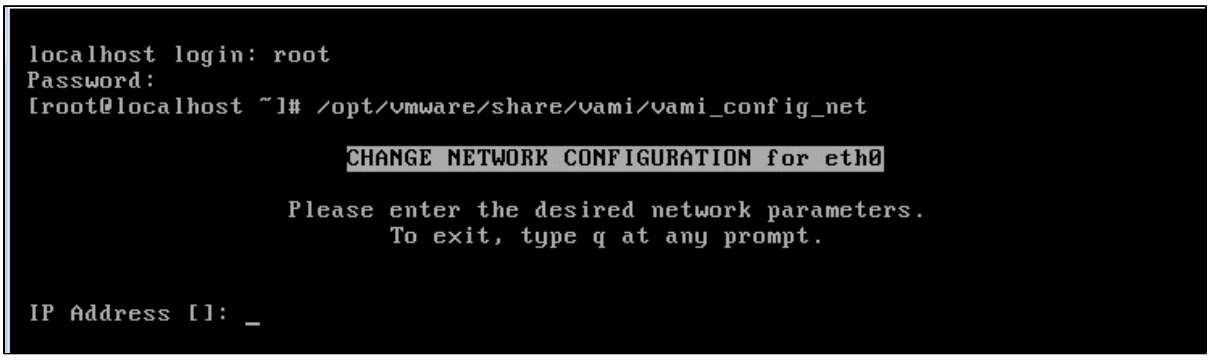
2. Enter default log in information.
   Login: **root**
   Password: **ProspectHills**



3. Run vami_config_net script to configure network and installing AccelOps Supervisor

Configure the Network

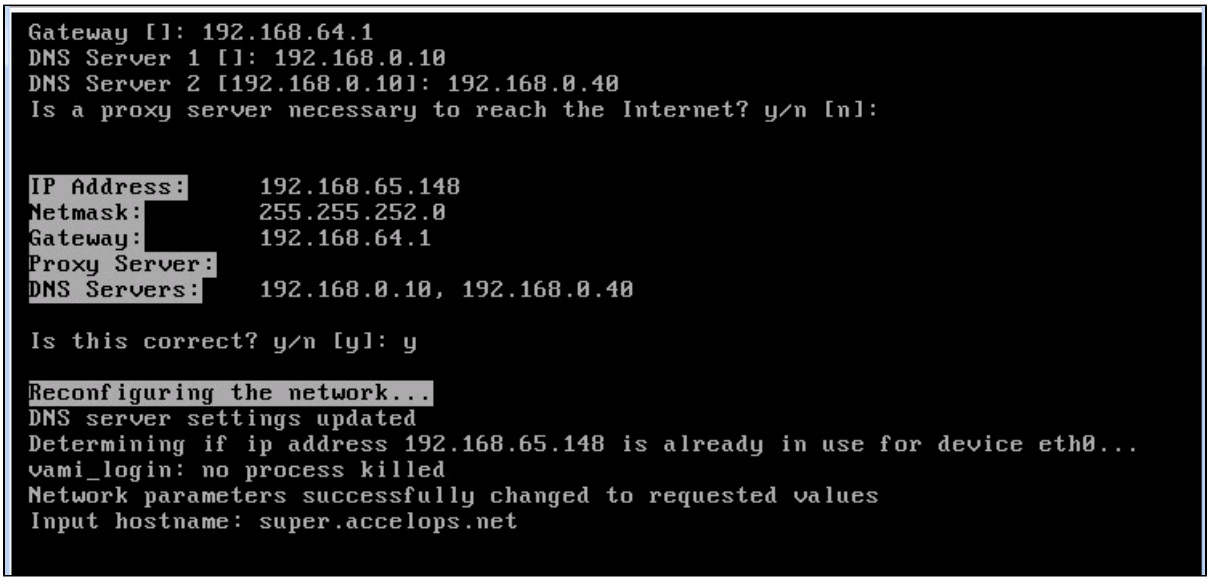
```
/opt/vmware/share/vami/vami_config_net
```



4. Configure Network with Static IP address
    a. The following information is required to configure Static IP address:
        i. IP Address
        ii. Netmask
        iii. Gateway
        iv. DNS Server(s)

> **Proxy Server**
>
> Do not configure the proxy server setting. The authenticated proxy server is not supported in this version of AccelOps. Turn off authentication on proxy server for this host or completely disable the proxy for this host.

    b. Press the 'y' key to accept the changes
    c. Enter 'Host name' and press 'Enter' key



Step 4: Select Mount Point to store your data

The AccelOps Supervisor can be installed using either storage configured within the ESX server or NFS storage.

Choose only following Step 4.1 or 4.2 based on Section 3

1. Enter your Local hard disk mount point

> **Note**

Skip Step 4.1 if you decided use NFS storage to store the Events data. Else, continue below steps.

Local Storage Mount point

```
/dev/sdd
```

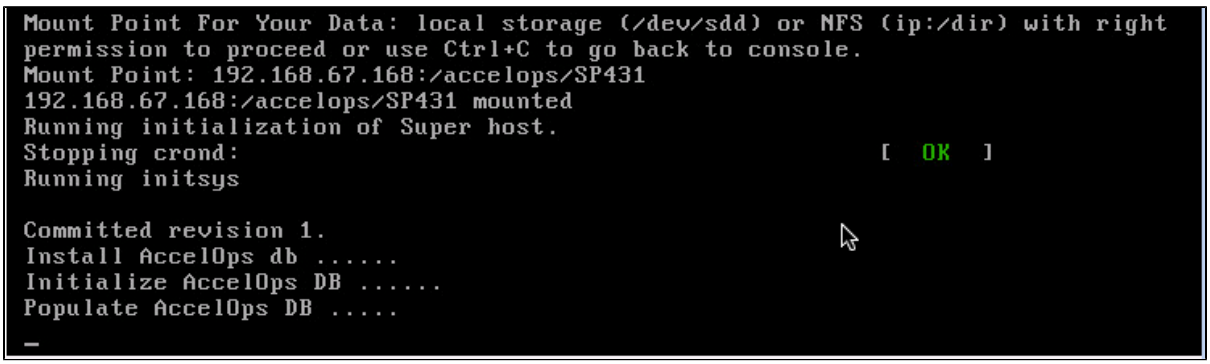
2. Enter your NFS mount point

Note

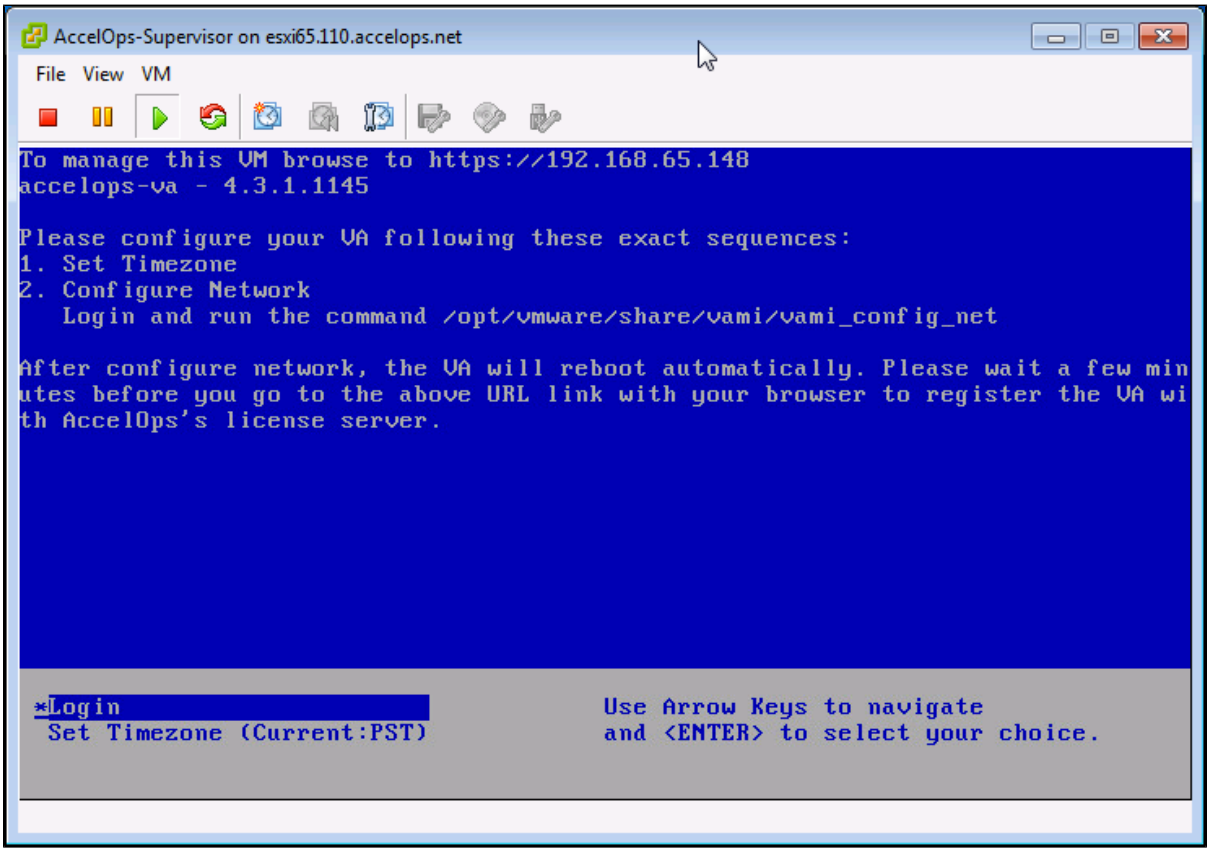
Skip Step 4.2 if you choose Step 4.1 to store Events data in local Hard disk. Else, continue below steps.

NFS Mount point

```
<NFS_Server_IP_Address>:/<Directory_Path>
```



3. After mount point, Supervisor will reboot automatically
   In 15 to 25mins, Supervisor will be configure successful.

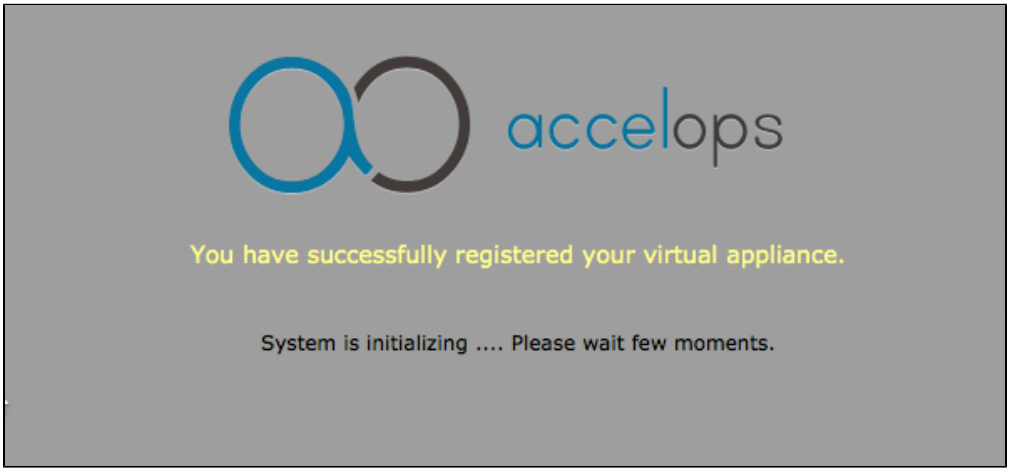


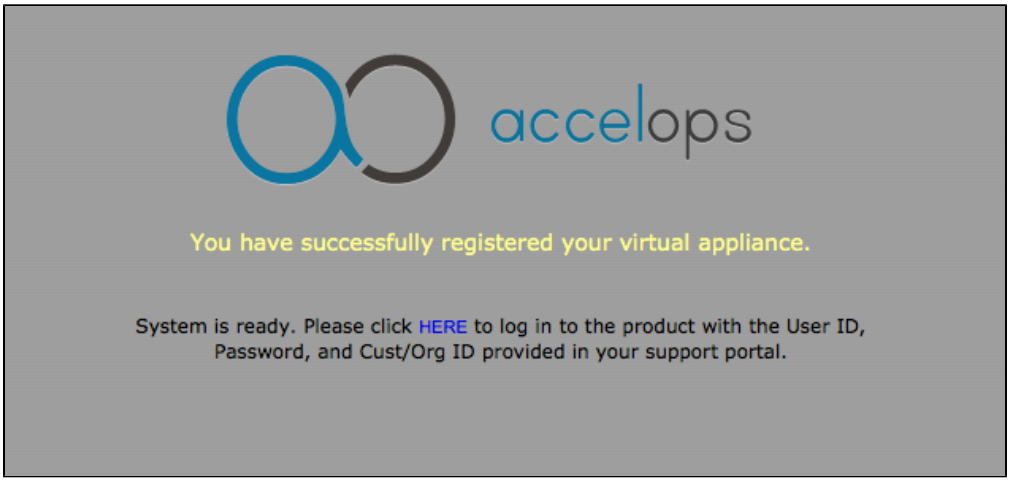
Section 5: Register the Supervisor

Step 1: Register AccelOps Supervisor

1. In browser windows, enter 'https://<Supervisor IP>'

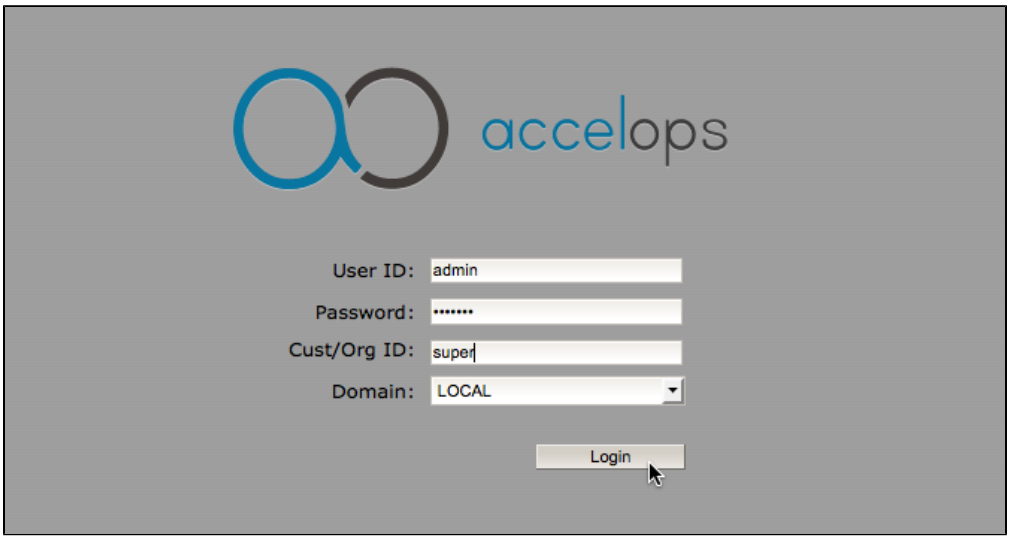
2. Enter license user name and password and click on Register



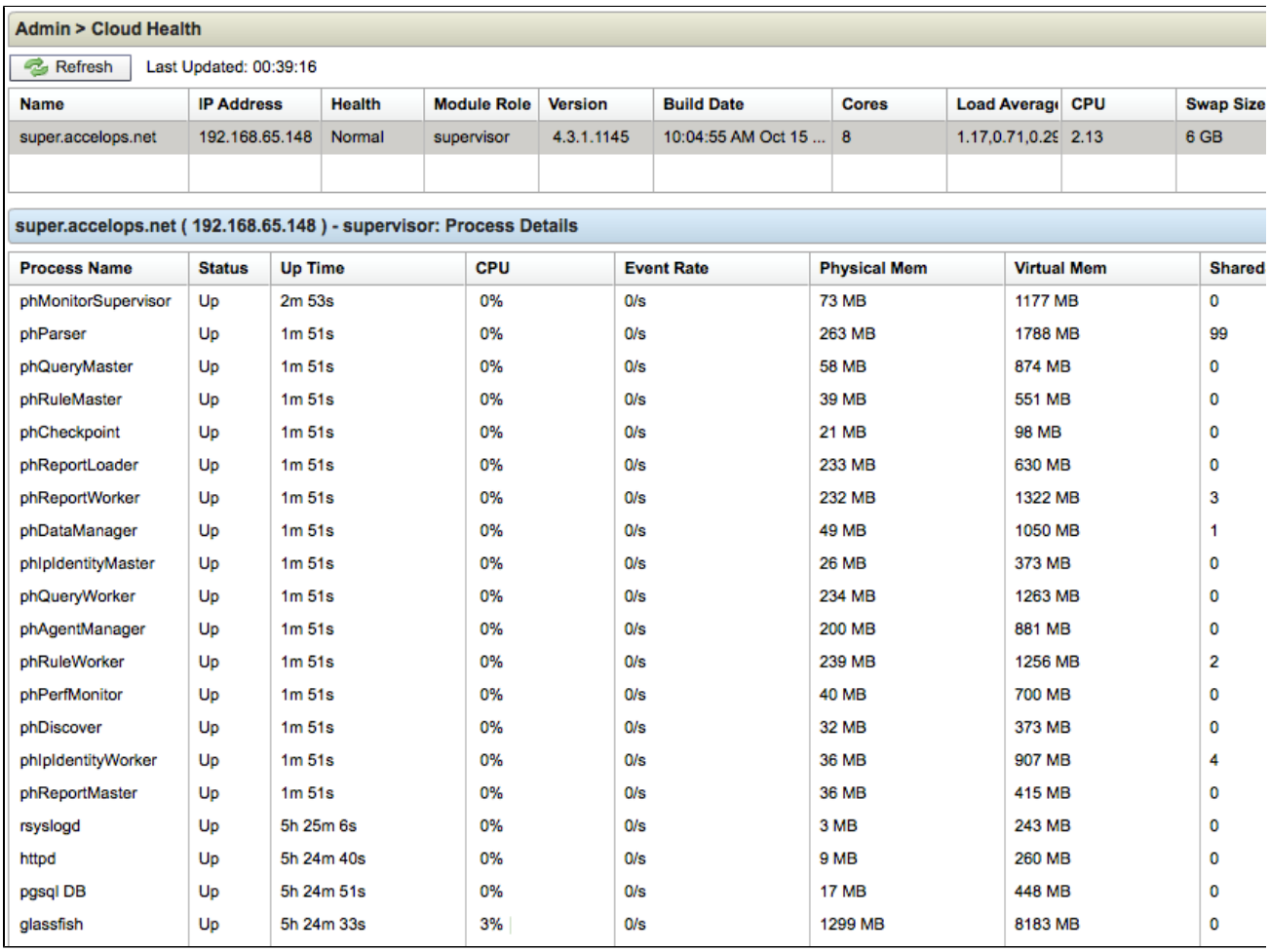


> **Offline License Registration**
>
> Contact AccelOps Support if you need to register Supervisor offline.

3. After Registration, Click blue link 'HERE' on AccelOps UI to login
4. Enter the default log in credentials
   User ID: **admin**
   Password: **admin*1**
   Cust/Org ID: **super**



5. Go to Admin > Cloud Health and check Supervisor health.



Admin > Cloud Health

Refresh Last Updated: 00:39:16

Name	IP Address	Health	Module Role	Version	Build Date	Cores	Load Averag	CPU	Swap Size
super.accelops.net	192.168.65.148	Normal	supervisor	4.3.1.1145	10:04:55 AM Oct 15 ...	8	1.17,0.71,0.2	2.13	6 GB

super.accelops.net (192.168.65.148) - supervisor: Process Details

Process Name	Status	Up Time	CPU	Event Rate	Physical Mem	Virtual Mem	Shared
phMonitorSupervisor	Up	2m 53s	0%	0/s	73 MB	1177 MB	0
phParser	Up	1m 51s	0%	0/s	263 MB	1788 MB	99
phQueryMaster	Up	1m 51s	0%	0/s	58 MB	874 MB	0
phRuleMaster	Up	1m 51s	0%	0/s	39 MB	551 MB	0
phCheckpoint	Up	1m 51s	0%	0/s	21 MB	98 MB	0
phReportLoader	Up	1m 51s	0%	0/s	233 MB	630 MB	0
phReportWorker	Up	1m 51s	0%	0/s	232 MB	1322 MB	3
phDataManager	Up	1m 51s	0%	0/s	49 MB	1050 MB	1
phIpIdentityMaster	Up	1m 51s	0%	0/s	26 MB	373 MB	0
phQueryWorker	Up	1m 51s	0%	0/s	234 MB	1263 MB	0
phAgentManager	Up	1m 51s	0%	0/s	200 MB	881 MB	0
phRuleWorker	Up	1m 51s	0%	0/s	239 MB	1256 MB	2
phPerfMonitor	Up	1m 51s	0%	0/s	40 MB	700 MB	0
phDiscover	Up	1m 51s	0%	0/s	32 MB	373 MB	0
phIpIdentityWorker	Up	1m 51s	0%	0/s	36 MB	907 MB	4
phReportMaster	Up	1m 51s	0%	0/s	36 MB	415 MB	0
rsyslogd	Up	5h 25m 6s	0%	0/s	3 MB	243 MB	0
httpd	Up	5h 24m 40s	0%	0/s	9 MB	260 MB	0
pgsql DB	Up	5h 24m 51s	0%	0/s	17 MB	448 MB	0
glassfish	Up	5h 24m 33s	3%	0/s	1299 MB	8183 MB	0

Section 6: Troubleshoot Supervisor installation

Step 1: Verify Supervisor system level permissions

1. SSH to Supervisor and Check 'cmdb, data, query, querywkr and svn' permissions

System level permissions

```
[root@super ~]# ls -l /
dr-xr-xr-x.   2 root     root      4096 Oct 15 11:09 bin
dr-xr-xr-x.   5 root     root      1024 Oct 15 14:50 boot
drwxr-xr-x    4 postgres postgres  4096 Nov 10 18:59 cmdb
drwxr-xr-x    9 admin    admin     4096 Nov 11 11:32 data
drwxr-xr-x   15 root     root      3560 Nov 10 11:11 dev
-rw-r--r--    1 root     root        34 Nov 11 12:09 dump.rdb
drwxr-xr-x.  93 root     root     12288 Nov 11 12:12 etc
drwxr-xr-x.   4 root     root      4096 Nov 10 11:08 home
dr-xr-xr-x.  11 root     root      4096 Oct 15 11:13 lib
dr-xr-xr-x.   9 root     root     12288 Nov 10 19:13 lib64
drwx------.   2 root     root     16384 Oct 15 14:46 lost+found
drwxr-xr-x.   2 root     root      4096 Sep 23  2011 media
drwxr-xr-x.   2 root     root      4096 Sep 23  2011 mnt
drwxr-xr-x.  10 root     root      4096 Nov 10 09:37 opt
drwxr-xr-x    2 root     root      4096 Nov 10 11:10 pbin
dr-xr-xr-x  289 root     root         0 Nov 10 11:13 proc
drwxr-xr-x    8 admin    admin     4096 Nov 11 00:37 query
drwxr-xr-x    8 admin    admin     4096 Nov 10 18:58 querywkr
dr-xr-x---.   7 root     root      4096 Nov 10 19:13 root
dr-xr-xr-x.   2 root     root     12288 Oct 15 11:08 sbin
drwxr-xr-x.   2 root     root      4096 Oct 15 14:47 selinux
drwxr-xr-x.   2 root     root      4096 Sep 23  2011 srv
drwxr-xr-x    4 apache   apache    4096 Nov 10 18:58 svn
drwxr-xr-x   13 root     root         0 Nov 10 11:13 sys
drwxrwxrwt.   9 root     root      4096 Nov 11 12:12 tmp
drwxr-xr-x.  15 root     root      4096 Oct 15 14:58 usr
drwxr-xr-x.  21 root     root      4096 Oct 15 11:01 var
```

2. Check '/data , /cmdb and /svn' permissions

EventDB, CMDB and SVN permssions

```
[root@super ~]# ls -l /data
drwxr-xr-x 3 root     root     4096 Nov 11 02:52 archive
drwxr-xr-x 3 admin    admin    4096 Nov 11 12:01 cache
drwxr-xr-x 2 postgres postgres 4096 Nov 10 18:46 cmdb
drwxr-xr-x 2 admin    admin    4096 Nov 10 19:04 custParser
drwxr-xr-x 5 admin    admin    4096 Nov 11 00:29 eventdb
drwxr-xr-x 2 admin    admin    4096 Nov 10 19:04 jmxXml
drwxr-xr-x 2 admin    admin    4096 Nov 11 11:33 mibXml

[root@super ~]# ls -l /cmdb
drwx------ 14 postgres postgres  4096 Nov 10 11:08 data

[root@super ~]# ls -l /svn
drwxr-xr-x 6 apache apache  4096 Nov 10 18:58 repos
```

Step 2: Check Backend system health

1. SSH to Supervisor, run 'phstatus' command

System Status

```
[root@super ~]# phstatus

Every 1.0s: /opt/phoenix/bin/phstatus.py

System uptime:  12:37:58 up 17:24,  1 user,  load average: 0.06, 0.01, 0.00
Tasks: 20 total, 0 running, 20 sleeping, 0 stopped, 0 zombie
Cpu(s): 8 cores, 0.6%us, 0.7%sy, 0.0%ni, 98.6%id, 0.0%wa, 0.0%hi, 0.1%si, 0.0%st
Mem: 16333720k total, 5466488k used, 10867232k free, 139660k buffers
Swap: 6291448k total, 0k used, 6291448k free, 1528488k cached


PROCESS                 UPTIME         CPU%           VIRT_MEM       RES_MEM

phParser                12:00:34    0              1788m          280m
phQueryMaster           12:00:34    0              944m           63m
phRuleMaster            12:00:34    0              596m           85m
phRuleWorker            12:00:34    0              1256m          252m
phQueryWorker           12:00:34    0              1273m          246m
phDataManager           12:00:34    0              1505m          303m
phDiscover              12:00:34    0              383m           32m
phReportWorker          12:00:34    0              1322m          88m
phReportMaster          12:00:34    0              435m           38m
phIpIdentityWorker      12:00:34    0              907m           47m
phIpIdentityMaster      12:00:34    0              373m           26m
phAgentManager          12:00:34    0              881m           200m
phCheckpoint            12:00:34    0              98m            23m
phPerfMonitor           12:00:34    0              700m           40m
phReportLoader          12:00:34    0              630m           233m
phMonitor               31:21       0              1120m          25m
Apache                  17:23:23    0              260m           11m
Node.js                 17:20:54    0              656m           35m
AppSvr                  17:23:16    0              8183m          1344m
DBSvr                   17:23:34    0              448m           17m
```

Installing a Worker node

Section 1: Import a Worker image into VMware ESX server

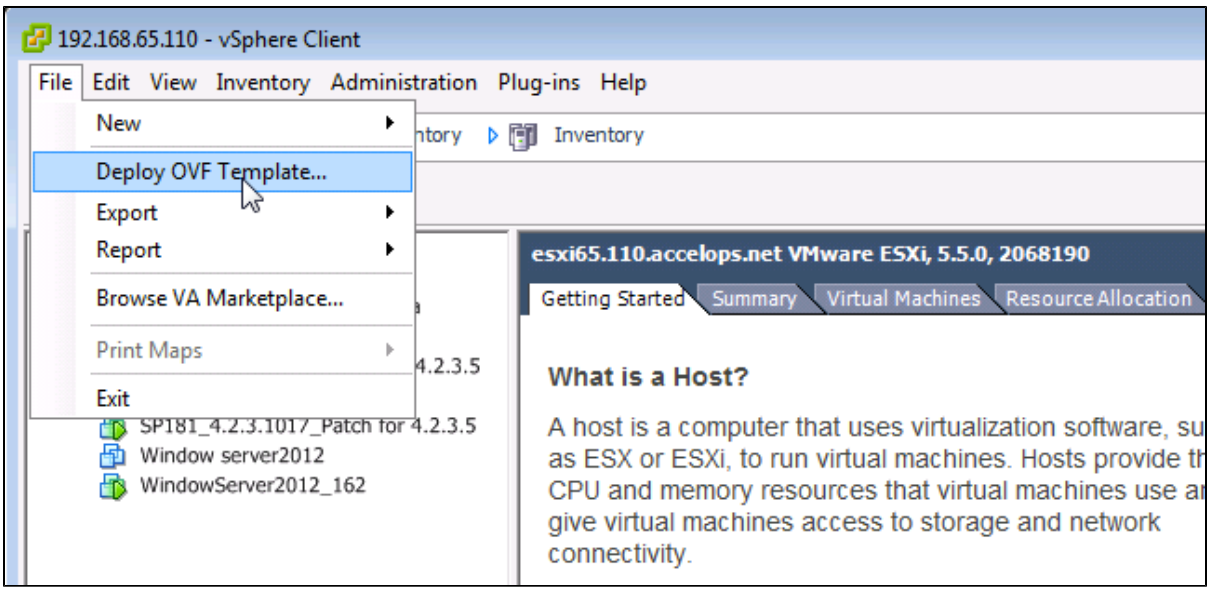
NOTE

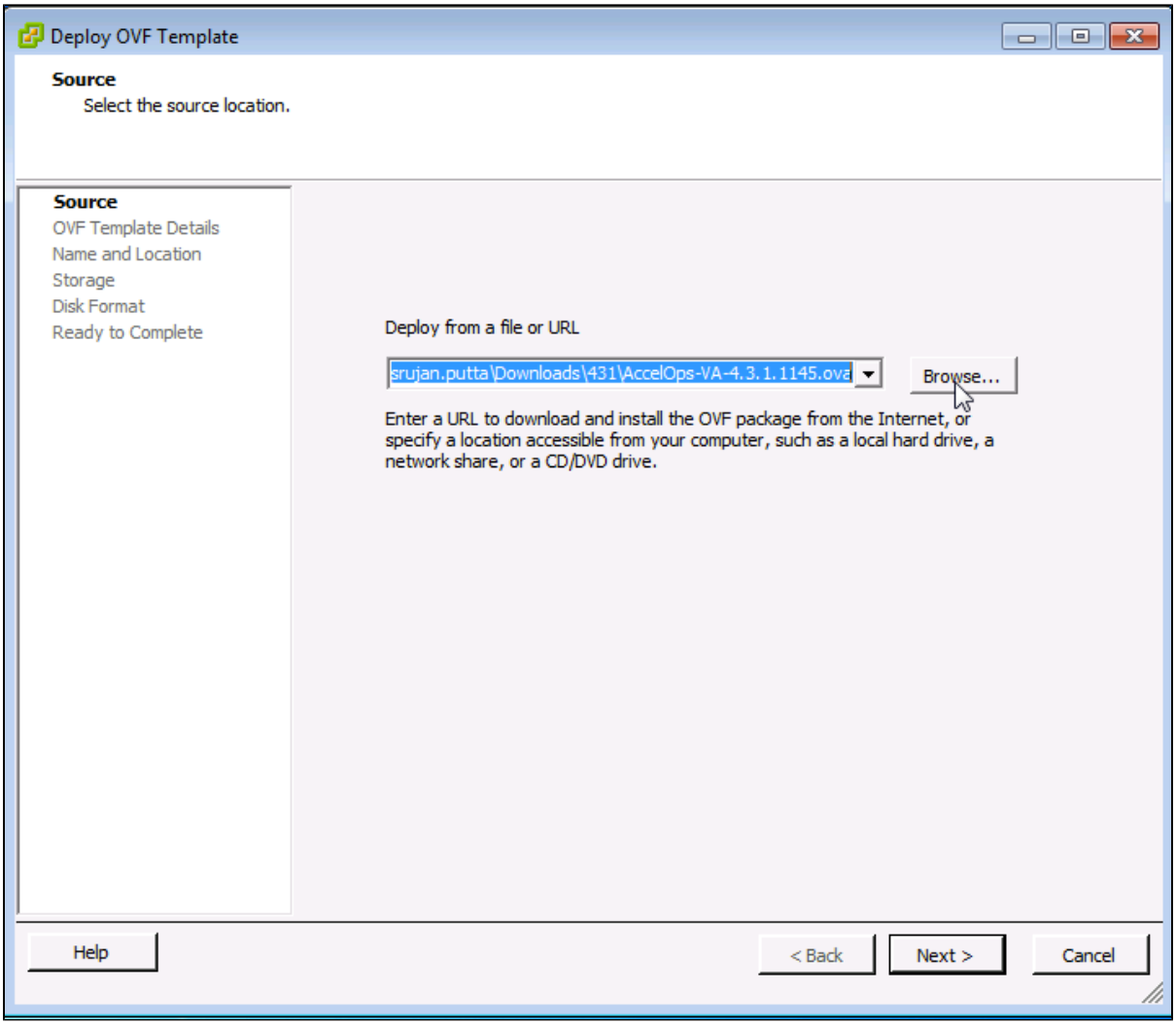
Supervisor and Worker installation packages are same. Please use Supervisor's NFS mount point location to install Worker.

Step 1: Begin importing Worker

1. Download Supervisor OVA package from AccelOps image server
2. Log into VMware vSphere Client
    a. Click on File -> Select Deploy OVF Template
    b. Click on Browse button to choose OVA file

c. Locate Supervisor .ova file (Example: AccelOps-VA-4.3.1.1145.ova)

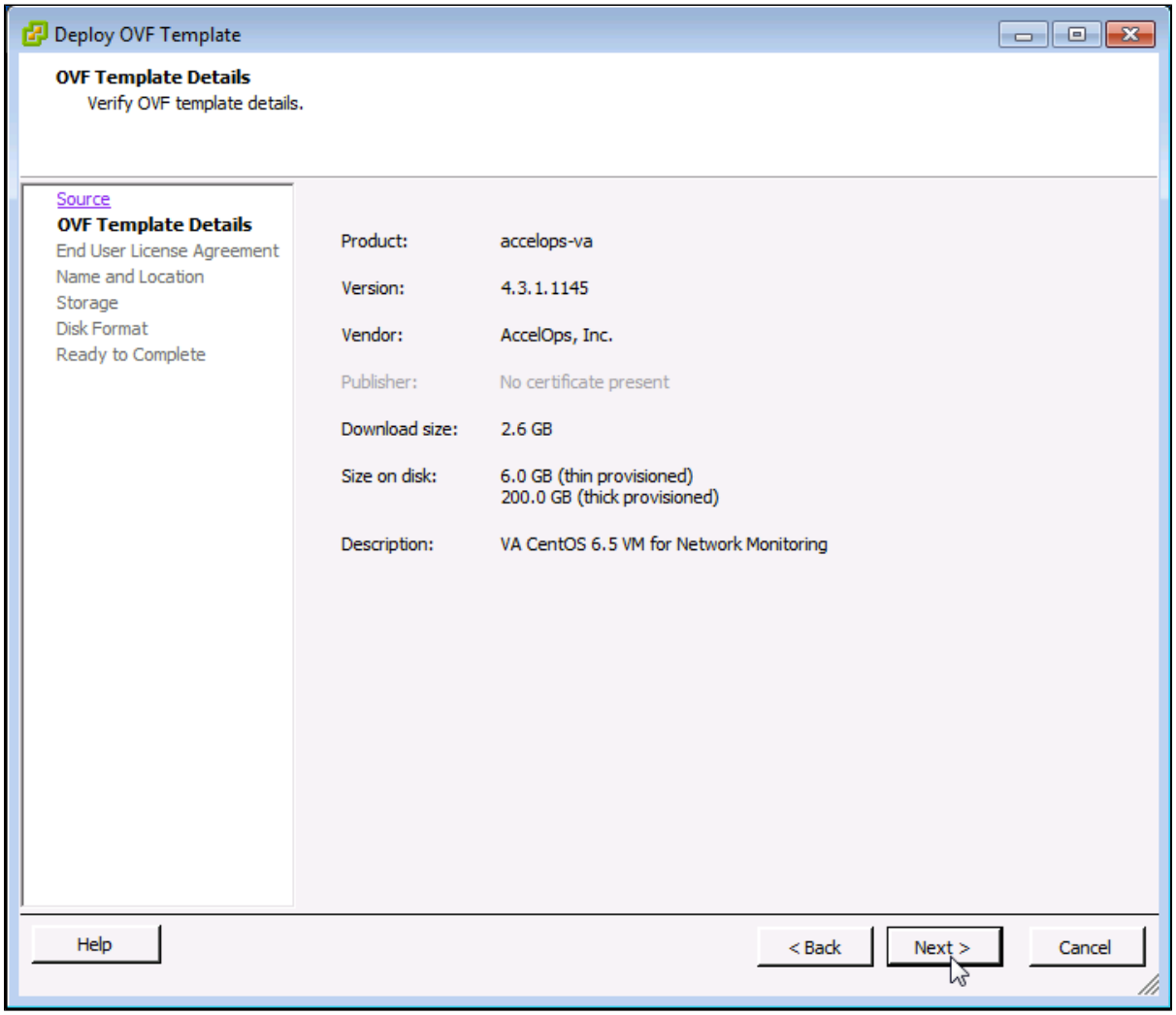




Step 2: Review the Virtual Appliance details

OVF Template details will tell you how big the file is to import and how mush disk space it will take up in your selected ESX server.

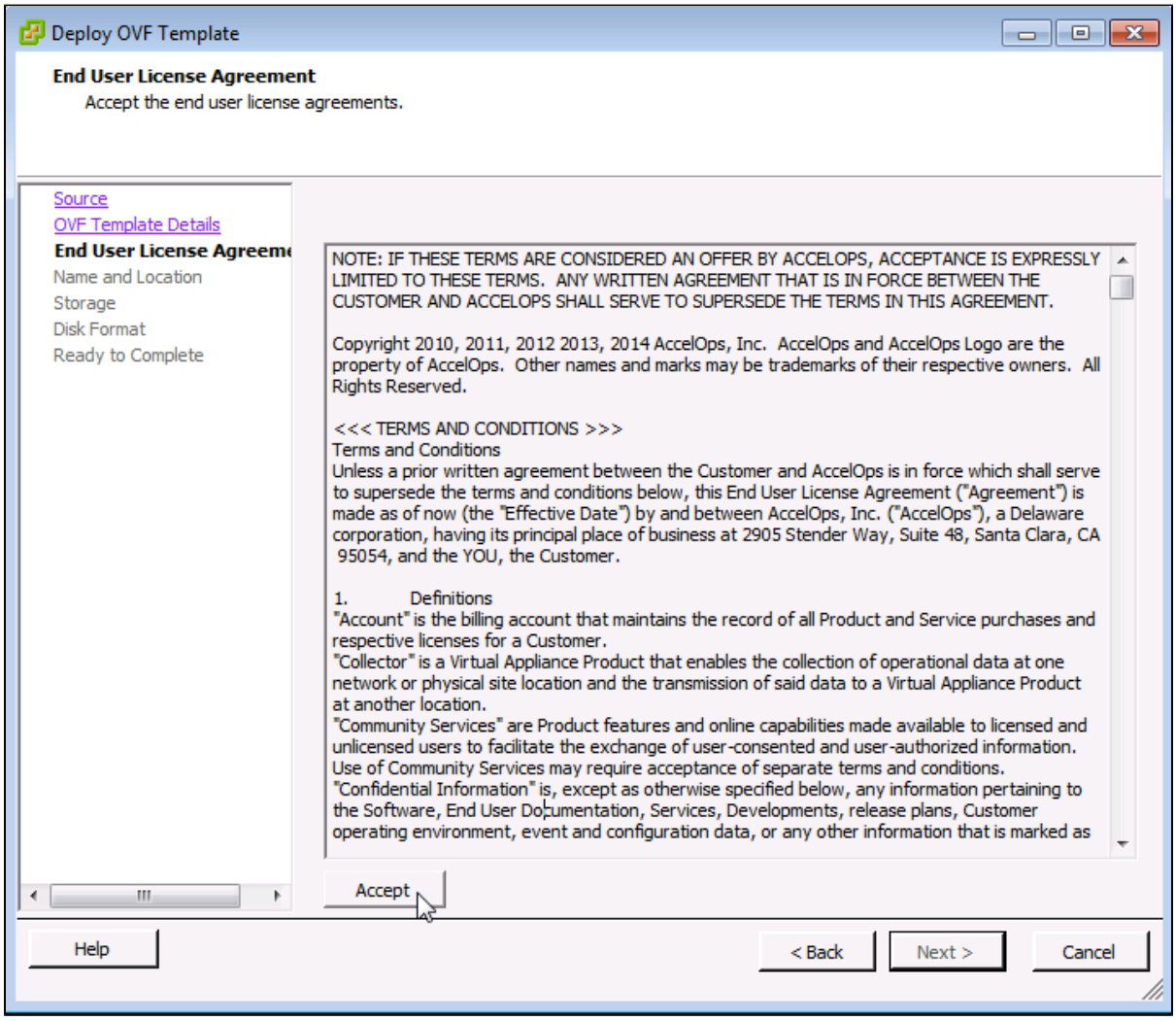
1. Click the 'Next' button



Step 3: End User License Agreement

To continue you must accept the End User License Agreement.

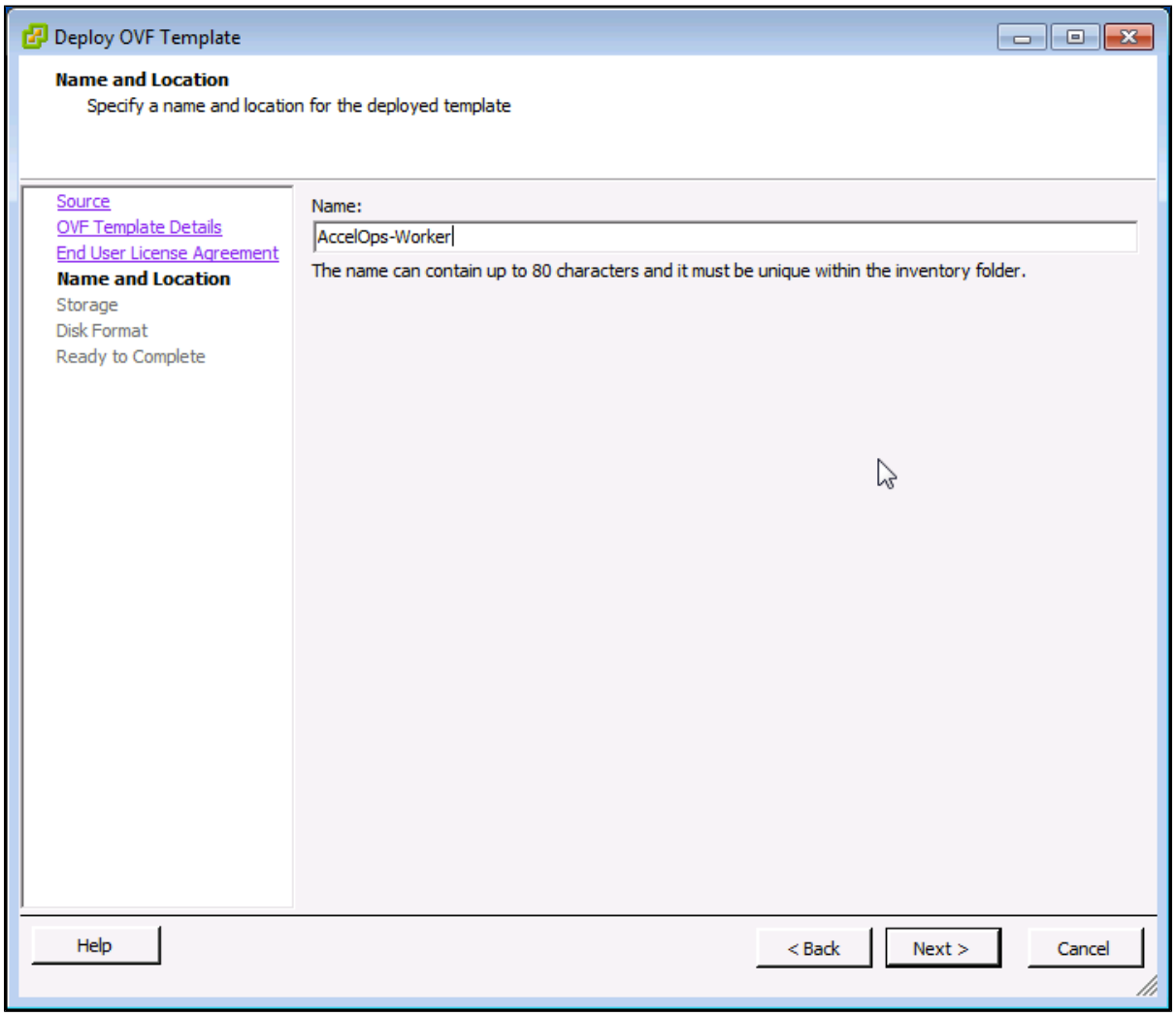
1. Click on 'Accept' button on License Agreement
2. Click on 'Next' button



Step 4: Name and Location

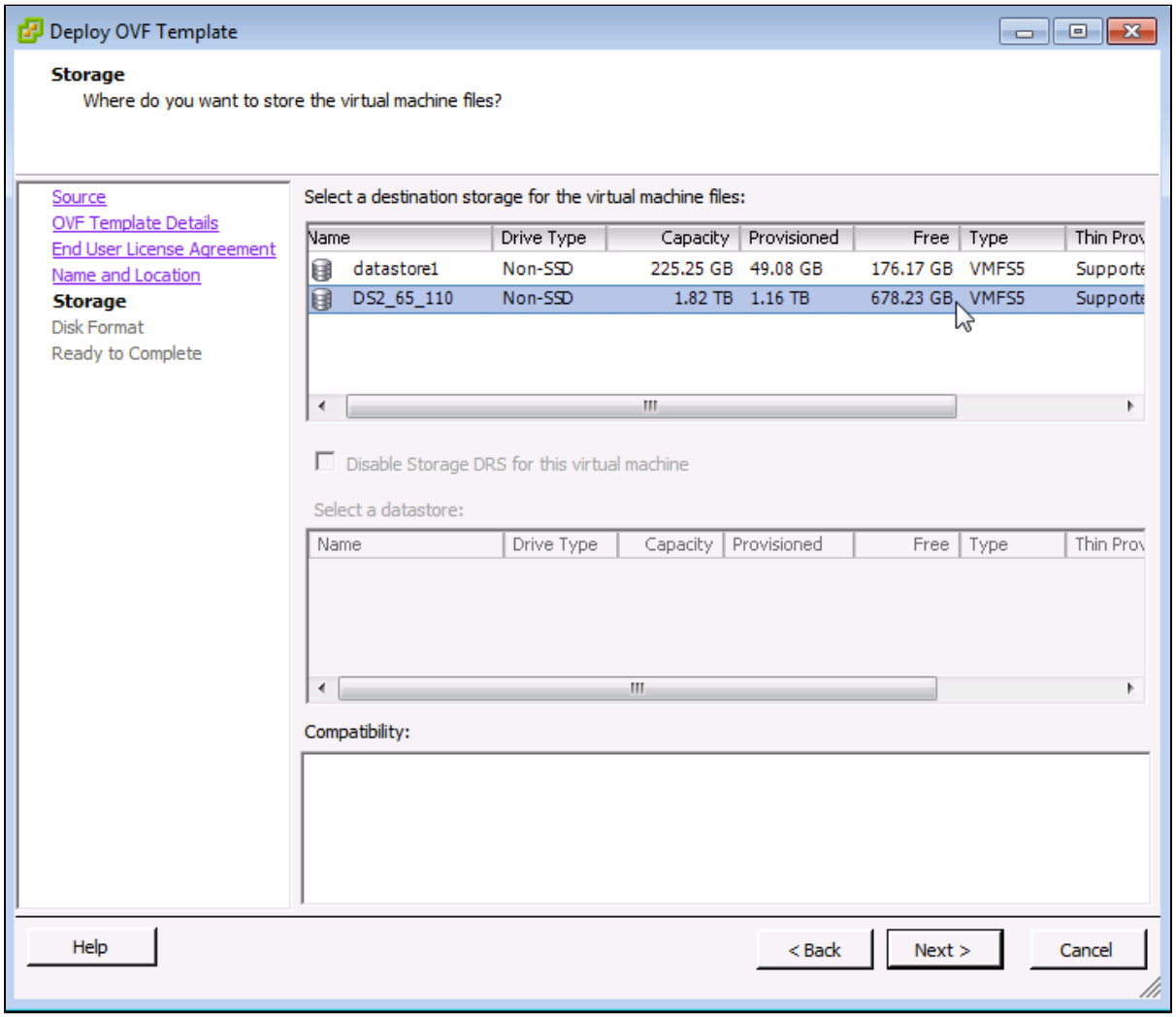
Enter a name for the Virtual Appliance that is being imported. This name is independent of the host name and is only visible within the ESX environment.

1. Enter a Worker name and Click on 'Next' button



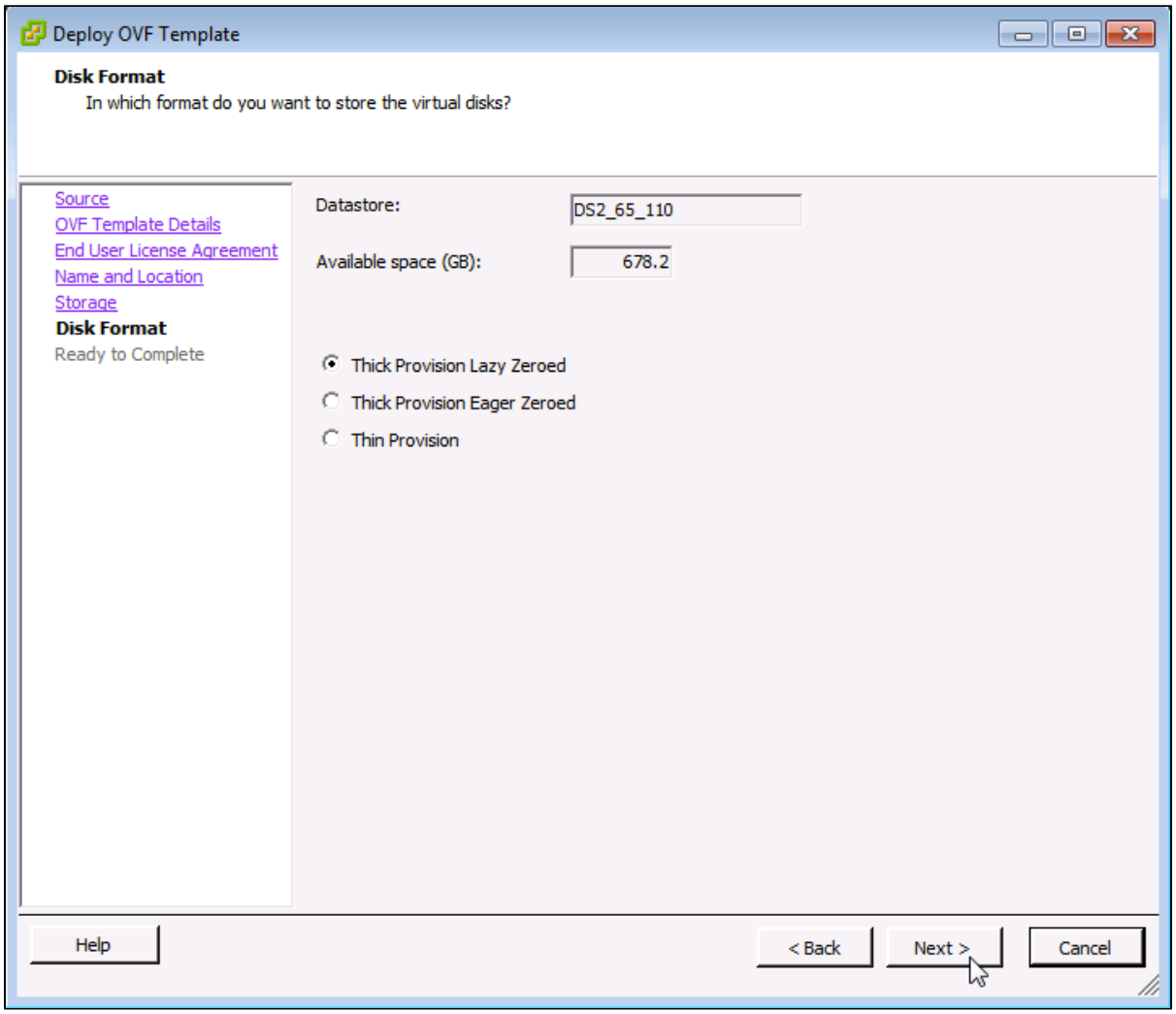
Step 5: Storage

1. Select the desired storage location(Data store) and Click on 'Next' button



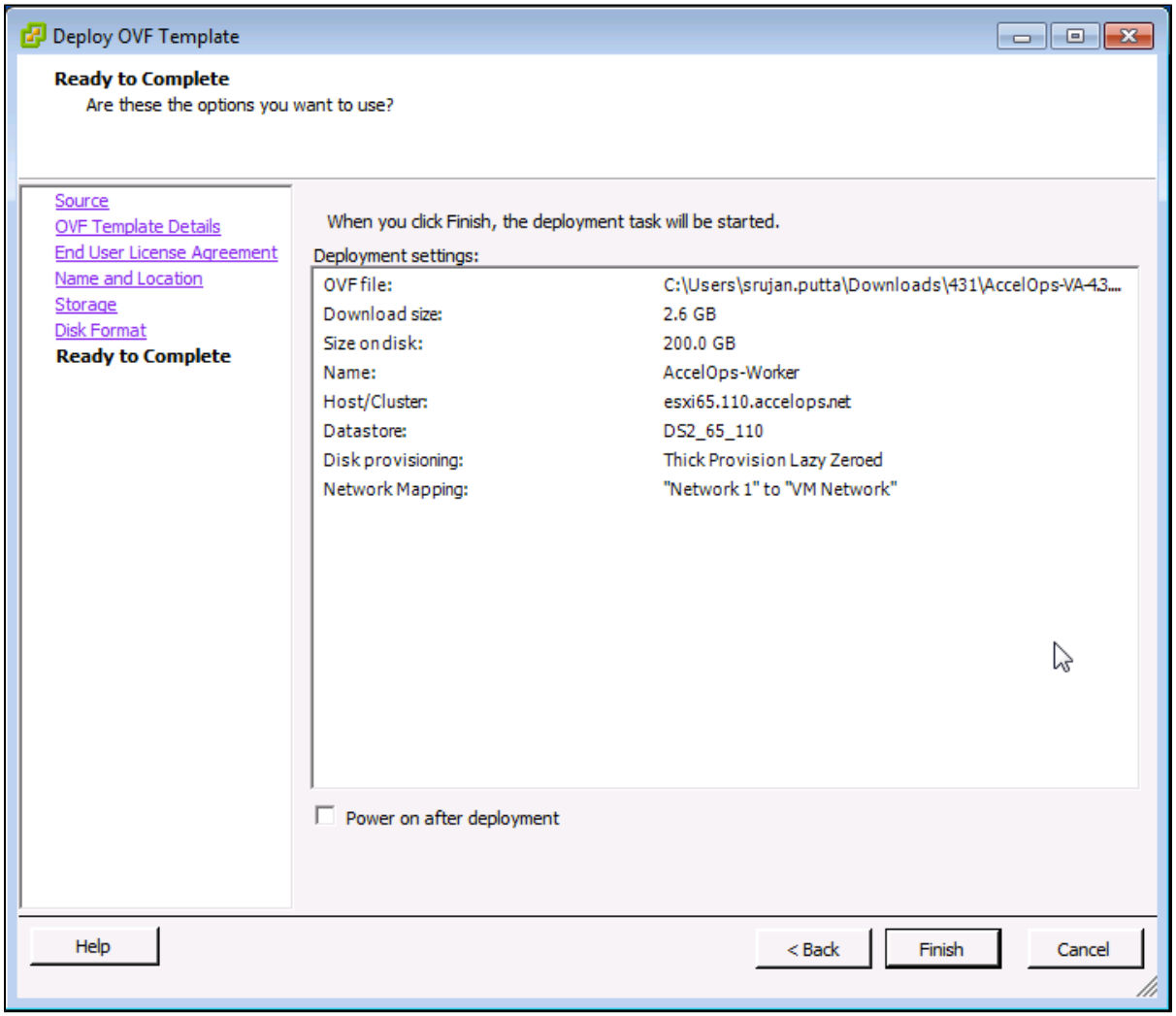
Step 6: Disk Format

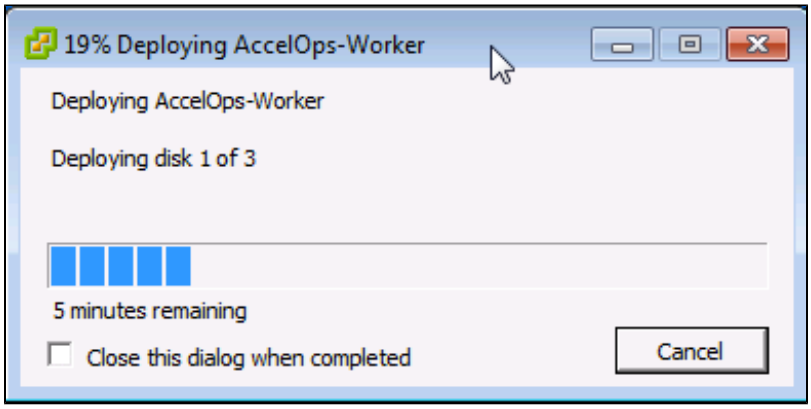
1. Select the Disk format as 'Thick Provision' (recommended) and Click on 'Next' button

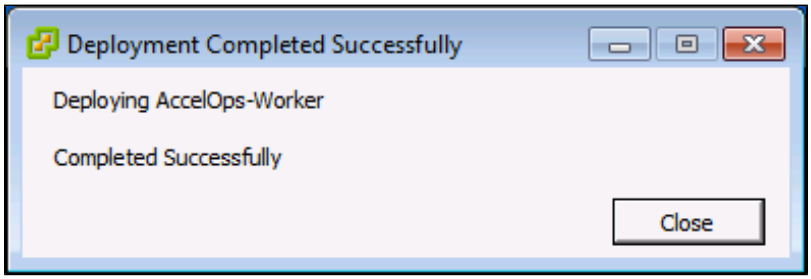


Step 7: Ready to Complete

1. Review the Worker resources and Click on 'Finish' button to begin importing Virtual Appliance
2. Virtual Appliance import will takes 7 to 10mins to complete. Do not turn off or reboot the system during this time.


Deploy OVF Template
Ready to Complete
Are these the options you want to use?
Source
OVF Template Details
End User License Agreement
Name and Location
Storage
Disk Format
Ready to Complete
When you click Finish, the deployment task will be started.
Deployment settings:
OVF file: C:\Users\srujan.putta\Downloads\431\AccelOps-VA-4.3...
Download size: 2.6 GB
Size on disk: 200.0 GB
Name: AccelOps-Worker
Host/Cluster: esxi65.110.accelops.net
Datastore: DS2_65_110
Disk provisioning: Thick Provision Lazy Zeroed
Network Mapping: "Network 1" to "VM Network"
Power on after deployment
Help
< Back
Finish
Cancel



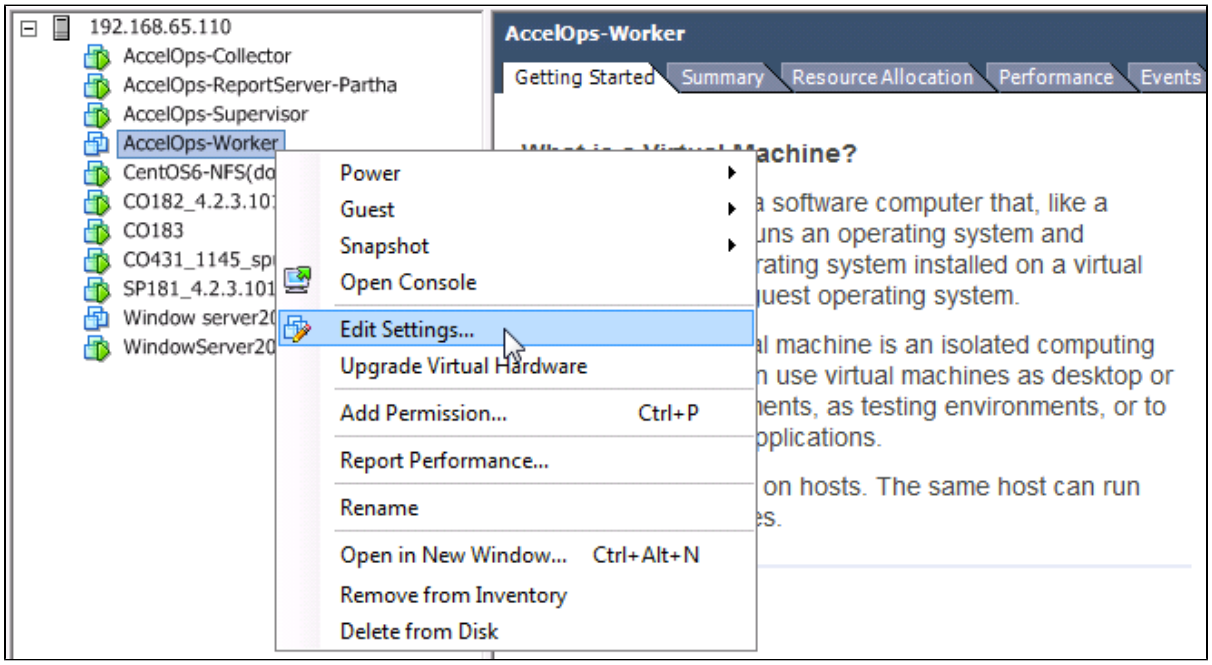


Section 2: Edit the Worker hardware settings

Prior to starting the Worker f or the first time it is required to make some modifications to the hardware setting for the Virtual Appliance.

Step 1: Edit Settings

1. From the VMware vSphere client, Select the imported Worker Virtual appliance
2. Right mouse click and select Edit Settings

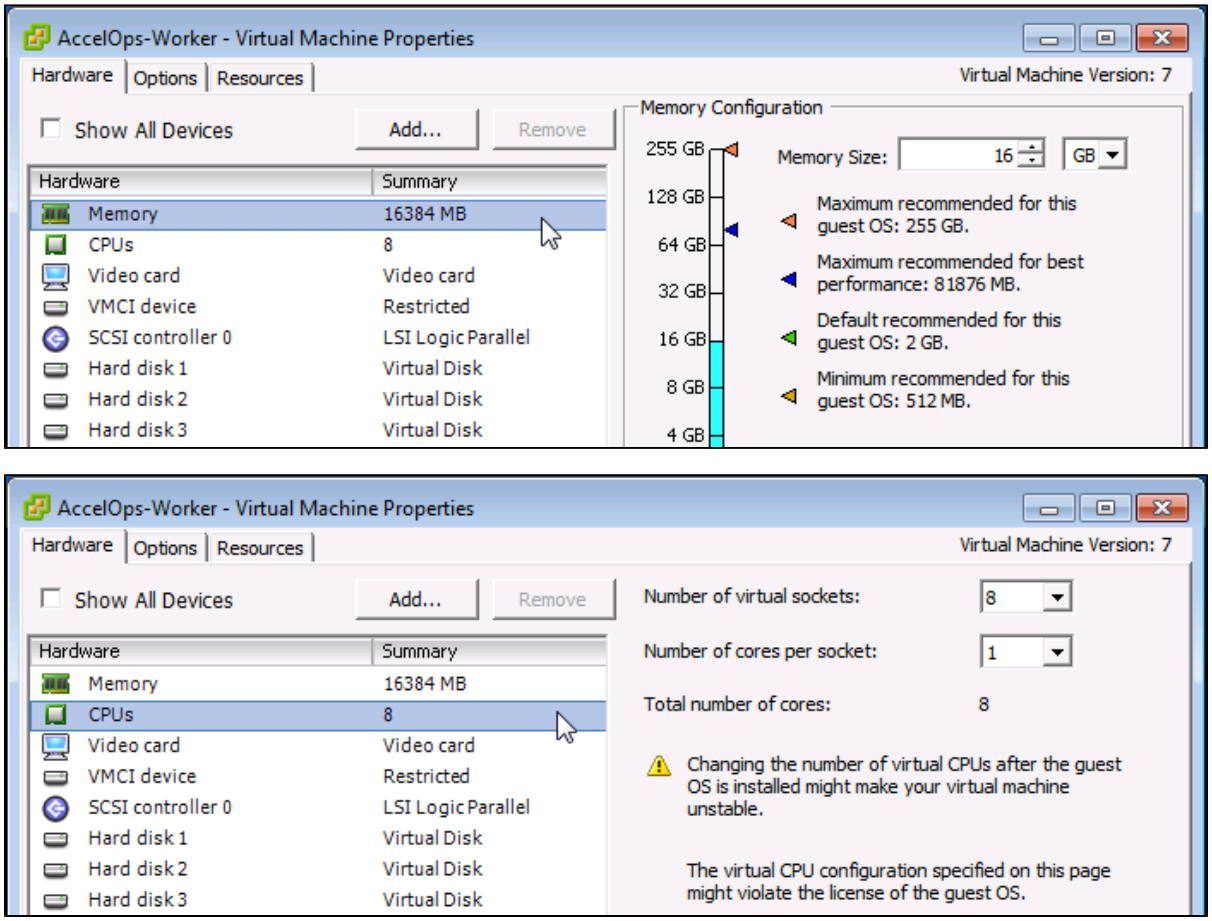


Step 2: Verify Allocated Memory

1. On Hardware tab, Click on Memory and verify the memory to at least 16 GB

> **Allocate more memory for large deployments**
>
> For large deployments you should allocate at least 24GB of memory. See the section on Worker Hardware requirements in the topic Must Read Prior to Install for more information.

2. Click on CPUs, verify the CPU cores to at least 8 cores



Section 3: Select mount point to Store Events data

The AccelOps Worker can be installed using only NFS storage. Please use Supervisor's NFS mount point location to install Worker.

1. SSH to Supervisor, copy NFS mount point location to store Events data

Supervisor's Mount point location

```
[root@super ~]# mount
/dev/sda3 on / type ext3 (rw)
proc on /proc type proc (rw)
sysfs on /sys type sysfs (rw)
devpts on /dev/pts type devpts (rw,gid=5,mode=620)
tmpfs on /dev/shm type tmpfs (rw)
/dev/sda1 on /boot type ext3 (rw)
/dev/sdb1 on /cmdb type ext3 (rw)
/dev/sdc1 on /svn type ext3 (rw)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw)
192.168.67.168:/accelops/SP431 on /data type nfs
(rw,noatime,nfsvers=3,timeo=14,nolock,addr=192.168.67.168)

Example Supervisor Mount point location: 192.168.67.168:/accelops/SP431
```

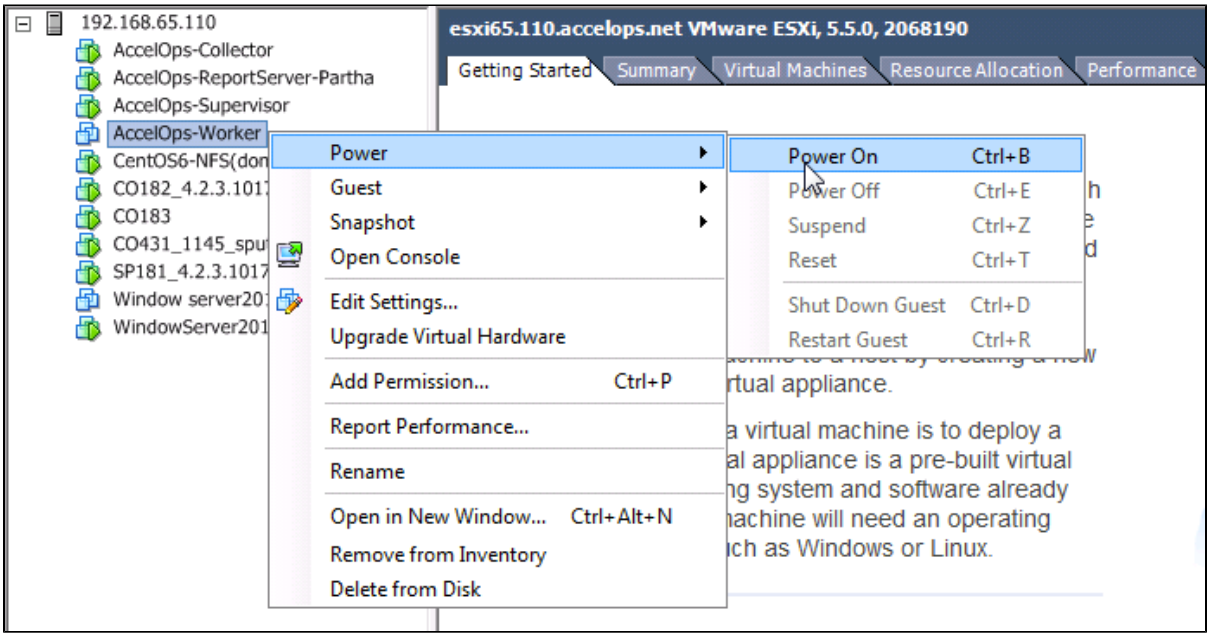
Section 4: Configure the Worker from the VMware Console

Note

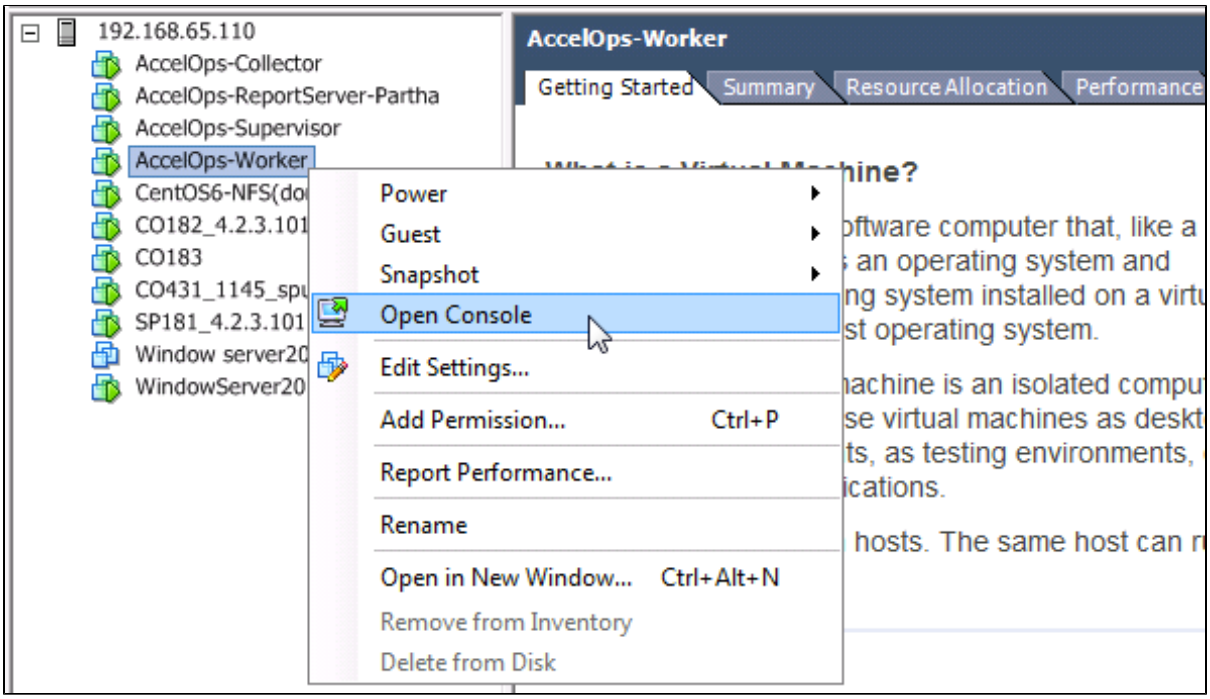
While in the VM console window do not press any control keys during the installation. Doing so might cause the installation to stop and not to precede any further. For example Ctrl – C or Ctrl – Z. If this occurs you must erase the Supervisor and start over from the beginning.

Step 1: Start Worker

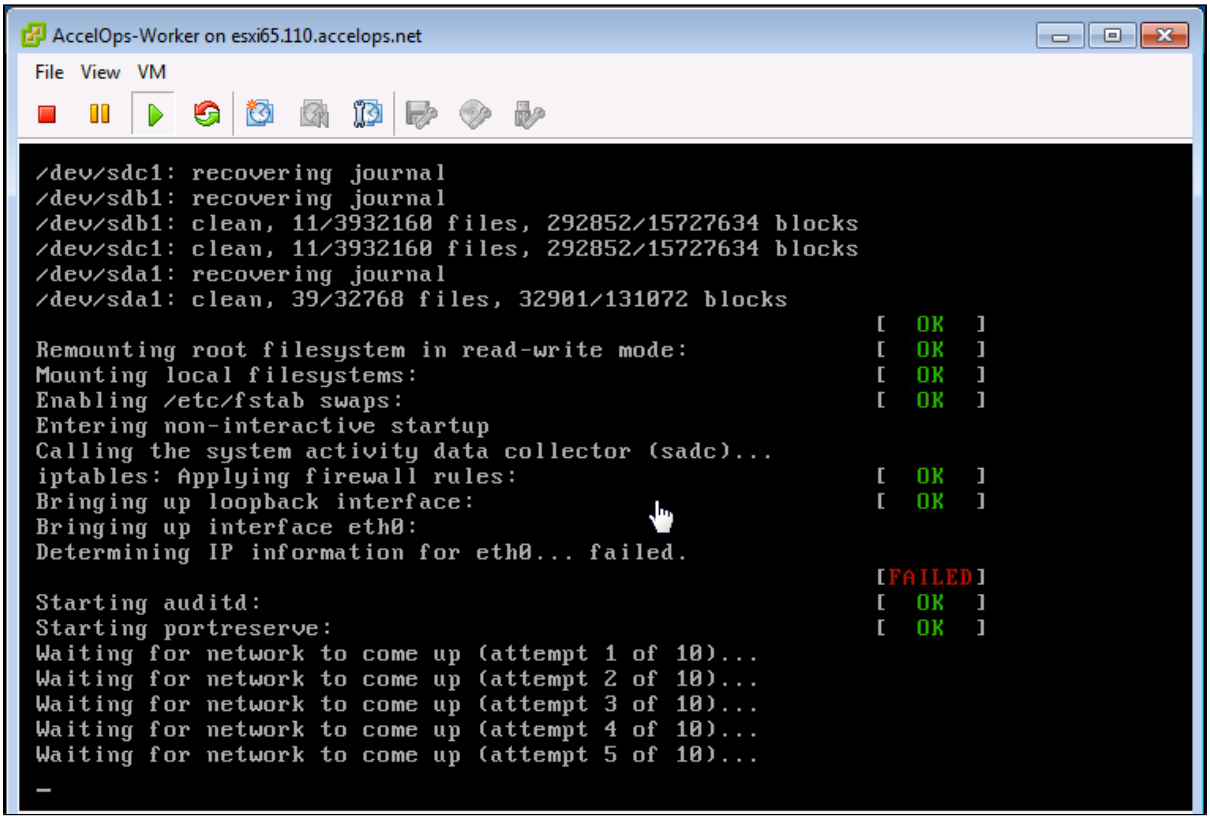
1. From the VMware vSphere client, Select recently imported Worker Virtual appliance and Power On (Right click > Power > Power On)



2. Open Worker VM Console (Right click > Open Console)



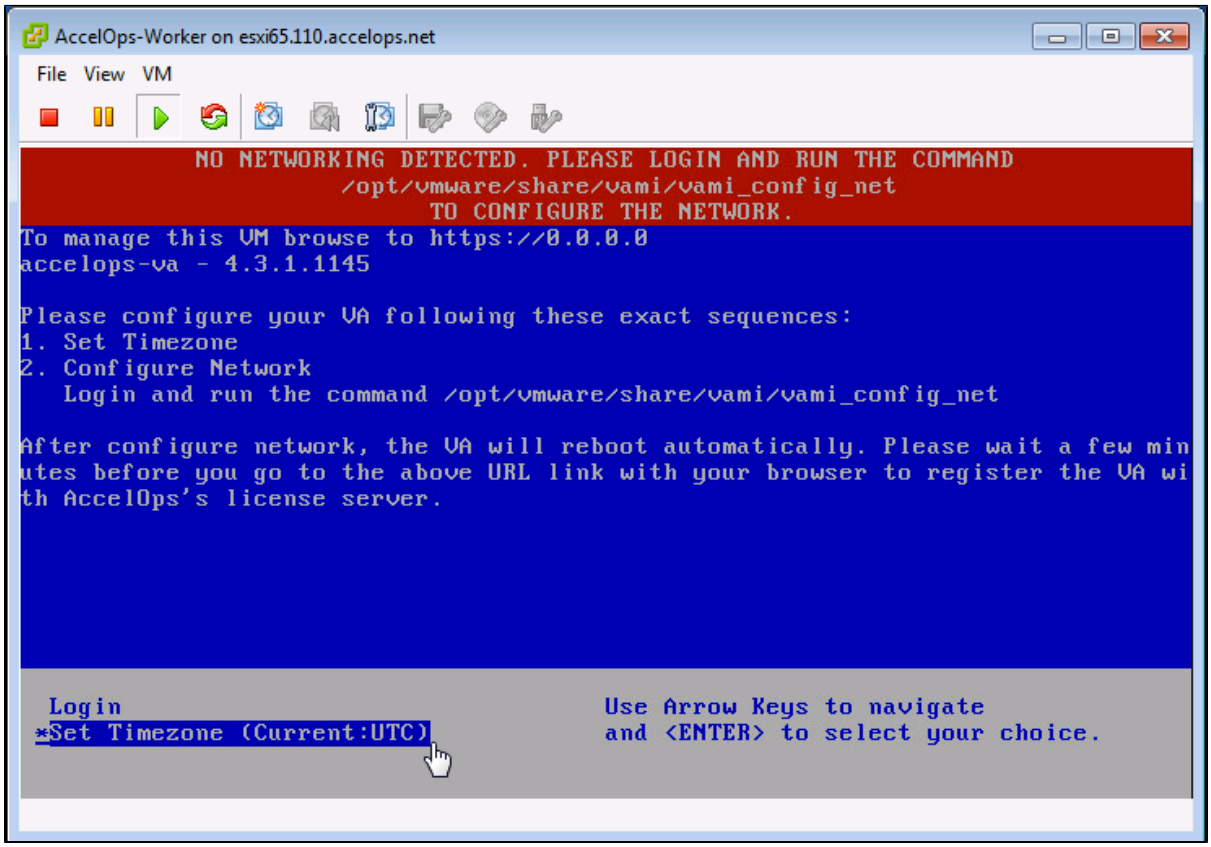
3. Network eth0 Failed message may appear on the screen during the loading, but this is to be expected the first time the AccelOps Worker is started.



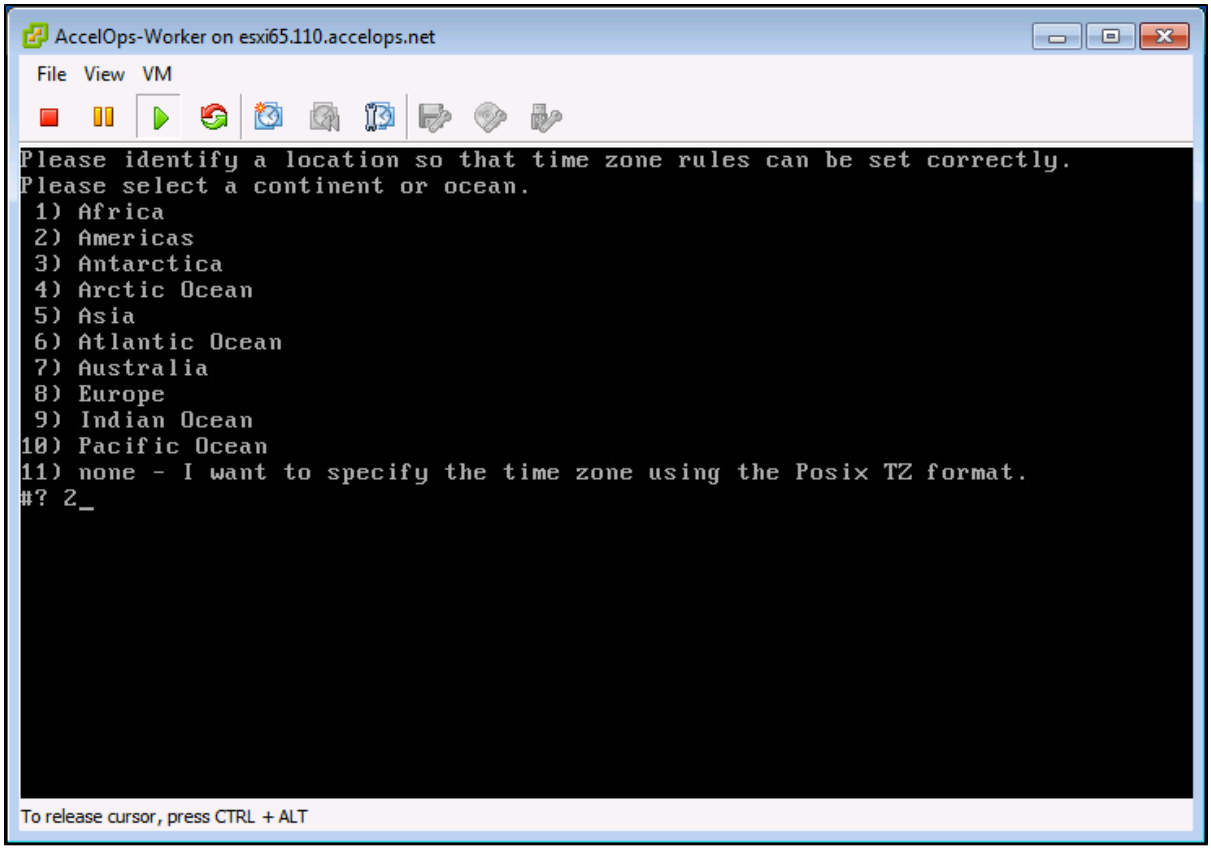
Step 2: Configure the Timezone

It is important to select the correct time zone that you are located in.

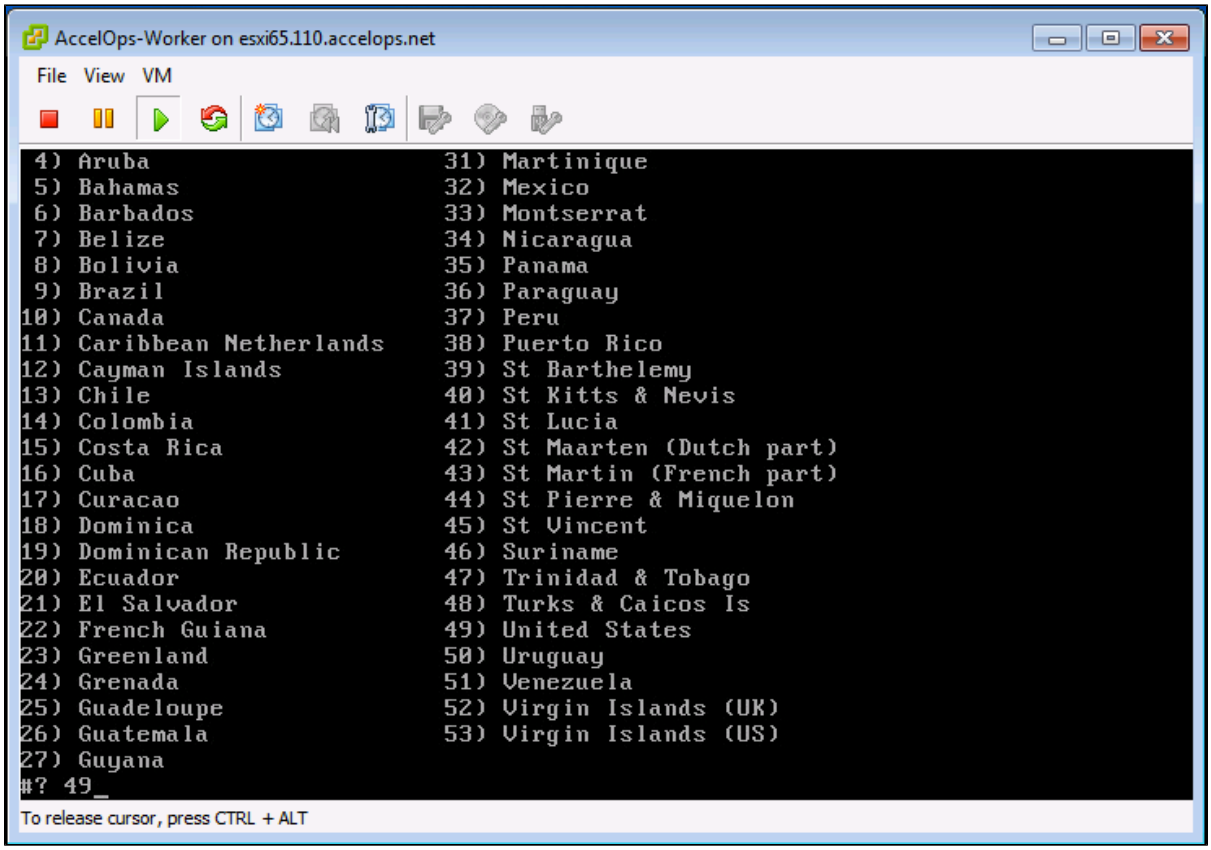
1. On VM console, Select 'Set Timezone' and press the 'Enter' key



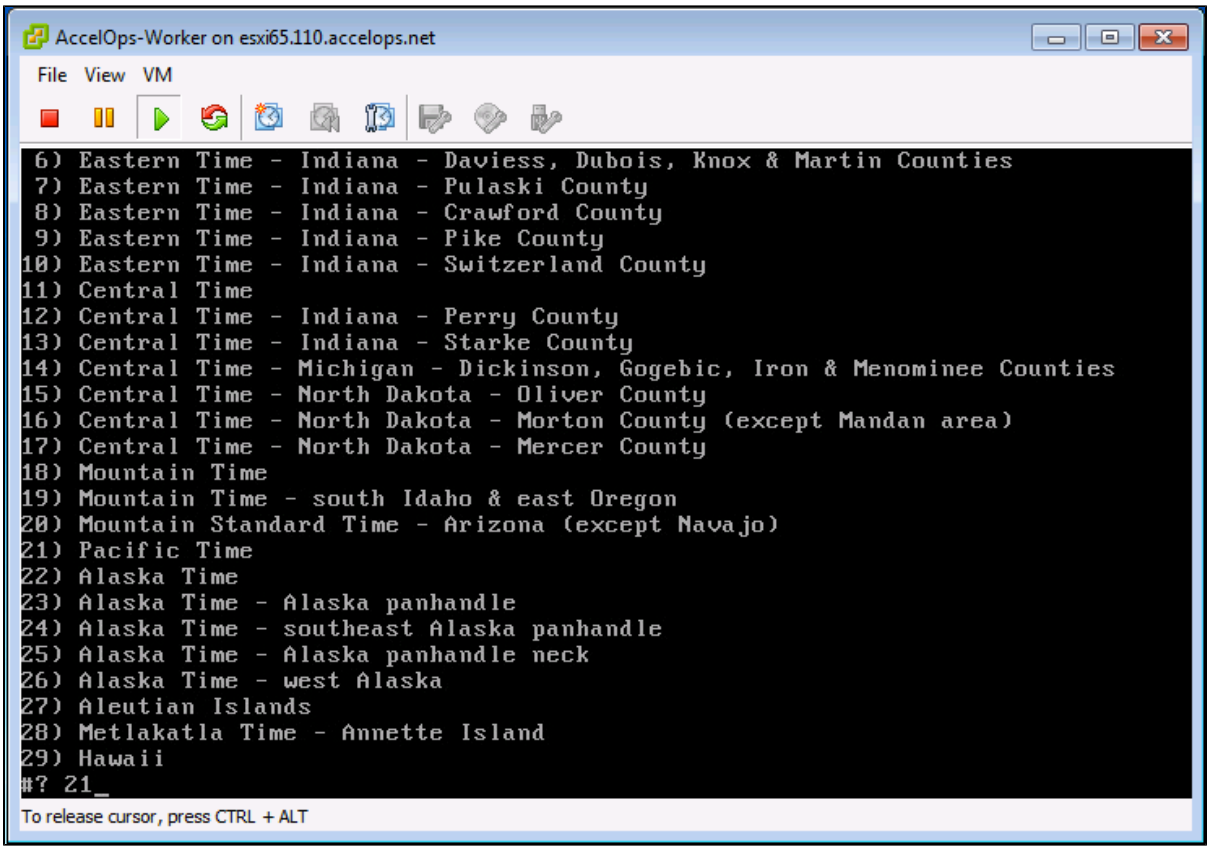
2. Select your Location and press the 'Enter' key



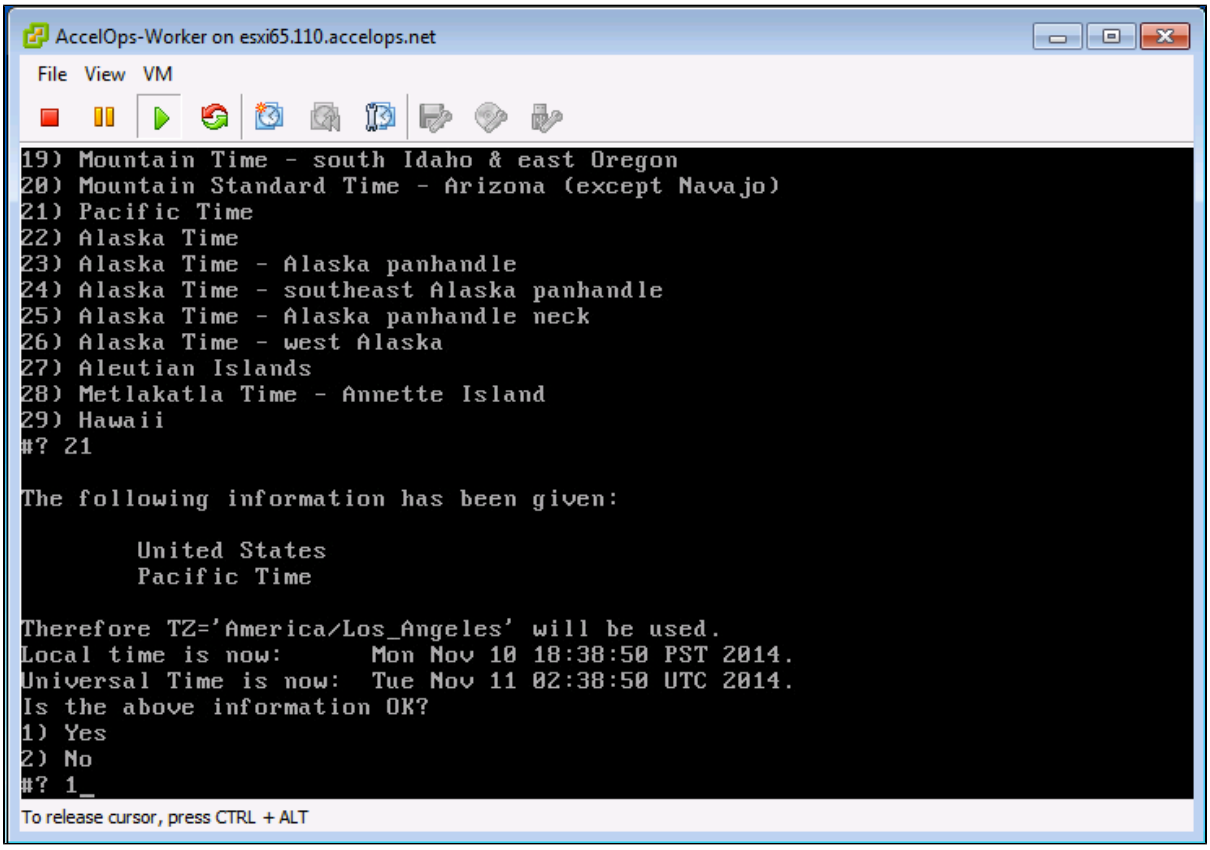
3. Select your Country and press the 'Enter' key



4. Select your Timezone and press the 'Enter' key

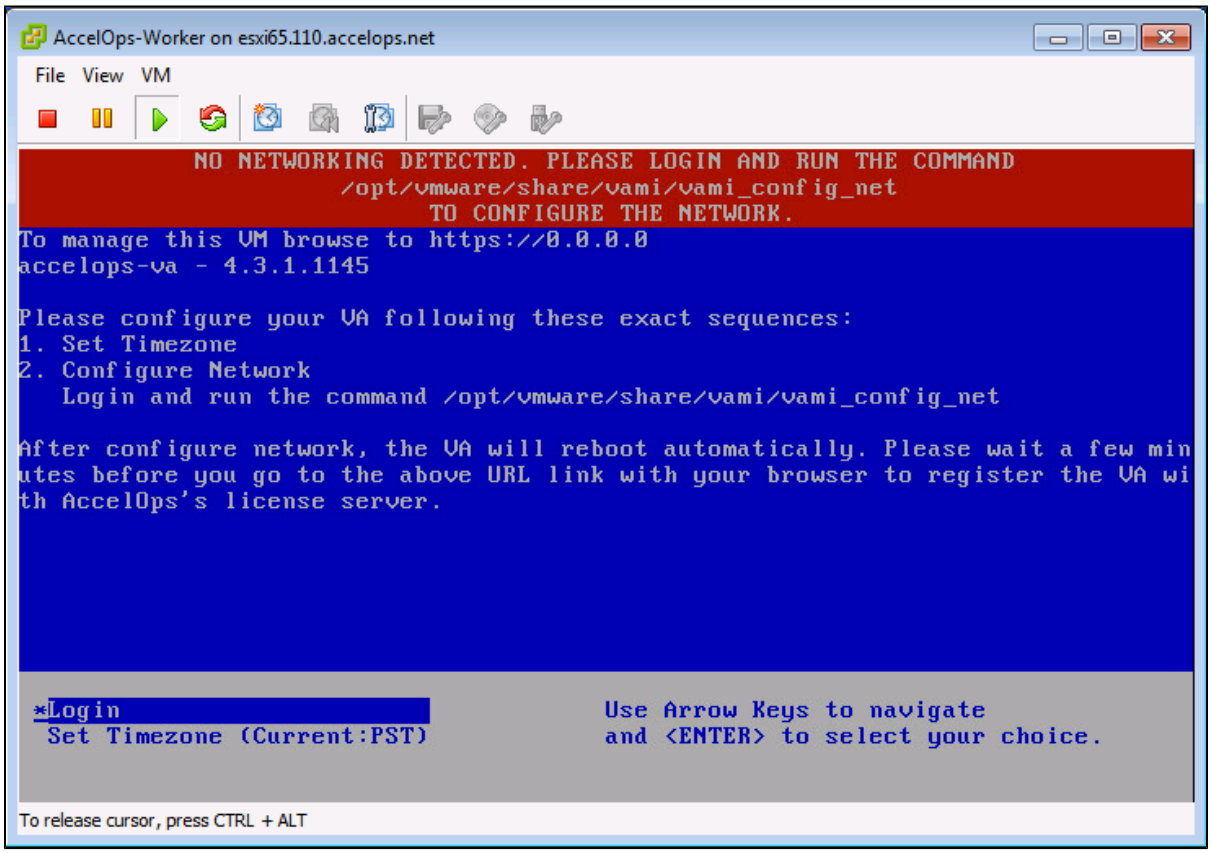


5. Review and Confirm your Timezone selection

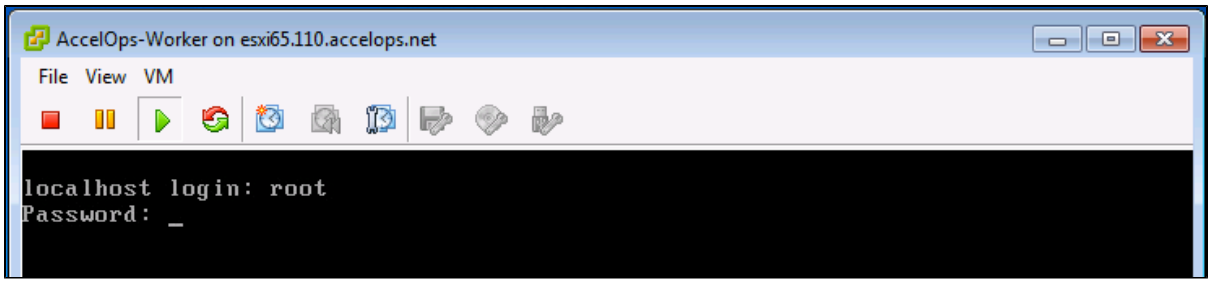


Step 3: Configure the Network

1. On VM console, Select 'Login' and press the 'Enter' key



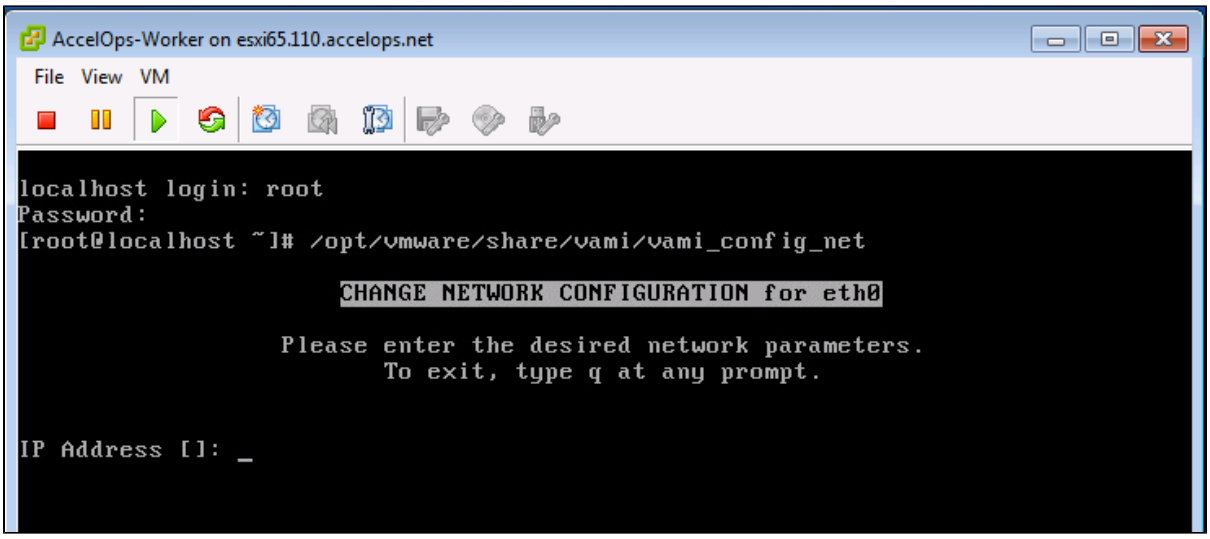
2. Enter default log in information.
   Login: **root**
   Password: **ProspectHills**



3. Run vami_config_net script to configure network and installing AccelOps Worker

Configure the Network

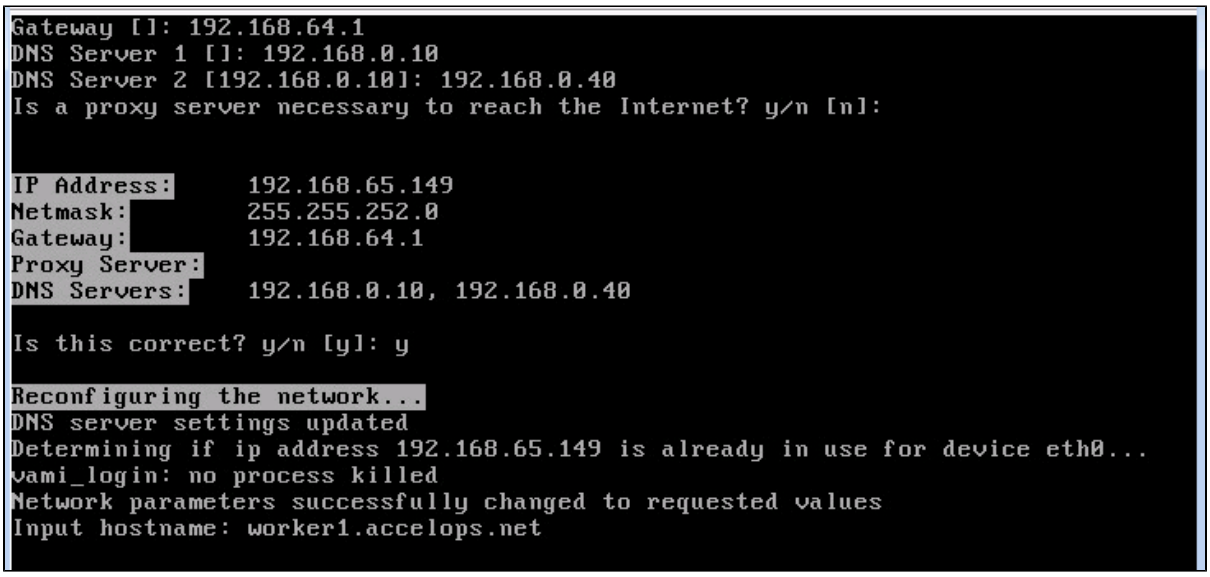
```
/opt/vmware/share/vami/vami_config_net
```



4. Configure Network with Static IP address
    a. The following information is required to configure Static IP address:
        i. IP Address
        ii. Netmask
        iii. Gateway
        iv. DNS Server(s)

> **Proxy Server**
>
> Do not configure the proxy server setting.

    b. Press the 'y' key to accept the changes
    c. Enter 'Host name' and press 'Enter' key



Step 4: Select Mount Point to store your data

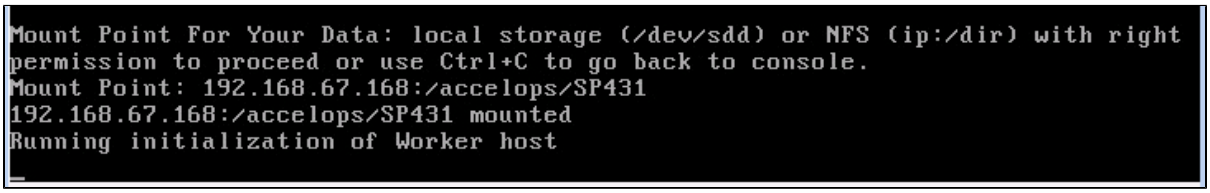
The AccelOps Worker can be installed using NFS storage.

Choose only following Step 4.1 or 4.2 based on Section 3

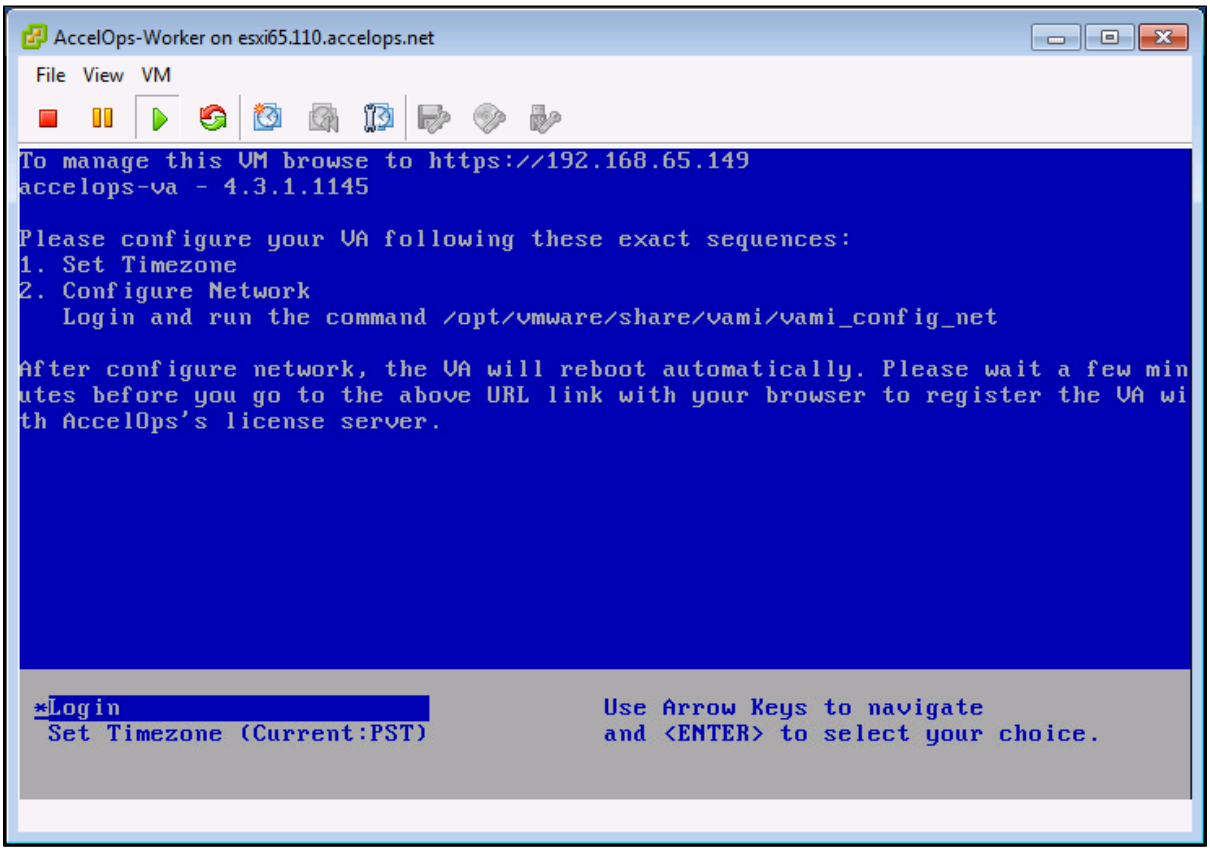
1. Enter Supervisor's NFS mount point location

NFS Mount point

```
<NFS_Server_IP_Address>:/<Supervisor_Mount_Directory_Path>
```



2. After mount point, Worker will reboot automatically
   In 3mins, Worker will be configure successful.

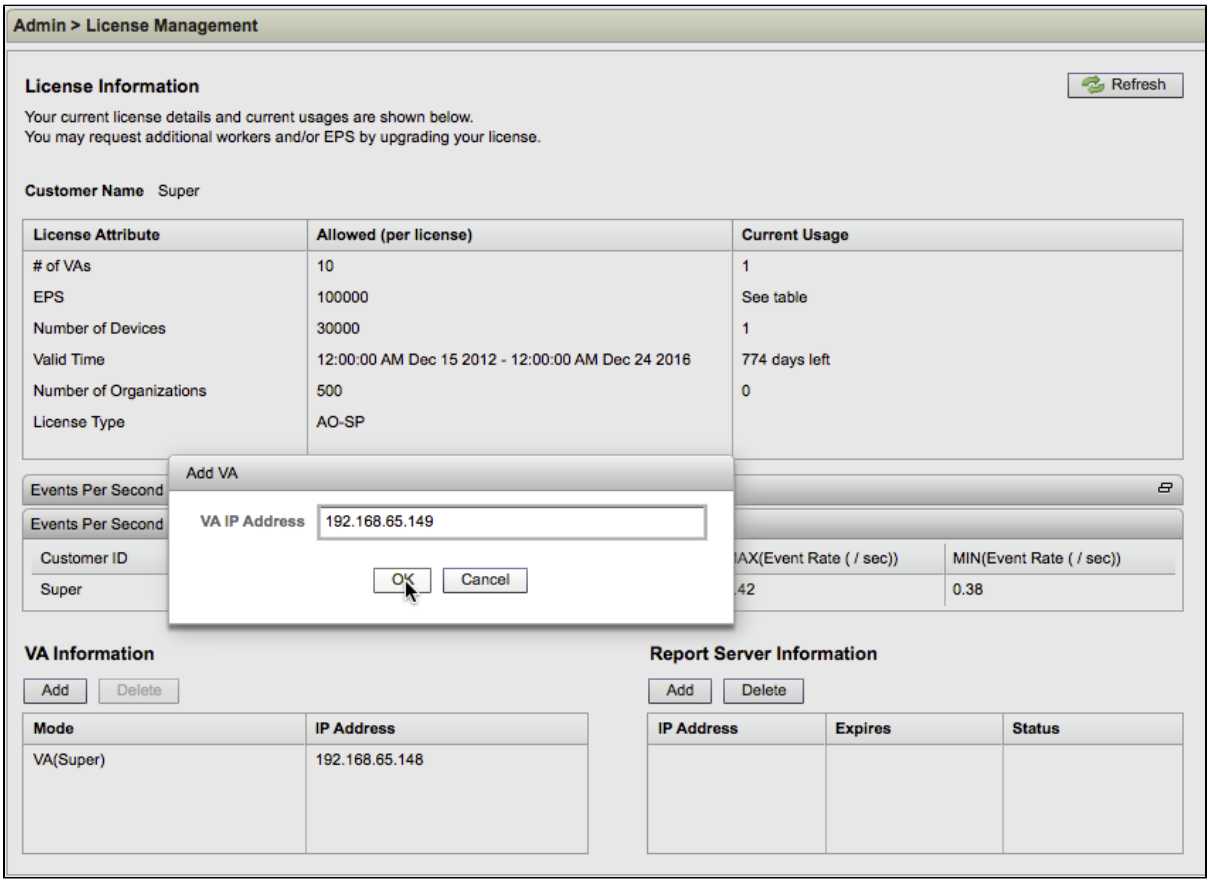


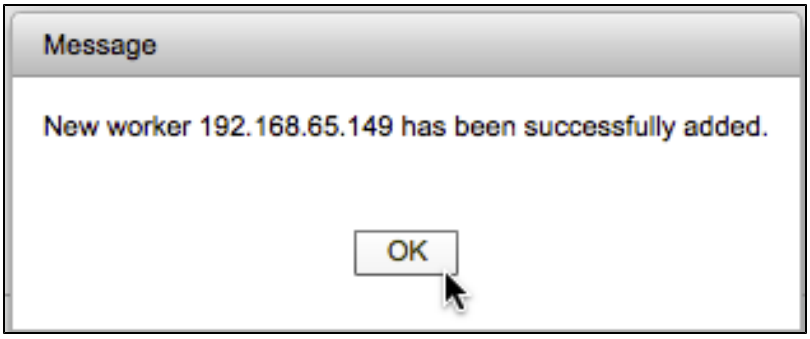
Section 5: Register the Worker to Supervisor

Step 1: Register AccelOps Worker to Supervisor

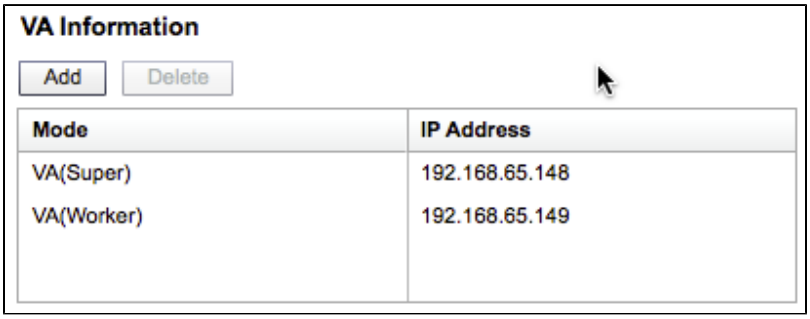
1. In browser windows, enter 'https://<Supervisor IP>'
2. Enter the default log in credentials
   User ID: **admin**
   Password: **admin*1**
   Cust/Org ID: **super**

3. Go to Admin > License Management > VA Information, Click on 'Add' button and Enter new Worker IP address.

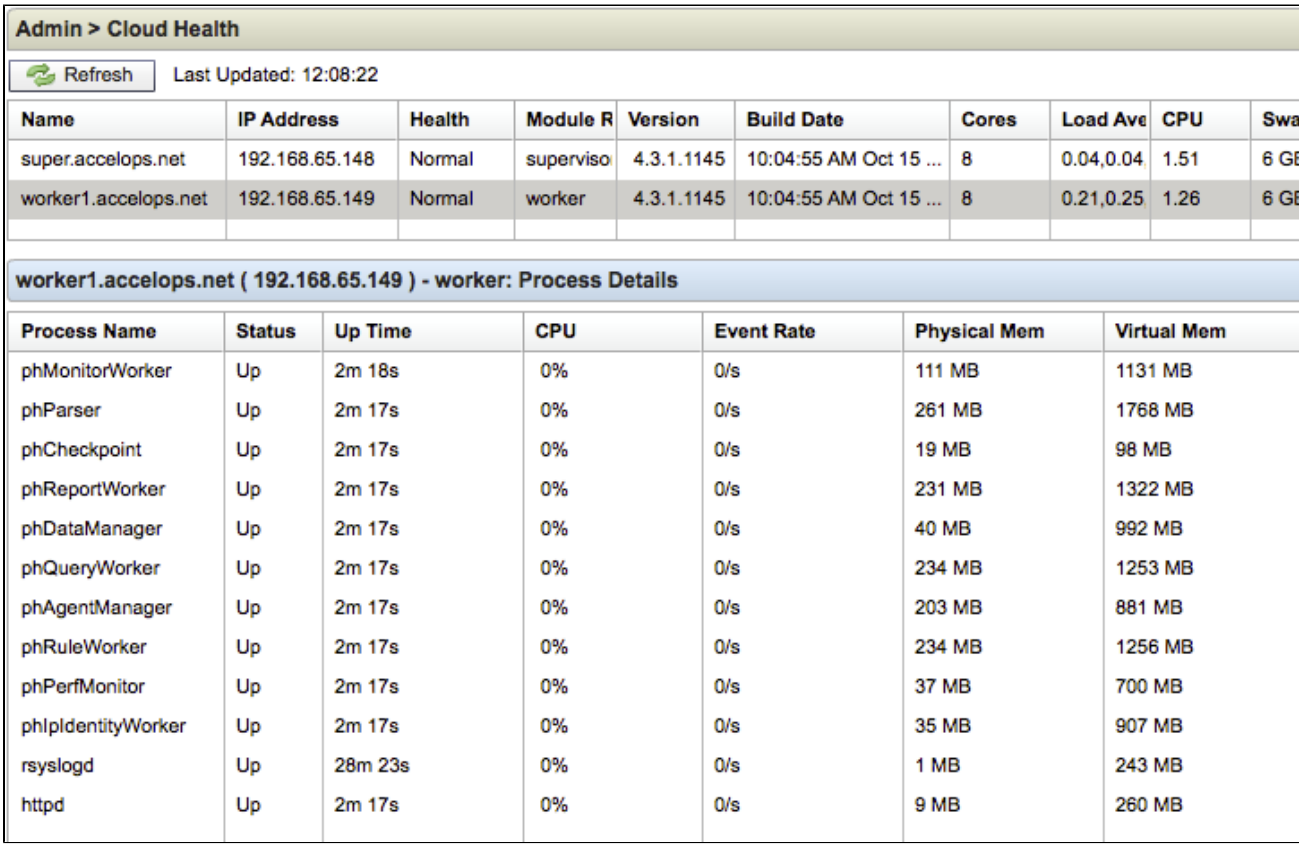




4. New Worker will configure successful in 2mins and Check new Worker IP address in VA information tab.



5. Go to Admin > Cloud Health and check Worker health.

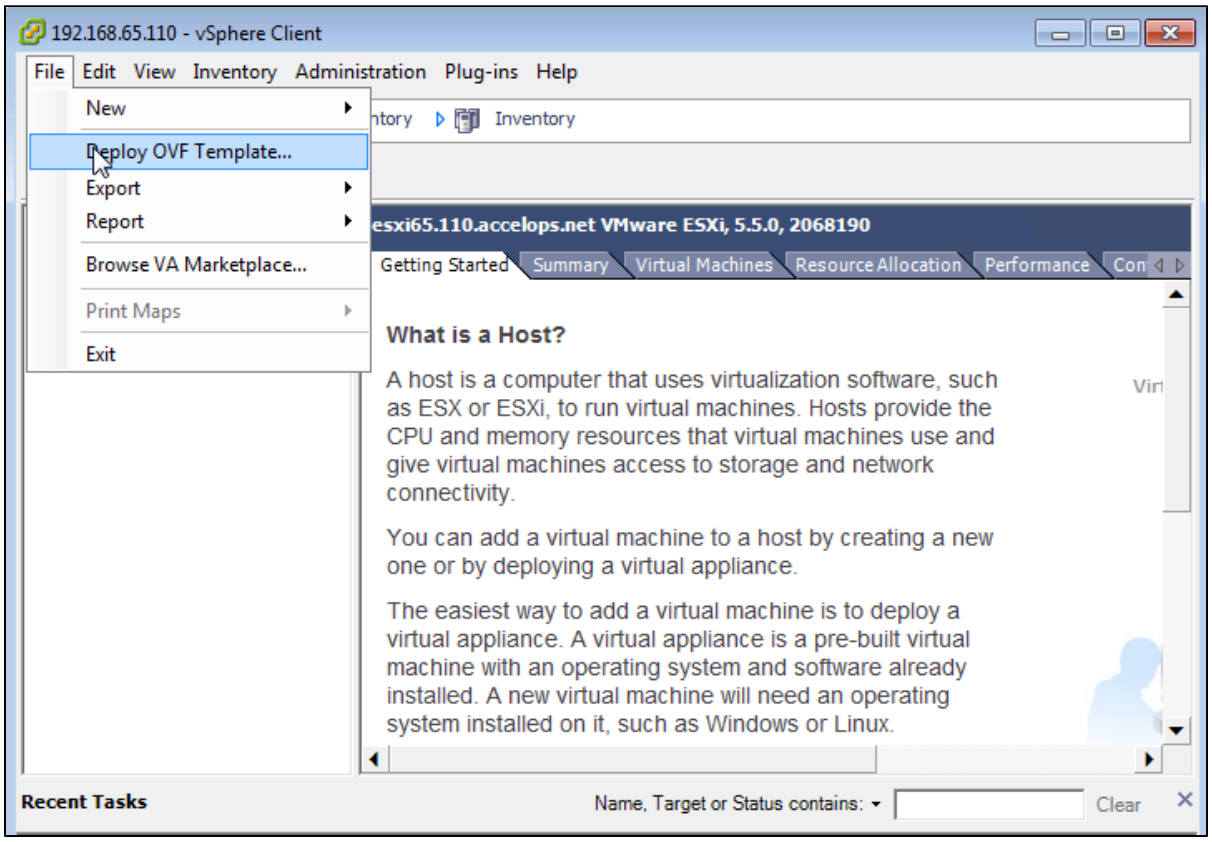


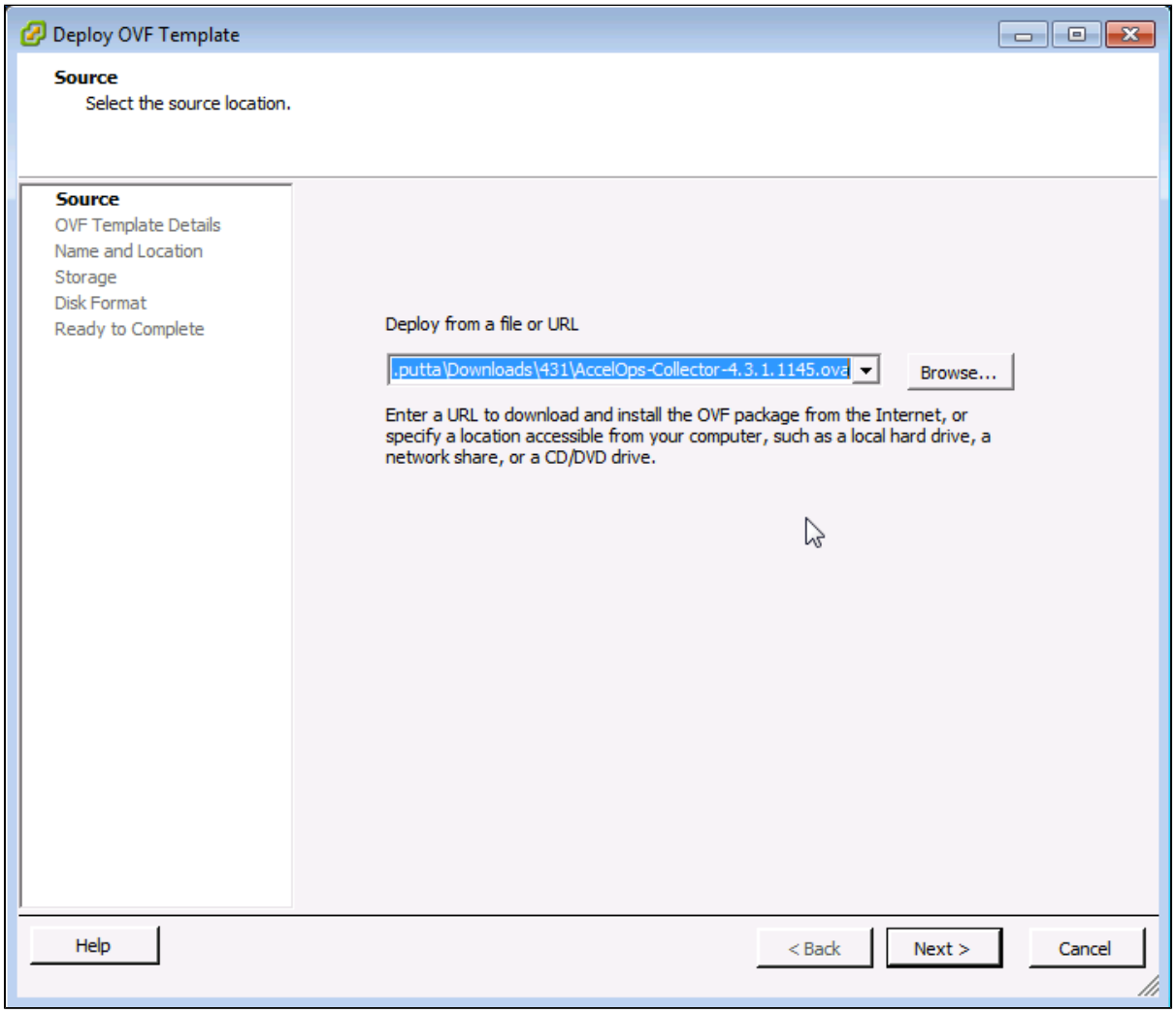
Installing a Collector node

Section 1: Import a Collector image into VMware ESX server

Step 1: Begin importing Collector

1. Download Collector OVA package from AccelOps image server
2. Log into VMware vSphere Client
    a. Click on File -> Select Deploy OVF Template
    b. Click on Browse button to choose OVA file
    c. Locate Collector .ova file (Example: AccelOps-Collector-4.3.1.1145.ova

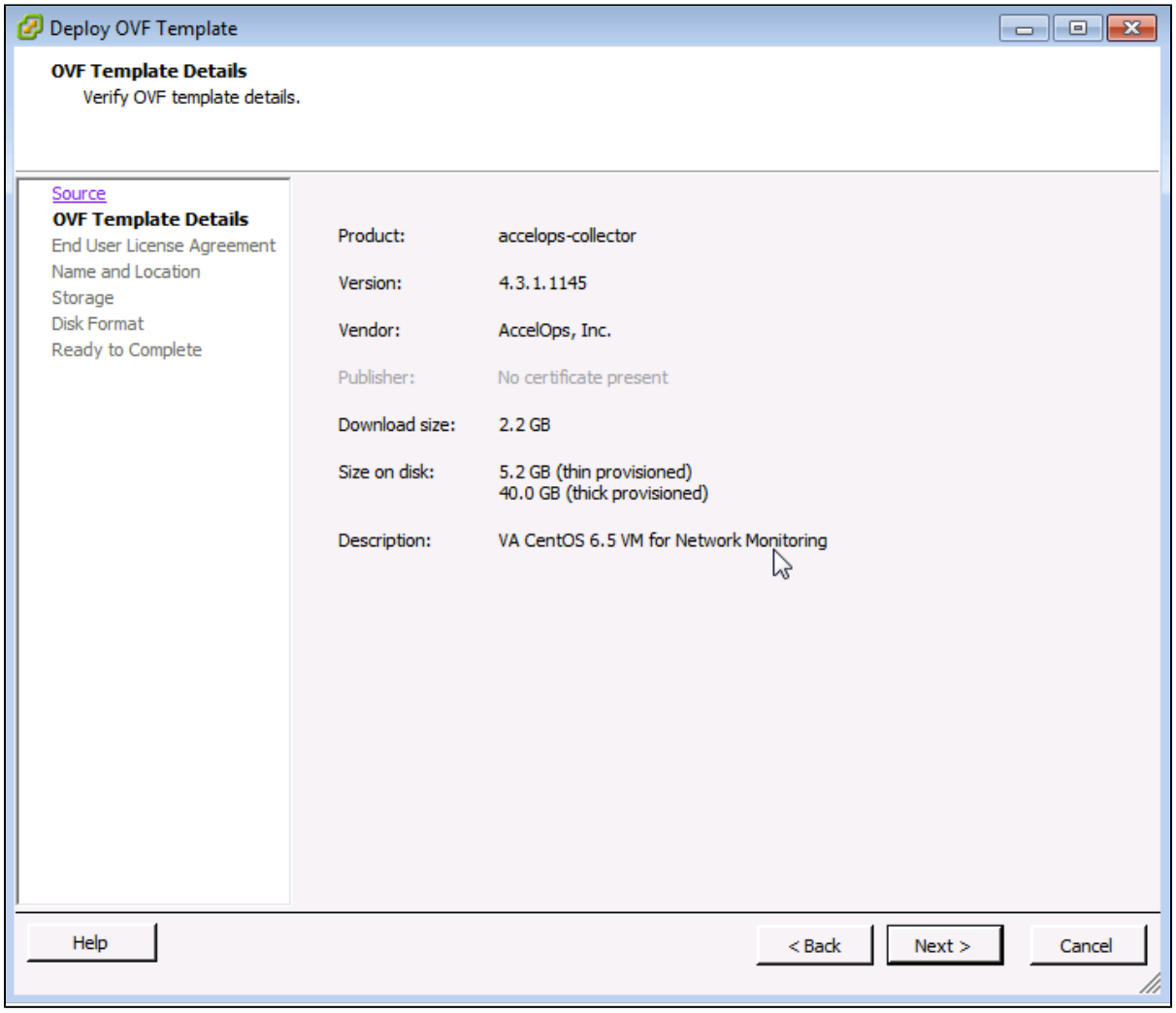



Deploy OVF Template
Source
Select the source location.
Source
OVF Template Details
Name and Location
Storage
Disk Format
Ready to Complete
Deploy from a file or URL
.putta\Downloads\431\AccelOps-Collector-4.3.1.1145.ova
Browse...
Enter a URL to download and install the OVF package from the Internet, or specify a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.
Help
< Back
Next >
Cancel

Step 2: Review the Virtual Appliance details

OVF Template details will tell you how big the file is to import and how mush disk space it will take up in your selected ESX server.

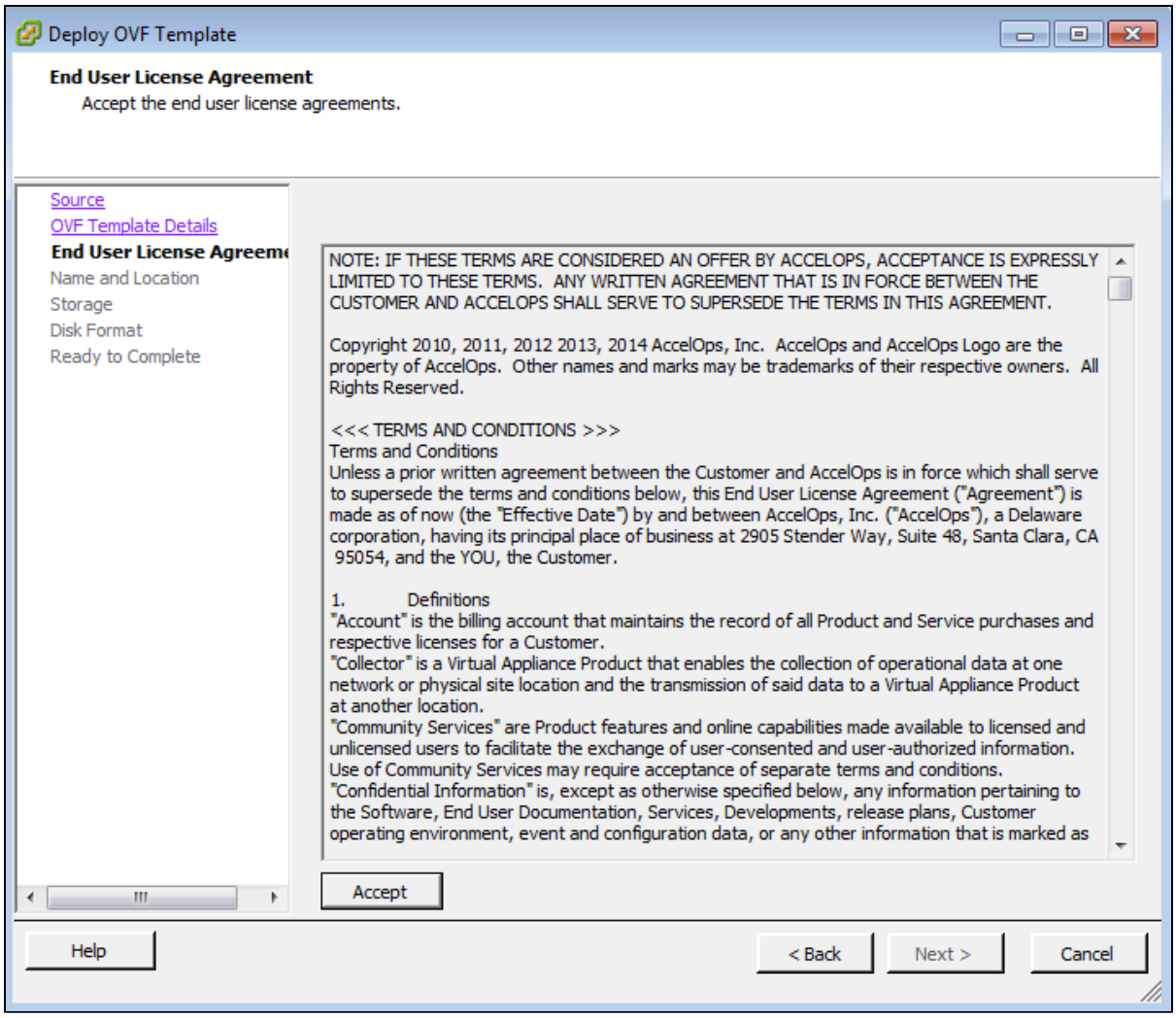
1. Click the 'Next' button



Step 3: End User License Agreement

To continue you must accept the End User License Agreement.

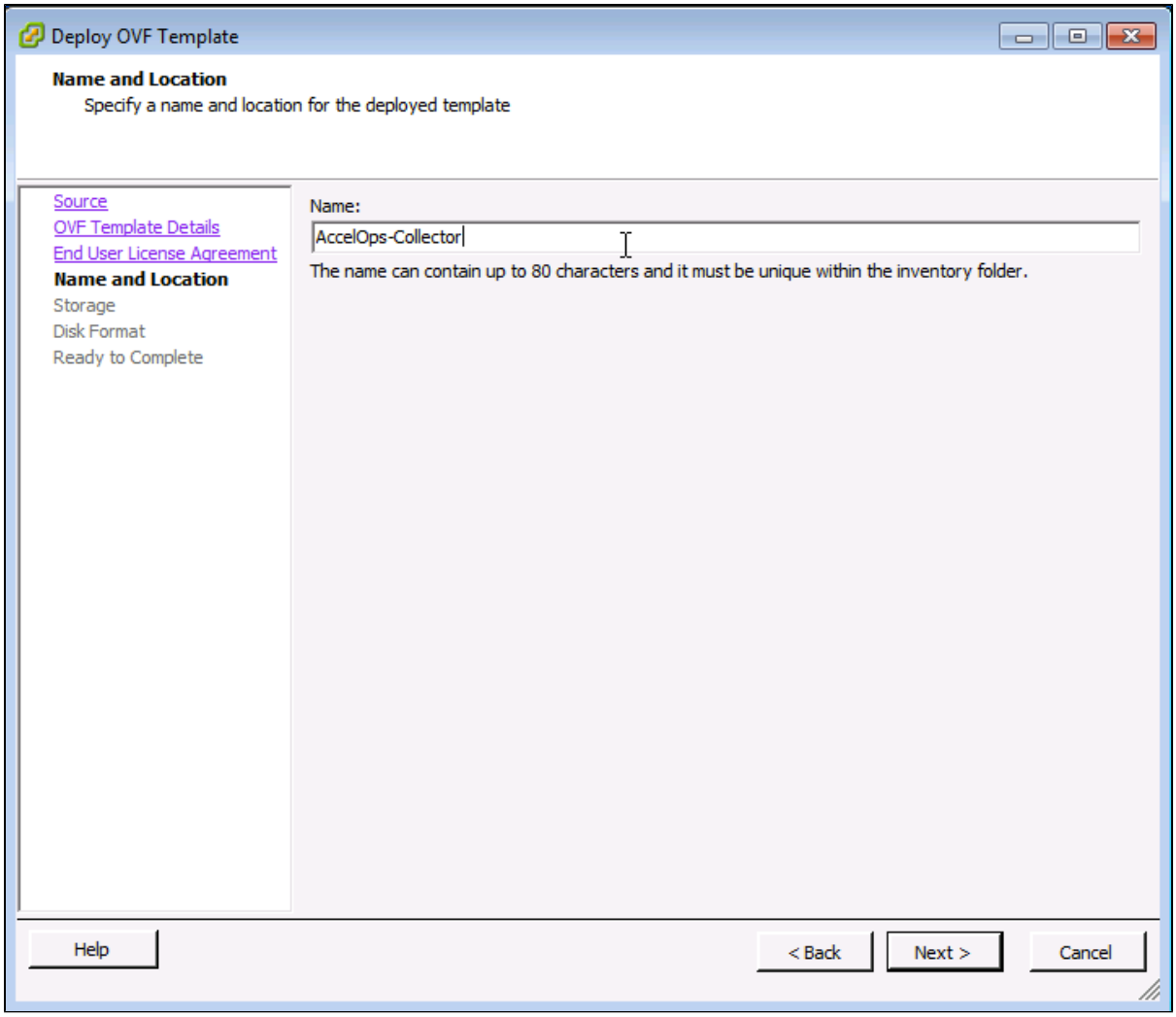
1. Click on 'Accept' button on License Agreement
2. Click on 'Next' button



Step 4: Name and Location

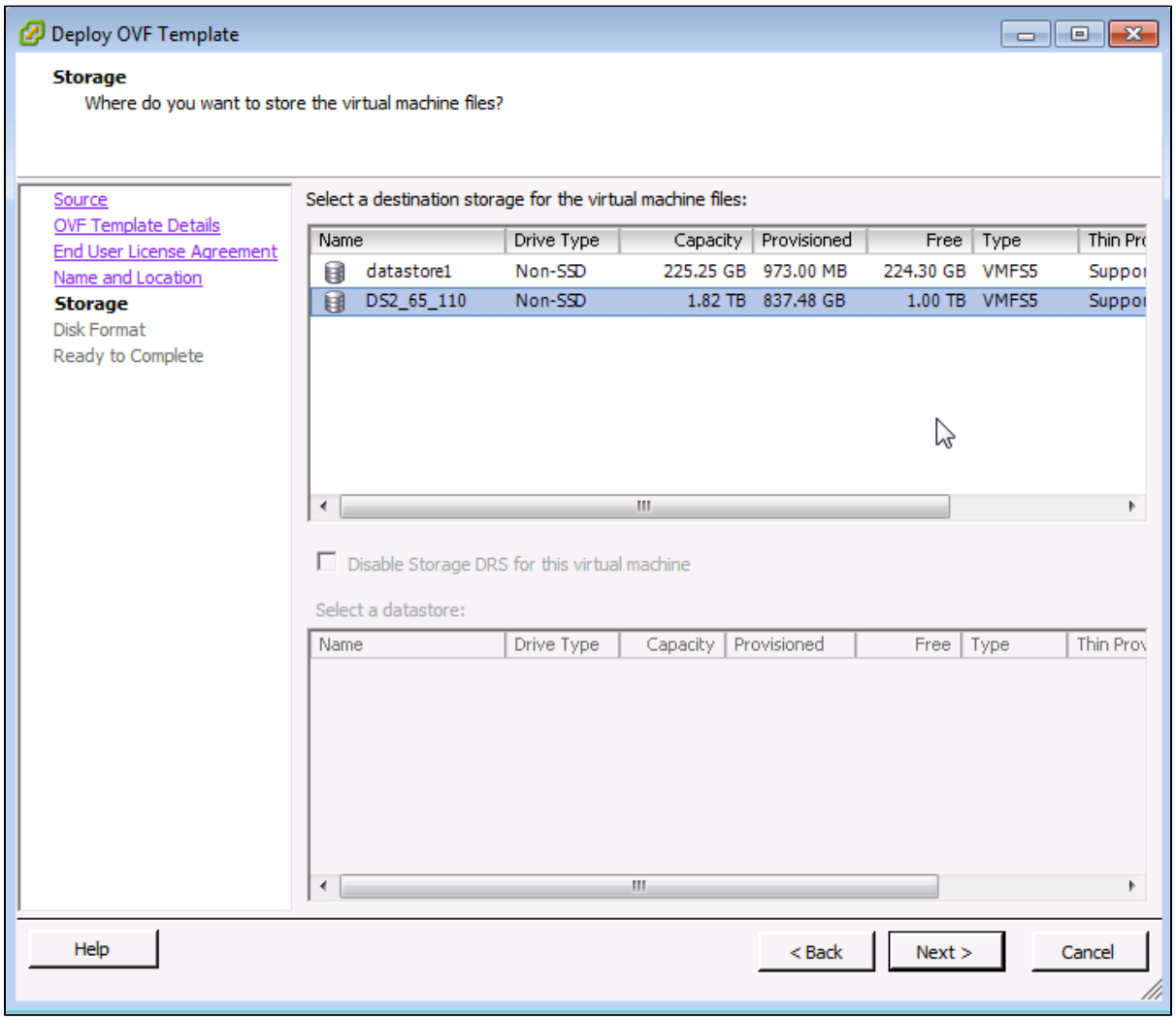
Enter a name for the Virtual Appliance that is being imported. This name is independent of the host name and is only visible within the ESX environment.

1. Enter a Collector name and Click on 'Next' button



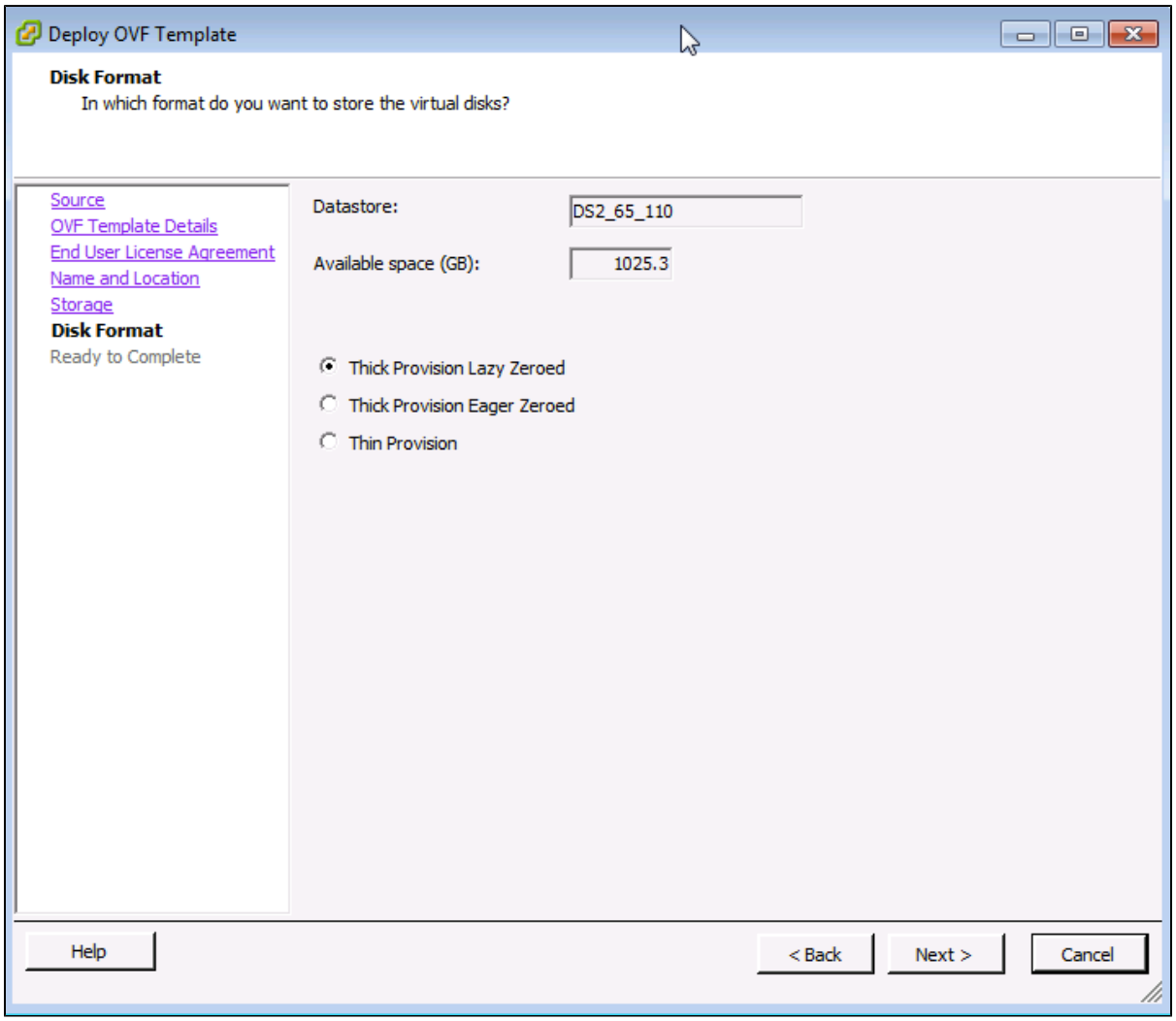
Step 5: Storage

1. Select the desired storage location(Data store) and Click on 'Next' button



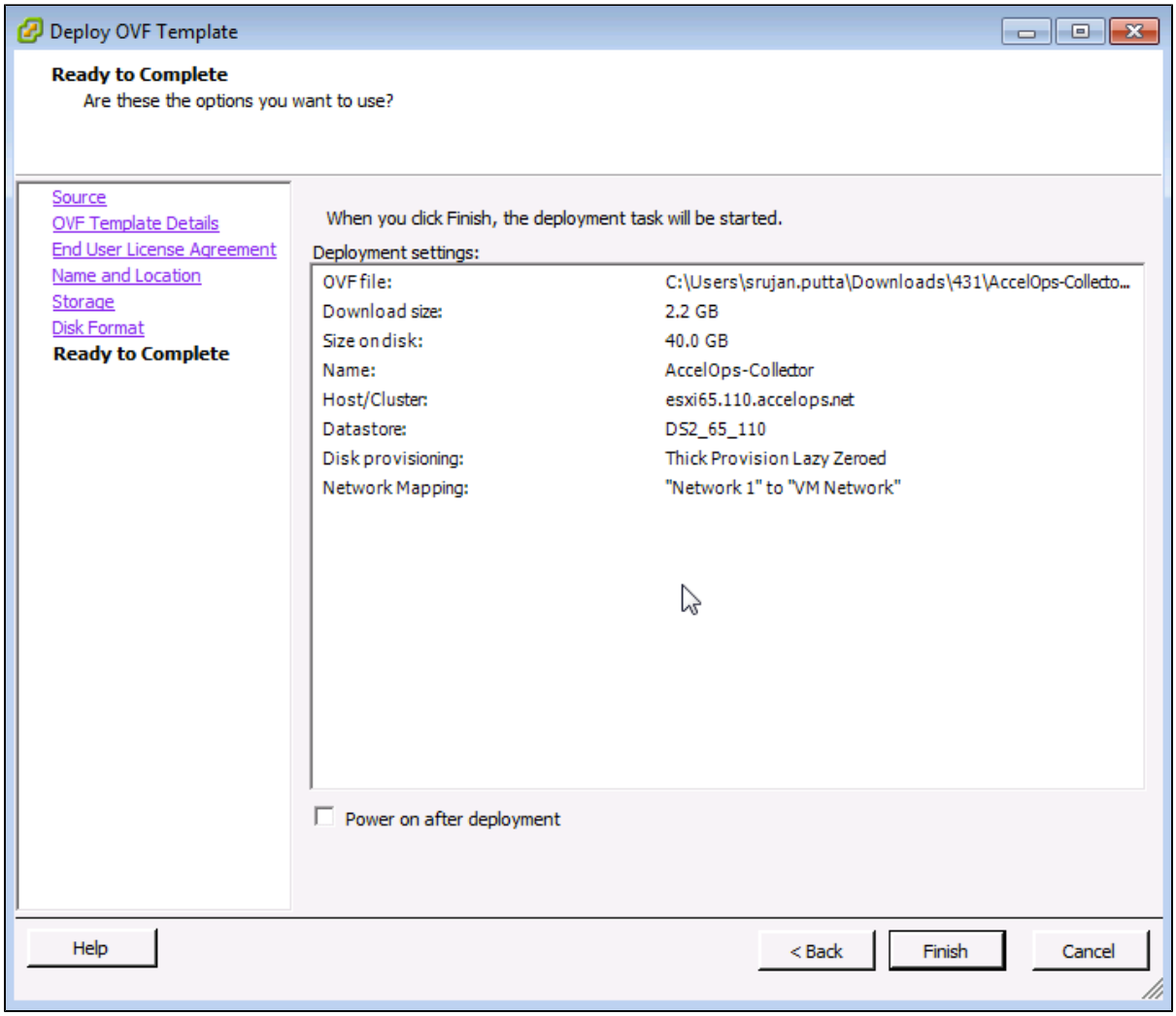
Step 6: Disk Format

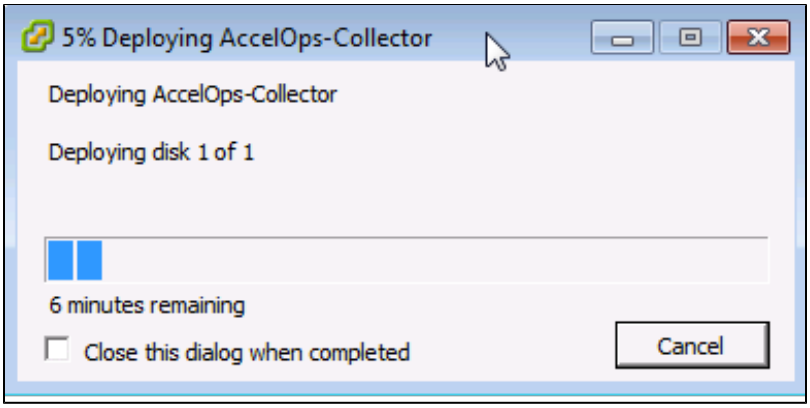
1. Select the Disk format as 'Thick Provision' (recommended) and Click on 'Next' button

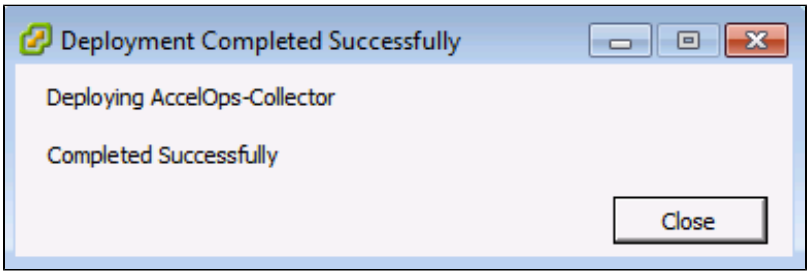


Step 7: Ready to Complete

1. Review the Collector resources and Click on 'Finish' button to begin importing Virtual Appliance
2. Virtual Appliance import will takes 5 to 7mins to complete. Do not turn off or reboot the system during this time


Deploy OVF Template
Ready to Complete
Are these the options you want to use?
Source
OVF Template Details
End User License Agreement
Name and Location
Storage
Disk Format
Ready to Complete
When you click Finish, the deployment task will be started.
Deployment settings:
OVF file: C:\Users\srujan.putta\Downloads\431\AccelOps-Collecto...
Download size: 2.2 GB
Size on disk: 40.0 GB
Name: AccelOps-Collector
Host/Cluster: esxi65.110.accelops.net
Datastore: DS2_65_110
Disk provisioning: Thick Provision Lazy Zeroed
Network Mapping: "Network 1" to "VM Network"
Power on after deployment
Help
< Back
Finish
Cancel



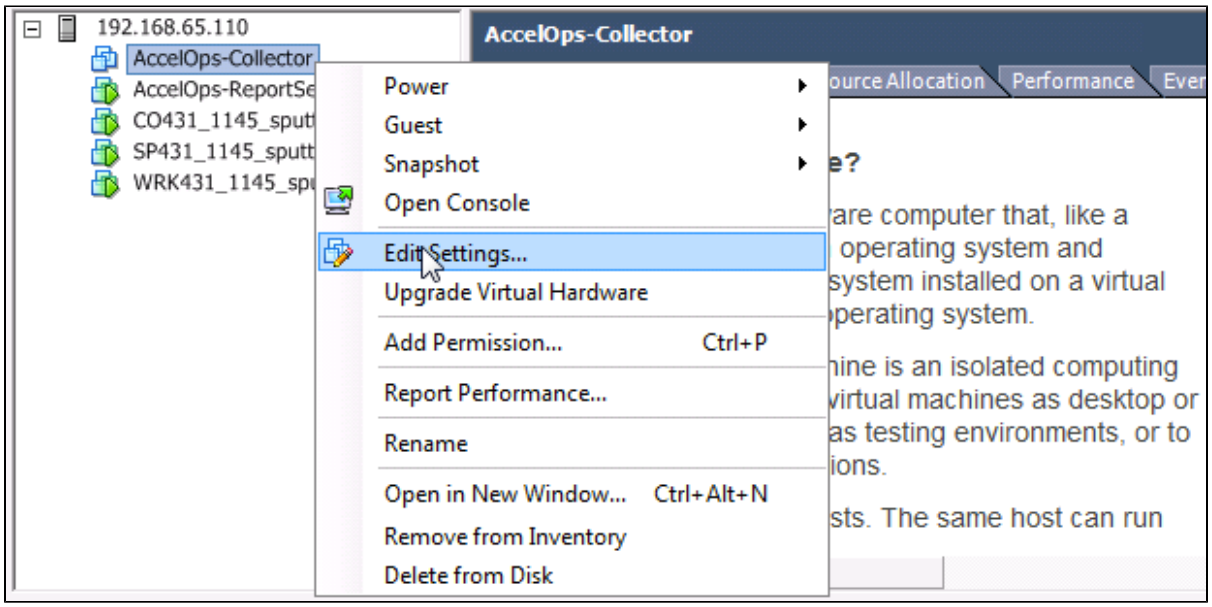


Section 2: Edit the Collector hardware settings

Prior to starting the Collector for the first time it is required to make some modifications to the hardware setting for the Virtual Appliance.

Step 1: Edit Settings

1. From the VMware vSphere client, Select the imported Collector Virtual appliance
2. Right mouse click and select Edit Settings



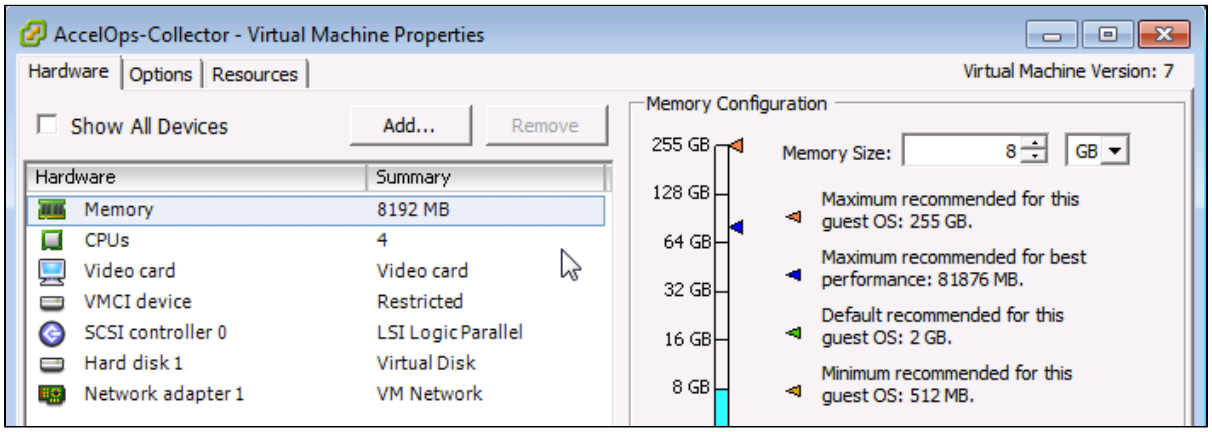
Step 2: Verify Allocated Memory

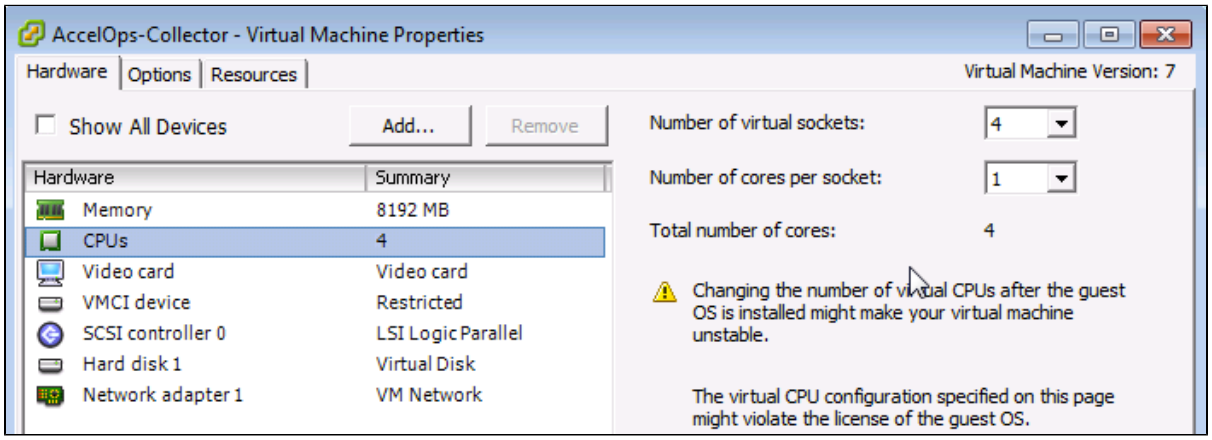
1. On Hardware tab, Click on Memory and verify the memory to at least 8 GB

Allocate more memory for large deployments

For large deployments you should allocate at least 24GB of memory. See the section on Collector Hardware requirements in the topic Must Read Prior to Install for more information.

2. Click on CPUs, verify the CPU cores to at least 4 cores





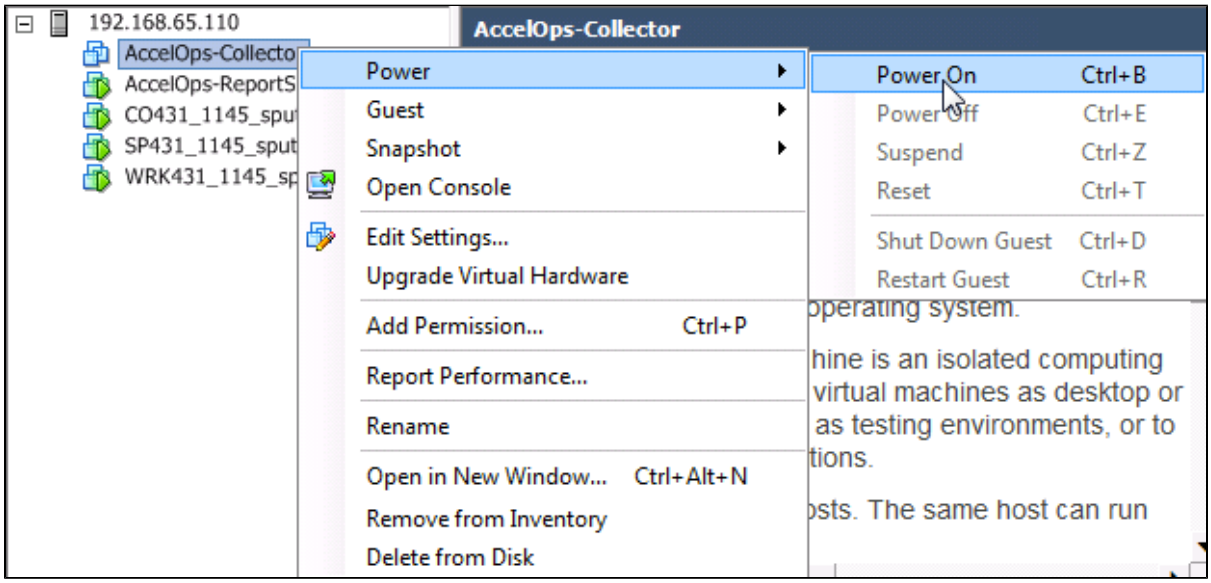
Section 3: Configure the Collector from the VMware Console

Note

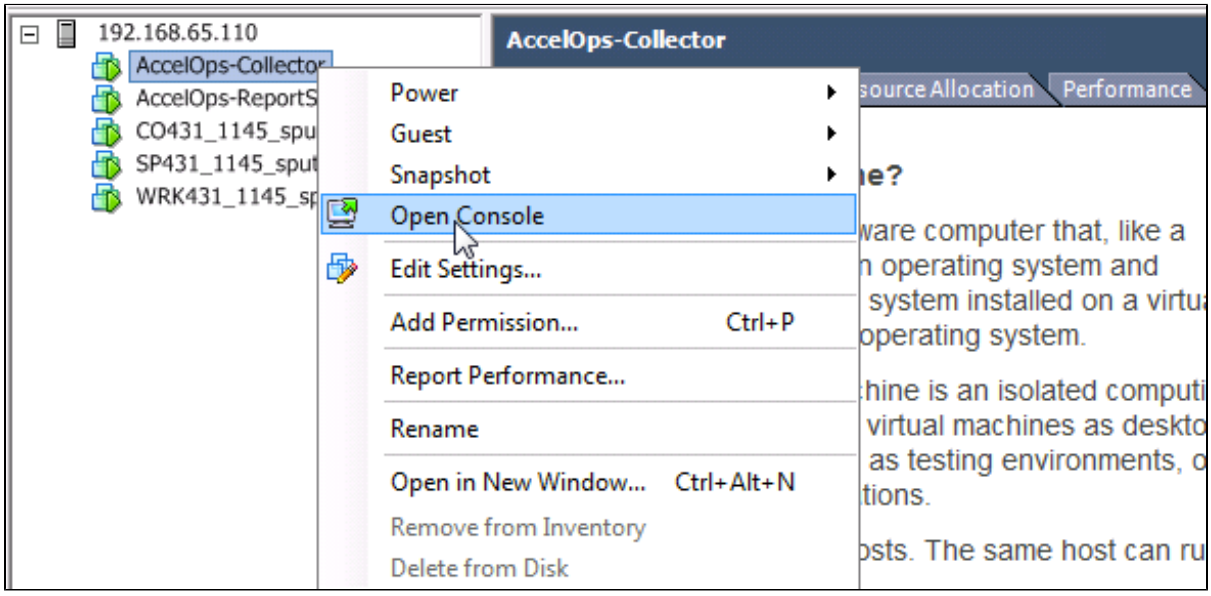
While in the VM console window do not press any control keys during the installation. Doing so might cause the installation to stop and not to precede any further. For example Ctrl – C or Ctrl – Z. If this occurs you must erase the VA and start over from the beginning.

Step 1: Start Collector

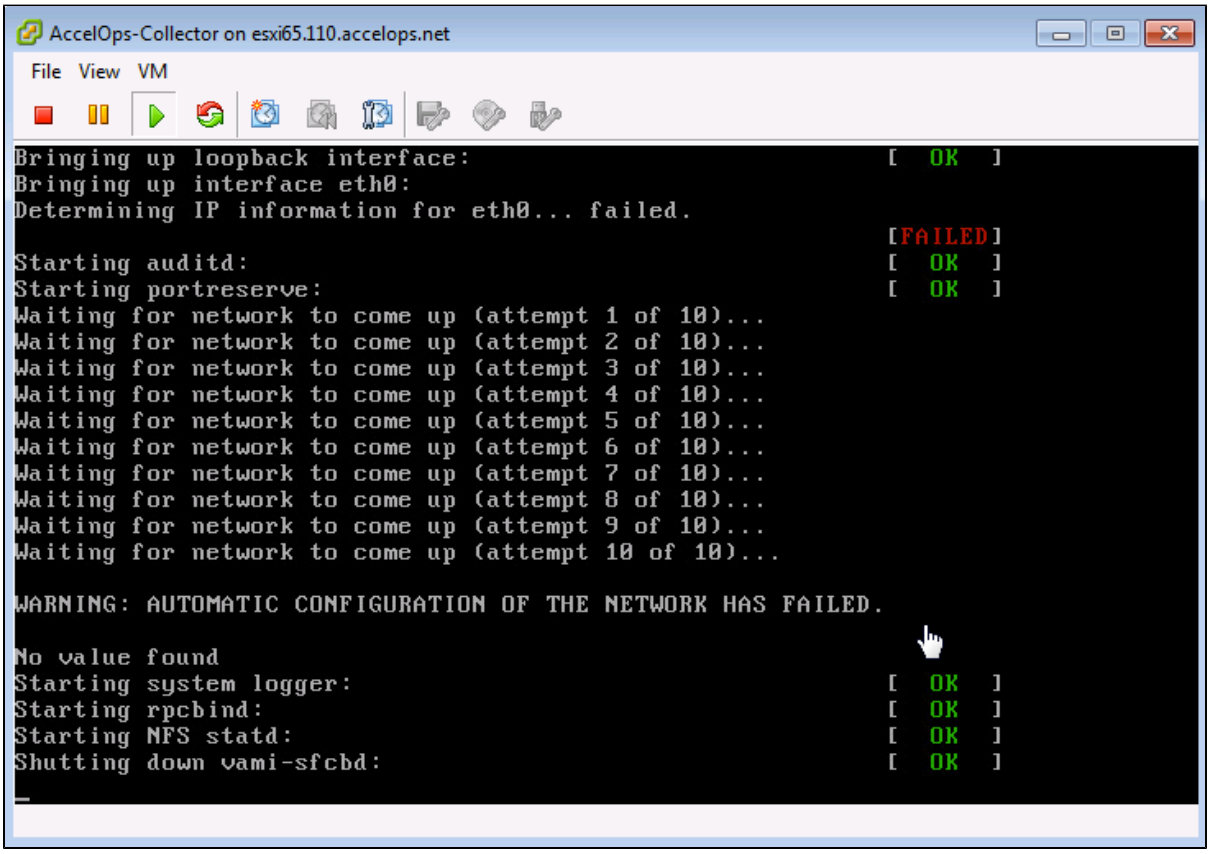
1. From the VMware vSphere client, Select recently imported Collector Virtual appliance and Power On (Right click > Power > Power On)



2. Open Collector VM Console (Right click > Open Console)



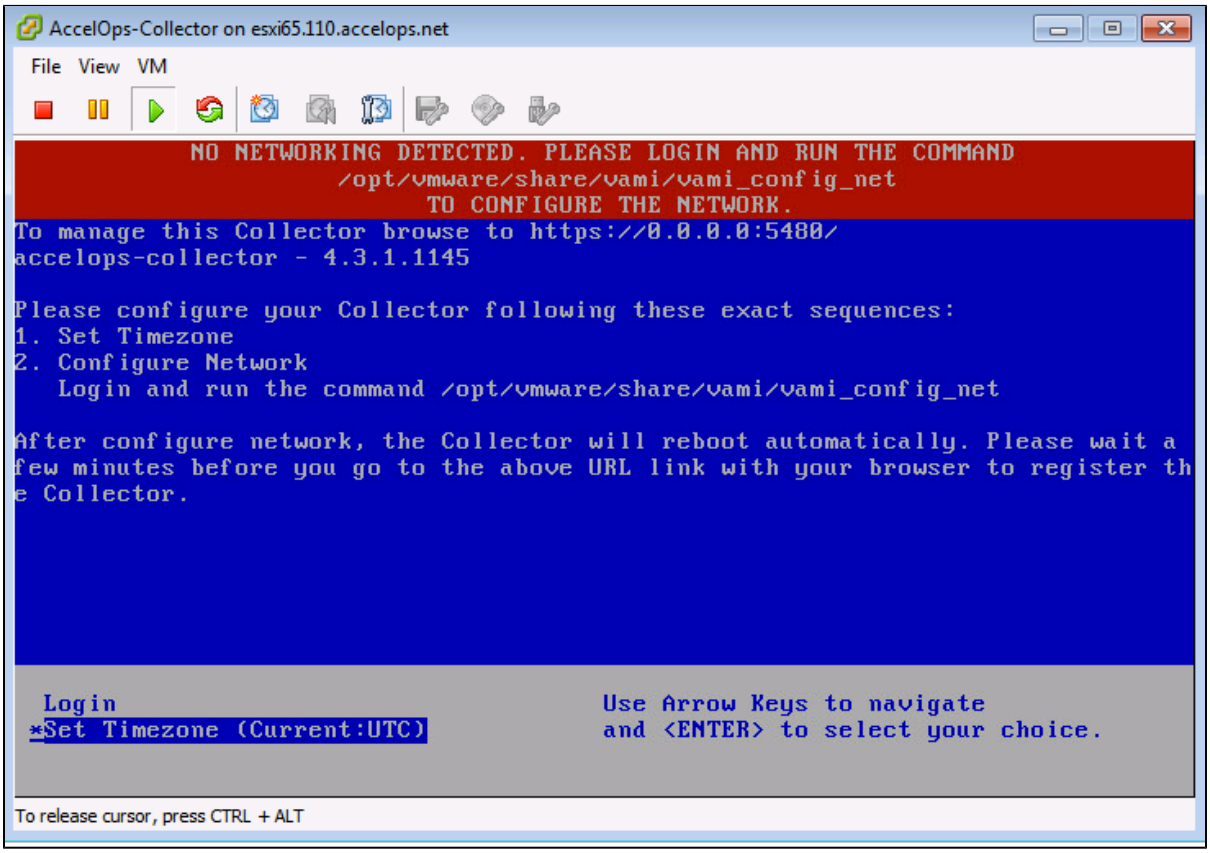
3. Network eth0 Failed message may appear on the screen during the loading, but this is to be expected the first time the AccelOps Collector is started.



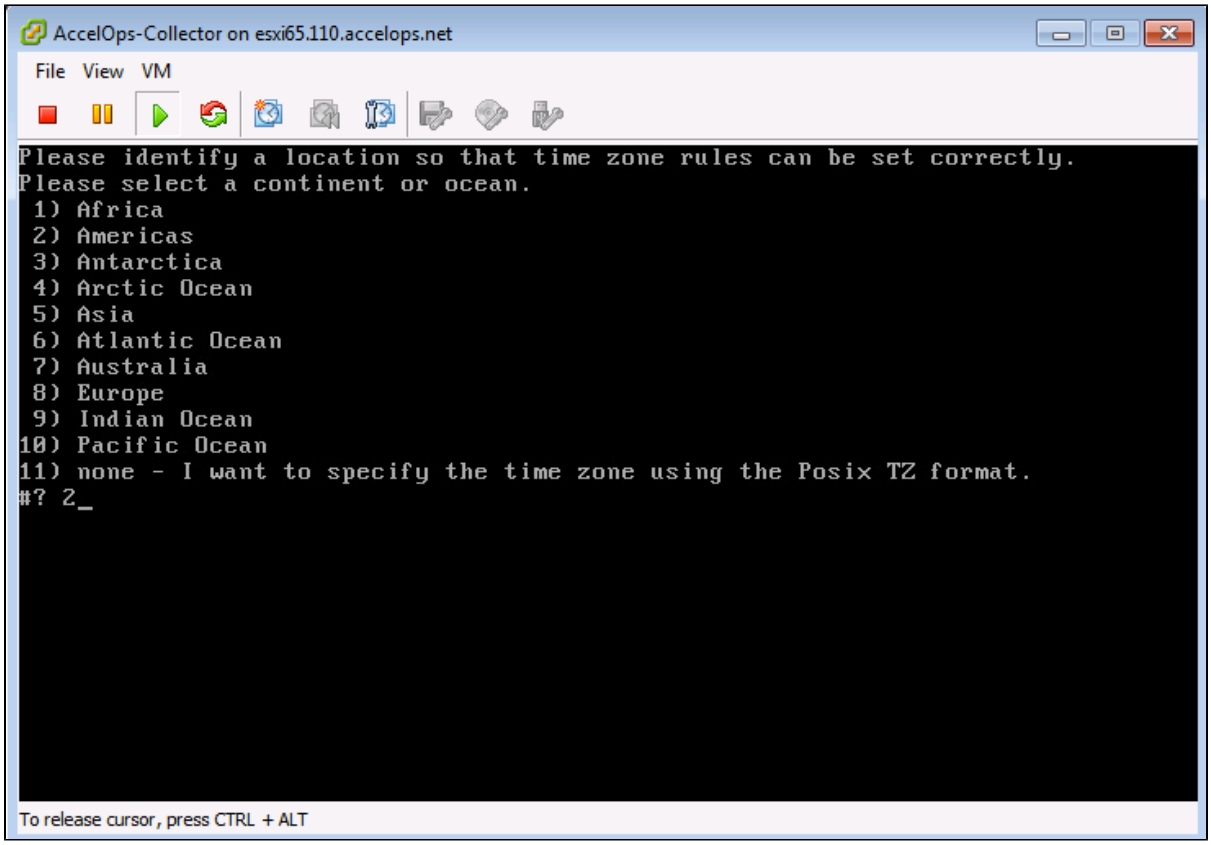
Step 2: Configure the Timezone

It is important to select the correct time zone that you are located in.

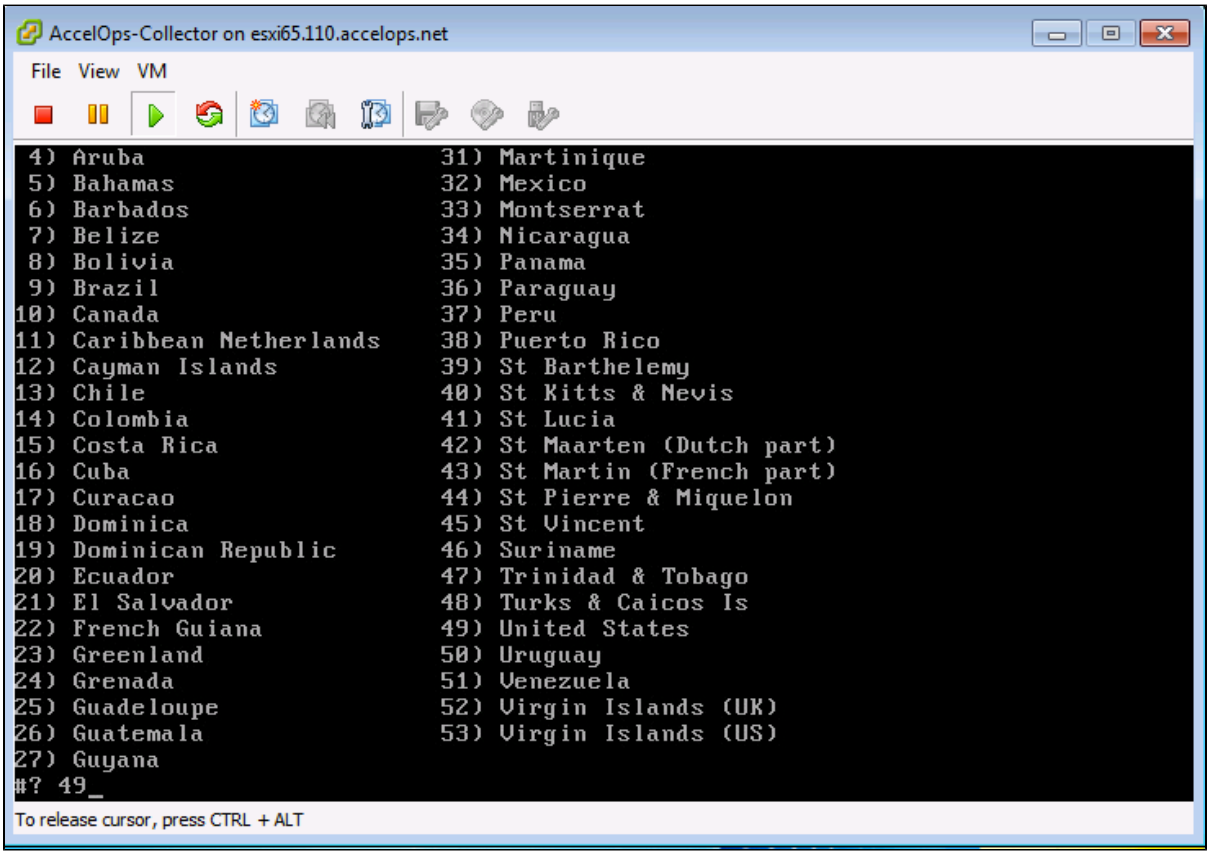
1. On VM console, Select 'Set Timezone' and press the 'Enter' key



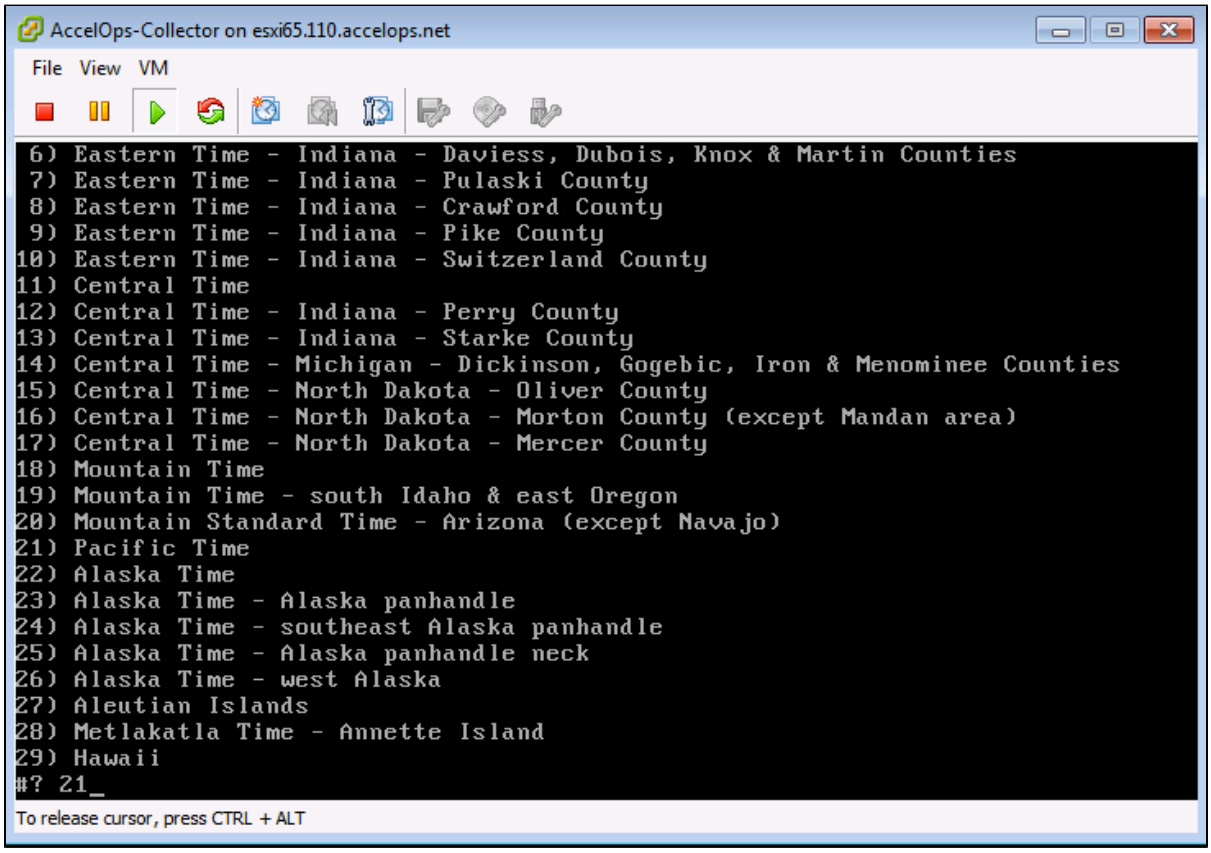
2. Select your Location and press the 'Enter' key



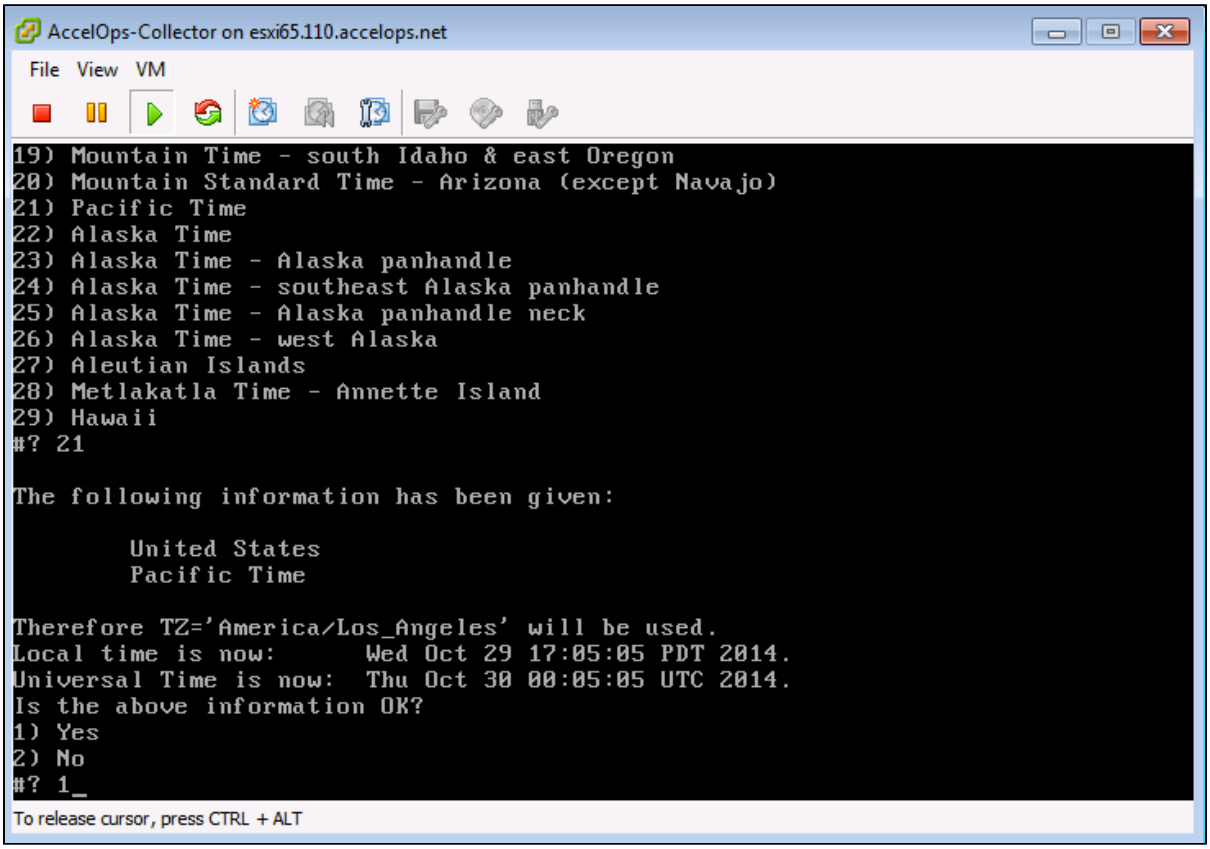
3. Select your Country and press the 'Enter' key



4. Select your Timezone and press the 'Enter' key

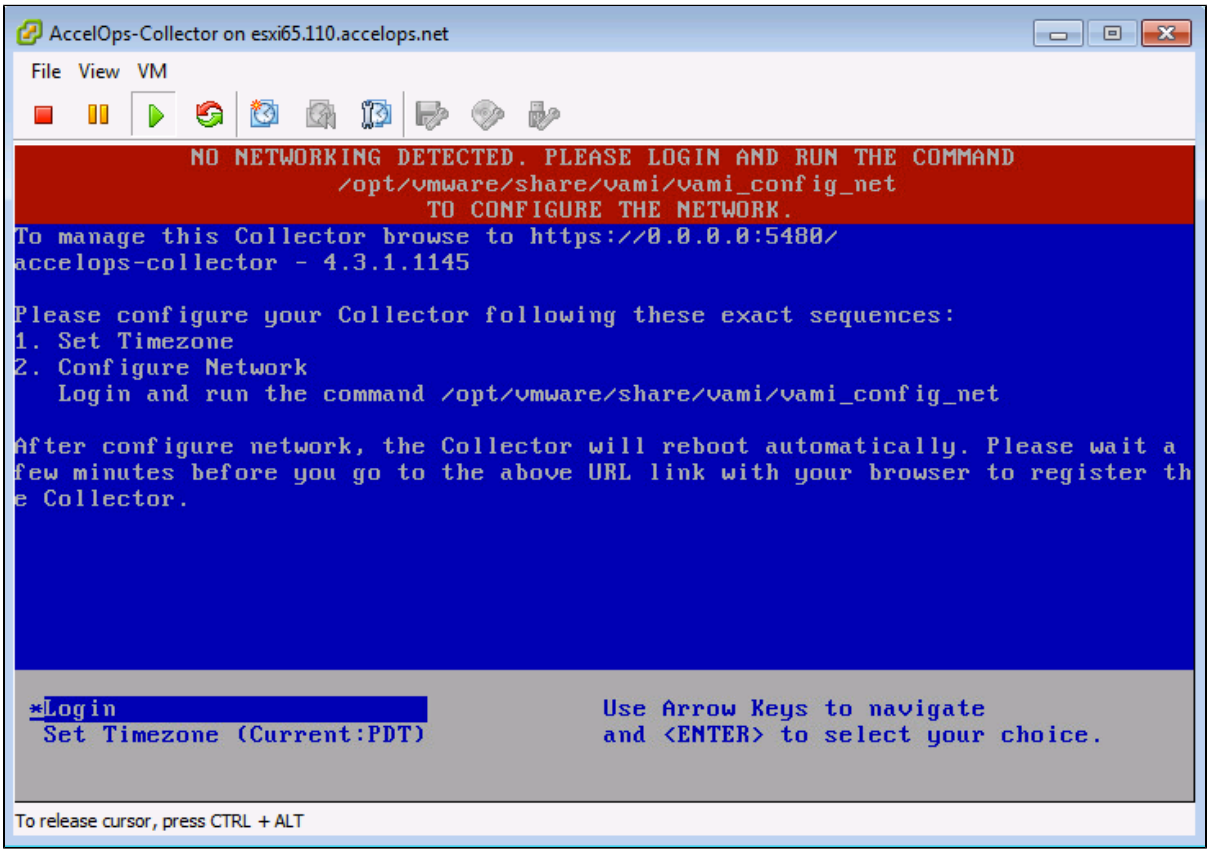


5. Review and Confirm your Timezone selection

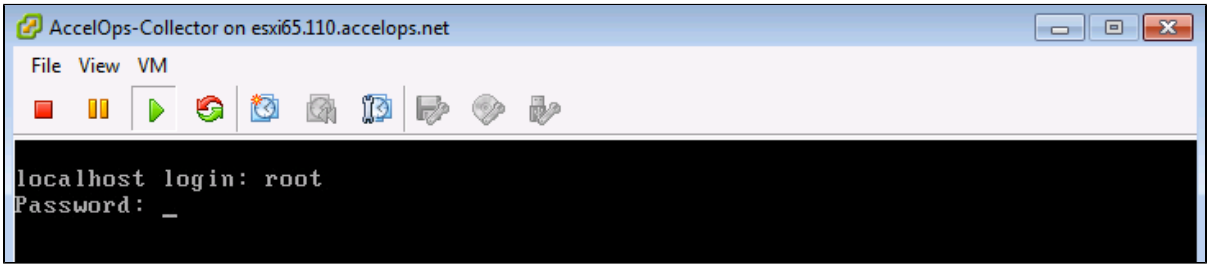


Step 3: Configure the Network

1. On VM console, Select 'Login' and press the 'Enter' key



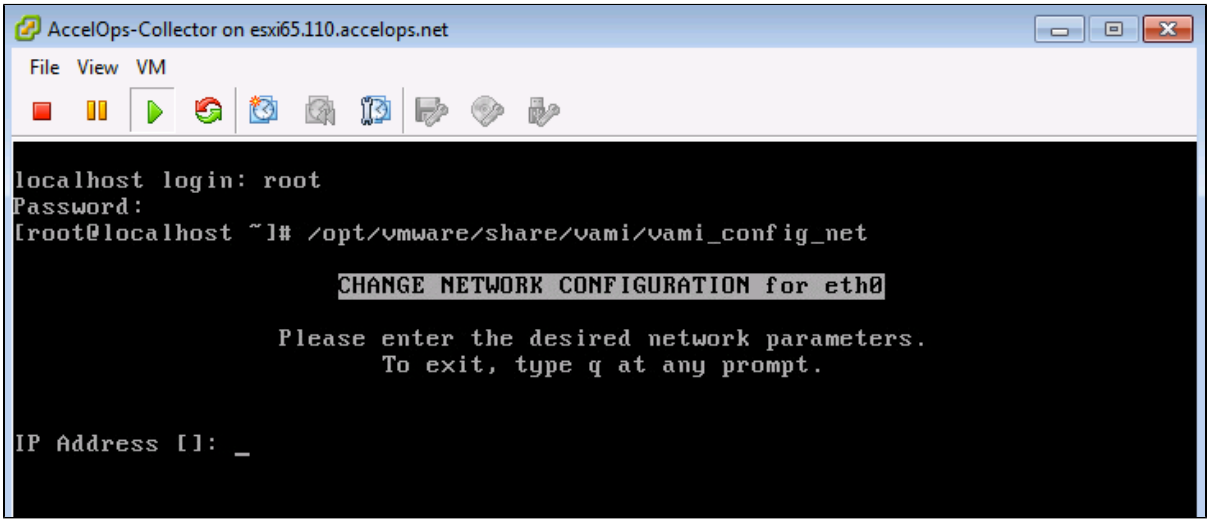
2. Enter default log in information.
   Login: root
   Password: ProspectHills



3. Run vami_config_net script to configure network and installing AccelOps Collector

Configure the Network

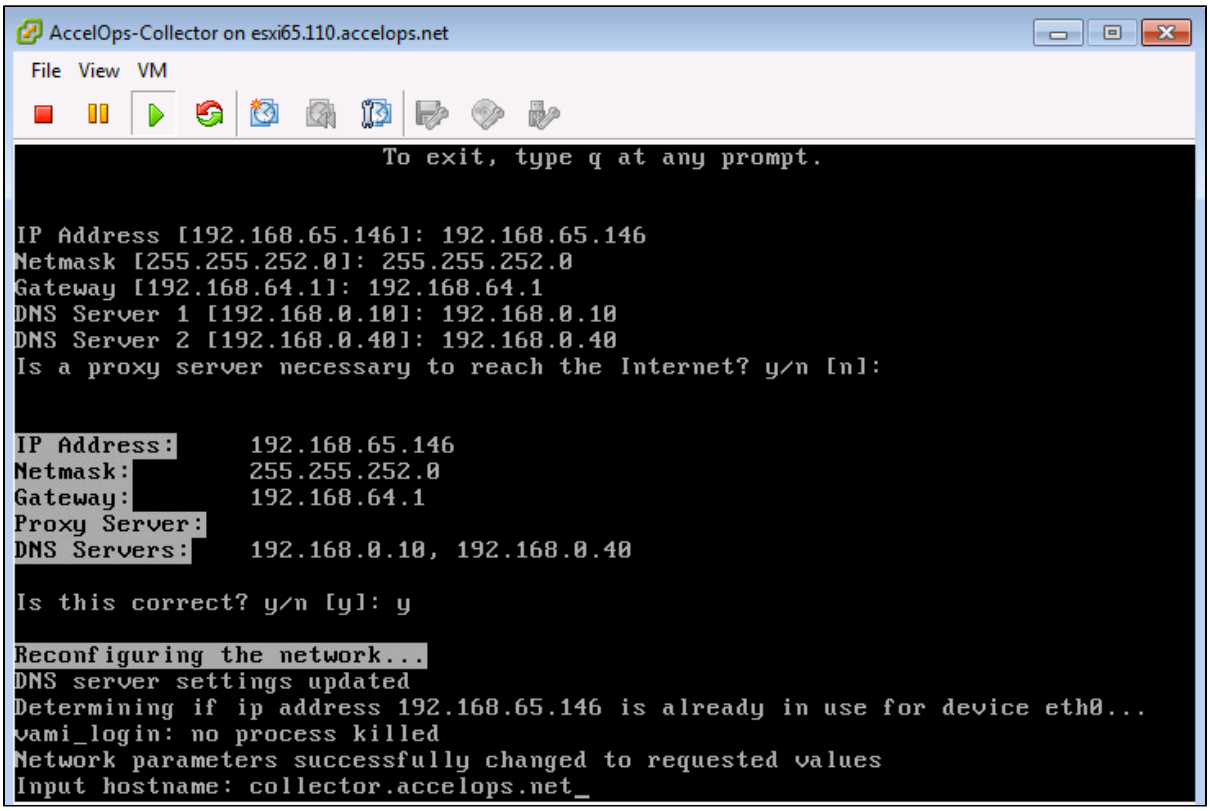
```
/opt/vmware/share/vami/vami_config_net
```



4. Configure Network with Static IP addres
    a. The following information is required to configure Static IP address:
        i. IP Address
        ii. Netmask
        iii. Gateway
        iv. DNS Server(s)

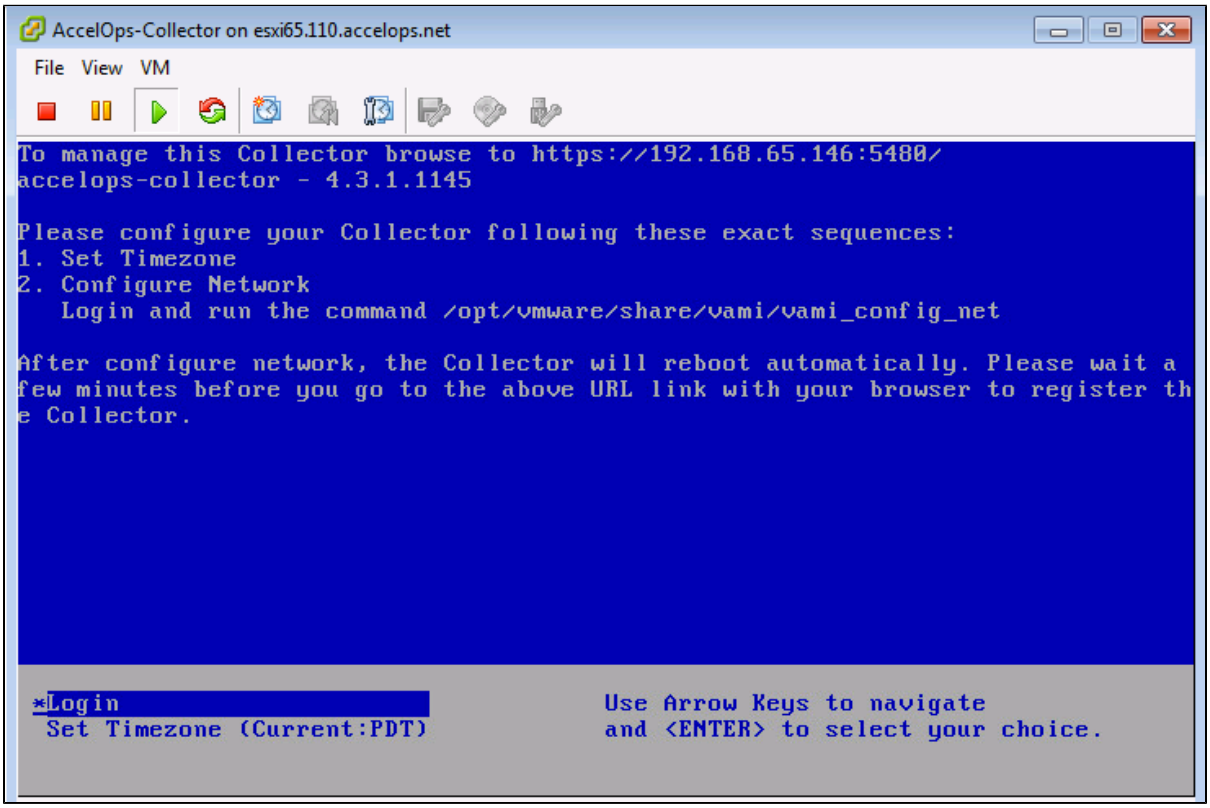
> **Proxy Server**
>
> Do not configure the proxy server setting.

    b. Press the 'y' key to accept the changes
    c. Enter 'Host name' and press 'Enter' key



5. After configuring network, Collector will reboot automatically

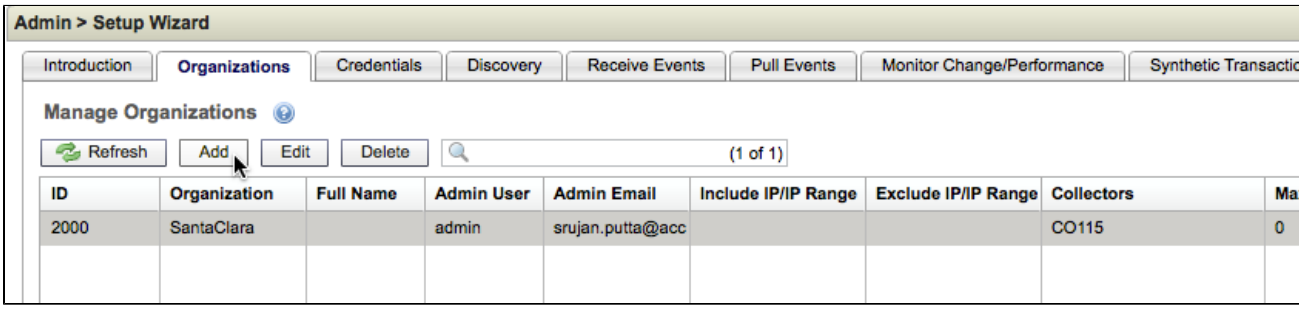
In 3 to 5mins, Collector will be configure successful.



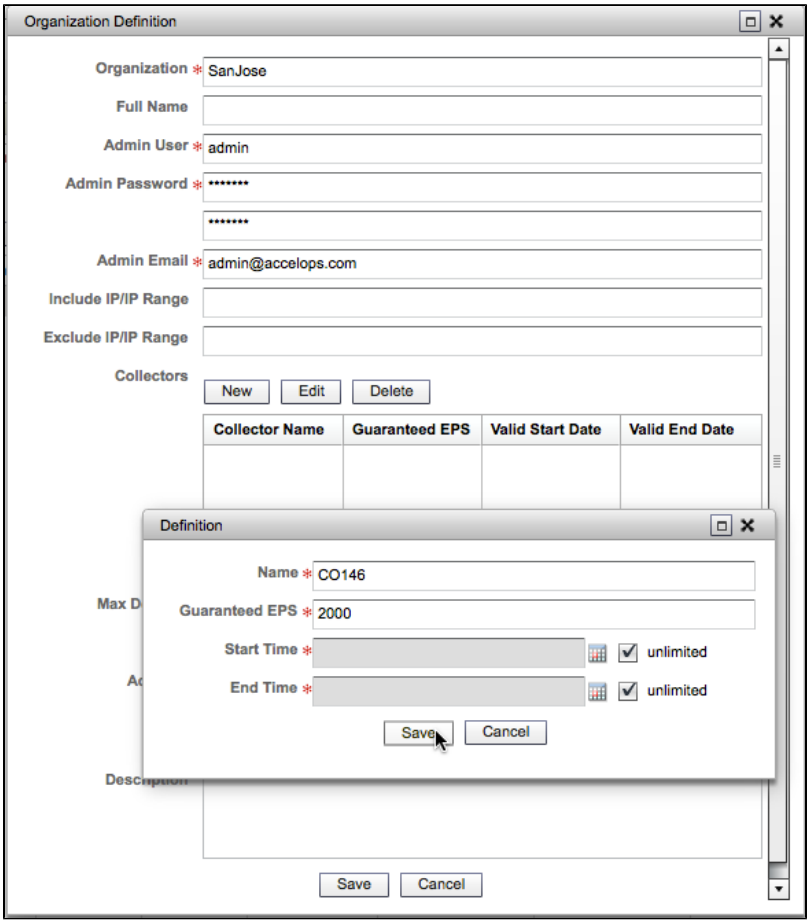
Section 4: Register the Collector to Supervisor

Step 1:Create an Organization on Supervisor UI

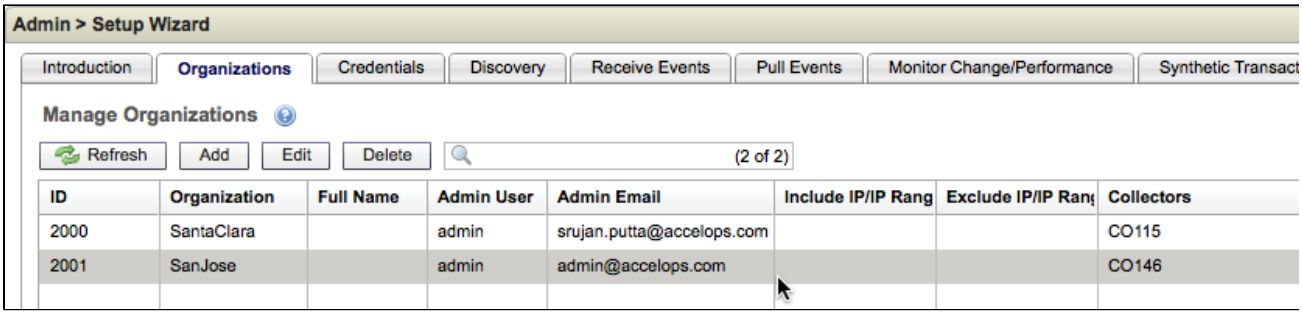
1. Logon to Supervisor UI
2. Go to Admin > Setup Wizard > Organizations > click 'Add'



3. Enter Organization Name, Admin User, Admin Password
   On Collectors section, click 'New' to add Collector enter Collector Name and license parameters
   a. Enter Collector Name
   b. Enter EPS limit
   c. Select valid Start and End times
   d. Click Save

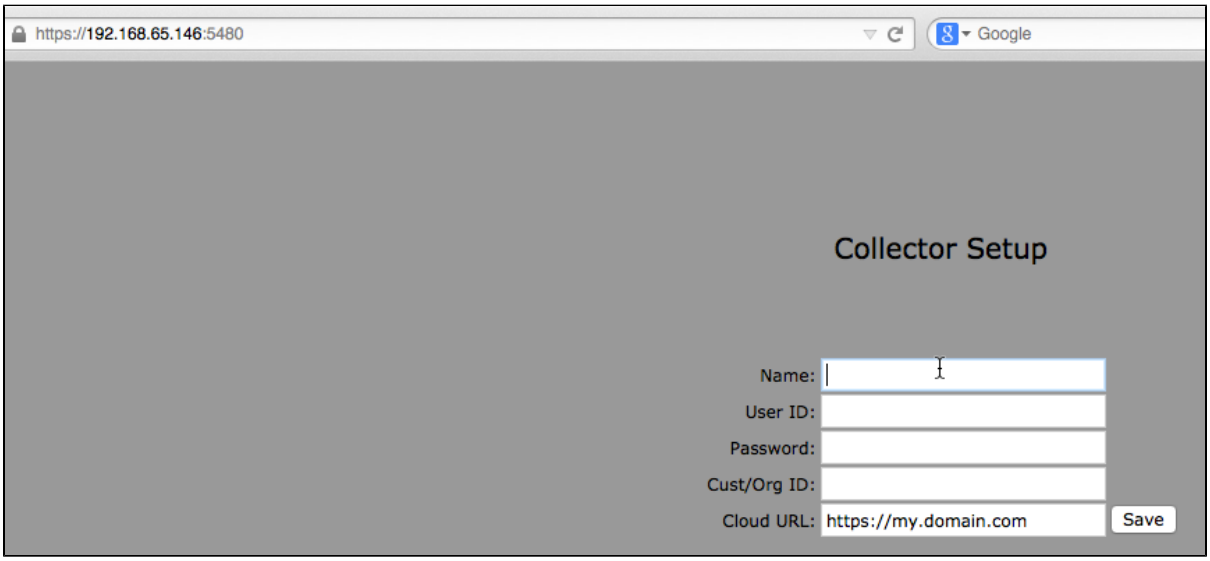


4. Review recently added Organization and Collector names

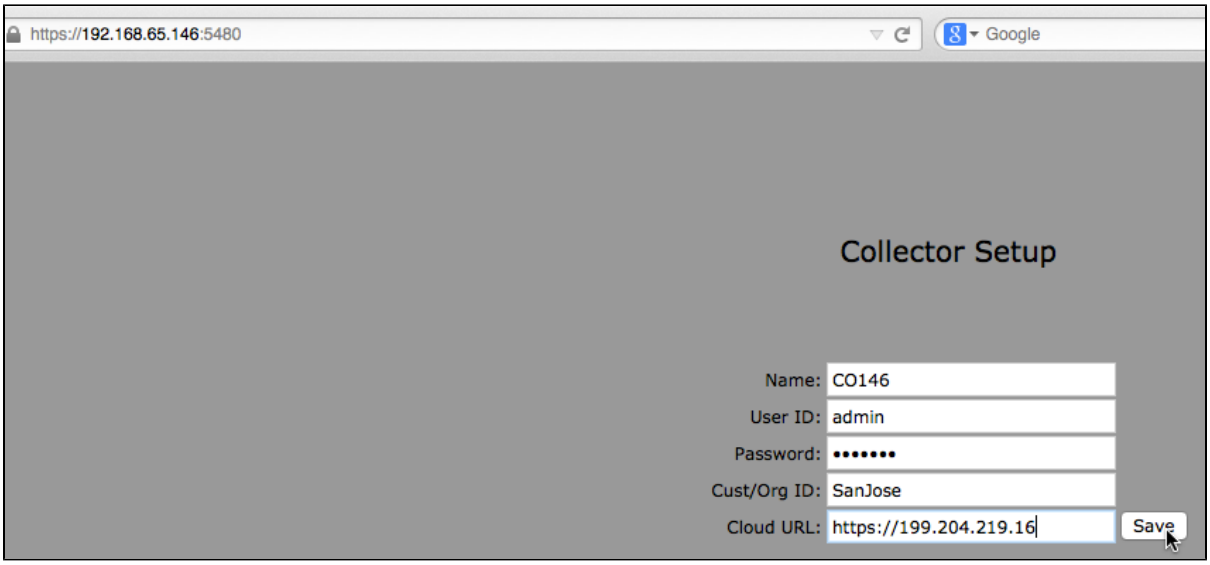


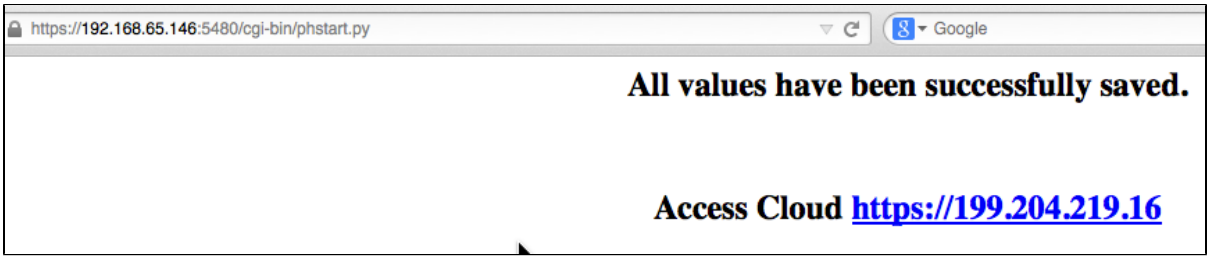
Step 2: Register the Collector to Supervisor

1. In browser windows, enter 'https://<Collector-IP>:5480'



2. Enter Collector setup information
    a. Name: Collector Name (defined in above Step 1.3)
    b. User ID: Admin User (defined in above Step 1.3)
    c. Password: Admin Password (defined in above Step 1.3)
    d. Cust/Org ID: Organization Name (defined in above Step 1.3)
    e. Cloud URL: Supervisor URL (eg: https://<Supervisor-IP>)
    f. Click Save

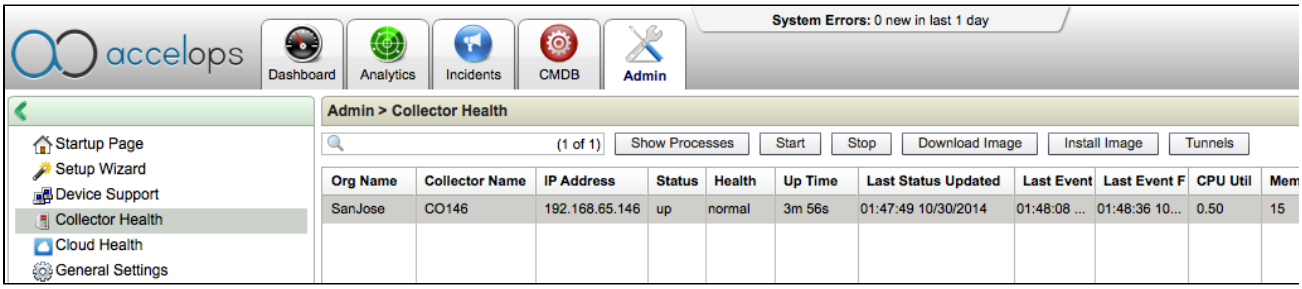




3. Collector will reboot automatically after registration successful.

Step 3: Check Collector health on Supervisor UI

1. Go to Admin > Collector Health, make sure Collector status is Up and health is Normal.

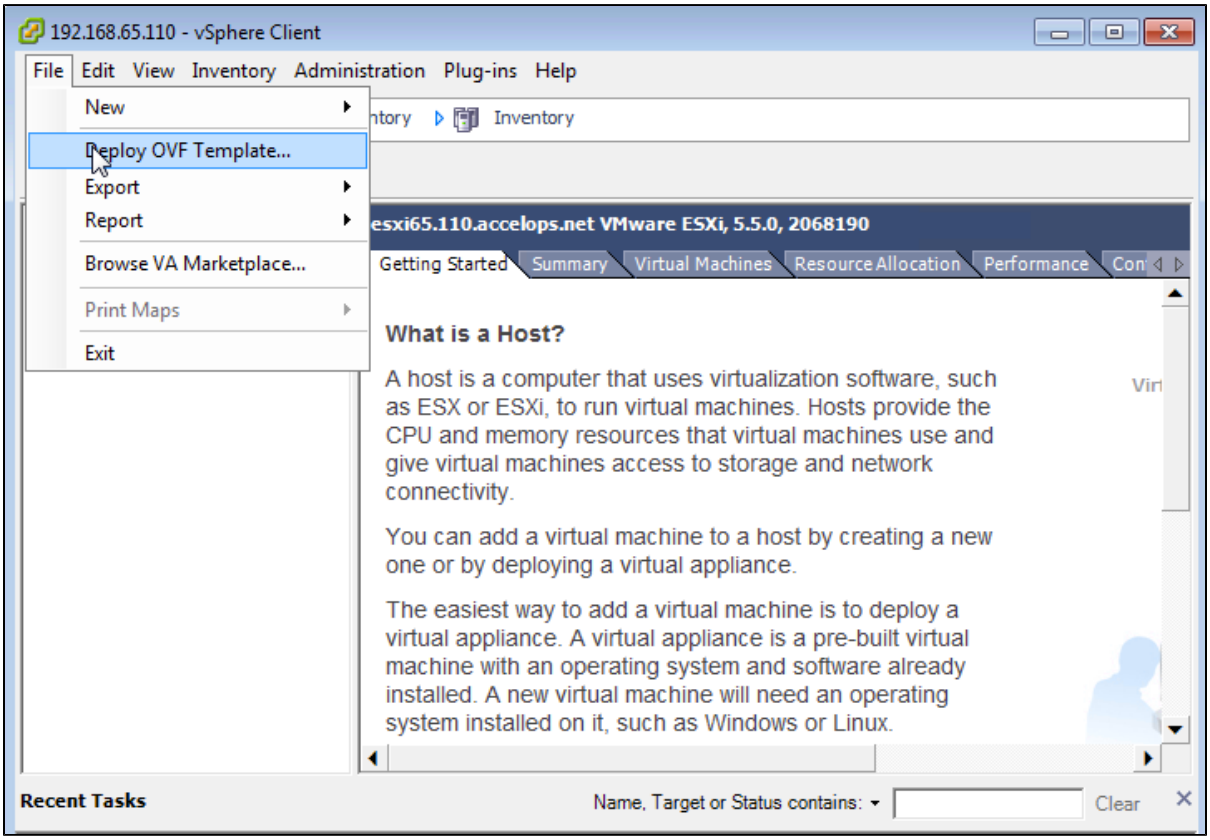


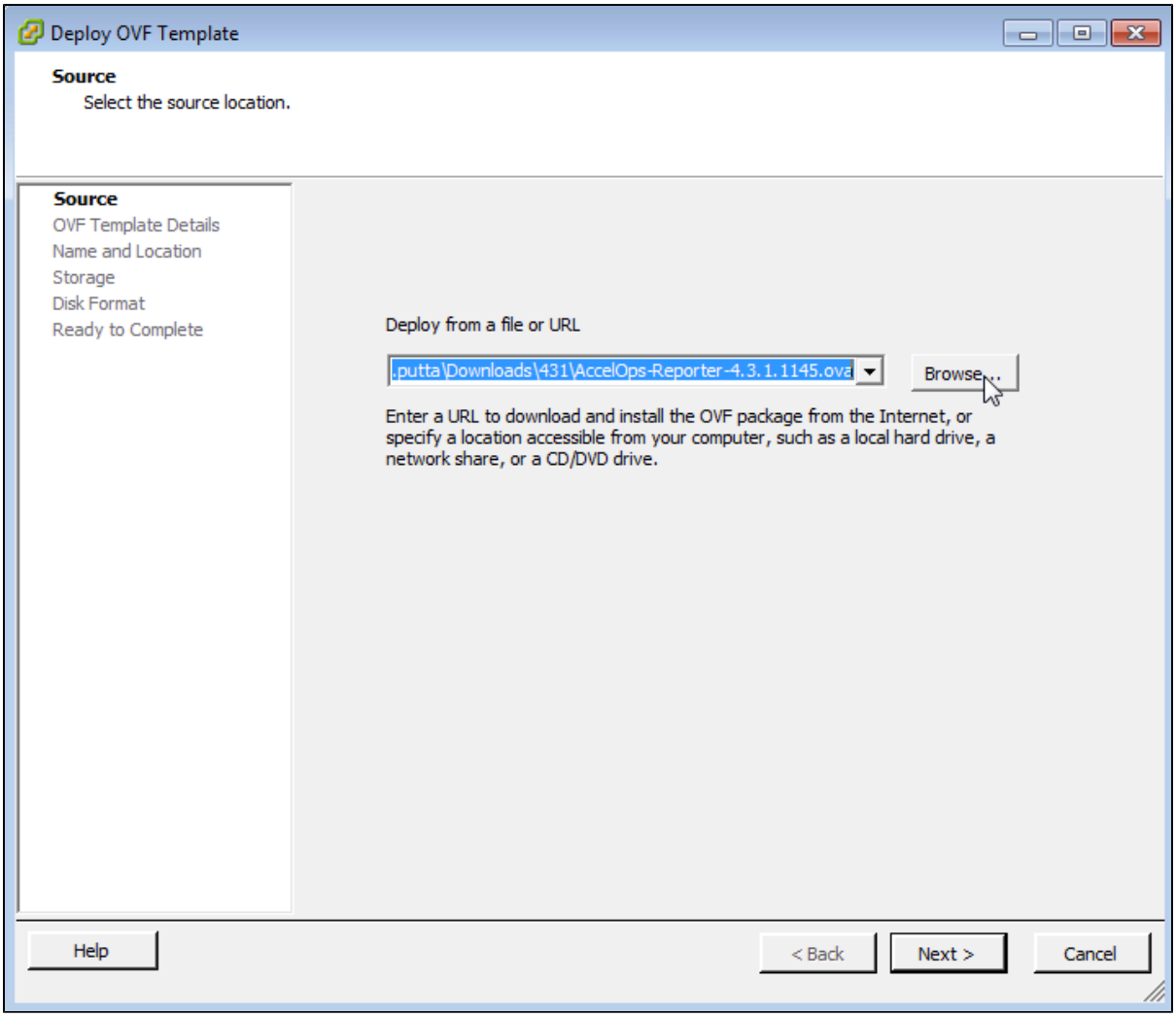
Installing a Report Server node

Section 1: Import a Report Server image into VMware ESX server

Step 1: Begin importing Report Server

1. Download Report server OVA package from AccelOps image server
2. Log into VMware vSphere Client
    a. Click on File -> Select Deploy OVF Template
    b. Click on Browse button to choose OVA file
    c. Locate Report Server .ova file (Example: AccelOps-Reporter-4.3.1.1145.ova)


192.168.65.110 - vSphere Client
File Edit View Inventory Administration Plug-ins Help
New
Deploy OVF Template...
Export
Report
Browse VA Marketplace...
Print Maps
Exit
Inventory
esxi65.110.accelops.net VMware ESXi, 5.5.0, 2068190
Getting Started Summary Virtual Machines Resource Allocation Performance
What is a Host?
A host is a computer that uses virtualization software, such as ESX or ESXi, to run virtual machines. Hosts provide the CPU and memory resources that virtual machines use and give virtual machines access to storage and network connectivity.
You can add a virtual machine to a host by creating a new one or by deploying a virtual appliance.
The easiest way to add a virtual machine is to deploy a virtual appliance. A virtual appliance is a pre-built virtual machine with an operating system and software already installed. A new virtual machine will need an operating system installed on it, such as Windows or Linux.
Recent Tasks
Name, Target or Status contains:
Clear

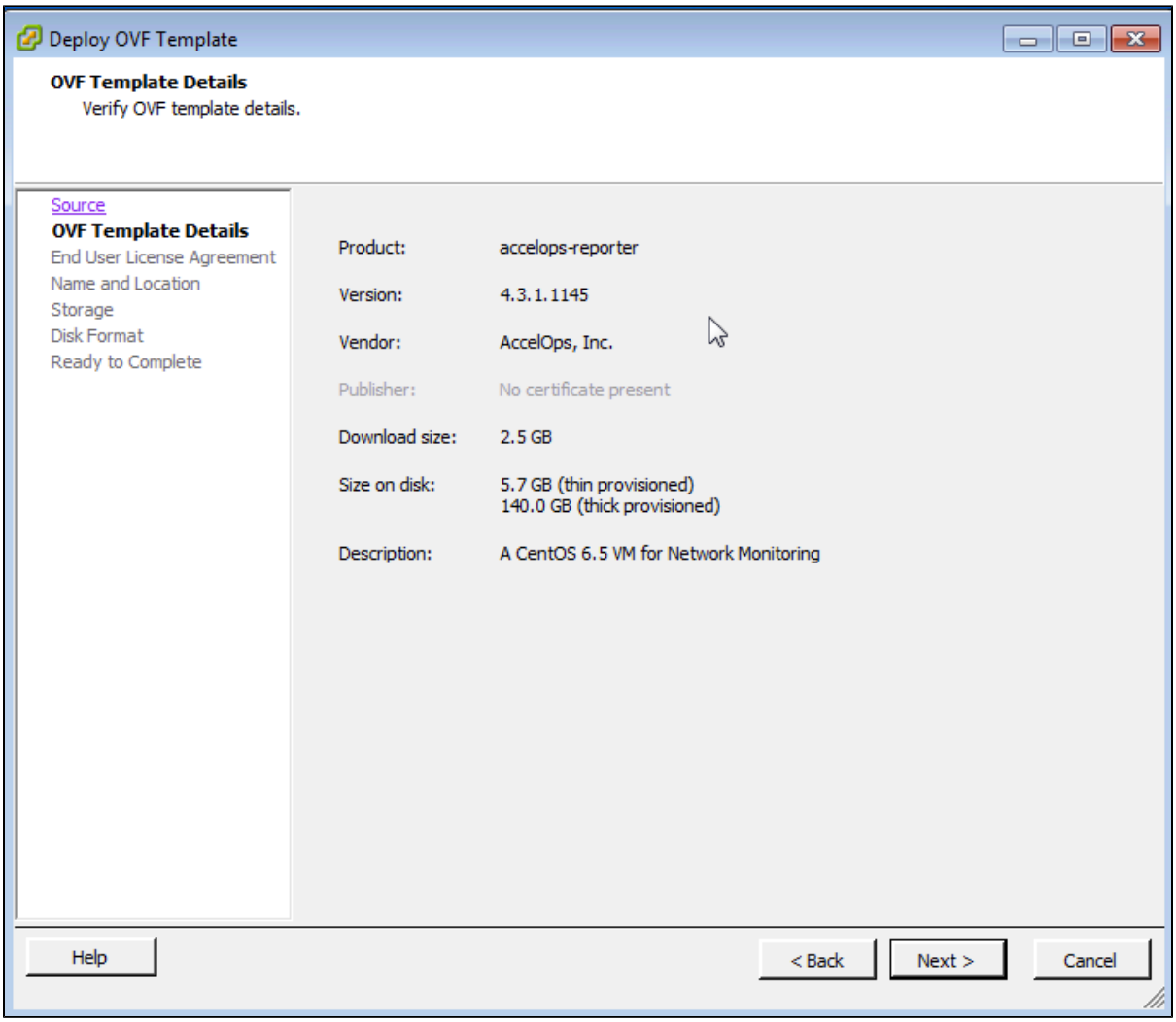


Step 2: Review the Virtual Appliance details

OVF Template details will tell you how big the file is to import and how mush disk space it will take up in your selected ESX server.

-

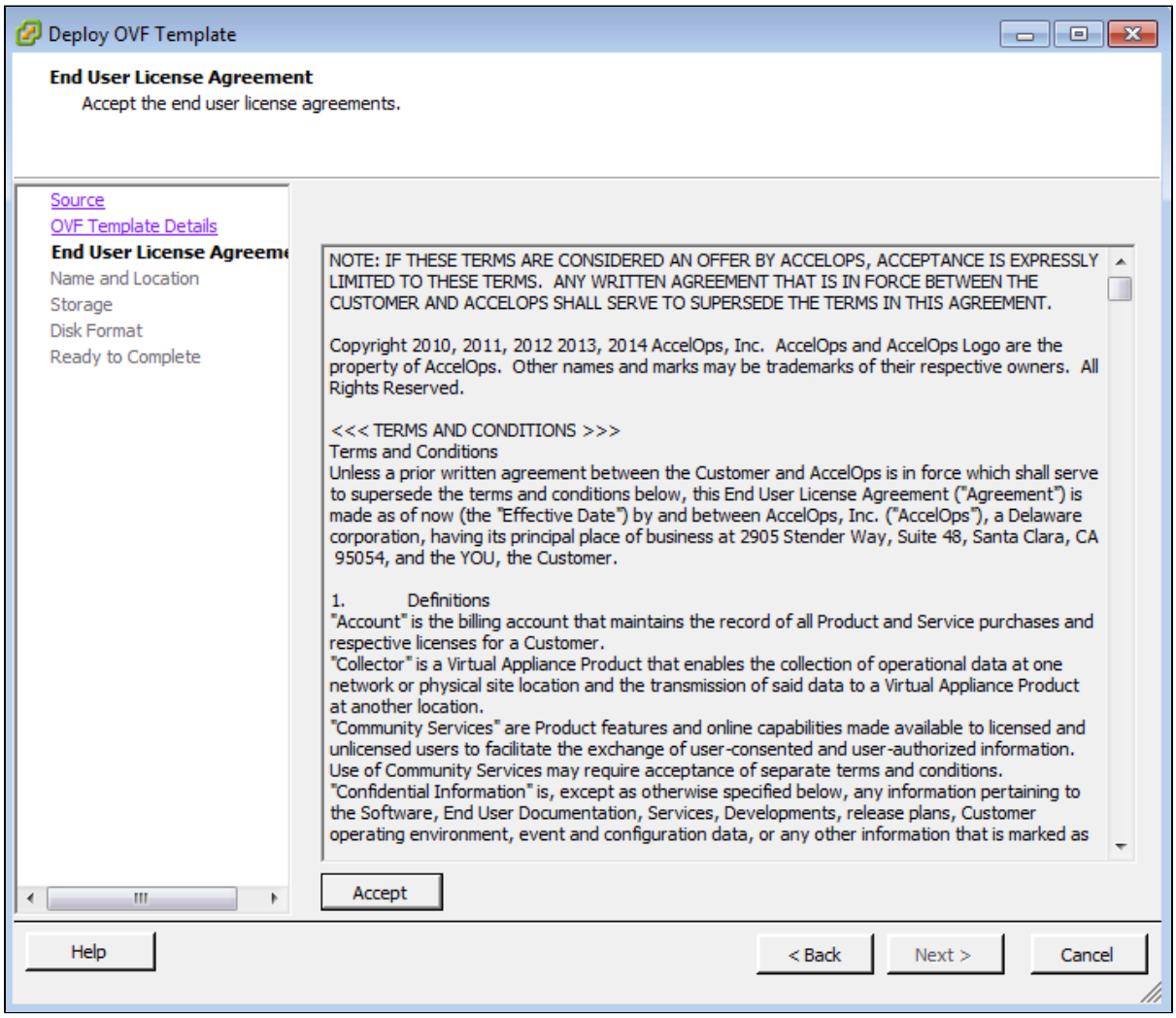
1. Click the 'Next' button



Step 3: End User License Agreement

To continue you must accept the End User License Agreement.

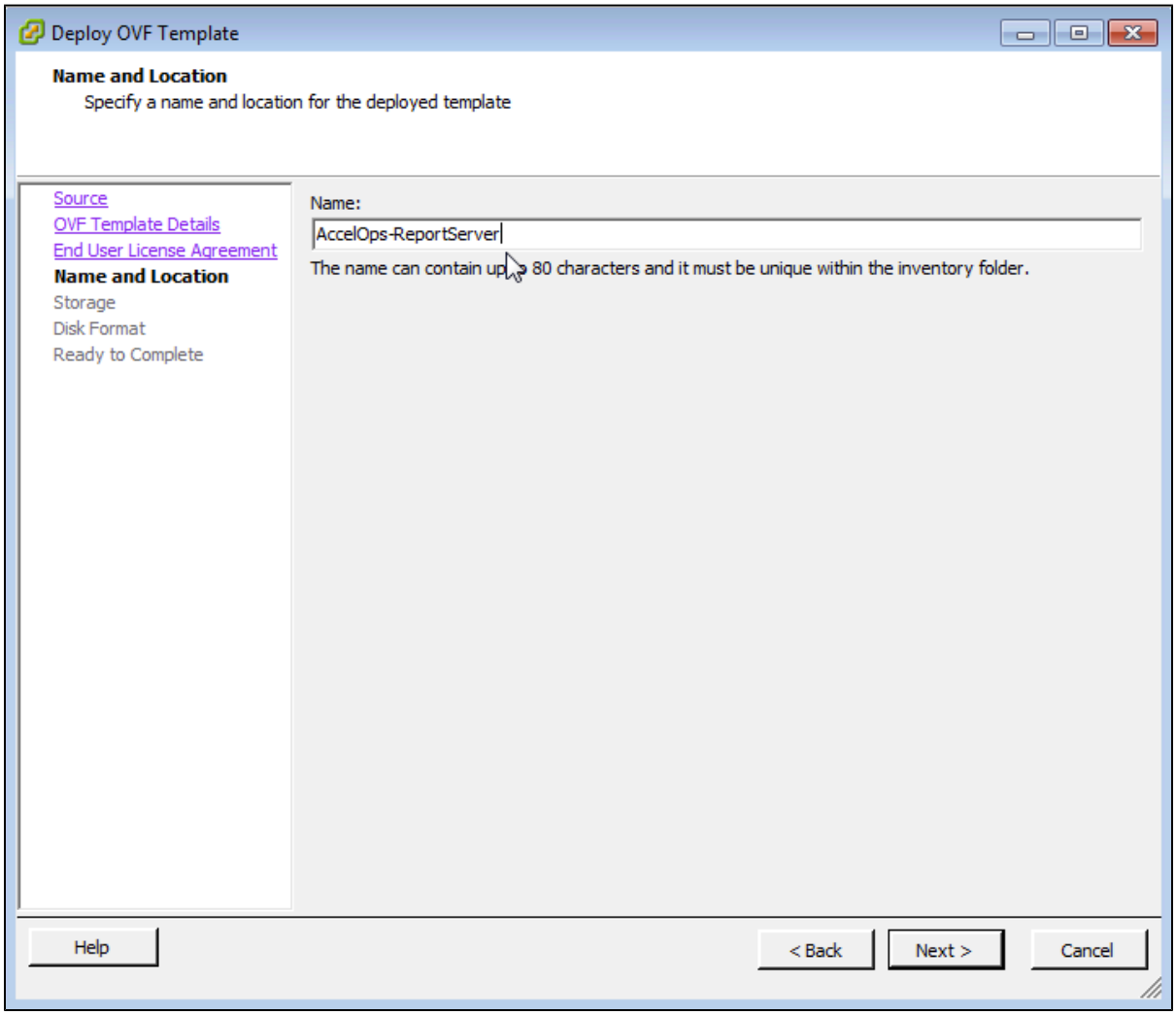
1. Click on 'Accept' button on License Agreement
2. Click on 'Next' button



Step 4: Name and Location

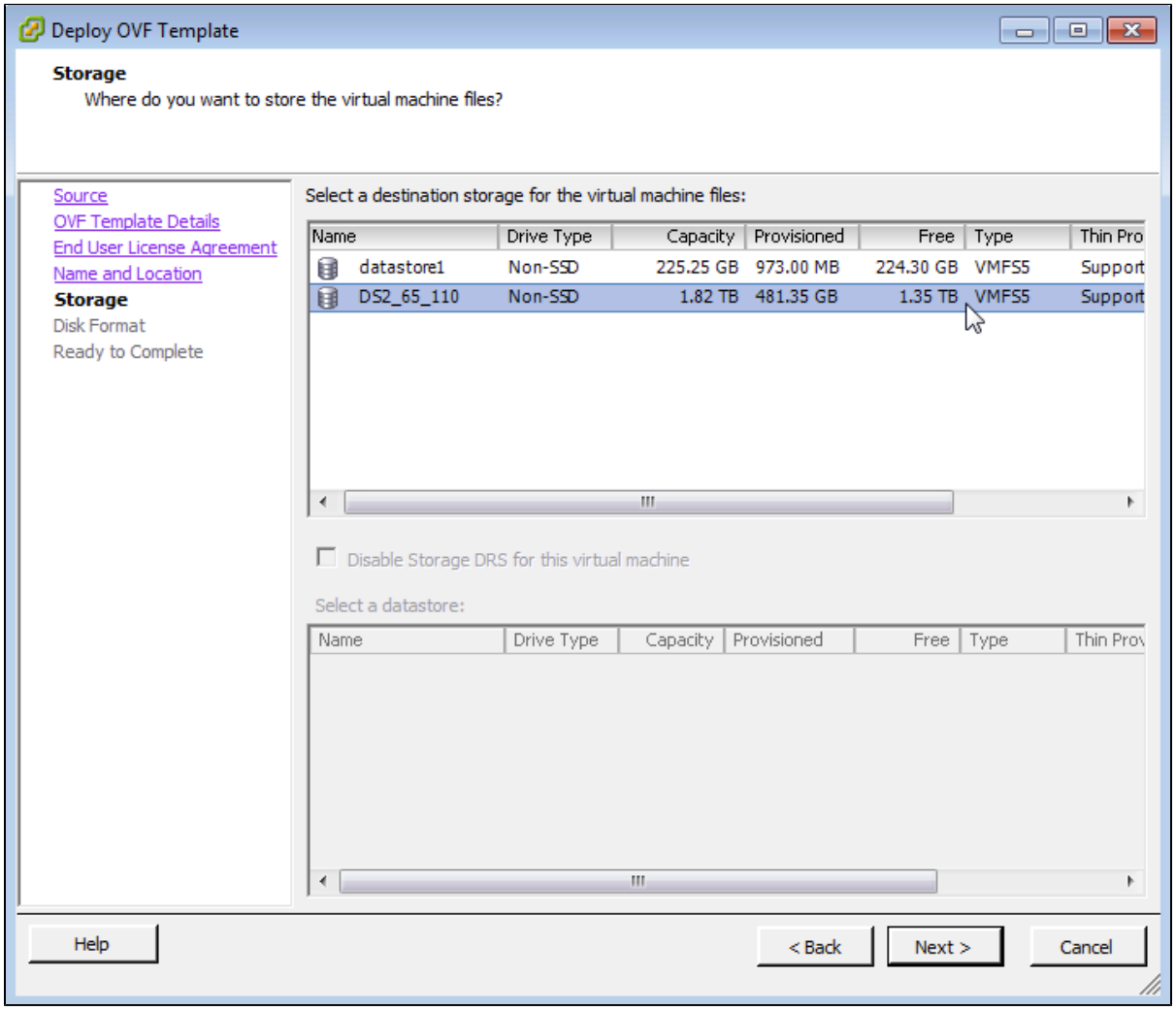
Enter a name for the Virtual Appliance that is being imported. This name is independent of the host name and is only visible within the ESX environment.

1. Enter a Report Server name and Click on 'Next' button



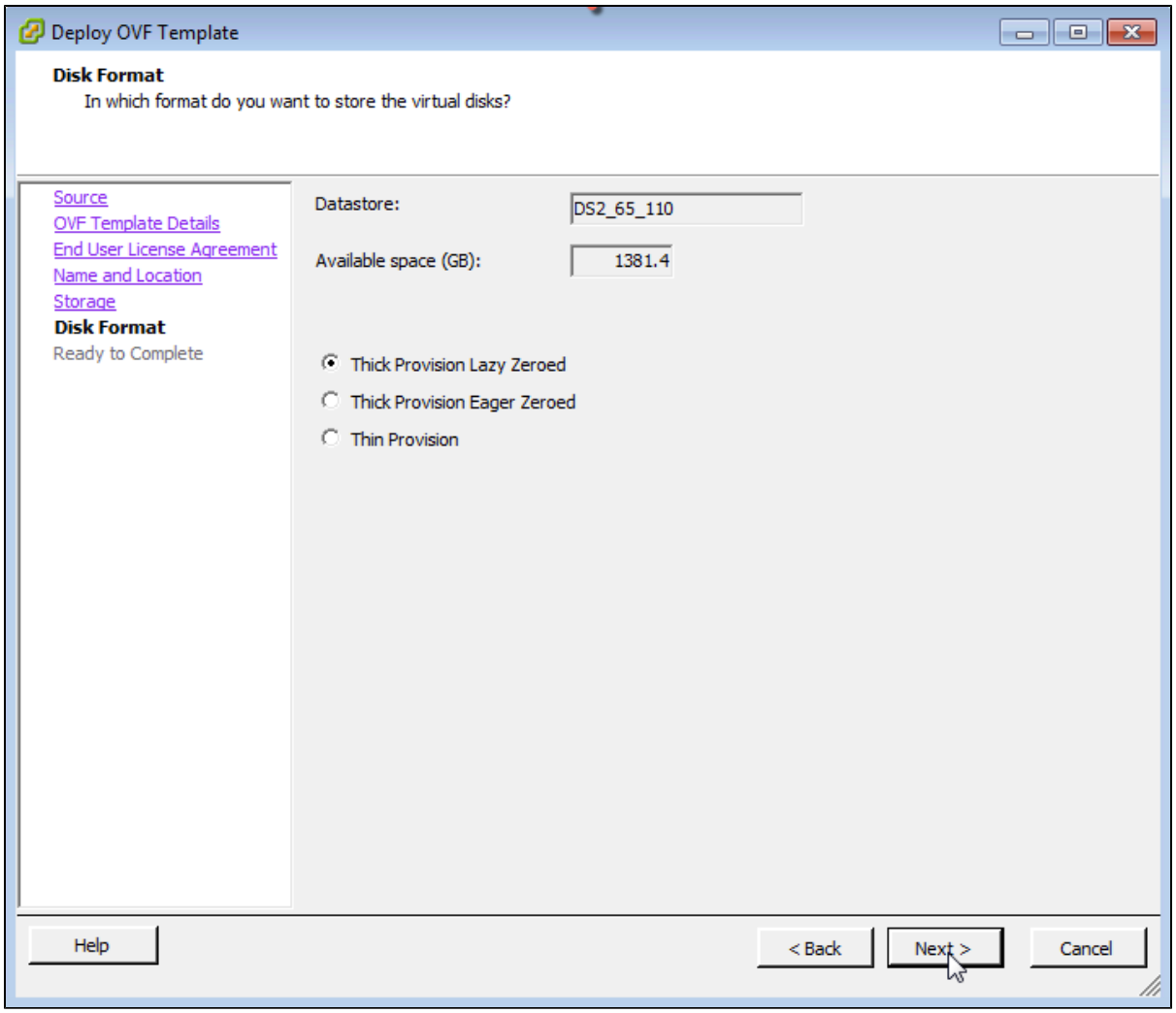
Step 5: Storage

1. Select the desired storage location(Data store) and Click on 'Next' button



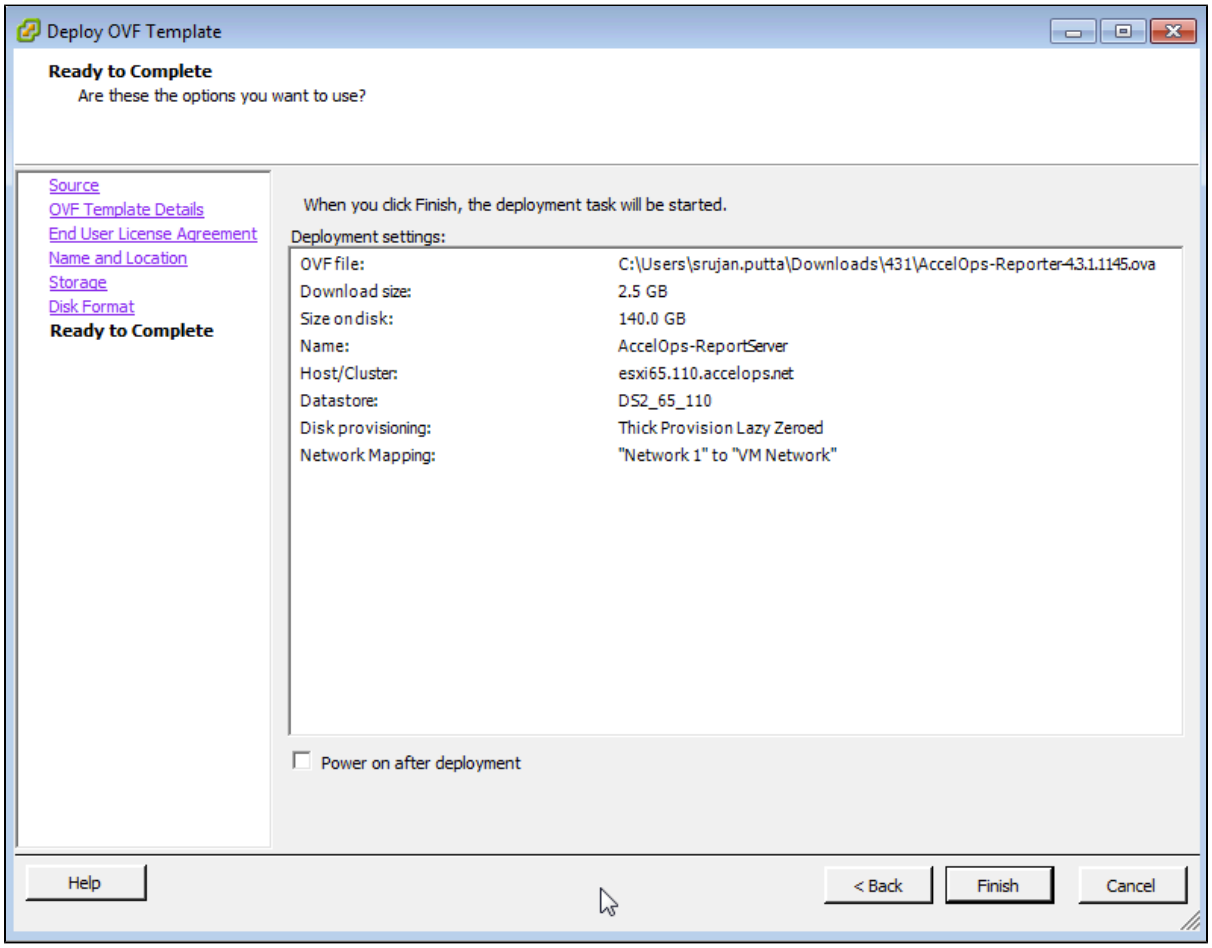
Step 6: Disk Format

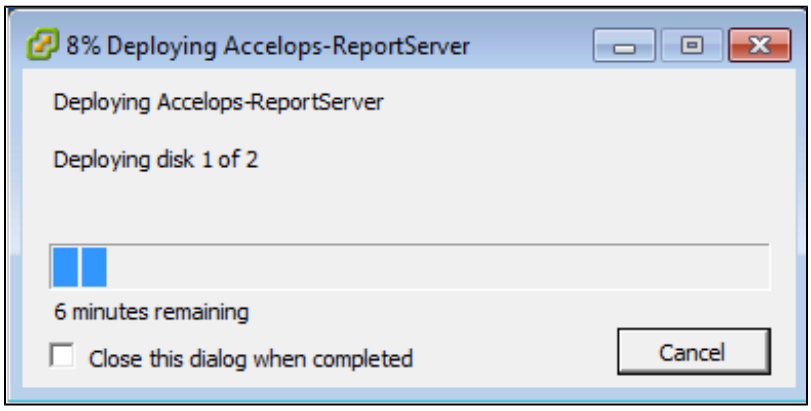
1. Select the Disk format as 'Thick Provision' (recommended) and Click on 'Next' button

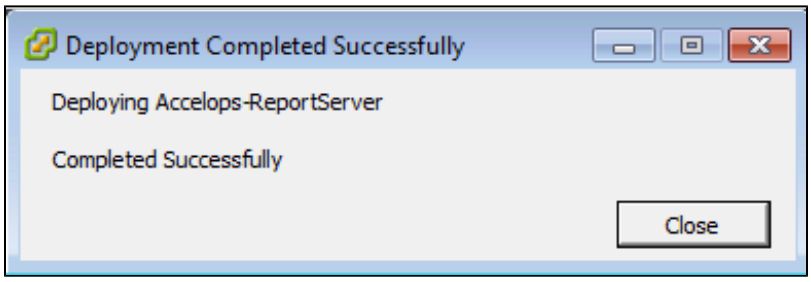


Step 7: Ready to Complete

1. Review the Report server resources and Click on 'Finish' button to begin importing Virtual Appliance
2. Virtual Appliance import will takes 7 to 10mins to complete. Do not turn off or reboot the system during this time.


Deploy OVF Template
Ready to Complete
Are these the options you want to use?
Source
OVF Template Details
End User License Agreement
Name and Location
Storage
Disk Format
Ready to Complete
When you click Finish, the deployment task will be started.
Deployment settings:
OVF file: C:\Users\srujan.putta\Downloads\431\AccelOps-Reporter-4.3.1.1145.ova
Download size: 2.5 GB
Size on disk: 140.0 GB
Name: AccelOps-ReportServer
Host/Cluster: esxi65.110.accelops.net
Datastore: DS2_65_110
Disk provisioning: Thick Provision Lazy Zeroed
Network Mapping: "Network 1" to "VM Network"
Power on after deployment
Help
< Back
Finish
Cancel



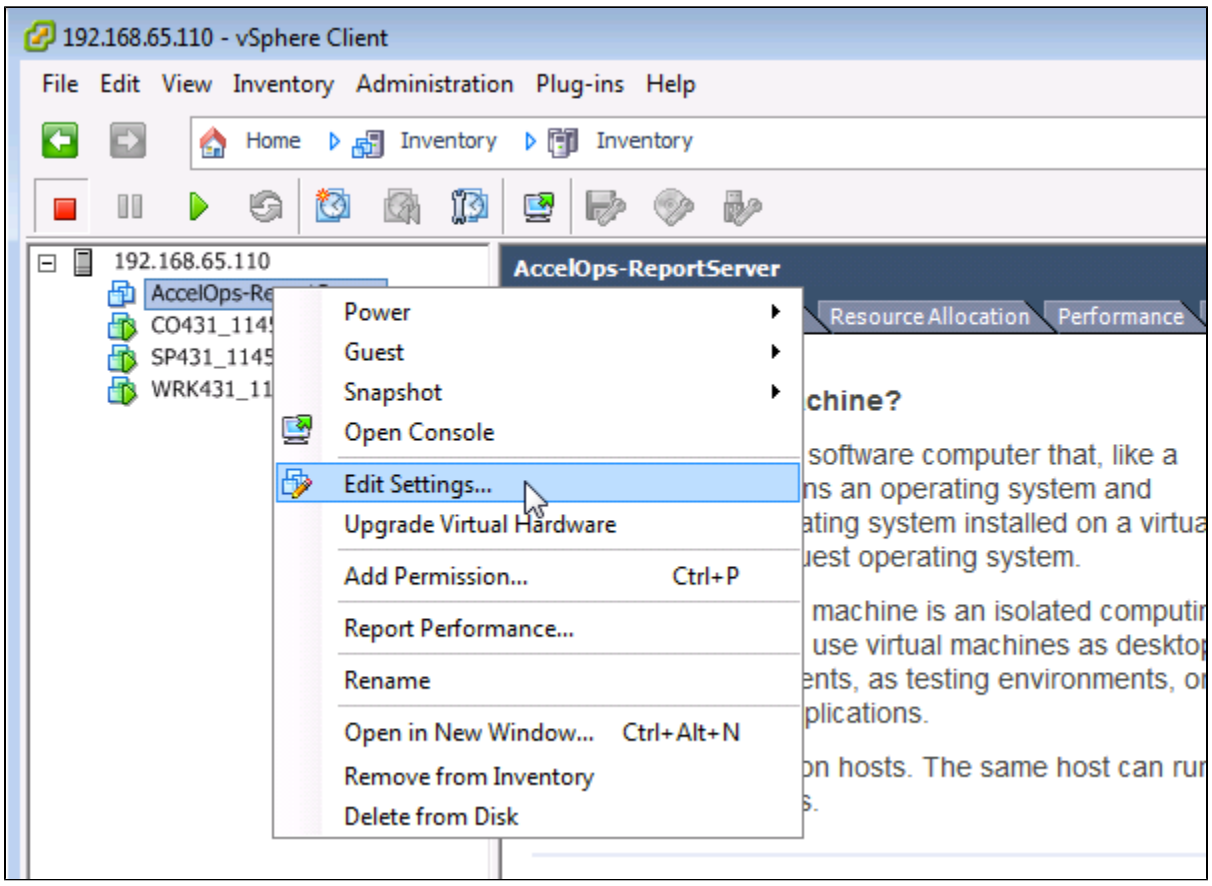


Section 2: Edit the Report Server hardware settings

Prior to starting the Report Server for the first time it is required to make some modifications to the hardware setting for the Virtual Appliance.

Step 1: Edit Settings

1. From the VMware vSphere client, Select the imported Report server Virtual appliance
2. Right mouse click and select Edit Settings

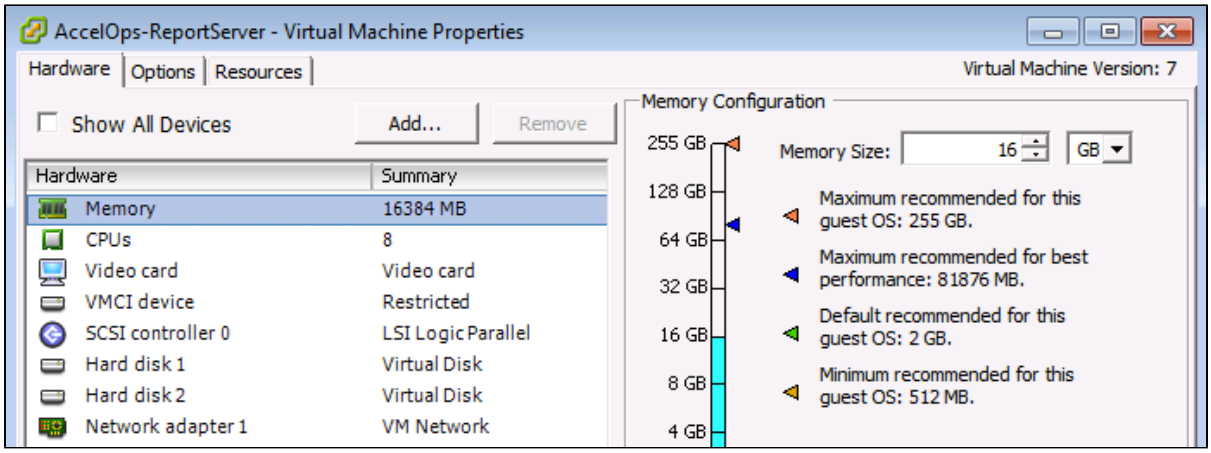


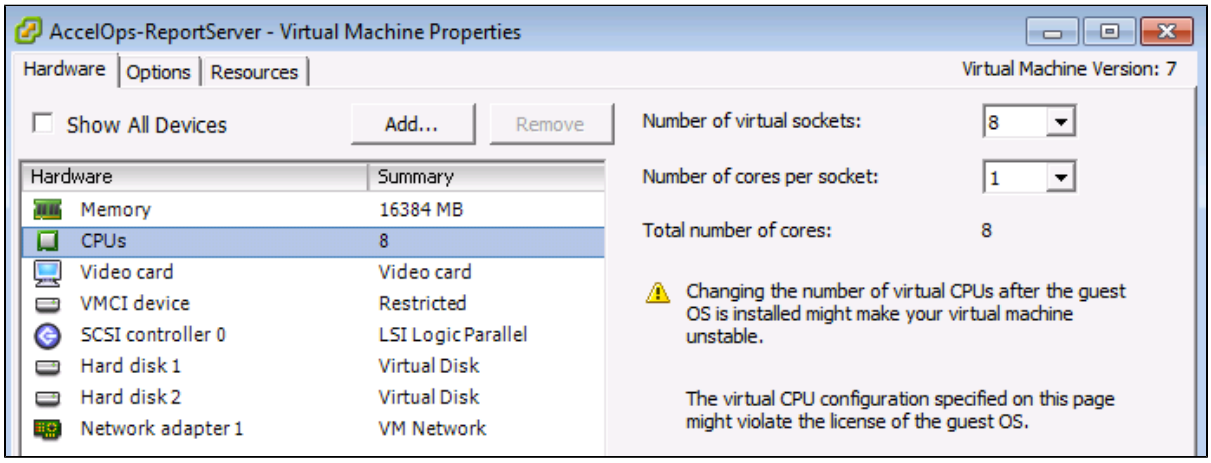
Step 2: Verify Allocated Memory

1. On Hardware tab, Click on Memory and verify the memory to at least 16 GB

> **Allocate more memory for large deployments**
>
> For large deployments you should allocate at least 24GB of memory. See the section on Report Server Hardware requirements in the topic Must Read Prior to Install for more information

2. Click on CPUs, verify the CPU cores to at least 8 cores





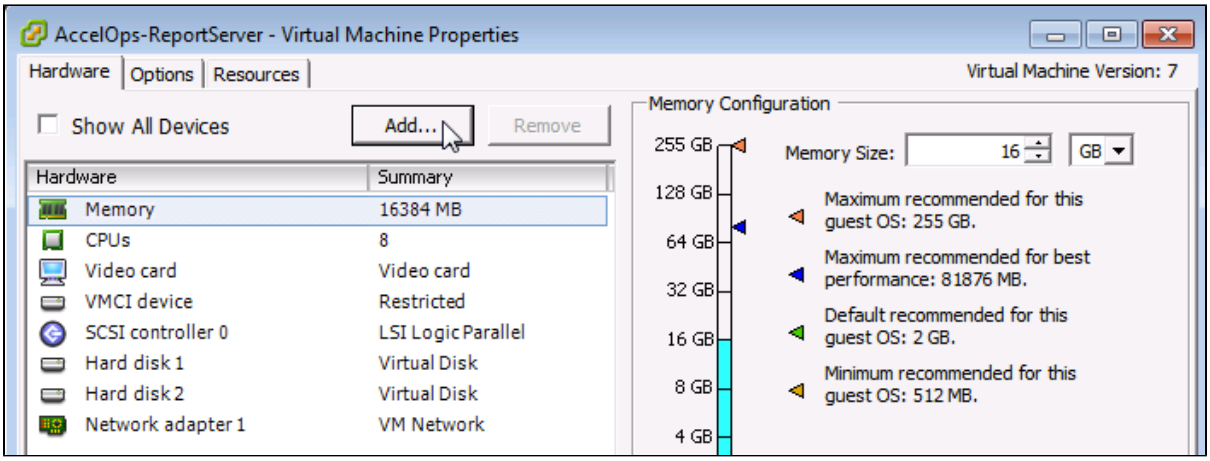
Section 3: Select mount point to Store Reports data

The AccelOps Report Server can be installed using either storage configured within the ESX server or NFS storage.

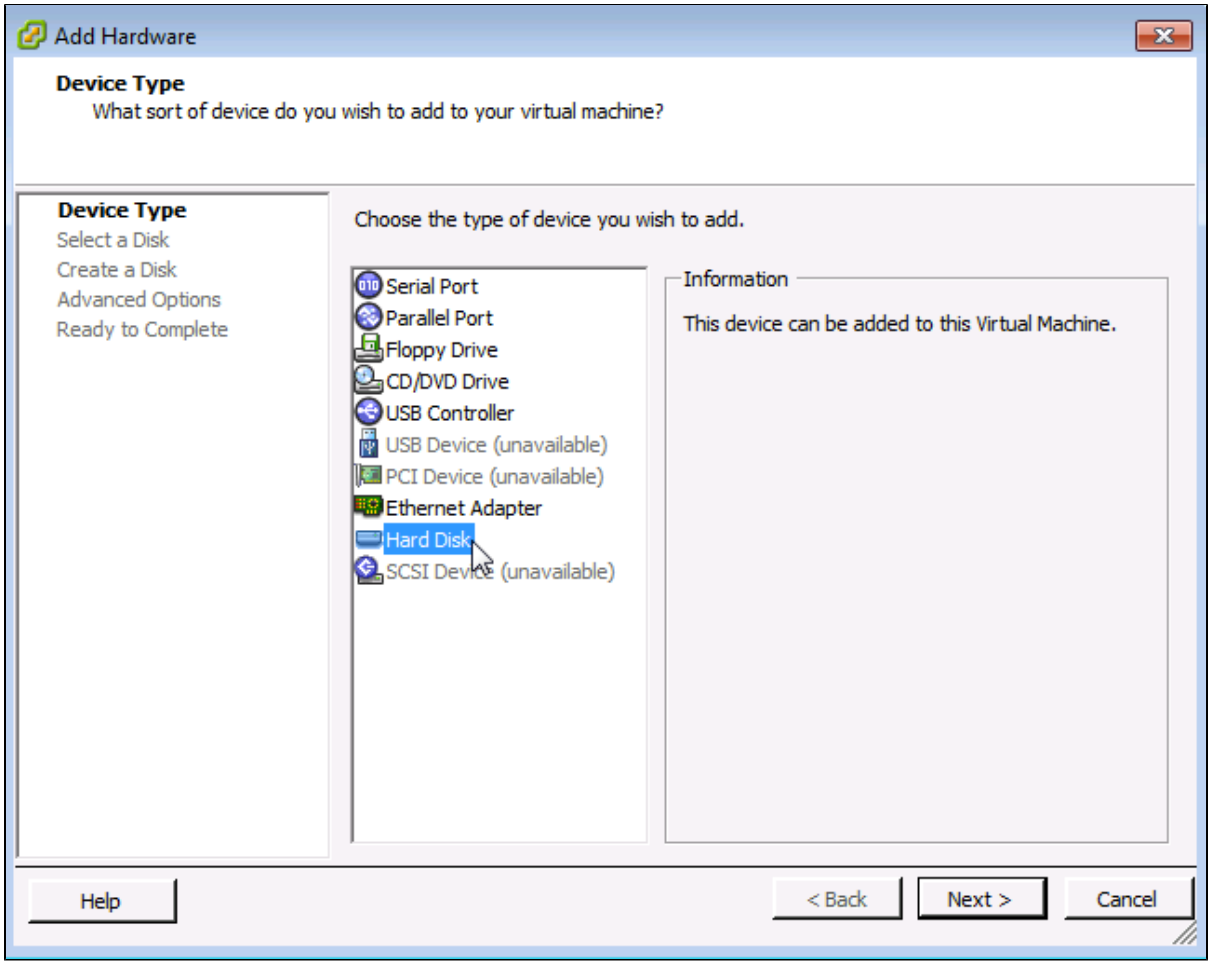
> **Note**
> Skip Step 1 if AccelOps Super is used NFS storage to store the events data. Else, continue Step 1 to create local disk to store the reports data.

Step 1: Adding an Additional Hard Disk to store the Reports data

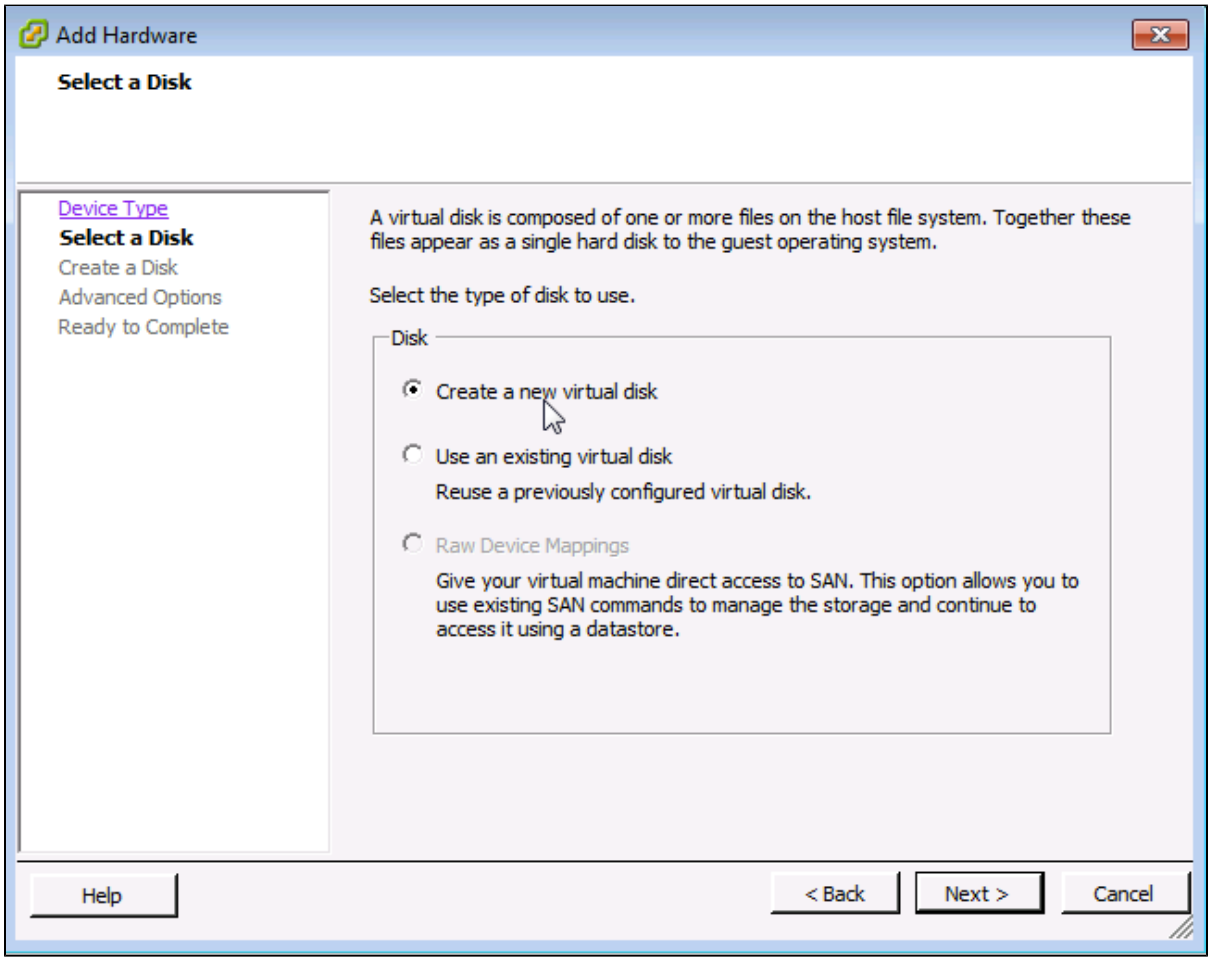
1. On Hardware tab, Click on the 'Add' button



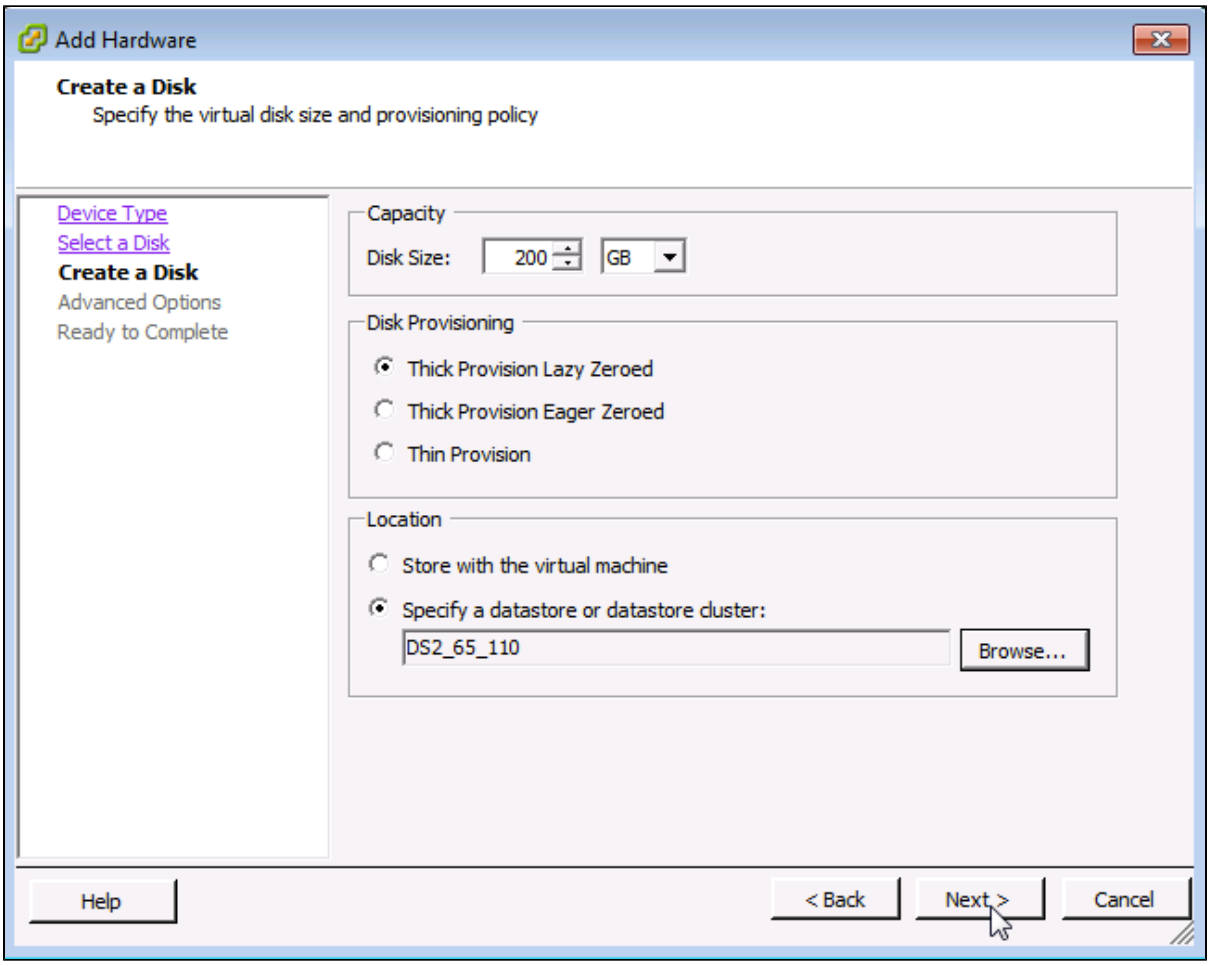
2. On Hardware pop-up, Select 'Hard Disk' and click on 'Next' button



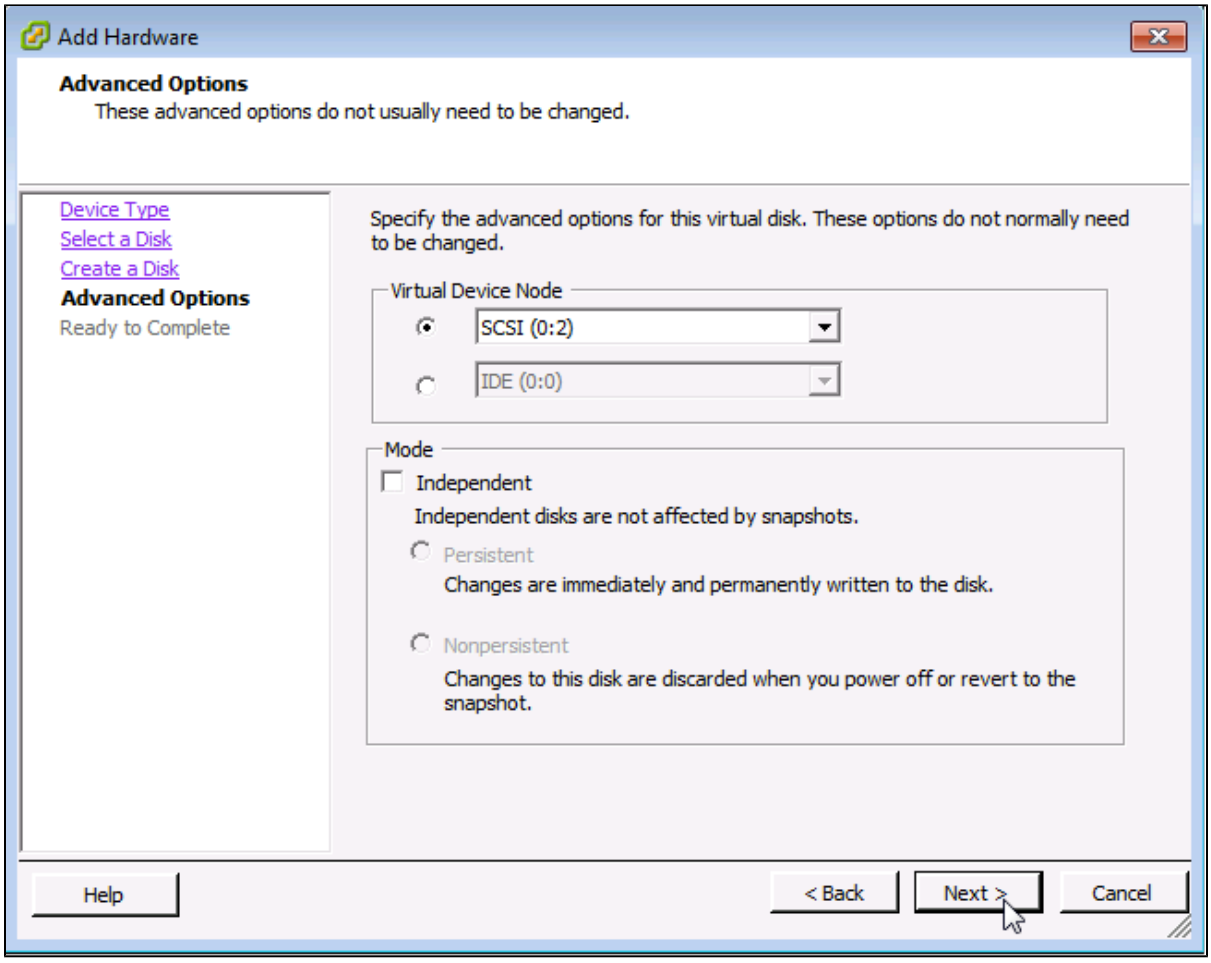
3. Select 'Create a new virtual disk' and click on 'Next' button


Add Hardware
Select a Disk
Device Type
Select a Disk
Create a Disk
Advanced Options
Ready to Complete
A virtual disk is composed of one or more files on the host file system. Together these files appear as a single hard disk to the guest operating system.
Select the type of disk to use.
Disk
Create a new virtual disk
Use an existing virtual disk
Reuse a previously configured virtual disk.
Raw Device Mappings
Give your virtual machine direct access to SAN. This option allows you to use existing SAN commands to manage the storage and continue to access it using a datastore.
Help
< Back
Next >
Cancel

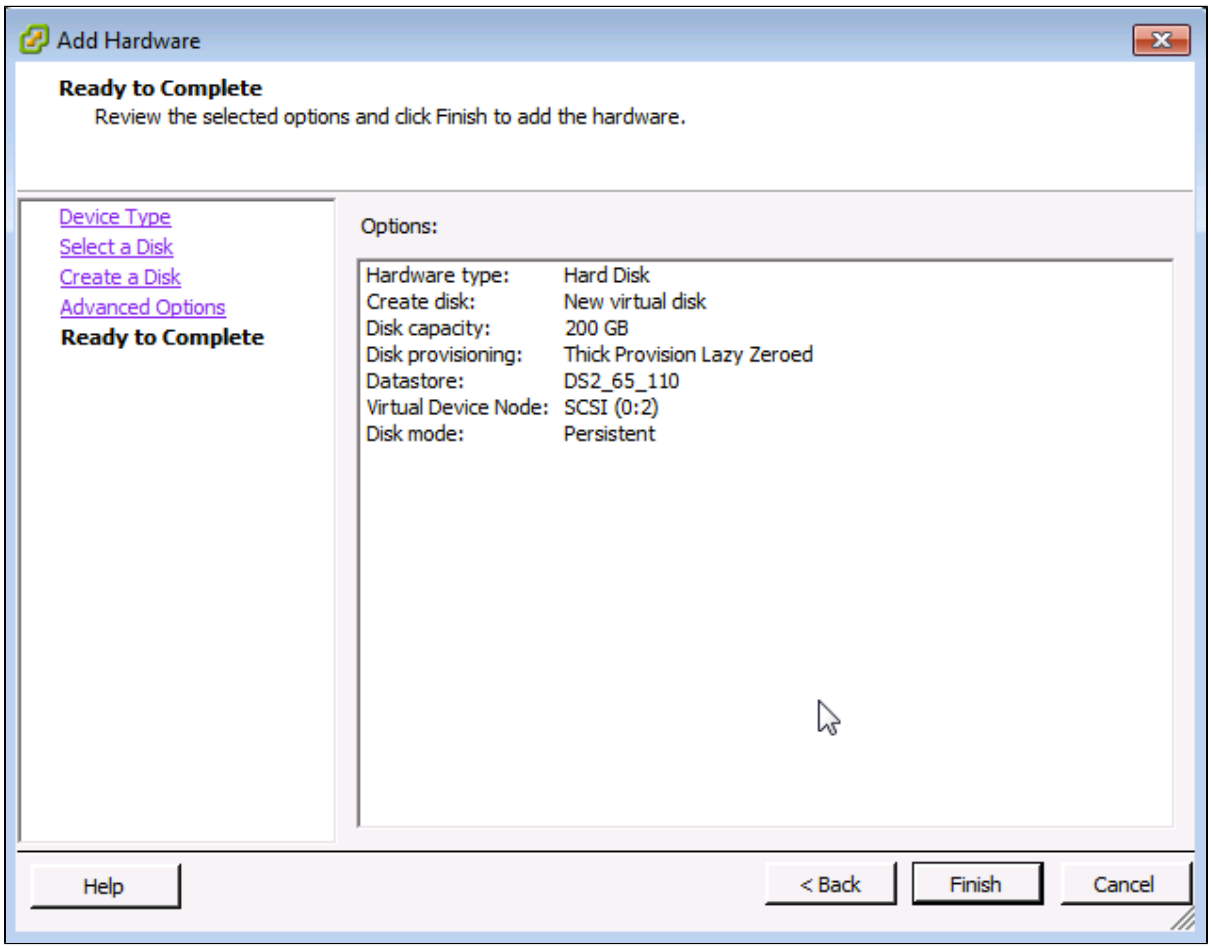
4. Enter the Disk size and click on 'Next' button
   Refer to Hardware Requirements for Report Server nodes



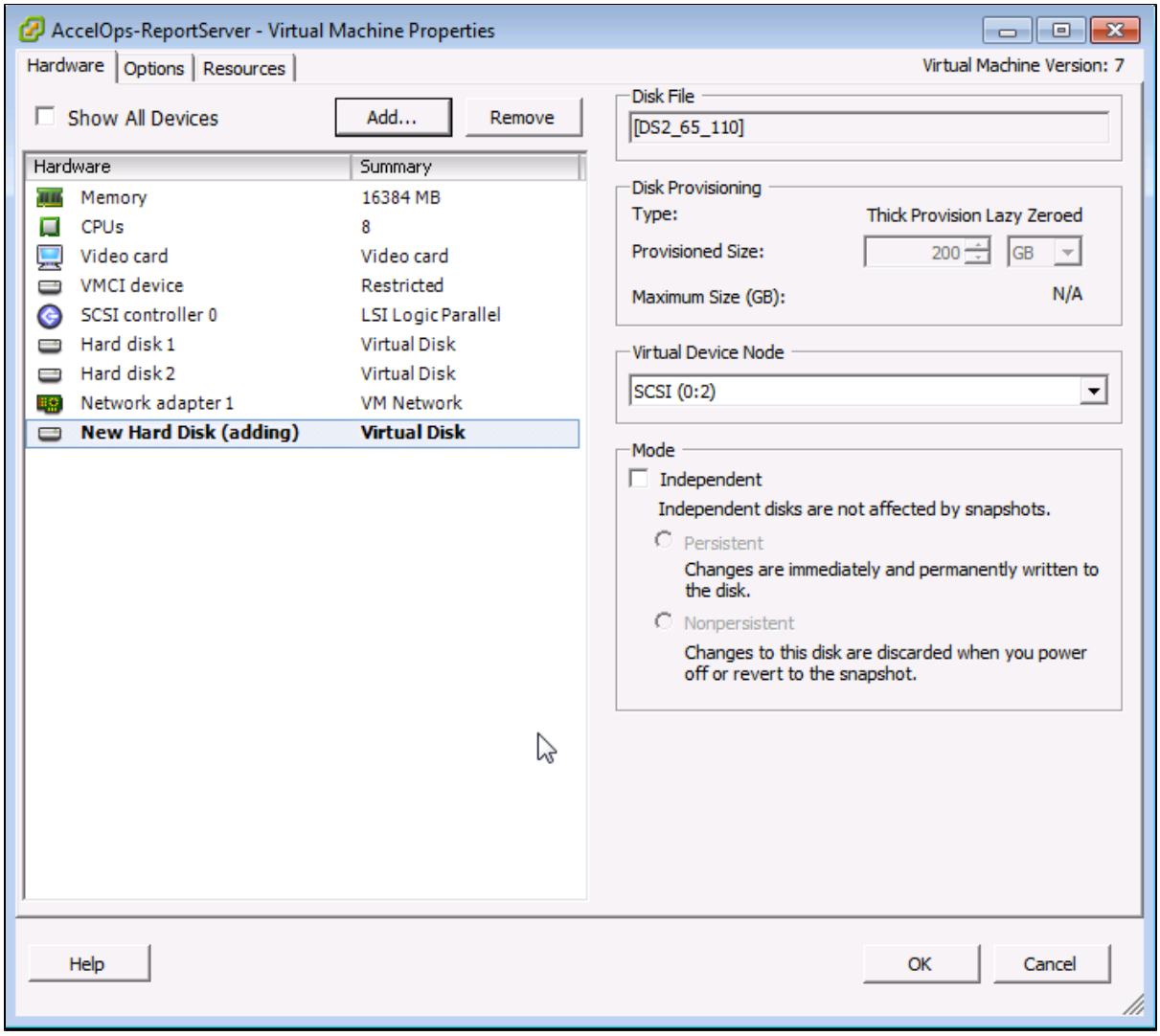
5. Ensure that 'Independent' is not checked and click on 'Next' button



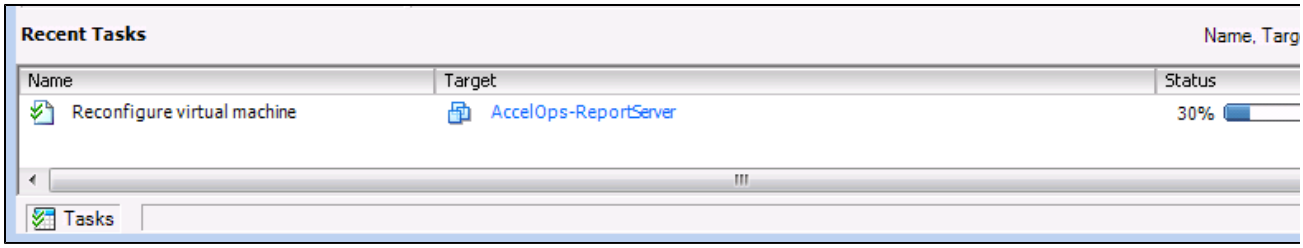
6. Confirm the Options are correct and click the 'Finish' button



7. Click 'OK' on Virtual Machine properties pop-up



8. Wait for until Adding Disk task complete on vSphere client



Note

Skip Step 2 if you choose Step 1 to store the AccelOps event data in local Hard disk. Else, continue Step 2 to create NFS mount point to store the reports data.

Step 2: Create new NFS mount point to store the Reports data

1. Log into NFS server, Create new directory to store Reports data

Note

Do not use AccelOps Supervisor mount point location.

2. Refer to NFS documentation to check NFS directory permission

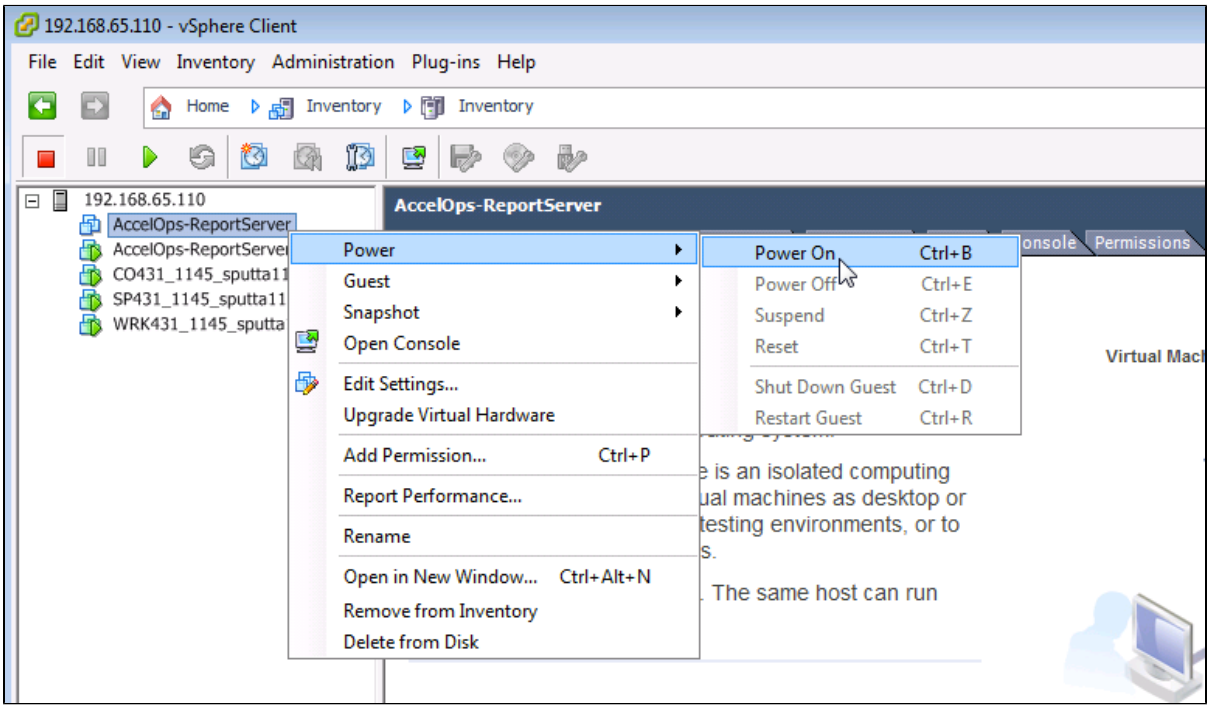
Section 4: Configure the Report Server from the VMware Console

Note

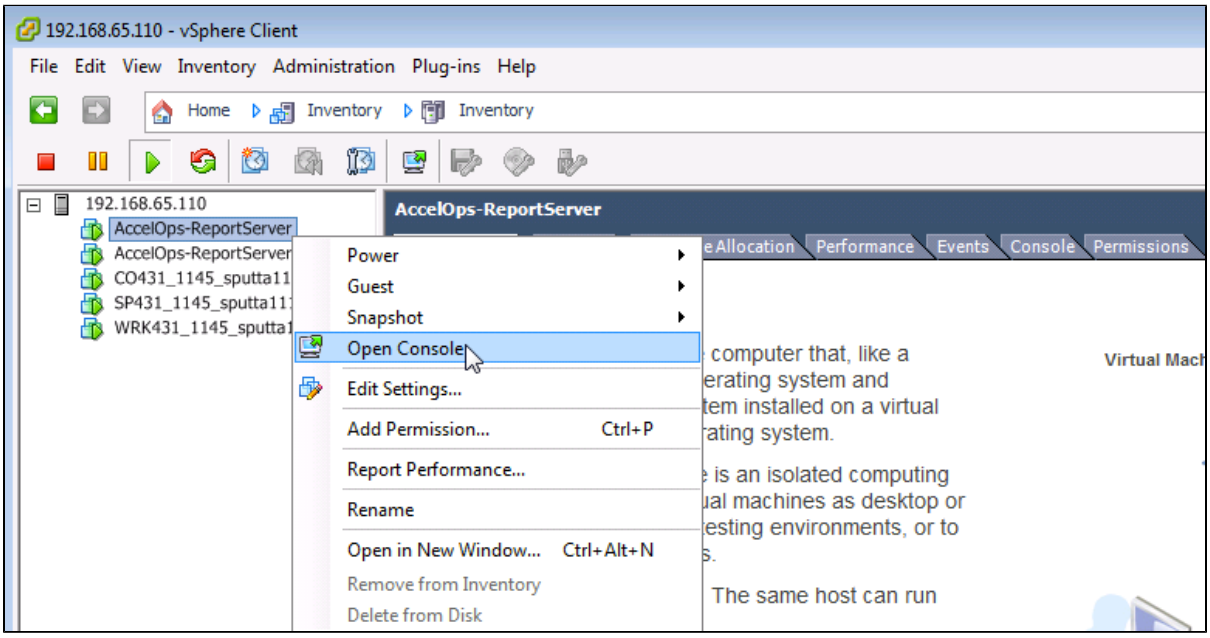
While in the VM console window do not press any control keys during the installation. Doing so might cause the installation to stop and not to precede any further. For example Ctrl – C or Ctrl – Z. If this occurs you must erase the VA and start over from the beginning.

Step 1: Start Report Server

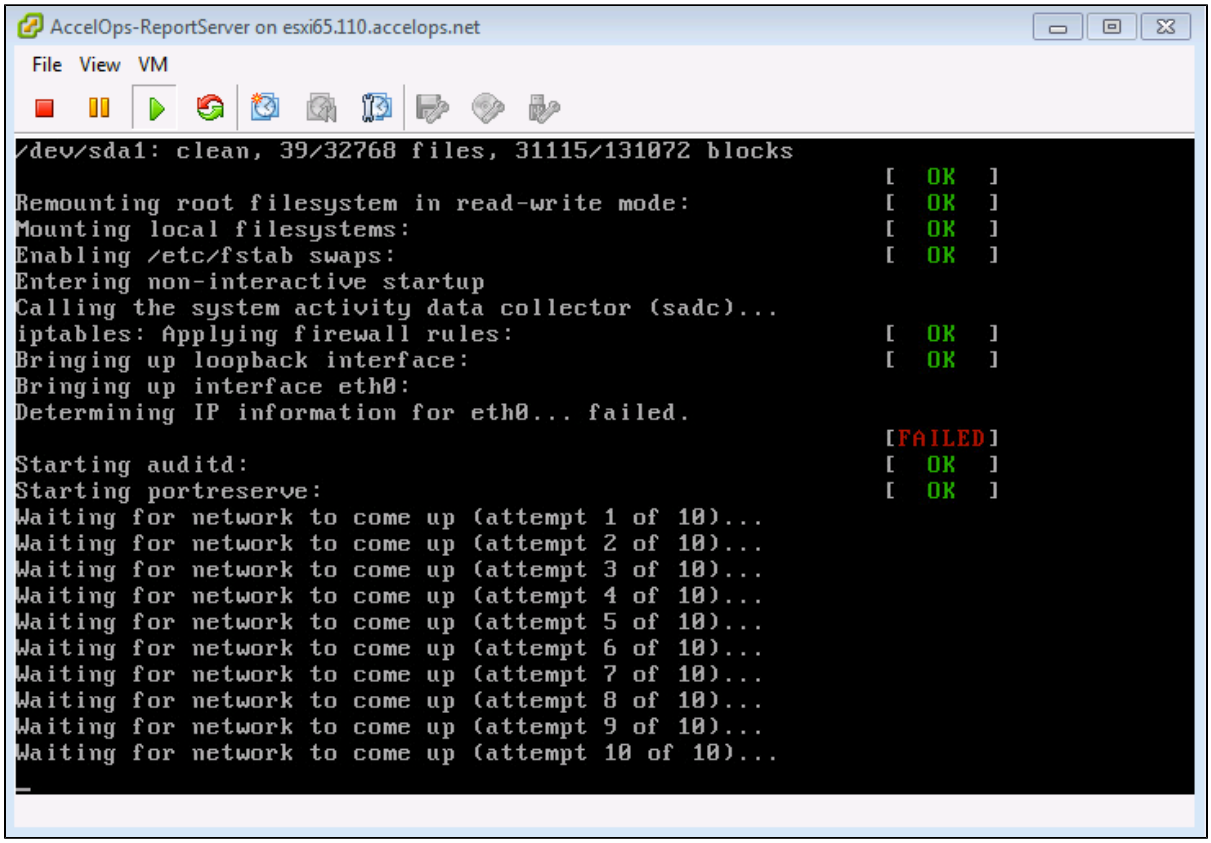
1. From the VMware vSphere client, Select recently imported Report server Virtual appliance and Power On (Right click > Power > Power On)



2. Open Report server VM Console (Right click > Open Console)



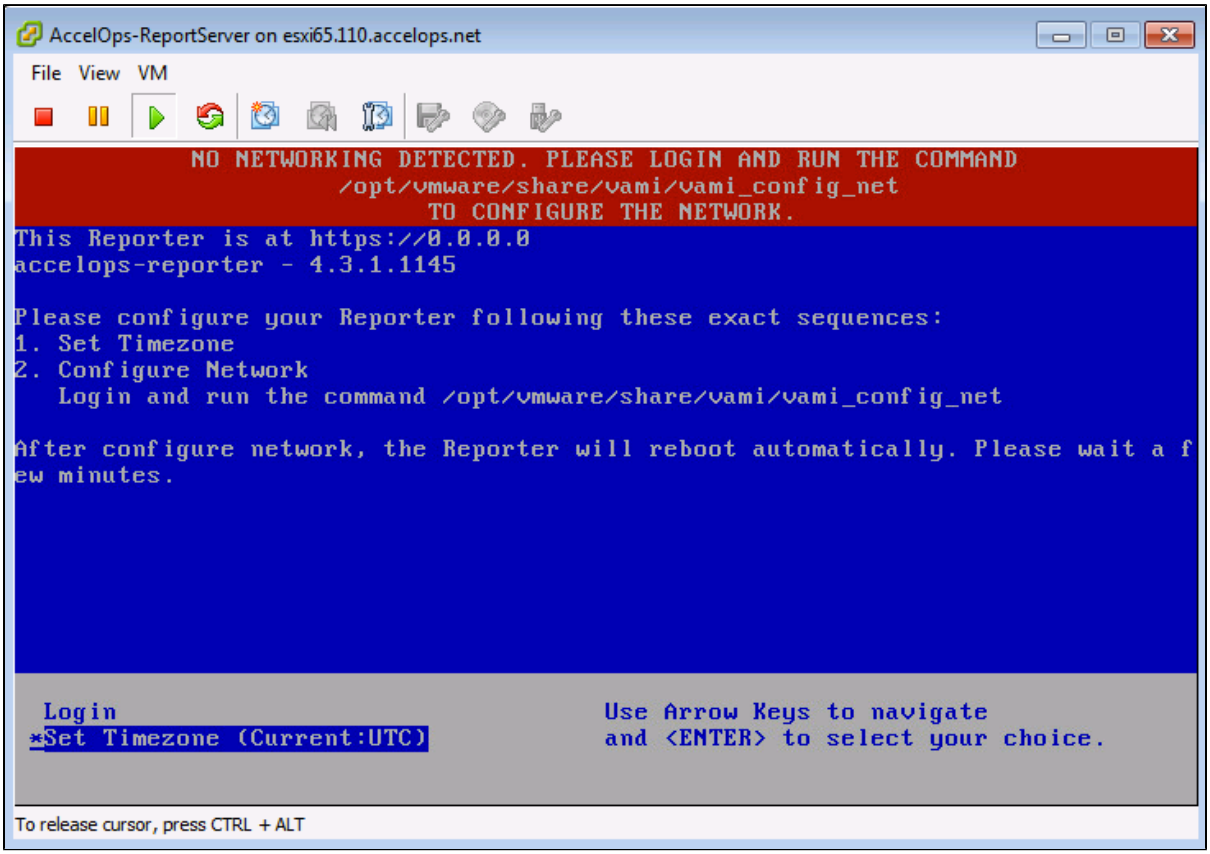
3. Network eth0 Failed message may appear on the screen during the loading, but this is to be expected the first time the AccelOps Report server is started.



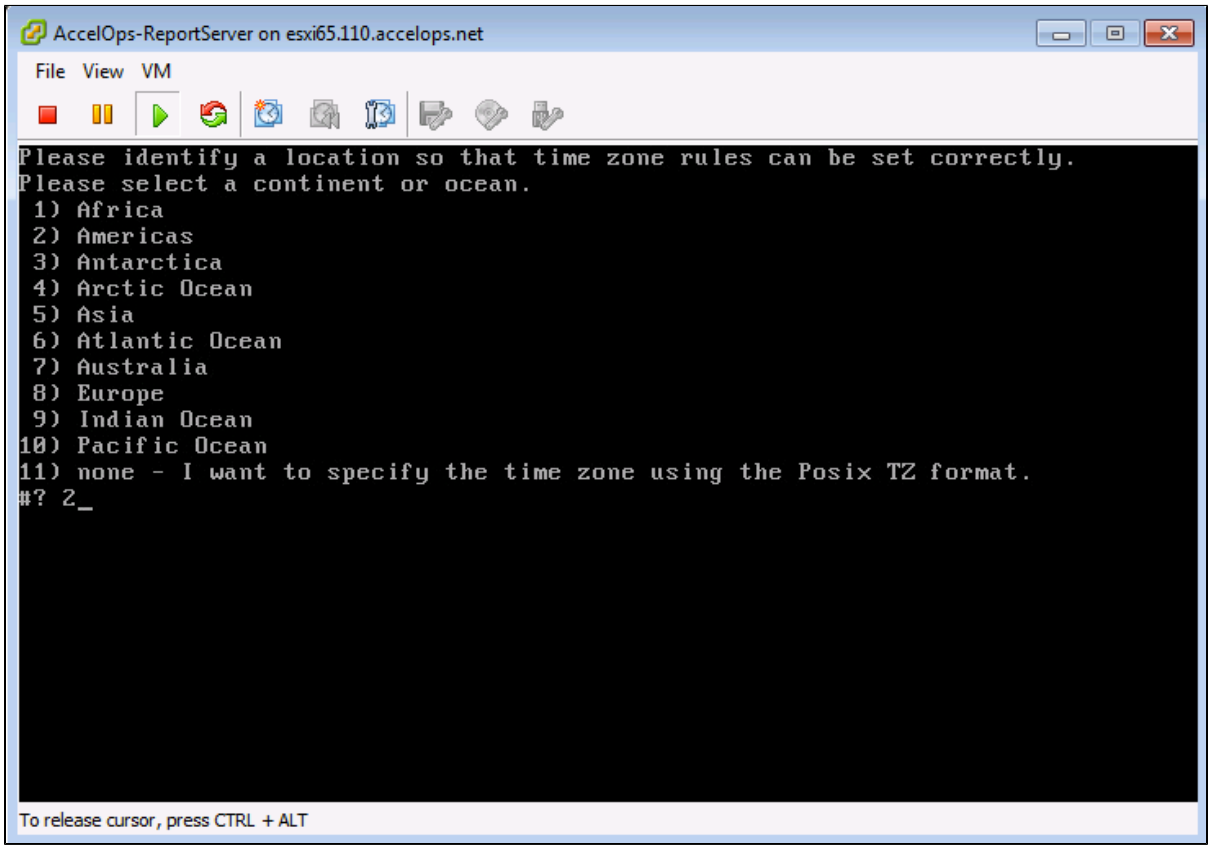
Step 2: Configure the Timezone

It is important to select the correct time zone that you are located in.

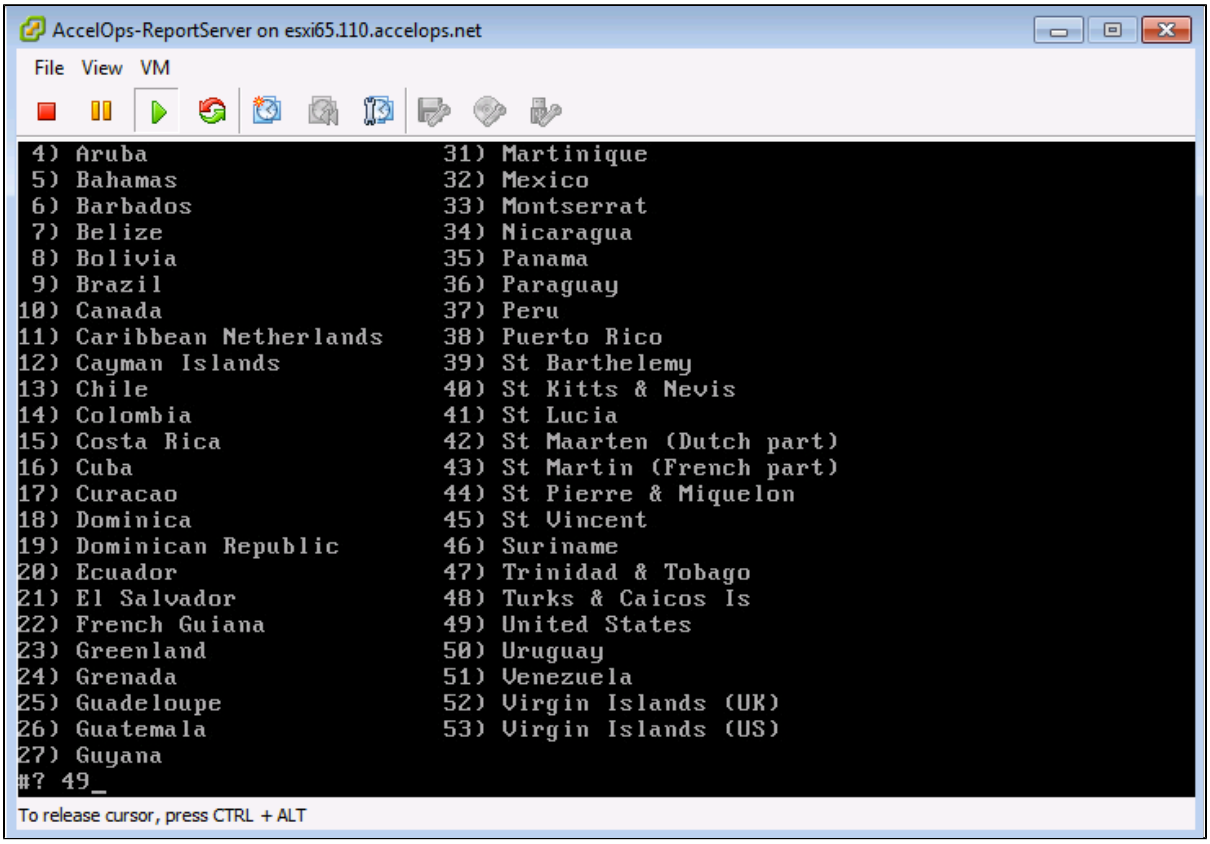
1. On VM console, Select 'Set Timezone' and press the 'Enter' key



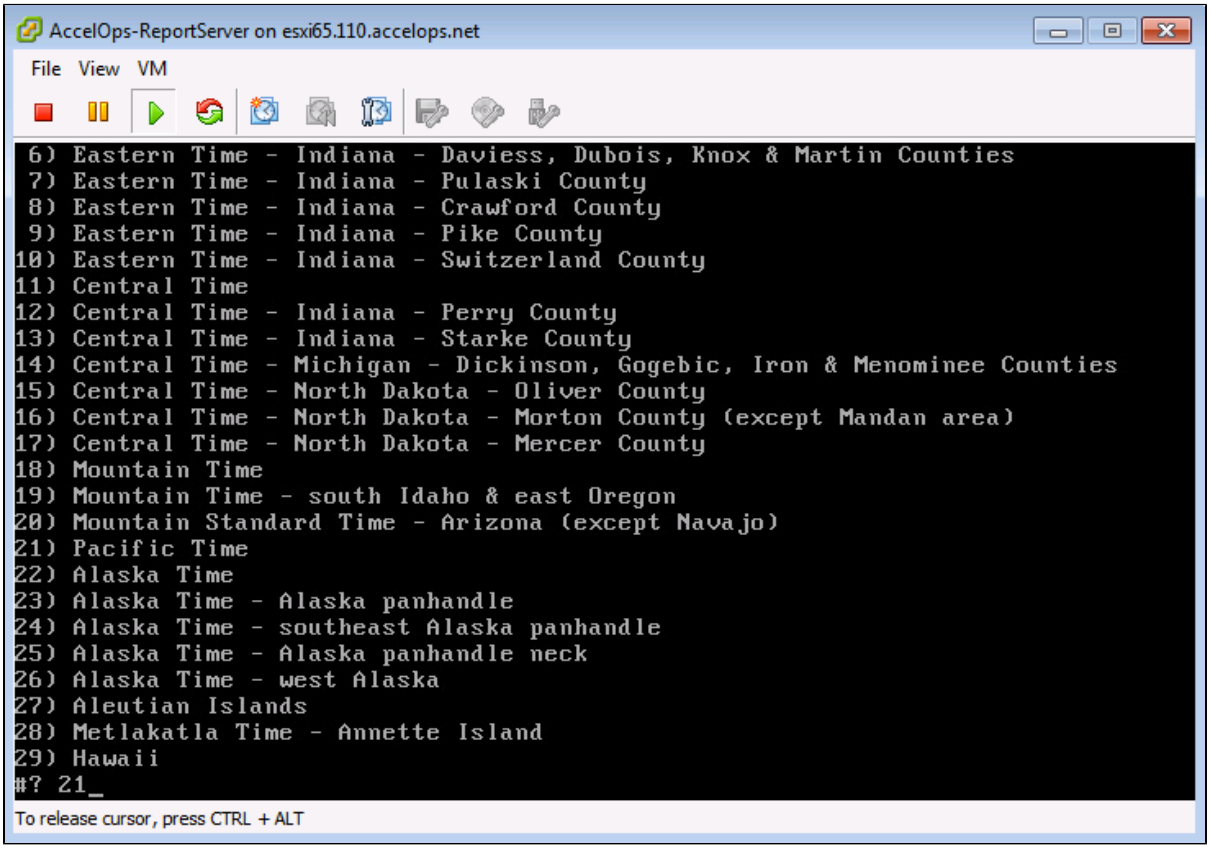
2. Select your Location and press the 'Enter' key



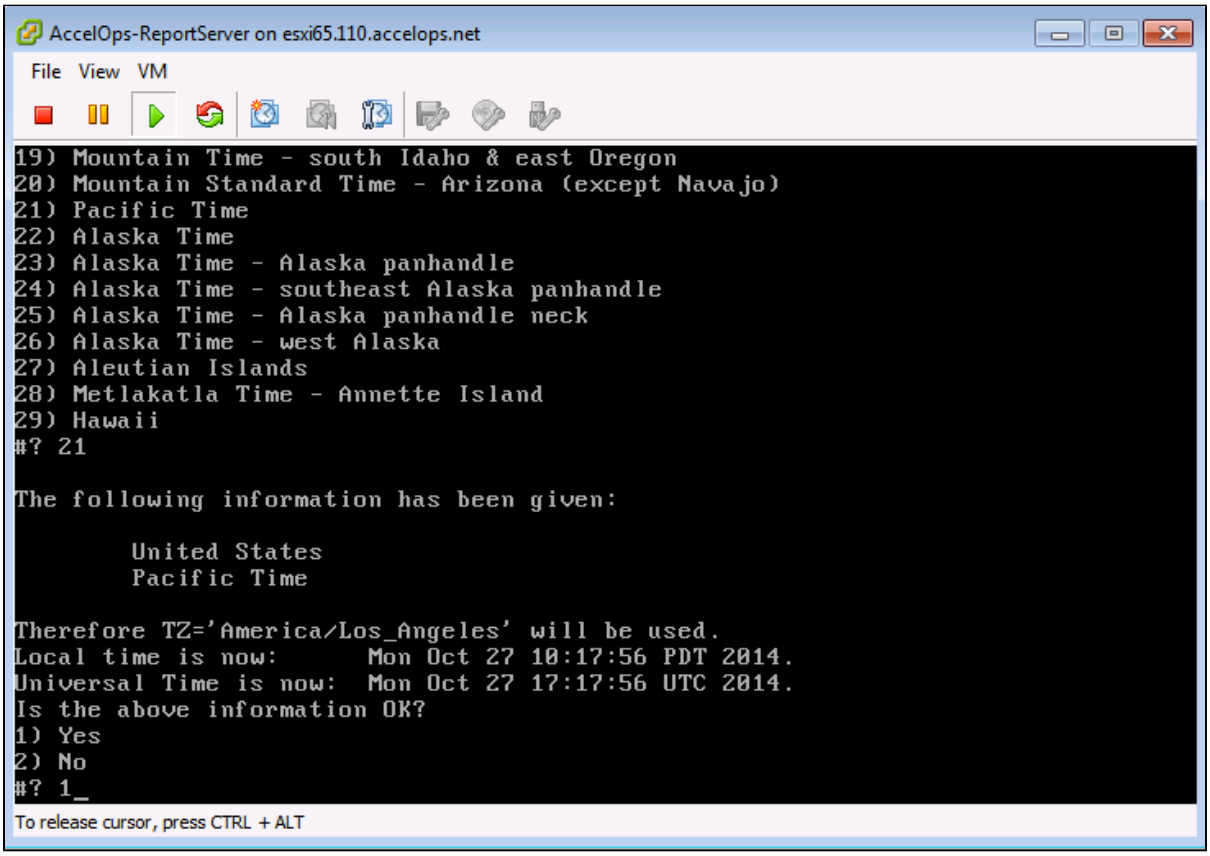
3. Select your Country and press the 'Enter' key



4. Select your Timezone and press the 'Enter' key

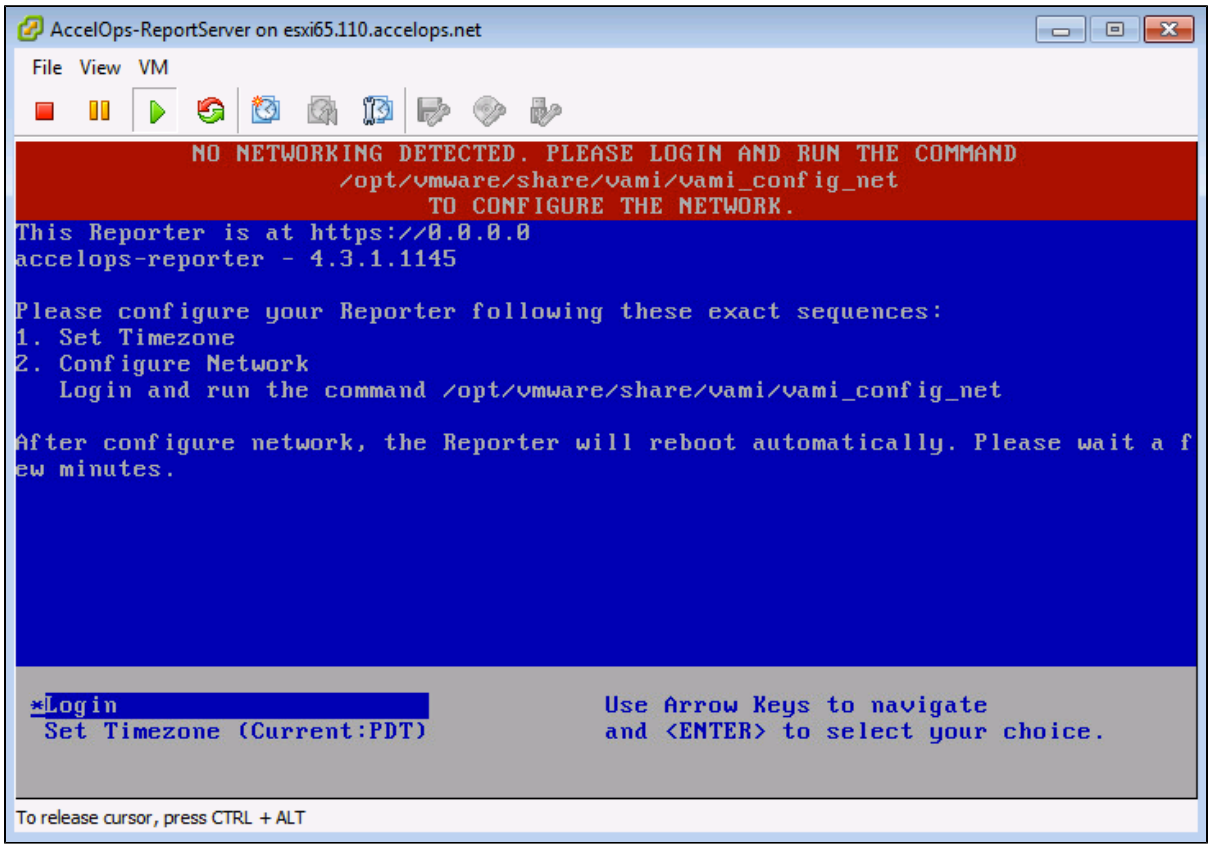


5. Review and Confirm your Timezone selection

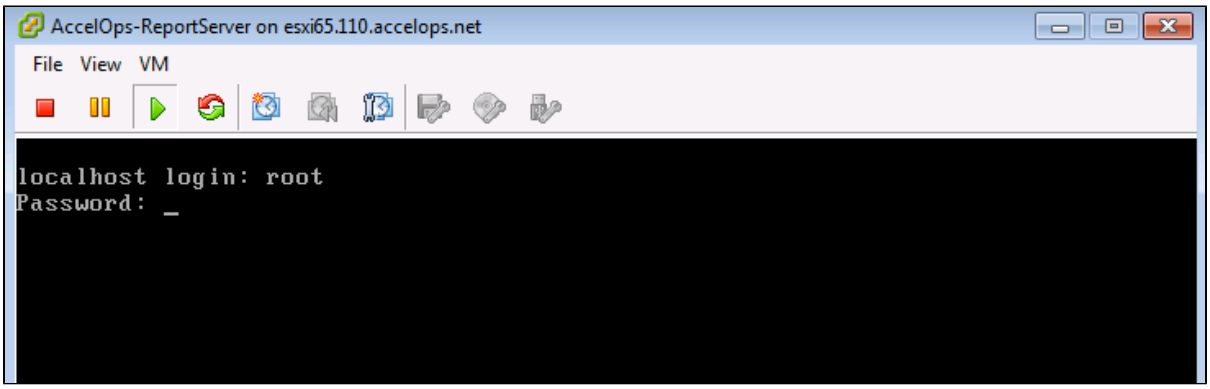


Step 3: Configure the Network

1. On VM console, Select 'Login' and press the 'Enter' key



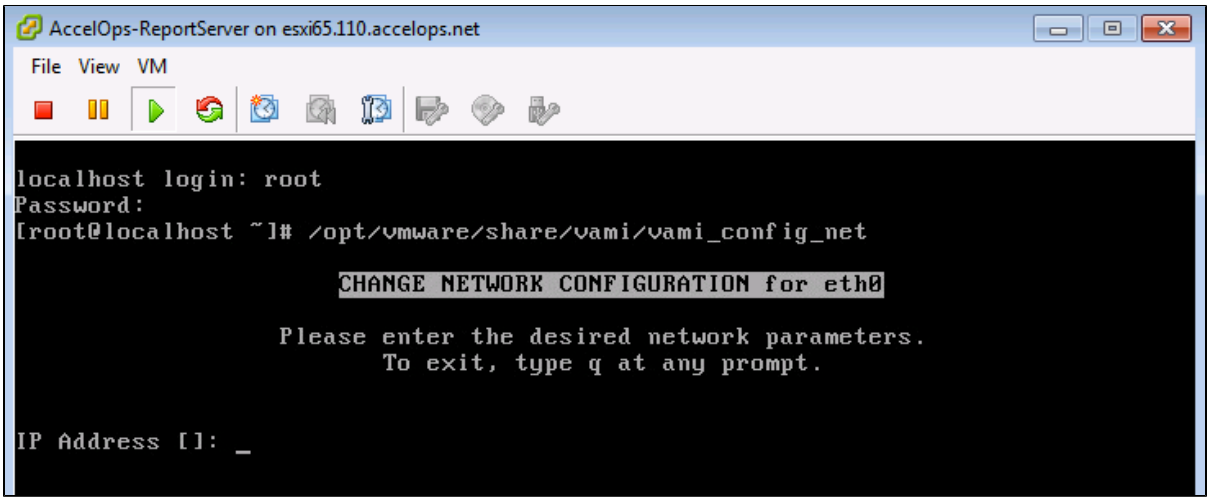
2. Enter default log in information.
   Login: root
   Password: ProspectHills



3. Run vami_config_net script to configure network and installing AccelOps Report server

Configure the Network

```
/opt/vmware/share/vami/vami_config_net
```

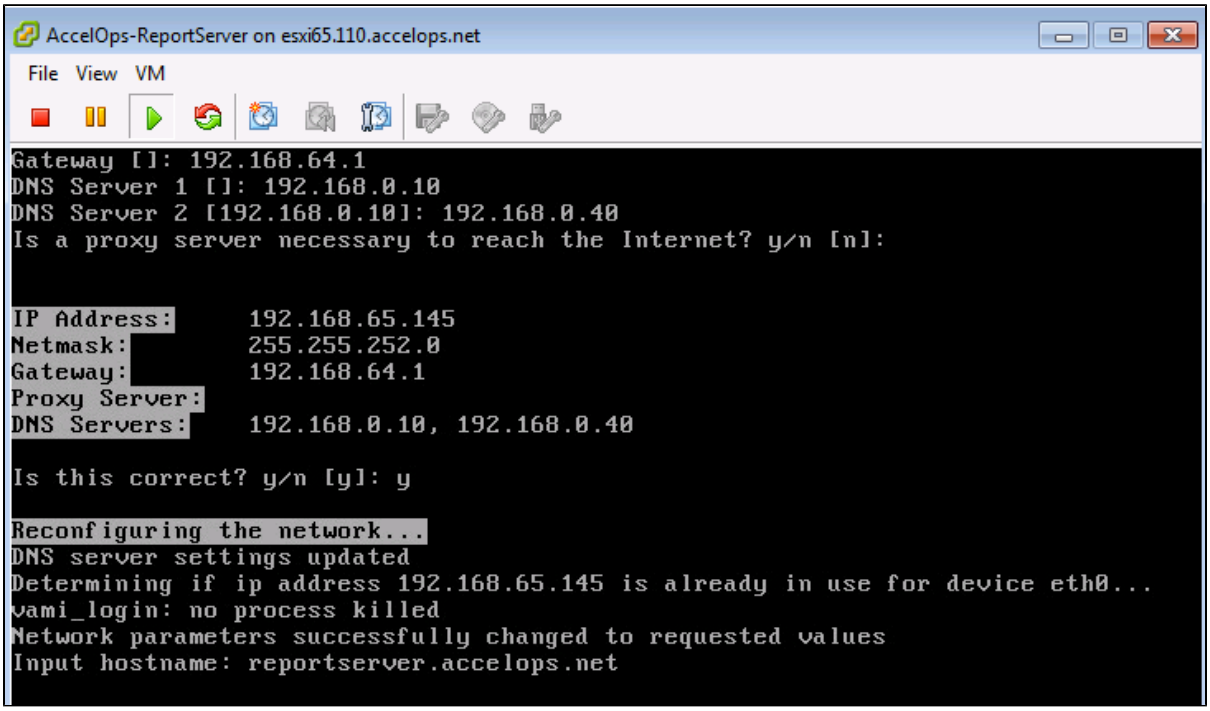


4. Configure Network with Static IP address
    a. The following information is required to configure Static IP address:
        i. IP Address
        ii. Netmask
        iii. Gateway
        iv. DNS Server(s)

> **Proxy Server**
>
> Do not configure the proxy server setting.

    b. Press the 'y' key to accept the changes

c. Enter 'Host name' and press 'Enter' key



Step 4: Select Mount Point to store your data

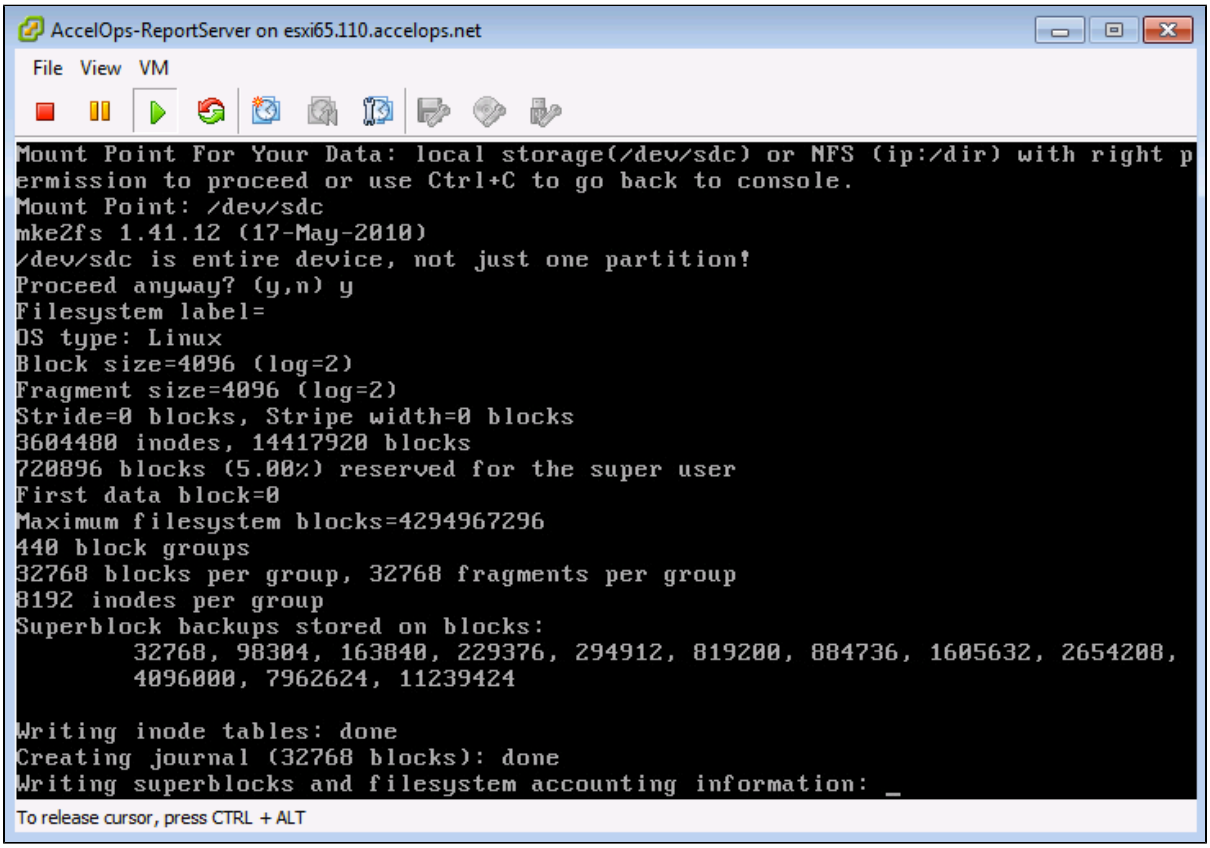
The AccelOps Report Server can be installed using either storage configured within the ESX server or NFS storage.

Choose only following Step 4.1 or 4.2 based on Section 3

1. Enter your Local hard disk mount point

> **Note**
>
> Skip Step 4.1 if AccelOps Super is used NFS storage to store the events data. Else, continue below steps.

Local Storage Mount point
/dev/sdc

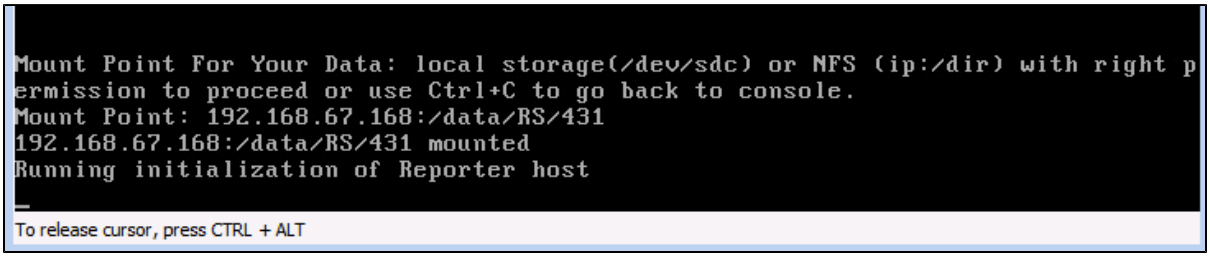


2. Enter your NFS mount point

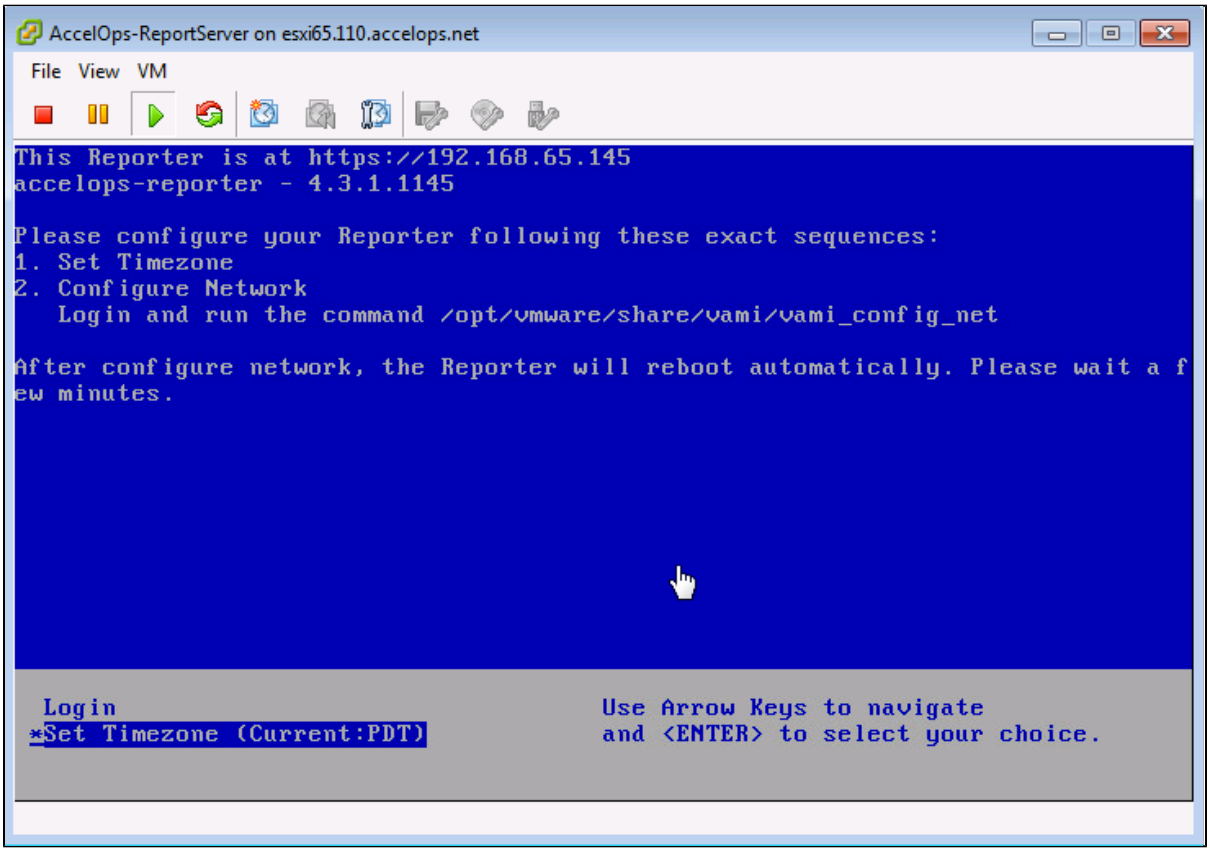
> **Note**
>
> Skip Step 4.2 if you choose Step 4.1 to store Reports data in local Hard disk. Else, continue below steps.

NFS Mount point

```
<NFS_Server_IP_Address>:/<Directory_Path>
```



3. After mount point, Report server will reboot automatically
   In 5 to 10mins, Report server will be configure successful.

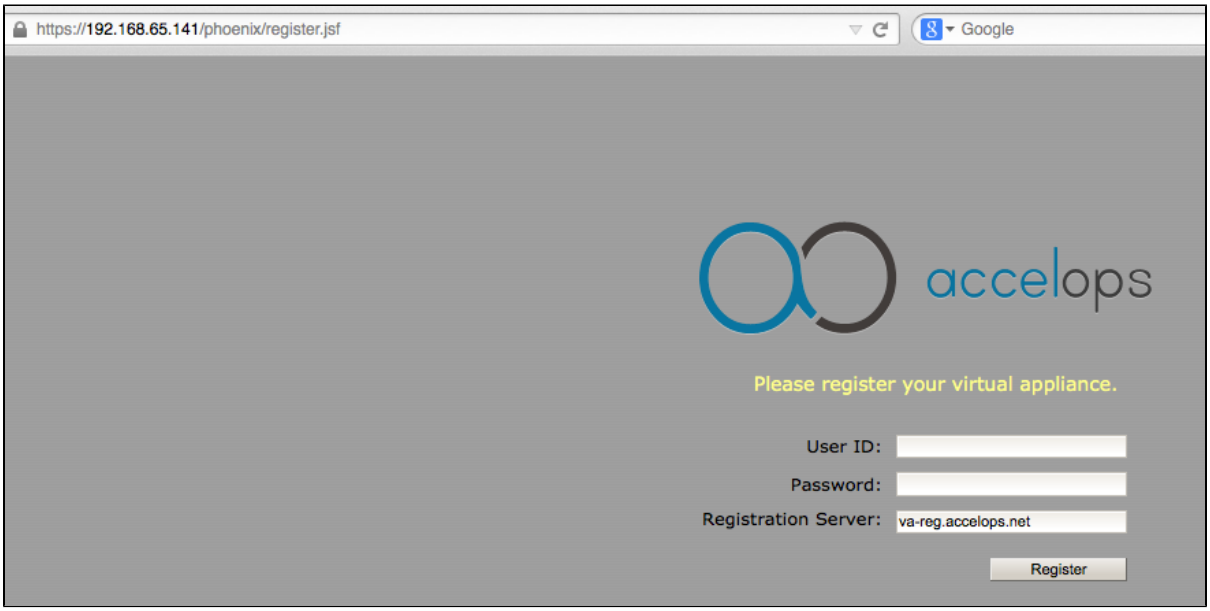


Section 5: Register the Report Server to Supervisor

> **Note**
>
> A new license is required to enable Report Server. Contact AccelOps support for Report Server License. You can skip this step if a Report Server license is already registered with the Supervisor.

Step 1: Re-register AccelOps Supervisor with new license

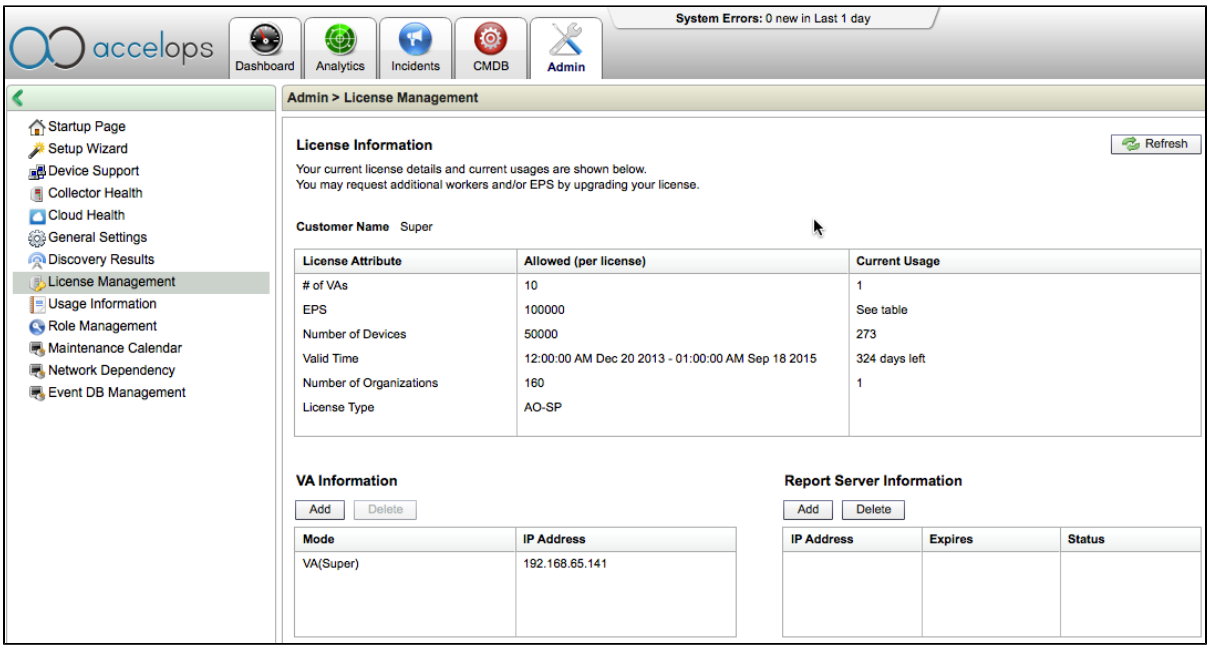
1. In browser windows, enter 'https://<Supervisor IP>/phoenix/register.jsf'



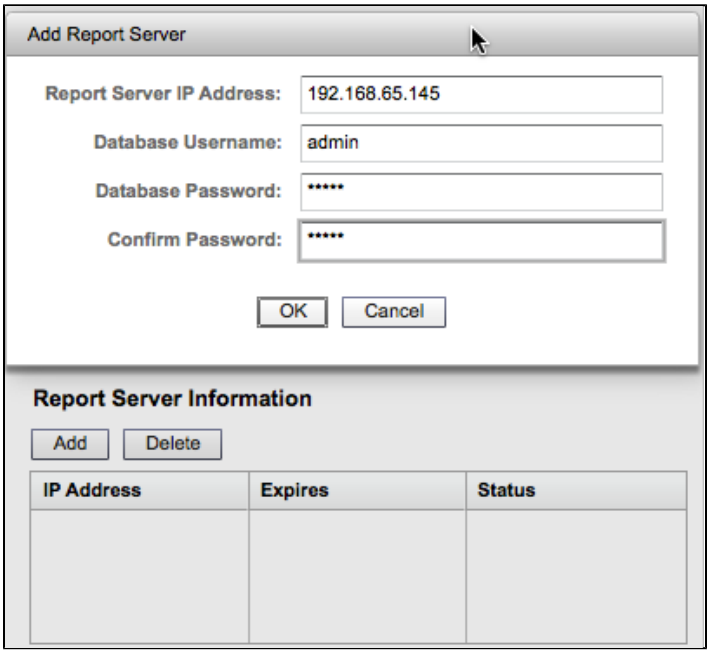
2. Enter license user name and password

Step 2: Add Report Server on Supervisor UI

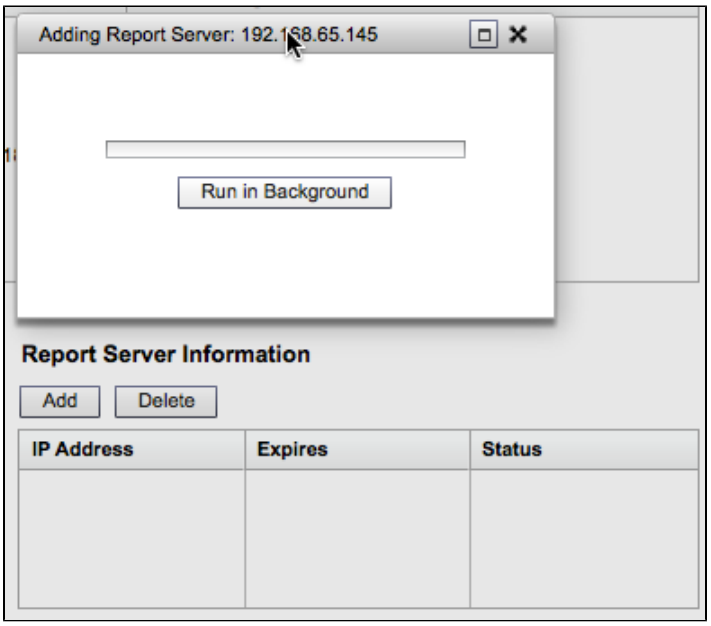
1. Go to Admin > License Management. You will see a section called 'Report Server Information'



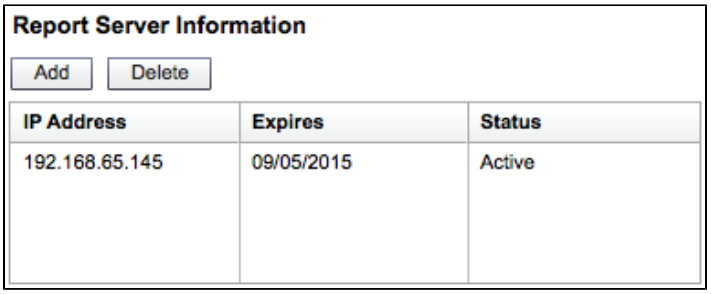
2. Click 'Add' to register the Report Server Node
    a. Enter Report Server IP Address
    b. Enter Read only credentials that will be used by the AccelOps Visualization Analytics Server to read the data in the PostgreSQL tables in the Report Server



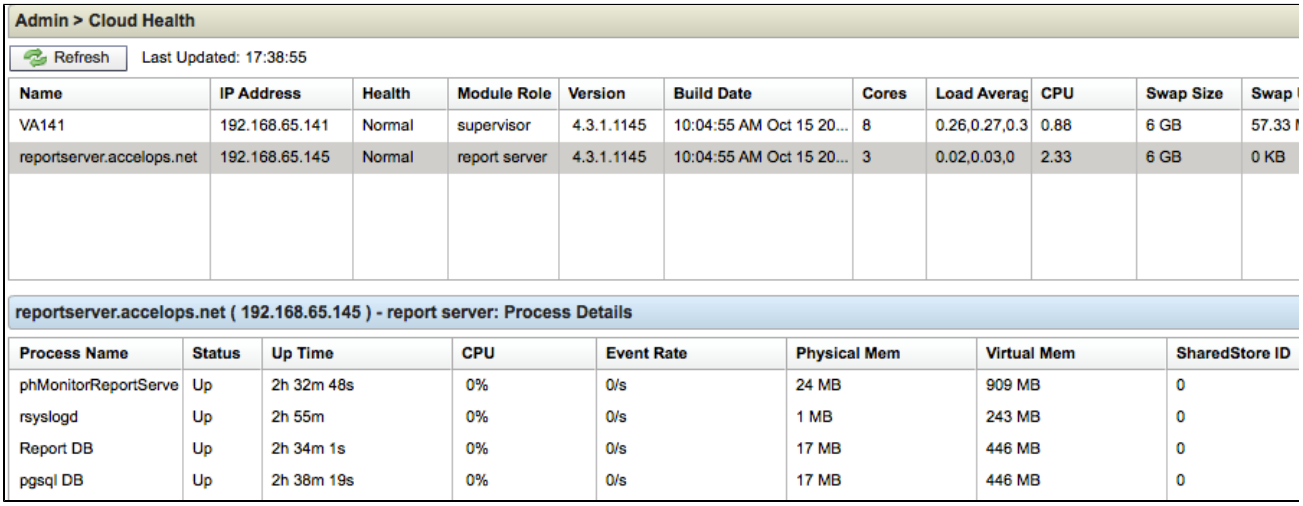
3. Report Server registration will takes 3mins to complete when Supervisor's CMDB size is <1 GB.
   Else, it takes more time to complete registration based Supervisor's CMDB size. You can 'Run in Background' when Supervisor's CMDB size is > 1GB.



4. Click 'OK' on Confirmation pop-up. The Supervisor node will configure the Report Server



5. Make sure Report Server appears in Admin > Cloud health



Admin > Cloud Health

Refresh Last Updated: 17:38:55

Name	IP Address	Health	Module Role	Version	Build Date	Cores	Load Averag	CPU	Swap Size	Swap
VA141	192.168.65.141	Normal	supervisor	4.3.1.1145	10:04:55 AM Oct 15 20...	8	0.26,0.27,0.3	0.88	6 GB	57.33 M
reportserver.accelops.net	192.168.65.145	Normal	report server	4.3.1.1145	10:04:55 AM Oct 15 20...	3	0.02,0.03,0	2.33	6 GB	0 KB

reportserver.accelops.net (192.168.65.145) - report server: Process Details

Process Name	Status	Up Time	CPU	Event Rate	Physical Mem	Virtual Mem	SharedStore ID
phMonitorReportServe	Up	2h 32m 48s	0%	0/s	24 MB	909 MB	0
rsyslogd	Up	2h 55m	0%	0/s	1 MB	243 MB	0
Report DB	Up	2h 34m 1s	0%	0/s	17 MB	446 MB	0
pgsql DB	Up	2h 38m 19s	0%	0/s	17 MB	446 MB	0

Installing in KVM

The following steps are needed to set up AccelOps Virtual Appliance under Redhat Kernel Virtualization Manager (KVM). The procedures are identical for both Service Provider and non-Service Provider versions; the difference is in the licenses applied which will make multiple organizations to appear.

This section describes the basic installation steps on KVM. Please follow the detailed steps for configuring AO Collector, Super, Worker as described under ESX.

- Prerequisites

Prerequisites

To install AccelOps under KVM, you will need this information:

- Static IP address
  - Determine the static IP address and subnet mask for your virtual appliance.
- Enter the AccelOps host name within your local DNS server
- Proxy server information (IP address and port number)
  - The authenticated proxy server is not supported in this version of AccelOps. Turn off authentication on proxy server for this host or completely disable the proxy for this host.
- Determine the IP address of NFS mount point and NFS share name

Preliminary step: setup bridge network for KVM

If AccelOps is the first guest on KVM, then a bridge network may be required to enable network connectivity. For details see here.

For the instructions below, **em1** connected as management network and **em4** connected to your local area network.

1. In KVM host go to /etc/sysconfig/network-scripts/
2. Create bridge network config file ifcfg-*br0* (Sample config for br0)

```
DEVICE=br0
BOOTPROTO=none
NM_CONTROLLED=yes
ONBOOT=yes
TYPE=Bridge
NAME="System br0"
```

3. Edit network config file *ifcfg-em4*

```
DEVICE=em4
BOOTPROTO=shared
NM_CONTROLLED=no
ONBOOT=yes
TYPE=Ethernet
UUID="24078f8d-67f1-41d5-8eea-xxxxxxxxxxxx"
IPV6INIT=no
USERCTL=no
DEFROUTE=yes
IPV4_FAILURE_FATAL=yes
NAME="System em4"
HWADDR=F0:4D:00:00:00:00
BRIDGE=br0
```

4. Restart network service
5.

Deploying AccelOps on KVM

1. Download AO KVM package from image server. Verify checksum of the package. Uncompress the file.
2. Start Virtual Machine Manager

3. Right click host and select New

4. Create new VM

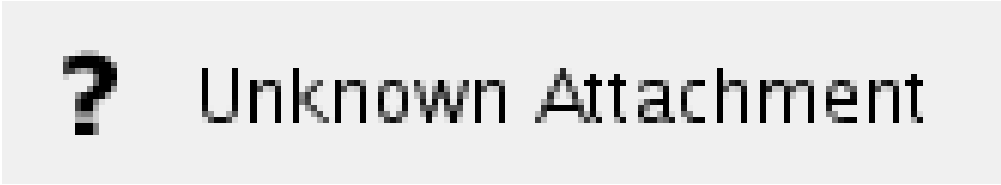
5. Choose the decompressed KVM disk image

6. Allocate resource based on the system requirement

7. Confirm and create new VM

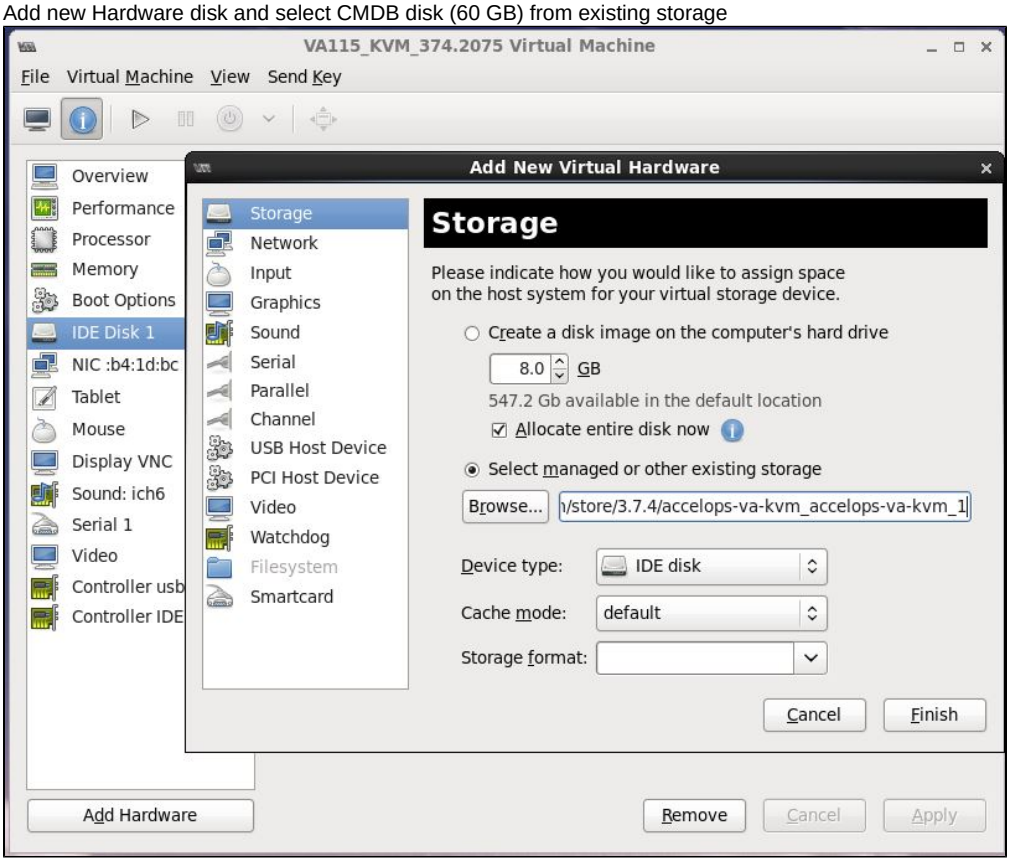
8. Open new VM

9. Change network setting bridge via “br0”



10. Change Storage Disk bus to IDE

11. Add new Hardware disk and select CMDB disk (60 GB) from existing storage



12. **Optional**: add local eventDB storage (VA mode only)

13. Power on AccelOps VA
14. Configure AccelOps system from console by following the steps described for ESX hypervisor.

Installing in HyperV

The following steps are needed to set up AccelOps Virtual Appliance under Microsoft Hyper-V virtualization platform. The procedures are identical for both Service Provider and non-Service Provider versions; the difference is in the licenses applied which will make multiple organizations to appear.

This section describes the basic installation steps on Hyper-V. Please follow the detailed steps for configuring AO Collector, Super, Worker as described under ESX

Supported Versions

AccelOps have been tested to run on Hyper-V on Microsoft Windows 2012.

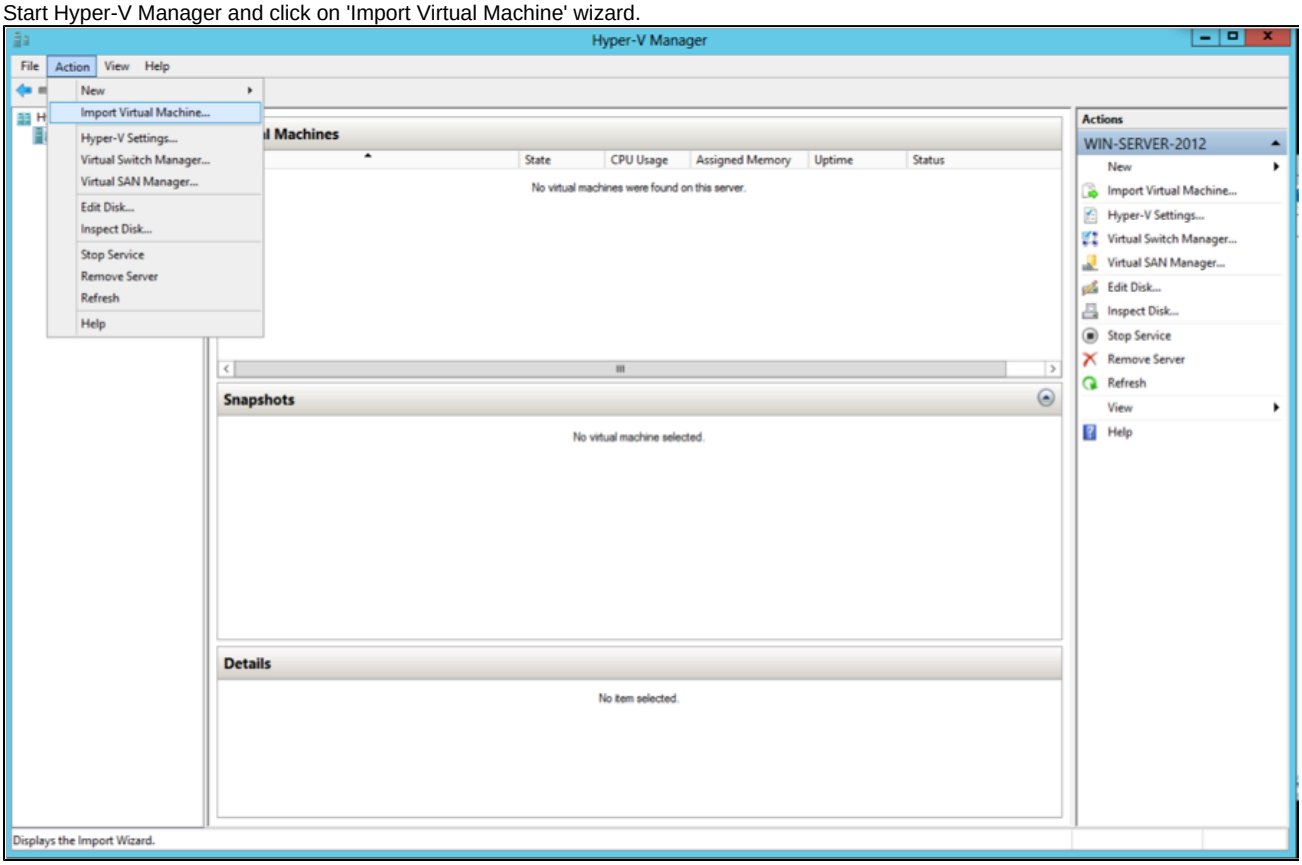
Prerequisites

To install AccelOps under HyperV, you will need this information:

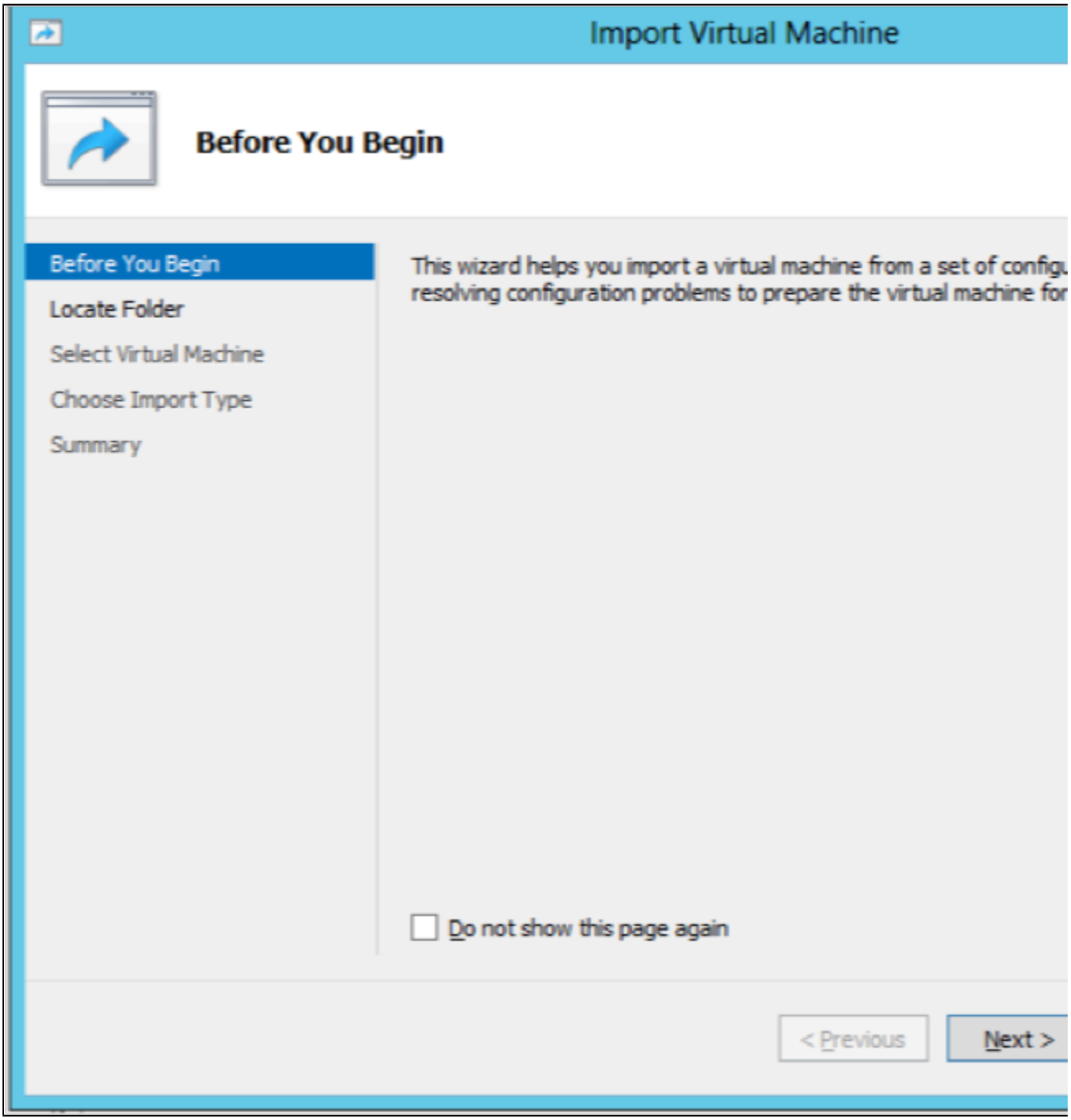
- Static IP address
  - Determine the static IP address and subnet mask for your virtual appliance.
- Enter the AccelOps host name within your local DNS server
- Proxy server information (IP address and port number)
  - The authenticated proxy server is not supported in this version of AccelOps. Turn off authentication on proxy server for this host or completely disable the proxy for this host.
- Determine the IP address of NFS mount point and NFS share name

Deploying a virtual appliance on Hyper-V

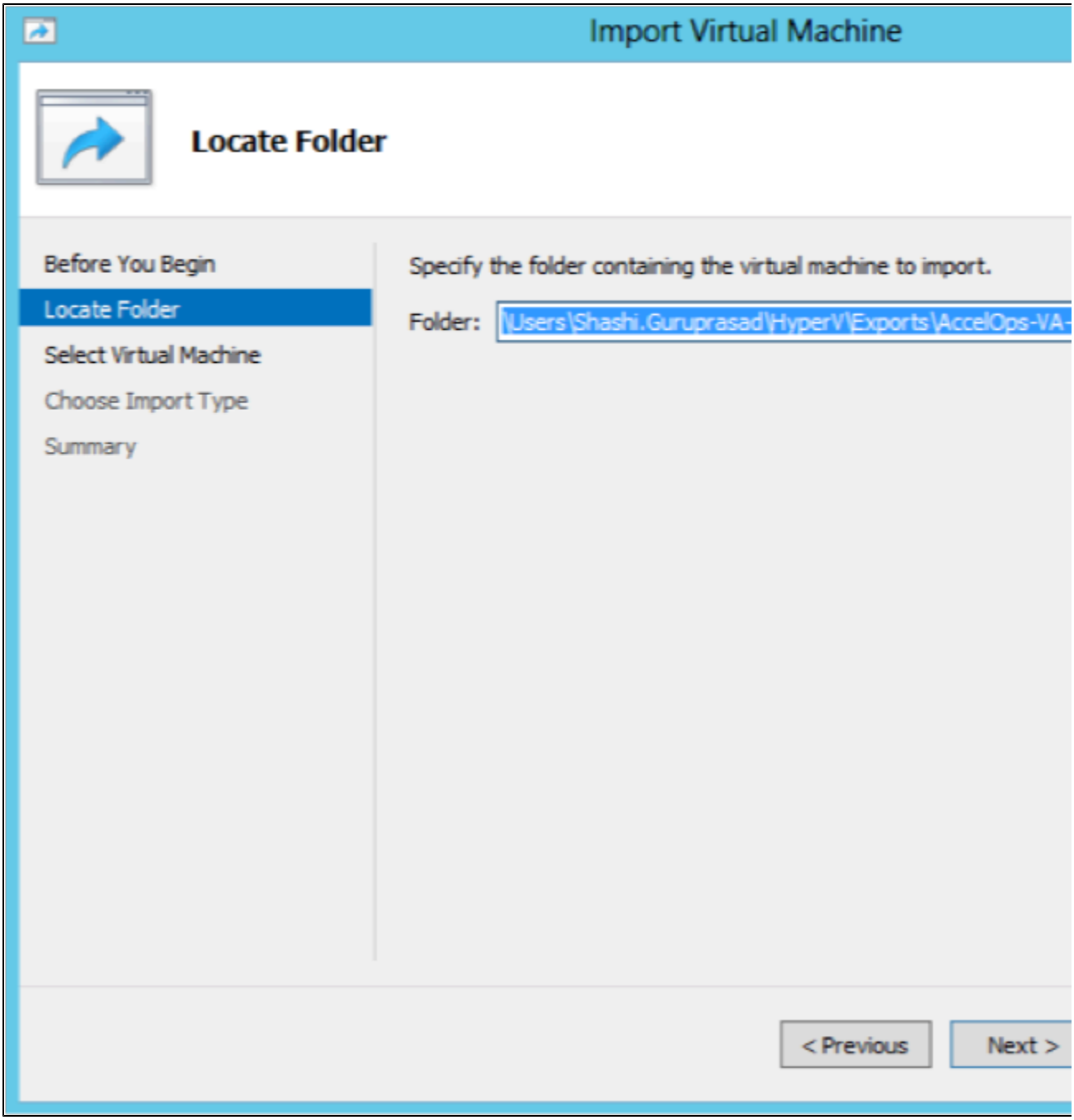
1. Download AO HyperV package from image server. Verify checksum of the package. Un-compress the file.
2. Start Hyper-V Manager and click on 'Import Virtual Machine' wizard.



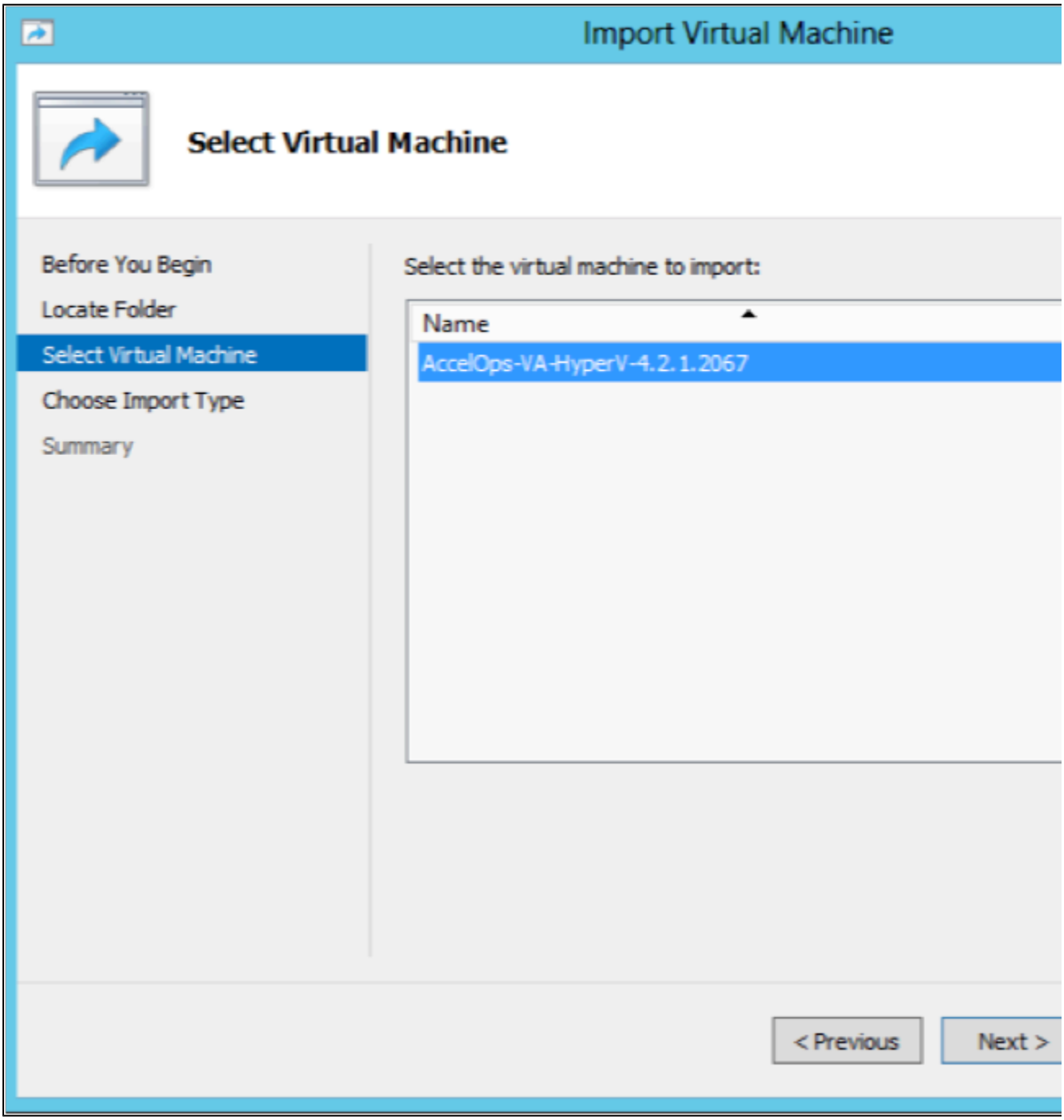
3.



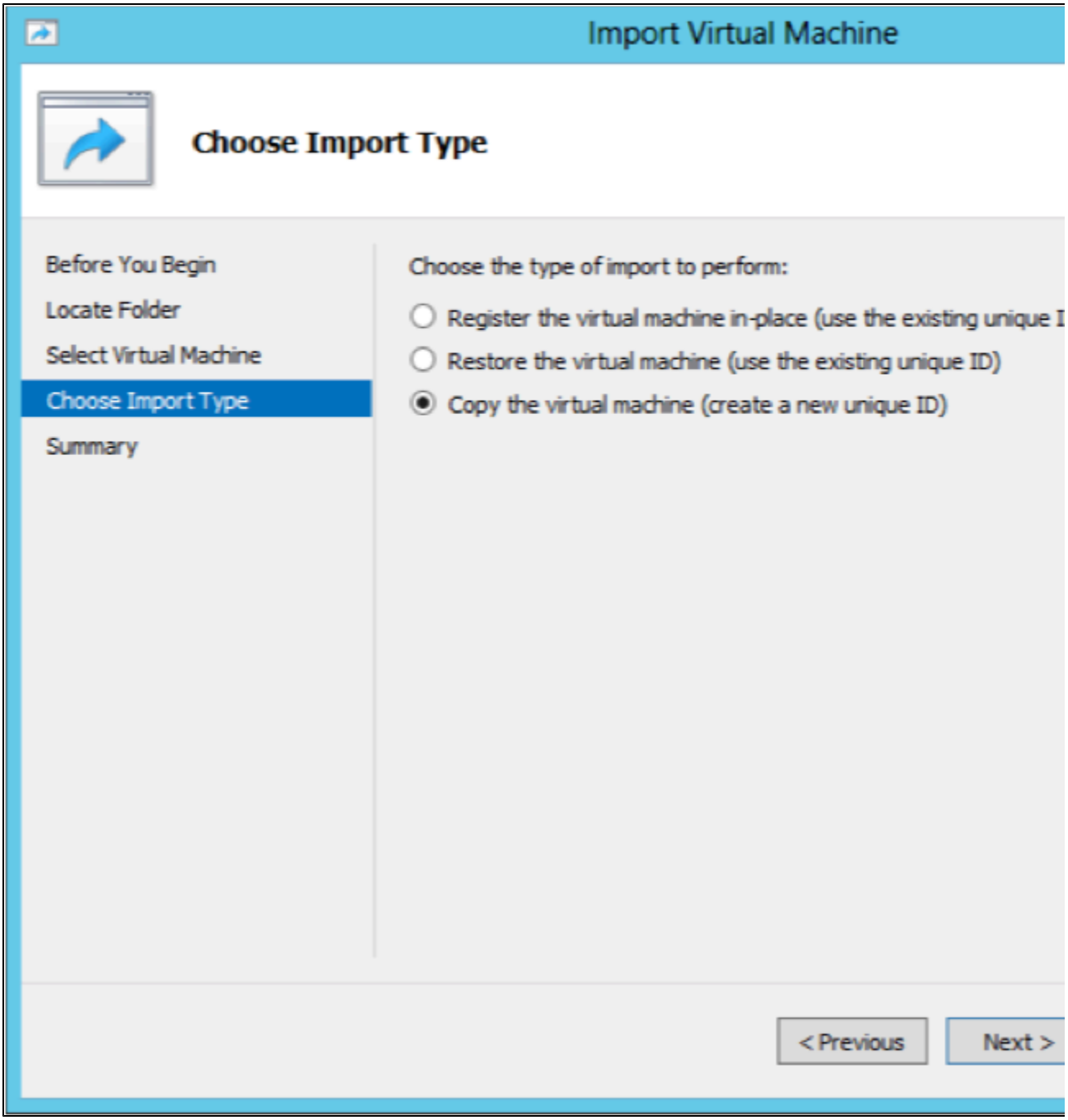
4. Specify the folder containing AccelOps virtual machine



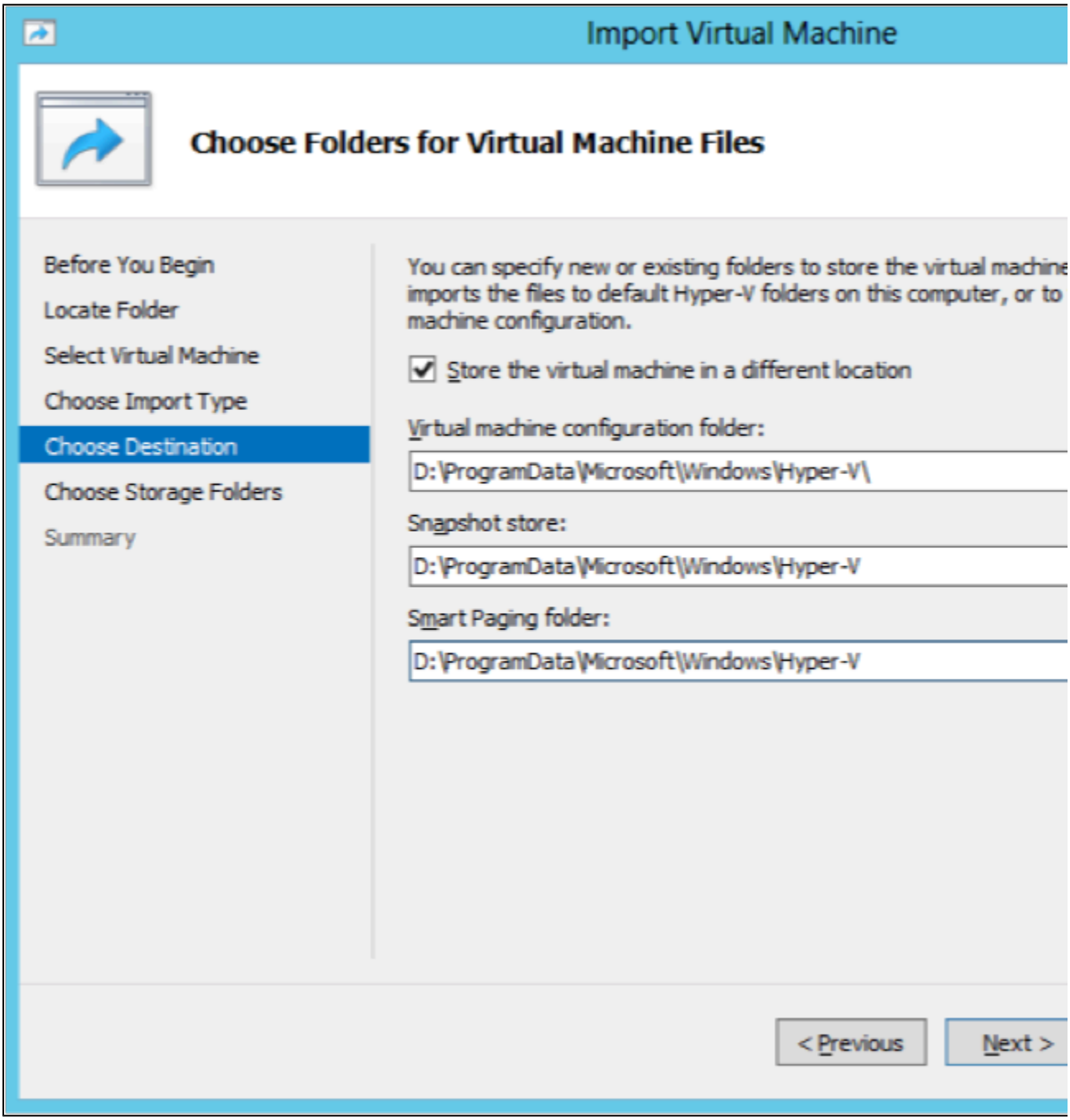
5. Select the proper AccelOps 4.2.1 image



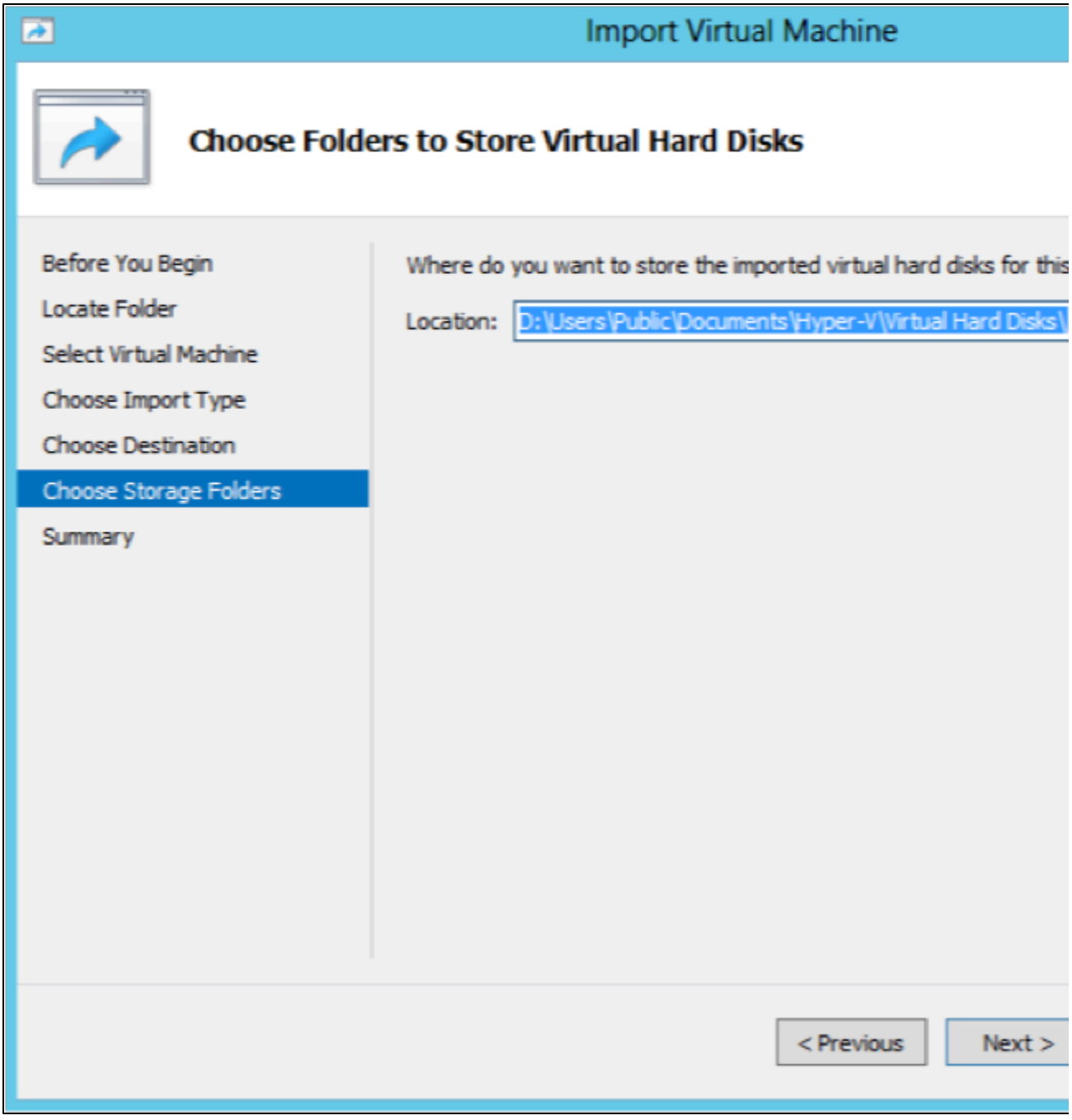
6. Start copying the virtual machine



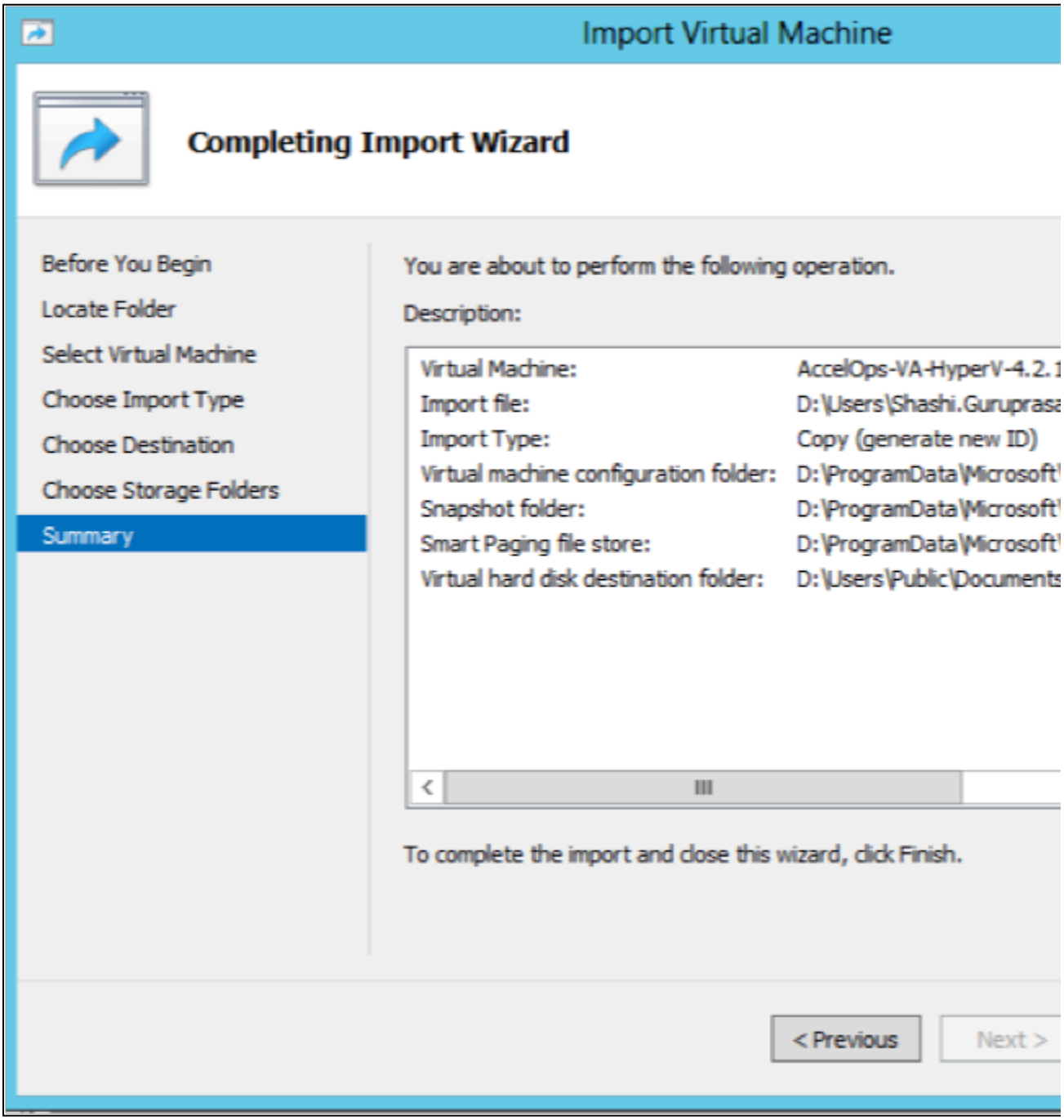
7. Choose folders for Virtual Machine files



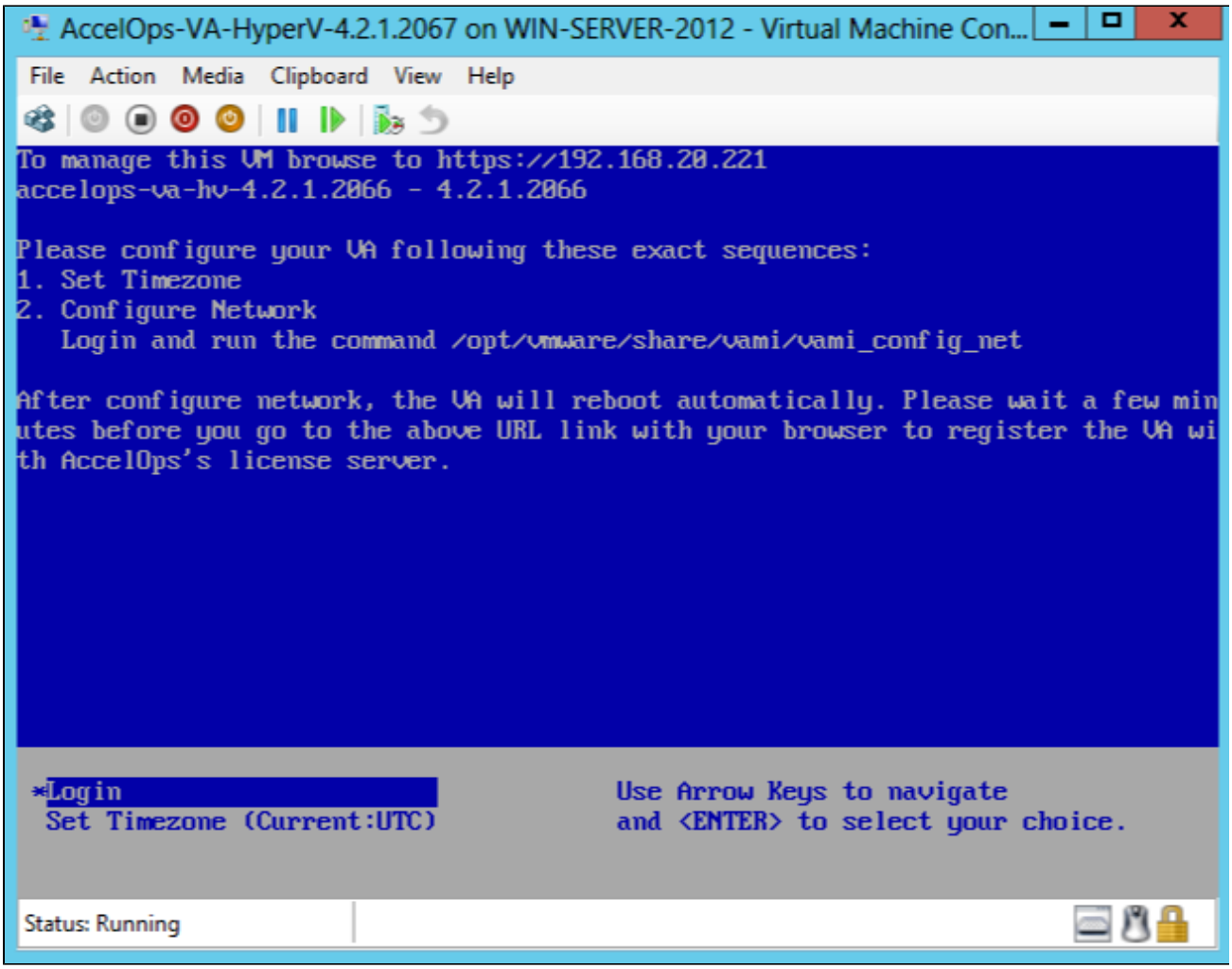
8. Choose folders to store virtual hard disks



9. Verify the information and complete the import by clicking Finish



10. Before you power on the VM, determine whether you plan on using NFS to store events (i.e. EventDB) or use a local disk. If you plan on using a local disk, a dynamically expanding disk of 100GB is already included in IDE controller 1. If this size is sufficient, proceed to complete the remaining installation steps. Use /dev/sdc1 as the device when you are asked for the path for EventDB. If you need a larger sized local disk, you can covert this disk to a larger one using 'Edit Disk' and selecting 'Convert' to create a new hard disk. After this step is complete, replace the third disk on IDE controller 1 with the new one that you create. If you are going to use NFS for EventDB, follow the same steps as described for ESX hypervisor
11. Power on AccelOps VA and Connect to the console (right click the VM and click 'Connect')



12. Configure AccelOps system from console by following the steps described for ESX hypervisor.

Note: AccelOps HyperV images uses dynamically expanding VHD disks for the root and CMDB partitions, and a dynamically expanding VHDX disk for EventDB. Dynamically expanding disks are used to keep the exported HyperV image within reasonable limits. For production deployments, Microsoft recommends using a 'Fixed type' disk for VHD format (root and CMDB partition) and 'Dynamic type' for VHDX format (EventDB). Please refer to 'Performance Tuning Guidelines for Windows Server 2012 (or R2)'

Installing in AWS

The following steps are needed to set up AccelOps Virtual Appliance in Amazon Web Services (AWS). The procedures are identical for both Service Provider and non-Service Provider versions; the difference is in the licenses applied which will make multiple organizations to appear.

The following are the Amazon Machine Instance ids for the various relevant releases

Region Code	Region Name	4.2.1 Super/Worker AMI-id	4.2.1 Collector AMI-id	4.2.3 Super/Worker AMI-id	4.2.3 Collector AMI-id
us-east-1	US East (Northern Virginia)	ami-cc7e9ba4	ami-49190320	ami-2872a340	ami-5a954532
us-west-1	US West (Northern California)	ami-9c4443d9	ami-a24443e7	ami-17242852	ami-2b24286e
us-west-2	US West (Oregon) Region	ami-2fc6b21f	ami-aa1f6b9a	ami-d90145e9	ami-2f02461f
eu-west-1	EU (Ireland) Region	ami-bf08c7c8	ami-a708c7d0	ami-aa3ce3dd	ami-903ce3e7

Note: SVN password reset issue after system reboot for AccelOps 3.7.6 customers in AWS Virtual Private Cloud (VPC)

AccelOps uses SVN to store monitored device configurations. In AWS VPC setup, we have noticed that AccelOps SVN password gets changed if the system reboots - this prevents AccelOps from storing new configuration changes and viewing old configurations. The following procedure can be used to reset the SVN password to AccelOps factory default so that AccelOps can continue working correctly.

This script needs to be run only once.

1. Logon to Super
2. Copy the attached “ao_svnpwd_reset.sh” script to Super on EC2+VPC deployment
3. Stop all backend processes before running script by issuing the following command: **phtools --stop all**
4. Run following command to change script permissions: **"chmod +x ao_svnpwd_reset.sh"**
5. Execute “ao_svnpwd_reset.sh” as root user: "./ao_svnpwd_reset.sh"
6. The system will reboot
7. Check SVN access to make sure that old configurations can be viewed.

Setup a VPC (Virtual Private Cloud) in AWS for use by AccelOps VMs

The user **must** setup a VPC in AWS and deploy AccelOps cluster (or VA) within a VPC rather than classic-EC2. In classic-EC2, starting or stopping an instance changes the private IP address of the instance. This not only invalidates the license but also causes AccelOps software to stop working.

1. Visit the VPC dashboard page and start VPC Wizard. In the example below, we create a VPC with a single public subnet (i.e. each VM has an elastic IP attached to it). Customers may use other configurations depending on their requirements of security and public access requirements (e.g: customer collectors need access to AccelOps cluster over public Internet as opposed to reaching AccelOps over a

VPN)

Unknown Attachment

2. Hit Continue and Create VPC

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3. You should get a 'success' screen as follows

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4. Once this is done, you will see the following defined: VPC, subnet, route table, Internet gateway, DHCP option set, default Network ACLs, and a 'default' security group. The only change needed to this default VPC is to modify the 'default' security group to add inbound rules for ssh(22) and https(443). The example screenshots below show this configuration (user does not need to perform any action except for the security group). For better security, Users can customize the inbound rules and limit the IP addresses from where this VPC can be accessed from.

   Alternatively, a VPN connection can be setup to customer's private data center in which the default inbound rules ensure that the VPC is firewalled off from public Internet. This user guide does not explain such a setup. Please refer to Amazon's documentation to set up VPN connections.

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Determine Local or NFS Storage for EventDB

If the aggregate EPS for your AccelOps installation requires a cluster (VA or SP + Worker nodes), then you **must** setup an NFS server. The next section describes setting up an NFS Server. If your storage requirements for EventDB is more than 1TB, it is recommended that you use an NFS server where you can configure LVM+RAID0 which is described in the next section. Although it is possible to setup a similar LVM+RAID0 on AccelOps node itself, this has not been tested.

To calculate storage requirements, here is an example. At 5000 EPS, you can calculate daily storage requirements to about 22-30GB (300k events take roughly 15-20MB on average in compressed format stored in eventDB). So, in order to have 6 months of data available for querying, you need to have 4-6TB of storage.

If you only need one AccelOps node and your storage requirements are lower than 1TB and is not expected to ever grow beyond this limit, you can avoid setting up an NFS server and use a local EBS volume for EventDB. For this option, skip the next section, and install AccelOps as described in section 'Setup AO Supervisor and Worker nodes in AWS'.

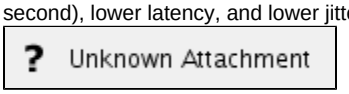
Setup NFS Server in AWS for use by AccelOps VMs

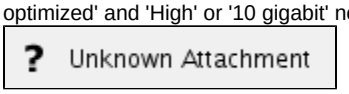
To setup an NFS server in AWS that is also highly available across availability zone failures, several architectures and partner options are presented by an AWS Solutions Architect in this talk (40 min youtube video) and link to slides.

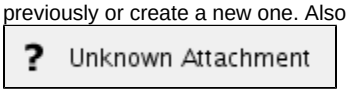
In this section, we describe setting up a simple NFS server using EBS volumes. **Note: If you are running these machines in production, it is significantly cheaper to use EC2 Reserved Instances (1 or 3 year) as opposed to on-demand instances.**

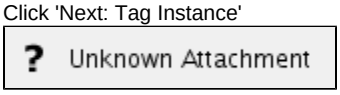
Note that EBS volumes have 10 times higher durability guarantees than traditional disk drives because data is replicated within an availability

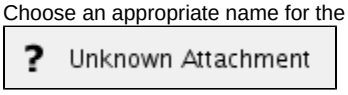
zone for component failures (RAID equivalent), so adding another layer of RAID on them does not provide you with higher durability guarantees. EBS has an annual failure rate (AFR) of 0.1 to 0.5%. In order to have higher durability guarantees, it is necessary to take periodic snapshots of the volumes. Snapshots are stored in AWS S3 which has 99.999999999% durability (via synchronous replication of data across multiple data centers) and 99.99% availability.

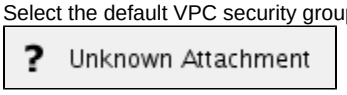
1. To configure the NFS Server for AccelOps eventDB, launch an instance and choose 64-bit HVM Amazon Linux AMI for the NFS server and follow the wizard. The reason to choose HVM image over the default Paravirtualized (PV) image is that HVM image automatically includes drivers to support enhanced networking which uses SR-IOV for networking that results in higher performance (packets per second), lower latency, and lower jitter.
   

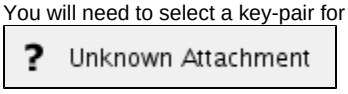
2. Choose instance type. For this example, I chose c3.2xlarge (current generation). Choose any instance type that has the capabilities 'EBS optimized' and 'High' or '10 gigabit' network performance. Click 'Next: Configure Instance Details'
   

3. Choose the VPC and Subnet you just created in the previous section. Make sure you choose a placement group that you created previously or create a new one. Also select EBS optimized instance
   

4. Click 'Next: Add Storage'. Add EBS volumes up to the capacity you need for AccelOps eventDB. For example, at 5000 EPS, you can calculate daily storage requirements to about 22-30GB (300k events take roughly 15-20MB on average in compressed format stored in eventDB). So, in order to have 6 months of data available for querying, you need to have 4-6TB of storage. On AWS, the maximum EBS volume is sized 1TB. In order to have larger disks, you need to create software RAID-0 volumes. You can attach at most 8 such volumes to an instance which gets you 8TB with RAID-0. Note that there is no advantage in using a different RAID configuration other than RAID-0 because it does not increase durability guarantees. In order to ensure much better durability guarantees, plan on performing regular snapshots which store the data in S3 (See next section 'Performing consistent snapshots of EBS volumes that host EventDB and CMDB' for details on how to do this). Since RAID-0 stripes data across these volumes, the aggregate IOPS you get will be the sum of the IOPS on individual volumes.
   Click 'Next: Tag Instance'
   

5. Choose an appropriate name for the NFS instance, and click 'Next: Configure Security Group'
   

6. Select the default VPC security group that you configured previously. Click 'Next: Review and Launch'
   

7. Review the information on the review page and click 'Launch'
8. You will need to select a key-pair for communicating to the NFS server and select 'Launch Instances'
   

9. Make sure your NFS server comes up correctly.
10. Select the NFS server instance and click 'connect' and you will get information to ssh into the instance
11. Configure NFS mount point access give AO internal IP full access.

```
# Update the OS and libraries with the latest patches
$ sudo yum update -y

$ sudo yum install -y nfs-utils nfs-utils-lib lvm2

$ sudo su -
# echo  Y | mdadm --verbose --create /dev/md0 --level=0 --chunk=256
--raid-devices=4 /dev/sdf /dev/sdg /dev/sdh /dev/sdi
# mdadm --detail --scan >  /etc/mdadm.conf
# cat /etc/mdadm.conf
# dd if=/dev/zero of=/dev/md0 bs=512 count=1
# pvcreate /dev/md0
# vgcreate VolGroupData /dev/md0
# lvcreate -l 100%vg -n LogVolDataMd0 VolGroupData
# mkfs.ext4 -j /dev/VolGroupData/LogVolDataMd0
# echo "/dev/VolGroupData/LogVolDataMd0 /data       ext4    defaults        1 1"
>> /etc/fstab
# mkdir /data
# mount /data
# df -kh

# vi /etc/exports
/data 10.0.0.0/24(rw,no_root_squash)
# exportfs -ar
# chkconfig --levels 2345 nfs on
# chkconfig --levels 2345 rpcbind on
# service rpcbind start
Starting rpcbind:                                          [  OK  ]
# service nfs start
Starting NFS services:                                     [  OK  ]
Starting NFS mountd:                                       [  OK  ]
Stopping RPC idmapd:                                       [  OK  ]
Starting RPC idmapd:                                       [  OK  ]
Starting NFS daemon:                                       [  OK  ]
```

Performing consistent snapshots of EBS volumes that host EventDB and CMDB

In order to get high durability guarantees of AccelOps data, it is necessary to periodically create EBS snapshots (hourly, daily, weekly), and these are stored in S3. The EventDB is typically hosted as a RAID-0 volume of several EBS volumes (as given in example in previous section). In order to reliably snapshot these EBS volumes together, a script called ec2-consistent-snapshot can be used to briefly freeze the volumes and create a snapshot. Another script called ec2-expire-snapshots can be used to schedule cron jobs to delete old snapshots that are no longer needed. CMDB is hosted on a much smaller EBS volume and the same scripts can be used to snapshot this volume.

The details of how download these scripts and setup periodic snapshots and expiration is described in the following blog post:

http://twigmon.blogspot.com/2013/09/installing-ec2-consistent-snapshot.html

The actual scripts can be downloaded from these github projects

https://github.com/alestic/ec2-consistent-snapshot

https://github.com/alestic/ec2-expire-snapshots

Setup AO Supervisor and Worker nodes in AWS

1. Logon to AWS EC2 console using your AWS account and go to EC2 dashboard
2. If you have not created a VPC, please do that as described in the beginning of this document
3. Click Launch Instance

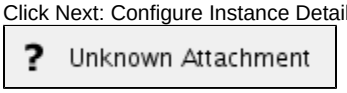
4. Select "Community AMIs" and search for **the following AMI ids** and click Select

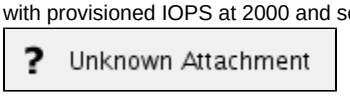
   The following AMIs are for release 4.2.1 and 4.2.3

Region Code	Region Name	4.2.1 Super/Worker AMI-id	4.2.3 Super/Worker AMI-id
us-east-1	US East (Northern Virginia)	**ami-cc7e9ba4**	**ami-2872a340**
us-west-1	US West (Northern California)	**ami-9c4443d9**	**ami-17242852**
us-west-2	US West (Oregon) Region	**ami-2fc6b21f**	**ami-d90145e9**
eu-west-1	EU (Ireland) Region	**ami-bf08c7c8**	**ami-aa3ce3dd**

5. Select 'Compute Optimized' instances, and preferably select one of c3 instances with 'High' network performance or 10 gigabit performance. C3 instances (current generation) run on the latest Intel Xeons that AWS provides as of AccelOps 3.7.6. For this guide, I chose c3.4xlarge and click Continue.
   Note: If you are running these machines in production, it is significantly cheaper to use EC2 Reserved Instances (1 or 3 year) as opposed to on-demand instances.
   

6. Click Next: Configure Instance Details
   

7. Click 'Next: Add Storage' - In this example, provisioned IOPS was selected for all 3 nodes in the cluster even though only Super node's CMDB data needs higher IOPS. For workers, Standard IOPS is sufficient. You can always launch with Standard IOPS first, and then add a separate EBS volume for CMDB separately with higher provisioned IOPS. As described in section 'Determine Local or NFS Storage for EventDB', if you are using local storage for EventDB, allocate a new EBS volume sized 50GB to 1TB (depending on storage requirement) with provisioned IOPS at 2000 and set it to device /dev/xvdi
   

8. Click 'Next: Tag Instance'. The name you give here will be assigned to all the instances you launch together in this wizard run. You will then have to rename the instances to its role (Super, worker1, worker2, etc.)
   

9. Click 'Next: Configure Security Group'. Choose the VPC's 'default' security group. AccelOps needs access to ports 443 (HTTPS) for GUI and API access, SSH(22) for remote management which are already included in the default security group. This group allows all traffic between instances within the VPC.
   

10. Click 'Review and Launch' to be taken to a review page. Make sure all the information provided is correct. Click 'Launch'
    

11. You will be asked to select an existing key pair or create a new key pair to connect to these instances via SSH. If you use an existing key pair, make sure you have access to it. If you are creating a new key pair, download the private key and store them in a secure location accessible from the machine from where you usually connect to these AWS instances. Then click 'Launch Instances'
    

12. Click 'View Instances'
    

13. Make sure your instances are running correctly. They will all be named 'AccelOps Cluster' to begin with. Rename them appropriately to distinguish between Super, Worker1, Worker2 as the screenshot below shows.
    

14. Create VPC based Elastic IPs and attach them to your nodes so that the public IPs do not change when you stop and start instances.
    

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15. You will now need to ssh to AccelOps SP. From the EC2 dashboard, select the instance, click Connect, select "Connect with a standalone SSH client" and locate the command example from the sample screenshot below. To login to AccelOps nodes, replace ec2-user with root as user name.

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16. SSH to the Super node. **Note: If you are installing a single AccelOps node with Local EventDB storage, please refer to section '(Optional - If using local storage) Configuring Local EventDB Storage' to perform additional steps**
17. Run "**cd /opt/phoenix/deployment/jumpbox/aws**"
18. Run the script ***pre-deployment.sh*** to configure host name and NFS mount point. Host name can be obtained from the EC2 dashboard, selecting the instance, right clicking on the instance, selecting "Connect with a standalone SSH client" and locating Public DNS.
    a. Agree with License Agreements
    b. Enter host name
    c. Enter the mount point -
        i. <NFS Server IP>:/data (For <NFS Server IP>, use the 10.0.0.X IP address of the NFS Server running within the VPC) ***or***
        ii. If using Local EventDB Storage as configured in section '(Optional - If using local storage) Configuring Local EventDB Storage', then use /dev/xvdi
19. The system will reboot
20. Logon to AccelOps SP; run "cd /opt/phoenix/deployment/jumpbox/aws" and run the script ***deployment.sh***
21. The system will reboot
22. Logon to AccelOps SP; run "cd /opt/phoenix/deployment/jumpbox/aws" and run the script ***post-deployment.sh***
23. The system will reboot is now ready
24. Register the virtual appliance. Launch browser to AccelOps VA using the DNS name in step 16. Register using the username and password provided by AccelOps.

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25. Once registration succeeds, log on using the default username and password.
    User ID: admin
    Password: admin*1

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26. The installation is now complete. The health of the system can be checked by ssh-ing to the device (as in step 14) and running phstatus command

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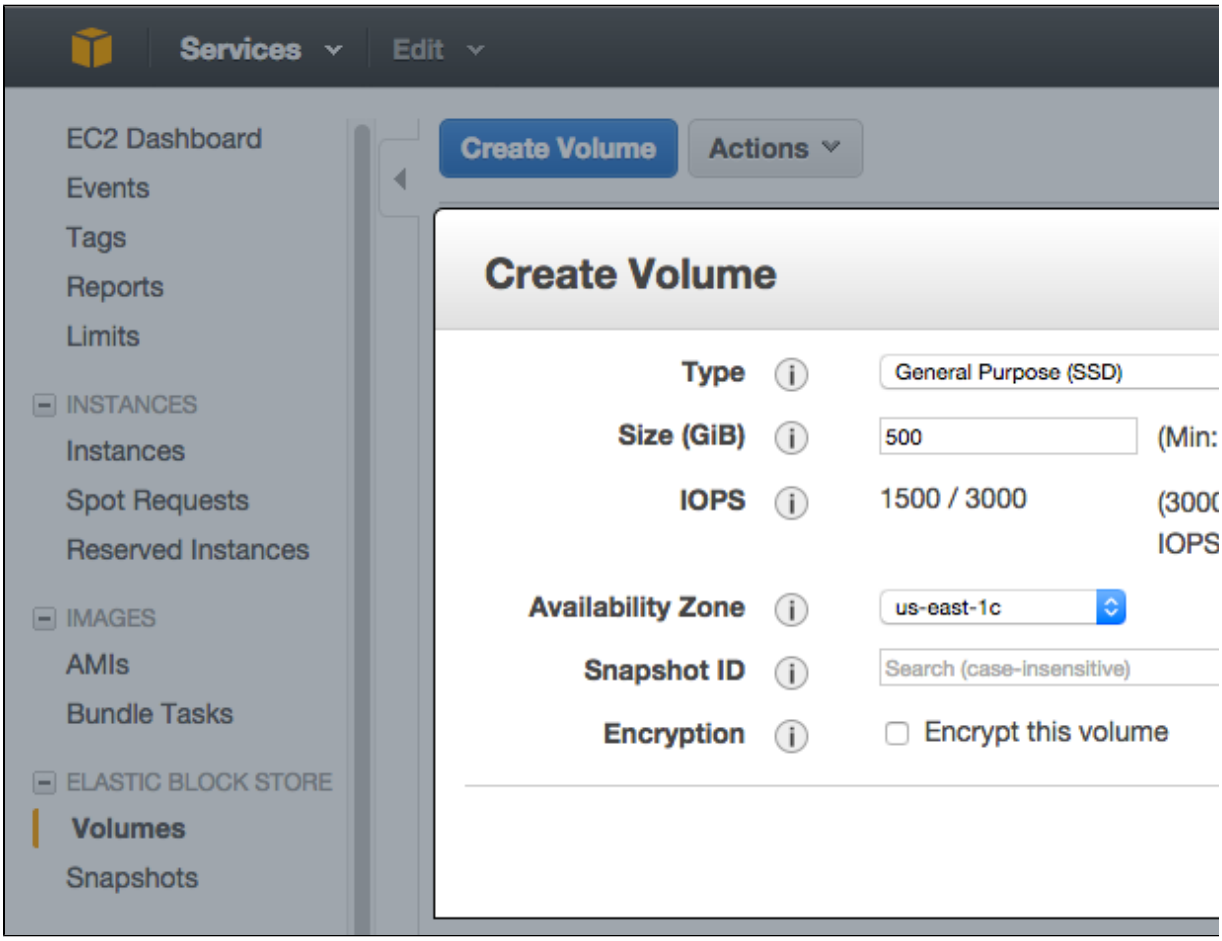
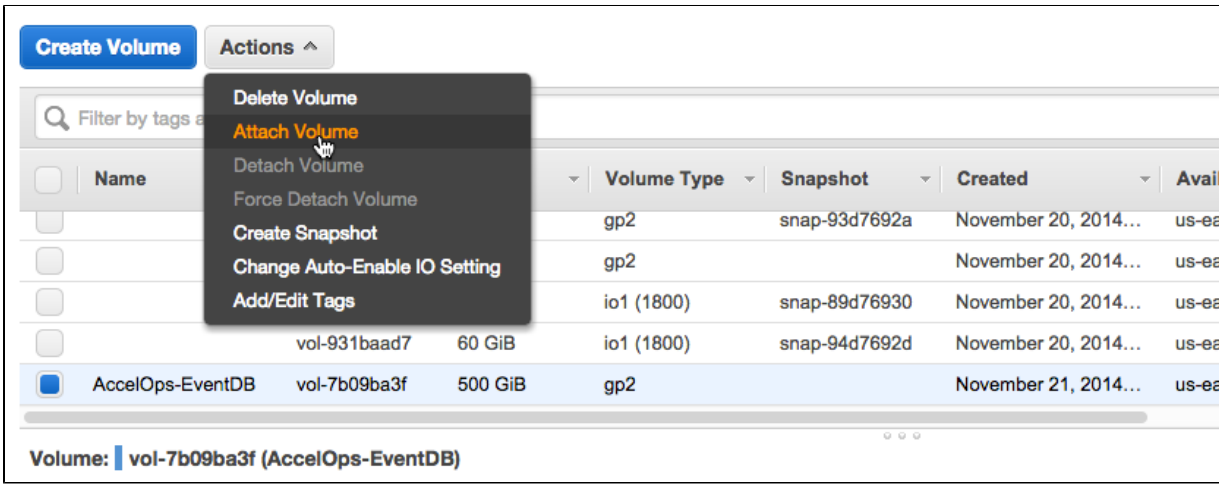
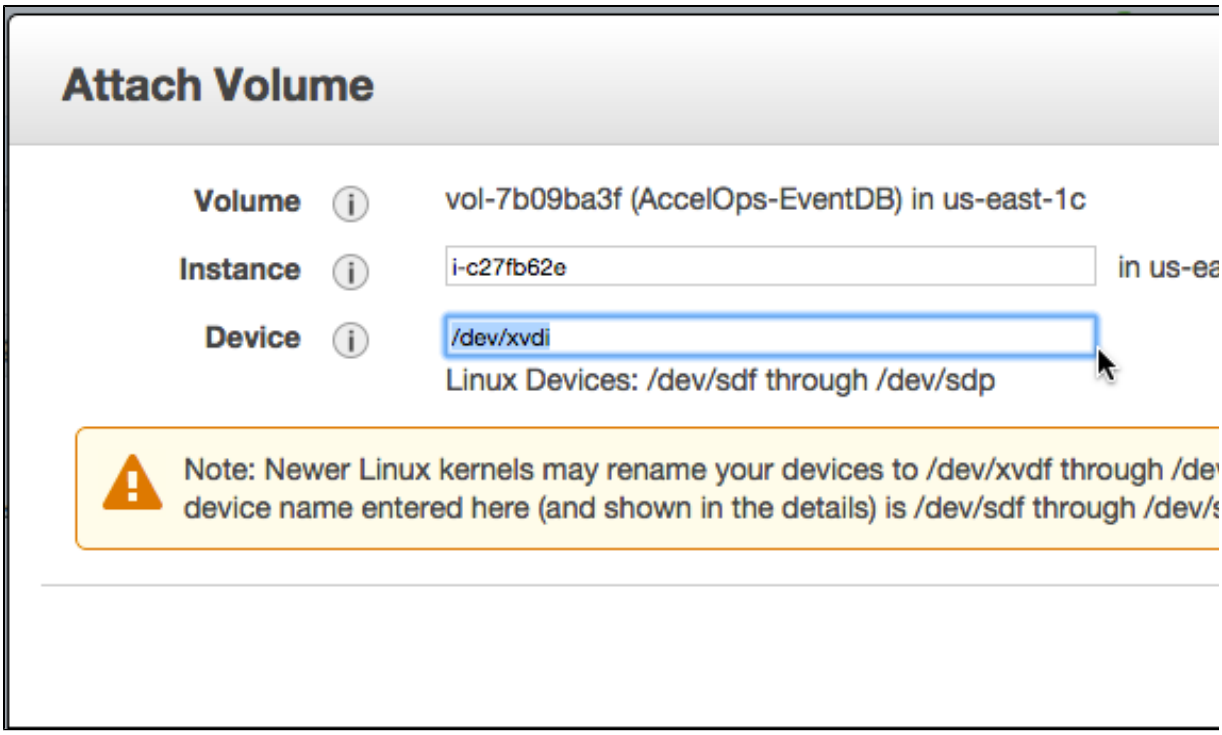
(Optional - If using Local storage) Configure Local Storage for EventDB

1. Login to AWS, Go to Ec2 > Volumes > Create Volume
    a. Allocate EBS volume sized 100 GB to 1 TB (depending on storage requirement)
    b. Select ‘Availability Zone’ same as AccelOps Supervisor instance launched region
    c. Click on Create Volume



2. Select recently created Volume and Attach to Supervisor instance
    a. Select Supervisor instance name
    b. Change device name to '**/dev/xvdi**' and click 'Attach' button


Create Volume
Actions
Delete Volume
Attach Volume
Detach Volume
Force Detach Volume
Create Snapshot
Change Auto-Enable IO Setting
Add/Edit Tags
Filter by tags a
Name
Volume Type
Snapshot
Created
Avai
gp2
snap-93d7692a
November 20, 2014...
us-ea
gp2
November 20, 2014...
us-ea
io1 (1800)
snap-89d76930
November 20, 2014...
us-ea
vol-931baad7
60 GiB
io1 (1800)
snap-94d7692d
November 20, 2014...
us-ea
AccelOps-EventDB
vol-7b09ba3f
500 GiB
gp2
November 21, 2014...
us-ea
Volume: vol-7b09ba3f (AccelOps-EventDB)



(Optional - if Worker is needed) Setup AO Worker node in AWS

1. If you have not already launched worker instances, then launch an AO Worker instance following steps 1-16 as described in previous section.
2. Follow steps 17-18 as in AO Supervisor case for basic setup. The system will now reboot and is ready for use.
3. Logon to AO Supervisor node and register the Worker to the Super
4. The installation is now complete. The health of the system can be checked by ssh-ing to the device (as in step 15) and running phstatus command

(Optional - if Collector is needed) Setup AO Collector node in AWS

1. First launch an AO Collector instance following steps 1-14 as in AO Supervisor case, **except use the following AMI id** for Collector and choose a large instance (2 core, 4GB).

Region Code	Region Name	4.2.1 Collector AMI-id	4.2.3 Collector AMI-id
us-east-1	US East (Northern Virginia)	**ami-49190320**	**ami-5a954532**
us-west-1	US West (Northern California)	**ami-a24443e7**	**ami-2b24286e**
us-west-2	US West (Oregon) Region	**ami-aa1f6b9a**	**ami-2f02461f**
eu-west-1	EU (Ireland) Region	**ami-a708c7d0**	**ami-903ce3e7**

2. Register Collector to Supervisor
    a. Logon to AccelOps Supervisor

b. Create an organization to which the collector AMI will belong to. Create a collector for that organization. Assign the collector IP to the collector's public IP.
c. Register the collector
    i. Locate a Windows machine on AWS
    ii. Open a Remote desktop session from your PC to that Windows machine on AWS.
        1. Within the remote desktop session, launch a browser session to the private address of AccelOps Collector WMI
        2. Fill in the registration information and click Save (Register)

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3. Once registration completes, the collector will reboot
4. Connect to AccelOps Collector AMI via SSH. Make sure all processes are up.

Deploy AccelOps Collector AMI

This section discusses how to deploy AccelOps Collector as an Amazon Machine Instance for monitoring Amazon Web Services (AWS) EC2 instances.

1. Logon to Amazon Web Services.
2. Find public AccelOps Collector AMI by searching the ami ids as per the following table

Region Code	Region Name	4.2.3 Collector AMI-id
us-east-1	US East (Northern Virginia)	ami-5a954532
us-west-1	US West (Northern California)	ami-2b24286e
us-west-2	US West (Oregon) Region	ami-2f02461f
eu-west-1	EU (Ireland) Region	ami-903ce3e7

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3. Launch AccelOps Collector AMI
    a. Select the AccelOps Collector AMI and click Launch

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    b. Fill in the following information
        i. Select Large instance

        ? Unknown Attachment

        ii. Use default for both Kernel ID and RAM Disk ID

        ? Unknown Attachment

        iii. Create and download key pair

        ? Unknown Attachment

        iv. Create Security Group to allow specific protocols

        ? Unknown Attachment

        ? Unknown Attachment

        v. Review and Launch

        ? Unknown Attachment

        ? Unknown Attachment

    c. Click “Instances” and see the new AMI (instance Id i-f5ff7490) initializing..

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    d. Once initialized, the AccelOps Collector AMI instance show like this

    ? Unknown Attachment

e. Note the private and public IP addresses for the collector

Validate AccelOps Collector connectivity and health

1. Connect to AccelOps Collector AMI via SSH
    a. Logon to Amazon Web Services
    b. Go to EC2 > My instances
    c. Click on the AccelOps Collector AMI
    d. Choose Connect and the help window appears. Follows the instructions on that popup to connect to AccelOps AMI via SSH

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    ? Unknown Attachment
2. Run "phstatus" - it will show the following processes but they will all be down since the collector is not yet registered.

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Register AccelOps Collector

1. Logon to AccelOps Supervisor
2. Create an organization to which the collector AMI will belong to. Create a collector for that organization. Assign the collector IP to the collector's public IP.
3. Register the collector
    a. Locate a Windows machine on AWS
    b. Open a Remote desktop session from your PC to that Windows machine on AWS.
    c. Within the remote desktop session, launch a browser session to the private address of AccelOps Collector WMI
    d. Fill in the registration information and click Save (Register)

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4. Once registration completes, the collector will reboot
5. Connect to AccelOps Collector AMI via SSH. Make sure all processes are up

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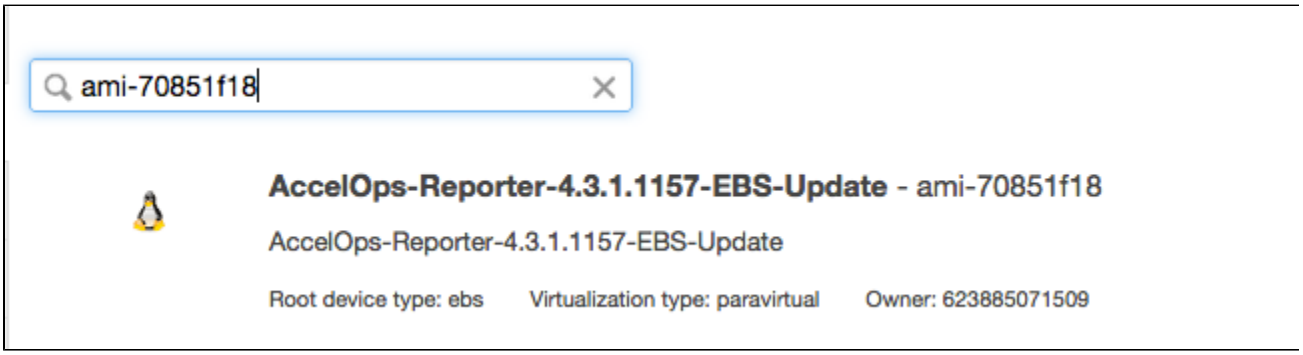
Setup AccelOps Report Server node

1. Logon to AWS EC2 console using your AWS account and go to EC2 dashboard
2. If you have not created a VPC, please do that as described in the beginning of this document
3. Go to EC2 Dashboard and Click on 'Launch Instance' button
4. Select "Community AMIs" and search for **the following AMI ids** and click Select

    The following AMIs are for release 4.2.1 and 4.2.3

Region Code	Region Name	4.3.1 Report Server AMI-id
us-east-1	US East (Northern Virginia)	**ami-70851f18**
us-west-1	US West (Northern California)	
us-west-2	US West (Oregon) Region	
eu-west-1	EU (Ireland) Region	



5. Select 'Compute Optimized' instances, and preferably select one of c3 instances with 'High' network performance or 10 gigabit performance. C3 instances (current generation) run on the latest Intel Xeons that AWS provides as of AccelOps 3.7.6. For this guide, I chose c3.4xlarge and click Continue.

   Note: If you are running these machines in production, it is significantly cheaper to use EC2 Reserved Instances (1 or 3 year) as opposed to on-demand instances.

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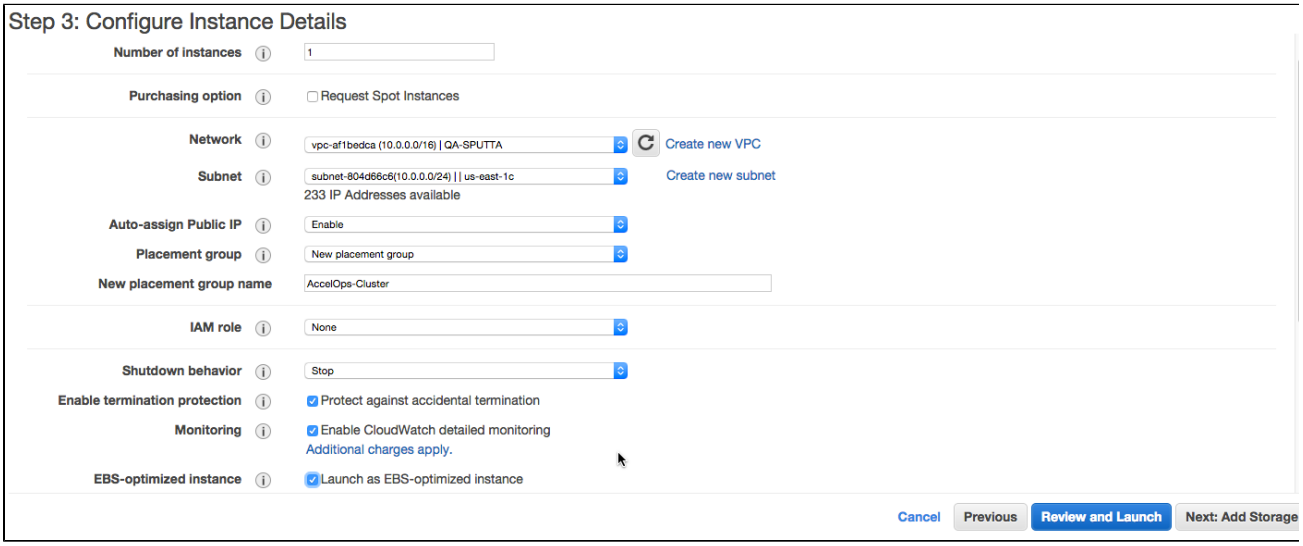
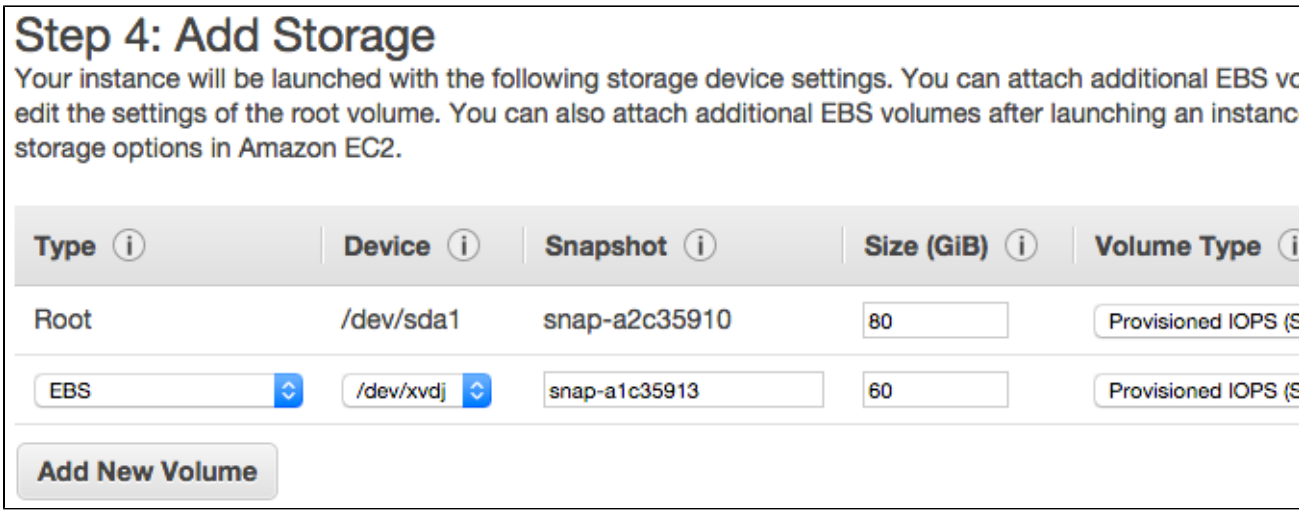
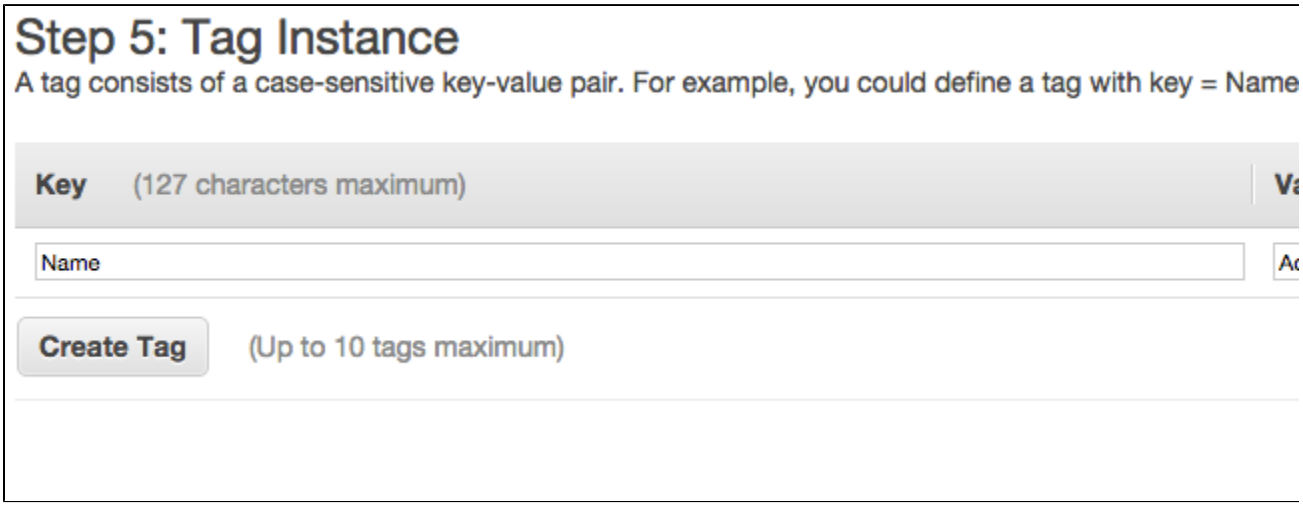
6. Click Next: Configure Instance Details



7. Click 'Next: Add Storage' - Select Provisioned IOPS. As described in section '**Determine Local or NFS Storage for ReportDB**', if you are using local storage for ReportDB, allocate a new EBS volume sized 50GB to 1TB (depending on storage requirement) with provisioned IOPS at 2000 and set it to device /dev/xvdi

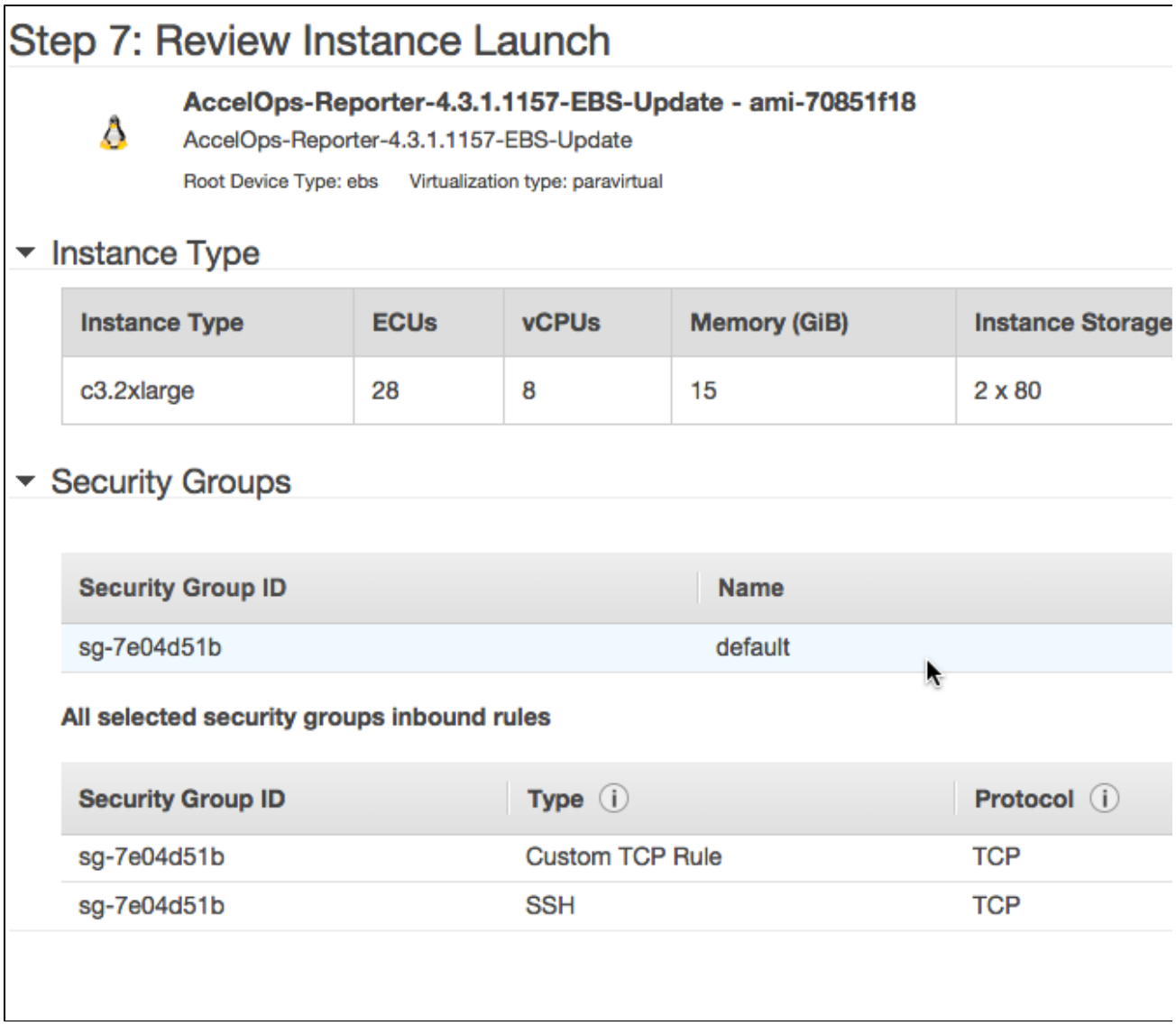


8. Click 'Next: Tag Instance'. The name you give here will be assigned to the 'Report Server instance'.



9. Click 'Next: Configure Security Group'. Choose the VPC's 'default' security group. AccelOps needs access to ports 443 (HTTPS) for GUI and API access, SSH(22) for remote management which are already included in the default security group. This group allows all traffic between instances within the VPC.

10. Click 'Review and Launch' to be taken to a review page. Make sure all the information provided is correct. Click 'Launch'



Step 7: Review Instance Launch

AccelOps-Reporter-4.3.1.1157-EBS-Update - ami-70851f18

AccelOps-Reporter-4.3.1.1157-EBS-Update

Root Device Type: ebs Virtualization type: paravirtual

Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage
c3.2xlarge	28	8	15	2 x 80

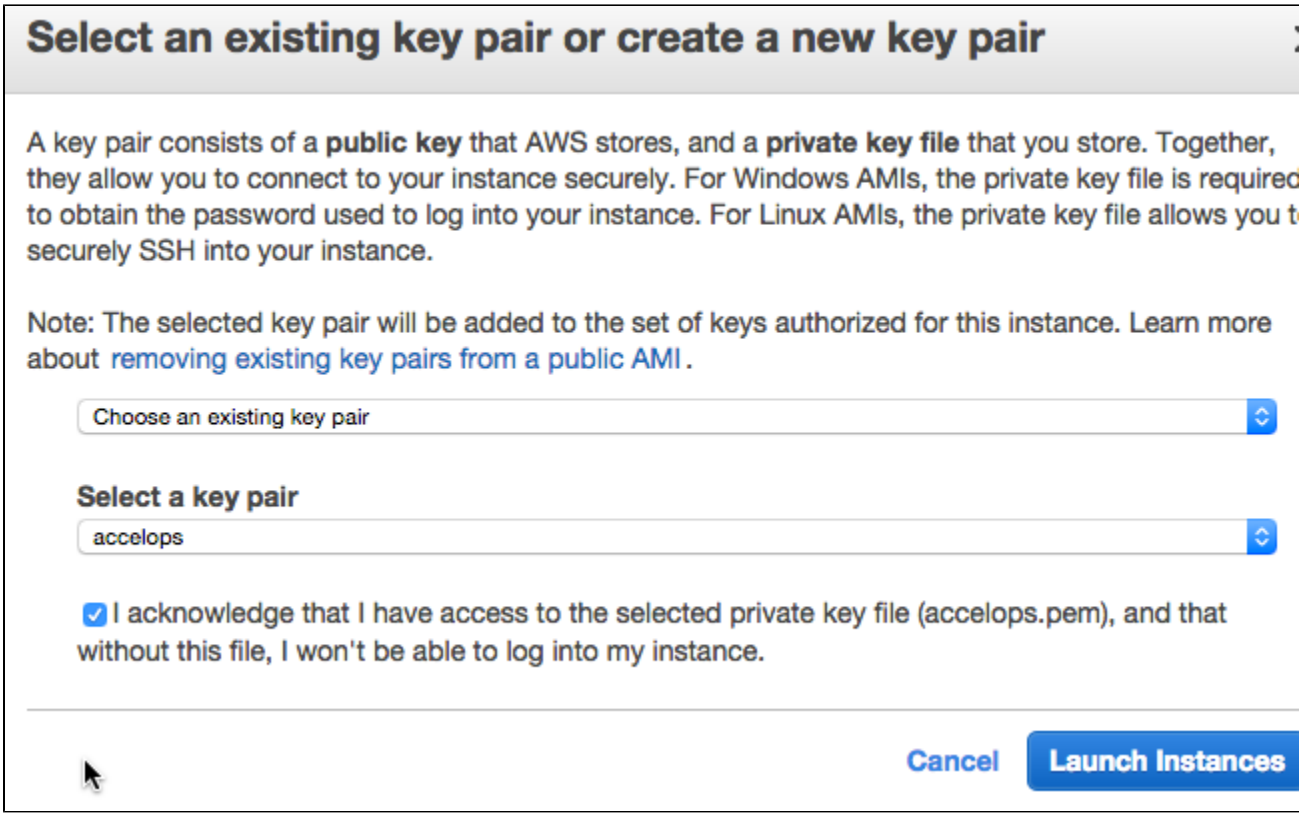
Security Groups

Security Group ID	Name
sg-7e04d51b	default

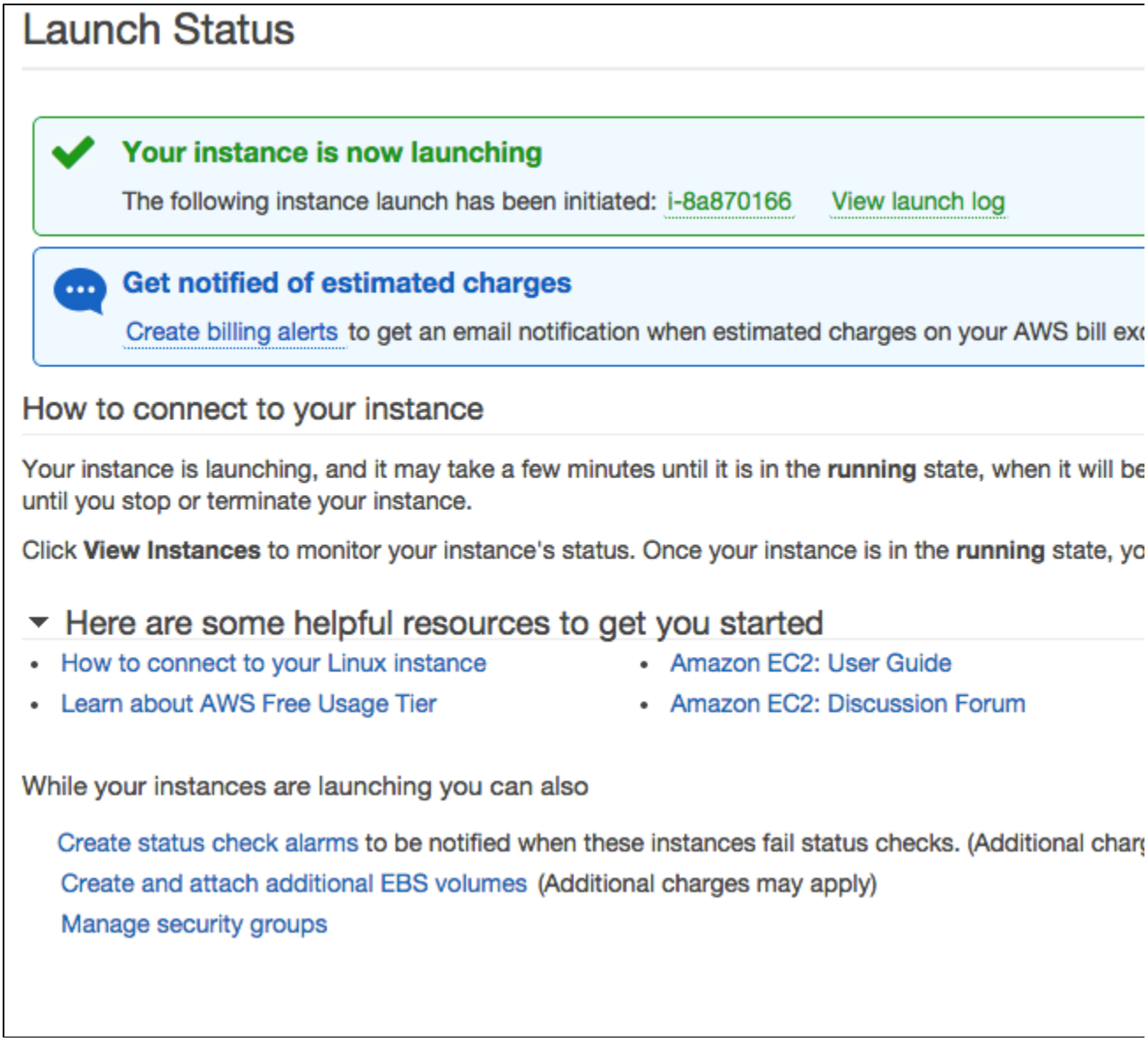
All selected security groups inbound rules

Security Group ID	Type	Protocol
sg-7e04d51b	Custom TCP Rule	TCP
sg-7e04d51b	SSH	TCP

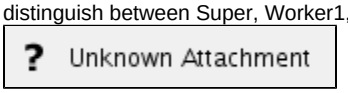
11. You will be asked to select an existing key pair or create a new key pair to connect to these instances via SSH. If you use an existing key pair, make sure you have access to it. If you are creating a new key pair, download the private key and store them in a secure location accessible from the machine from where you usually connect to these AWS instances. Then click 'Launch Instances'



12. Click 'View Instances'



13. Make sure your instances are running correctly. They will all be named 'AccelOps Cluster' to begin with. Rename them appropriately to distinguish between Super, Worker1, Worker2 as the screenshot below shows.



14. Create VPC based Elastic IPs and attach them to your nodes so that the public IPs do not change when you stop and start instances.

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15. You will now need to ssh to AccelOps SP. From the EC2 dashboard, select the instance, click Connect, select "Connect with a standalone SSH client" and locate the command example from the sample screenshot below. To login to AccelOps nodes, replace ec2-user with root as user name.

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16. SSH to the Super node. **Note: If you are installing a single AccelOps node with Local EventDB storage, please refer to section '(Optional - If using local storage) Configuring Local EventDB Storage' to perform additional steps**
17. Run "**cd /opt/phoenix/deployment/jumpbox/aws**"
18. Run the script ***pre-deployment.sh*** to configure host name and NFS mount point. Host name can be obtained from the EC2 dashboard, selecting the instance, right clicking on the instance, selecting "Connect with a standalone SSH client" and locating Public DNS.
    a. Agree with License Agreements
    b. Enter host name
    c. Enter the mount point -
        i. <NFS Server IP>:/data (For <NFS Server IP>, use the 10.0.0.X IP address of the NFS Server running within the VPC) ***or***
        ii. If using Local EventDB Storage as configured in section '(Optional - If using local storage) Configuring Local EventDB Storage', then use /dev/xvdi

19. The system will reboot
20. Logon to AccelOps SP; run "cd /opt/phoenix/deployment/jumpbox/aws" and run the script ***deployment.sh***
21. The system will reboot
22. Logon to AccelOps SP; run "cd /opt/phoenix/deployment/jumpbox/aws" and run the script ***post-deployment.sh***
23. The system will reboot is now ready
24. Register the virtual appliance. Launch browser to AccelOps VA using the DNS name in step 16. Register using the username and password provided by AccelOps.

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25. Once registration succeeds, log on using the default username and password.
    User ID: admin
    Password: admin*1

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26. The installation is now complete. The health of the system can be checked by ssh-ing to the device (as in step 14) and running phstatus command

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Visual Analytics

Visual Analytics is an add-on for AccelOps that lets you create individual visualizations of AccelOps report data, as well as dashboards containing multiple visualization charts. AccelOps Visual Analytics has three components:

1. The AccelOps Report Server, which syncs with and replicates AccelOps reports in near-real time.
2. The Visual Analytics Server from Tableau Software, which enables the publication and distribution of your visualizations.
3. The Visual Analytics Desktop, which is your primary tool for creating visualizations

Topics in this section will walk you through the process of installing and configuring all three components, as well as a brief introduction to creating single and multiple sheet workbooks of visualizations. For more detailed information about Tableau Software's Visual Analytics Server and Visual Analytics Desktop, including examples of creating sheets and workbooks, you should consult the Product Support section of the Tableau Software website.

AccelOps Visual Analytics: Overview

Architecture

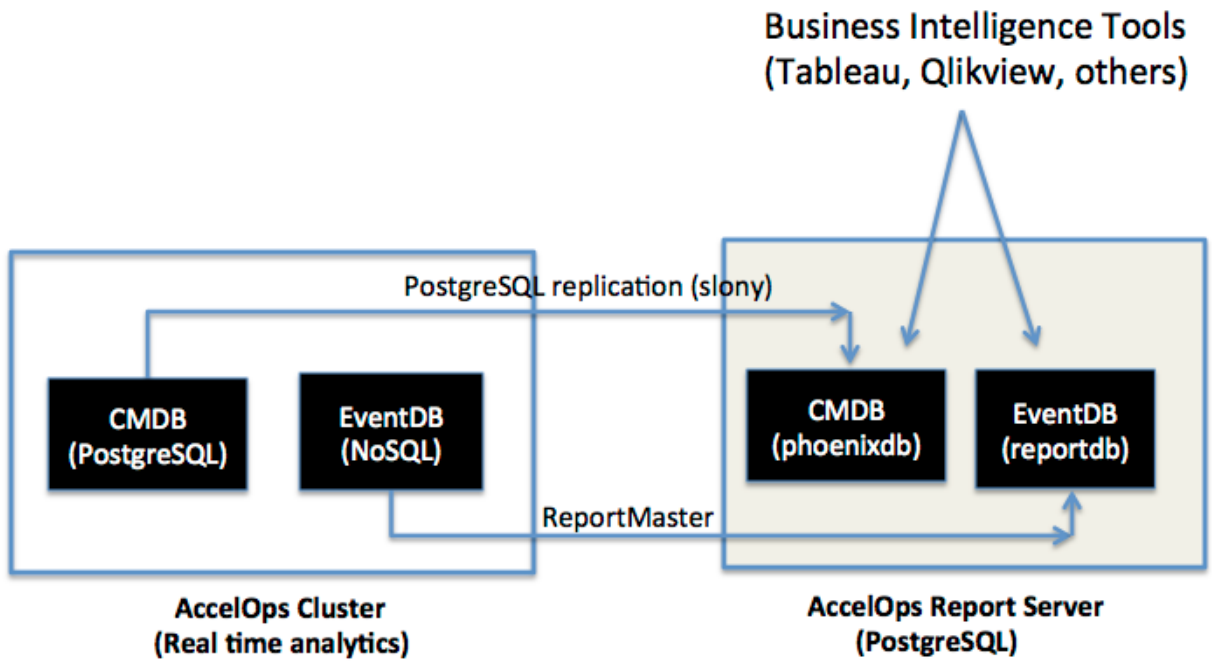
With AccelOps Visual Analytics, you can now create visual representations of the data that is stored in AccelOps. This includes:

- **Structured data** stored in the AccelOps CMDB relational PostgreSQL database, such as:
  - Discovered information about devices, systems, applications and users
  - Identity and location
  - Incidents and notifications
- **Unstructured data** such as logs, events, performance metrics etc. that is stored in the AccelOps EventDB NoSQL database that is accessible by the cluster members (Supervisor, Workers) over NFS.

For fast visual analytics without compromising the real time performance of AccelOps cluster, the data is exported to a separate virtual machine, the **AccelOps Report Server**, running PostgreSQL. The Report Server contains two databases that are queried by AccelOps Visual Analytics:

- **phoenixdb**
  This database contains the entire AccelOps CMDB and is populated via asynchronous PostgreSQL replication (slony) in near-real time.
- **reportdb**
  This database contains the results of event queries.

You can find more information about AccelOps Report Server in the topic Report Server Architecture: phoenixdb and reportdb and its related topics.



Set Up

There are three components to Accelops Visual Analytics:

1. Accelops Report Server
2. Visual Analytics Server (Powered by Tableau)
3. Visual Analytics Desktop (Powered by Tableau)

You must first install Report Server as described in Installing and Configuring AccelOps Report Server. After installing Visual Analytics Server on

a Windows server, and installing Visual Analytics Desktop on a Windows or Mac OS X device, you then connect the two systems as described in I nstalling and Configuring Visual Analytics Desktop. When this connection is established, it automatically triggers the remote registration and configuration of the AccelOps Report Server, including replication of the CMDB and EventDB data from the AccelOps Cluster to the AccelOps Report Server, as well as the user account required for access to the original databases. Registration of the Report Server and replication of the AccelOps cluster data may take some time depending on the size of the original CMDB. Registration is complete when the replication process catches up with the latest data in the system. From that point on replication from CMDB to Accelops Report Server takes place in near real time, letting you run Visual Analytics queries against CMDB data that has been replicated to the Report Server's phoenixdb.

You can find full information about setting up all components of AccelOps Visual Analytics in the section Installation and Configuration of AccelOps Visual Analytics

Using Visual Analytics

Using AccelOps Visual Analytics involves first syncing reports contained in the primary AccelOps application to the AccelOps Report Server.

1. Log in to the AccelOps application.
2. Select a report that can be synced to the Report Server.
   Currently only reports that contain a **Group By** condition can be synched. Both system and user-created reports can be synched as long as there is a Group By condition.
3. Click **Sync**.

When the sync process initiates, the Supervisor node dynamically creates a table within the Report Server reportdb database. When the sync is established, it will run every five minutes, and the last five minutes of data in the synced report will be pushed to the corresponding table. This lets you run Visual Analytics on event data stored in the Report Server reportdb database.

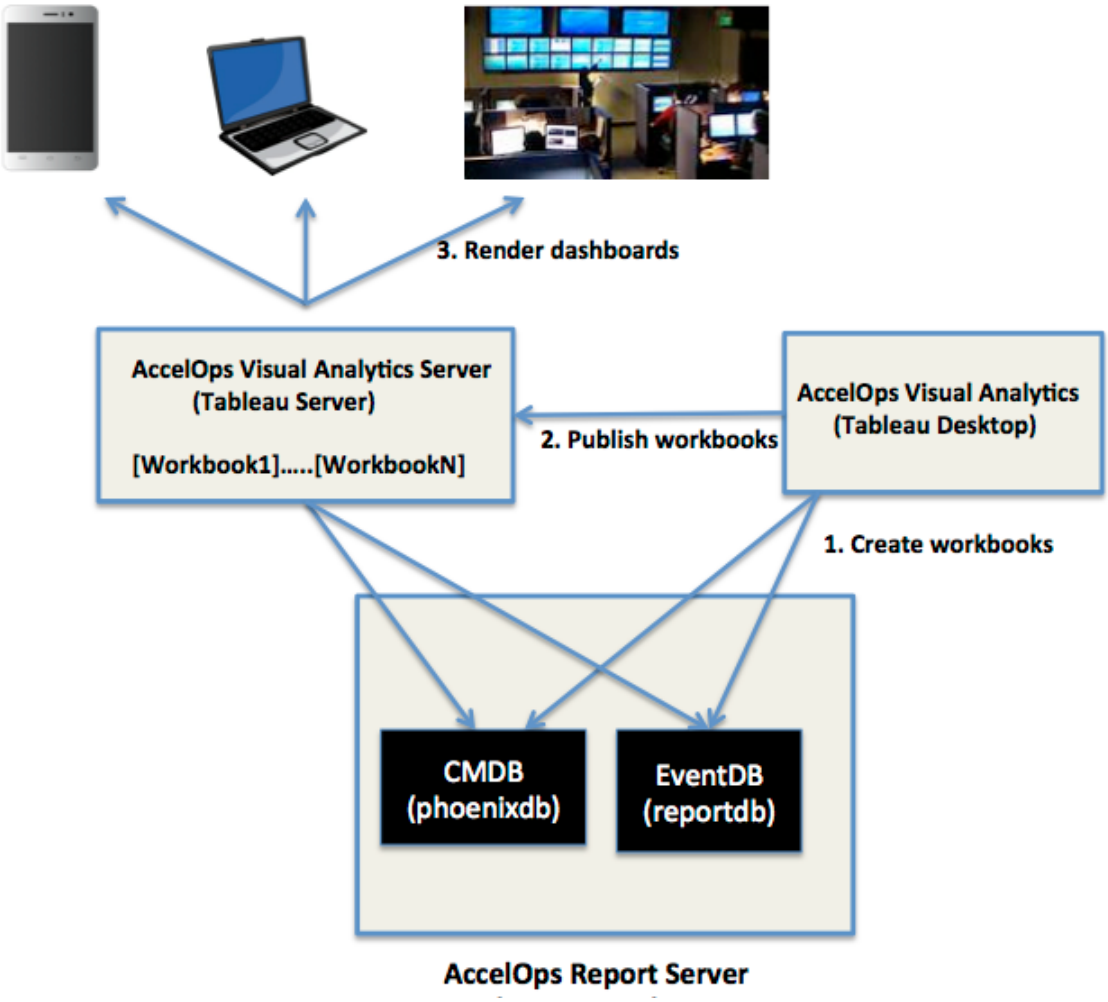
Viewing charts and dashboards in Visual Analytics involves using Visual Analytics Desktop to create workbooks that are connected to a datasource within Report Server (reportdb), and then providing users with access to those workbooks.

1. Install Visual Analytics Server on a Windows Server.
2. Load workbooks created in Visual Analytics Desktop onto Visual Analytics Server.
3. Create users and assign them access to specific workbooks on Visual Analytics Server.
4. Log on to Visual Analytics Server from a Windows or Mac OS X device, such as a phone, tablet, or PC, to view the contents of workbooks.

A few basic workbooks are provided by Accelops. To create your own workbook:

1. Install Visual Analytics Desktop onto your desktop.
2. Connect to the appropriate data source (phoenixdb or reportdb) to create a workbook.
3. Publish the workbook to the Visual Analytics Server.

You can find more information about workbooks in the section Creating and Managing Workbooks.


3. Render dashboards
AccelOps Visual Analytics Server
(Tableau Server)
[Workbook1].....[WorkbookN]
2. Publish workbooks
AccelOps Visual Analytics
(Tableau Desktop)
1. Create workbooks
CMDB
(phoenixdb)
EventDB
(reportdb)
AccelOps Report Server

(PostgreSQL)

Installation and Configuration of AccelOps Visual Analytics

The process for installing and configuring AccelOps Visual Analytics involves three steps:

1. Installing and configuring the AccelOps Report Server.
2. Installing and configuring the Visual Analytics Server.
3. Installing and configuring the Visual Analytics Desktop.

You can find requirements for all three components in Requirements for AccelOps Visual Analytics.

Requirements for AccelOps Visual Analytics

AccelOps Visual Analytics Report Server

You install Visual Analytics Report Server as a node running under the AccelOps All-in-One Virtual Appliance, and these requirements assume that you have already set up and installed AccelOps. If you are working with a fresh install of AccelOps that includes Report Server, see the topics under Fresh Installation for complete requirements and installation instructions for the AccelOps Virtual Appliance.

> You must install Visual Analytics Report Server on a dedicated machine.

Hardware Requirements for Report Server nodes

Model	Quantity	Host SW	Processor	Memory	OS/App Storage	**Reports Data Storage (1 year)**
Report Server	1	ESX	8 Core 3 GHz, 64 bit	16 GB	200GB (80GB OS/App; 60GB CMDB)	?

Virtual Analytics Server and Virtual Analytics Desktop (Tableau Software)

These are the basic requirements for installing Visual Analytics Server and Visual Analytics Desktop, both of which are powered by Tableau Software. For more detailed information about Tableau Server, see the Tableau Server Administrator's Guide. For more information about Tableau Desktop, see the Tableau Desktop User's Guide.

Visual Analytics Server Requirements

Supported Windows Servers

Tableau Server is available in 32-bit and 64-bit versions. We recommend running the 64-bit version of Tableau Server on a 64-bit operating system.

- Windows Server 2003 R2 SP2 or higher
- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012 and 2012R2

Memory, Cores, and Disk Space Recommendations

The minimum requirements for running the 64-bit version of Tableau Server are 4 cores and 8 GB of RAM.

These are the **minimum** recommendations based on the number of users on the server:

Deployment Type	Server Users	CPU	RAM	**Free Disk Space**
Small	<25	4-core	8 GB	20 GB
Medium	<100	8-core	32 GB	100 GB

Enterprise	>100	16-core	32 GB or more	100 GB or more

Accounts and Permissions

- **Administrative account**
  The account under which you install Tableau Server must have permission to install software and services.
- **Run As account (optional)**
  A Run As User account for the Tableau Server service to run under is useful if you're using NT Authentication with data sources, or if you're planning on using SQL Server impersonation. For more information, see Run As User and SQL Server Impersonation in the Tableau Administrator's Guide.

Configuration Information

When you install and configure Tableau Server you may be asked for the following information:

Option	Description	Your Information
Server Account	The server must have a user account that the service can use. The default is the built-in Windows Network Service account. If you use a specific user account you'll need the domain name, user name, and password.	Username: Password: Domain:
Active Directory	Instead of using Tableau's built-in user management system, you can authenticate through Active Directory. If so, you'll need the fully-qualified domain name.	Active Directory Domain:
Open port in Windows firewall	When selected, Tableau Server will open the port used for http requests in the Windows Firewall software to allow other machines on your network to access the server.	__ - Yes __ - No

Ports

- **TCP/IP, IIS and port 80**
  Tableau Server's gateway listens on port 80, which is also used by Internet Information Services (IIS) by default. If you are installing Tableau Server on a machine that's also running IIS, you should modify Tableau's gateway port number to avoid conflict with IIS. Tableau Server also requires several TCP/IP ports to be available to the server. See TCP/IP Ports and Edit the Default Ports in the Tableau Administrator's Guide for details.

Drivers

You may need to install additional database drivers. Download drivers from www.tableausoftware.com/support/drivers.

Visual Analytics Desktop Requirements

Supported operating systems

Tableau Desktop is available in 32-bit and 64-bit versions and can be used with these operating systems:

- Windows 7
- Windows 8
- Windows 8.1
- Mac OSX

Memory and disk space recommendations

The minimum requirements for Tableau Desktop are 4 GB of RAM and 10 GB disk free space.

Drivers

You may need to install additional database drivers. Download drivers from www.tableausoftware.com/support/drivers.

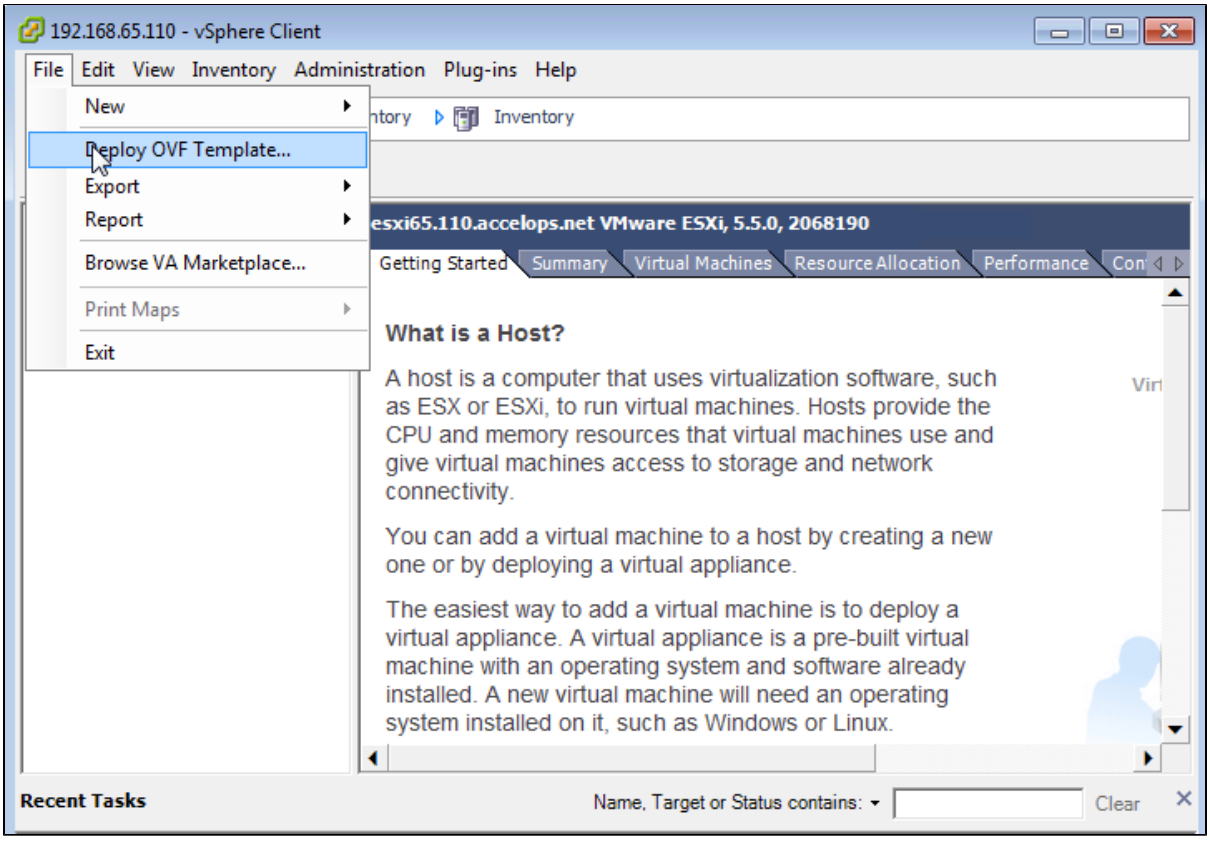
Installing and Configuring AccelOps Report Server

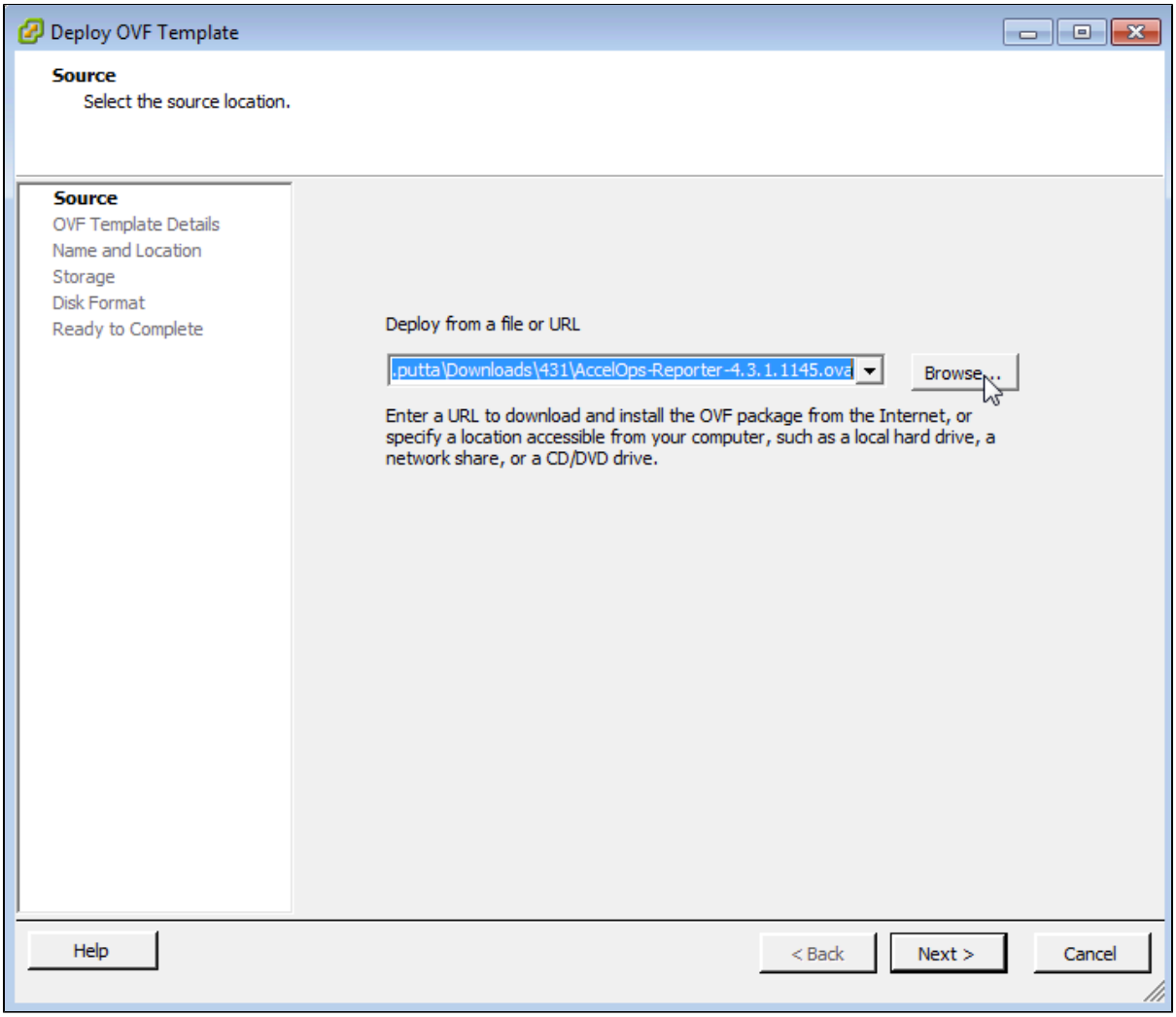
These instructions are for installing Report Server on VMWare ESX, and assume that you have already installed and configured an AccelOps environment. For instructions for a complete AccelOps install, see the topics under Fresh Installation. Information on installing and configuring Report Server with other hypervisors will be included in upcoming releases.

Section 1: Import a Report Server image into VMware ESX server

Step 1: Begin importing Report Server

1. Download Report server OVA package from AccelOps image server
2. Log into VMware vSphere Client
   a. Click on File -> Select Deploy OVF Template
   b. Click on Browse button to choose OVA file
   c. Locate Report Server .ova file (Example: AccelOps-Reporter-4.3.1.1145.ova)

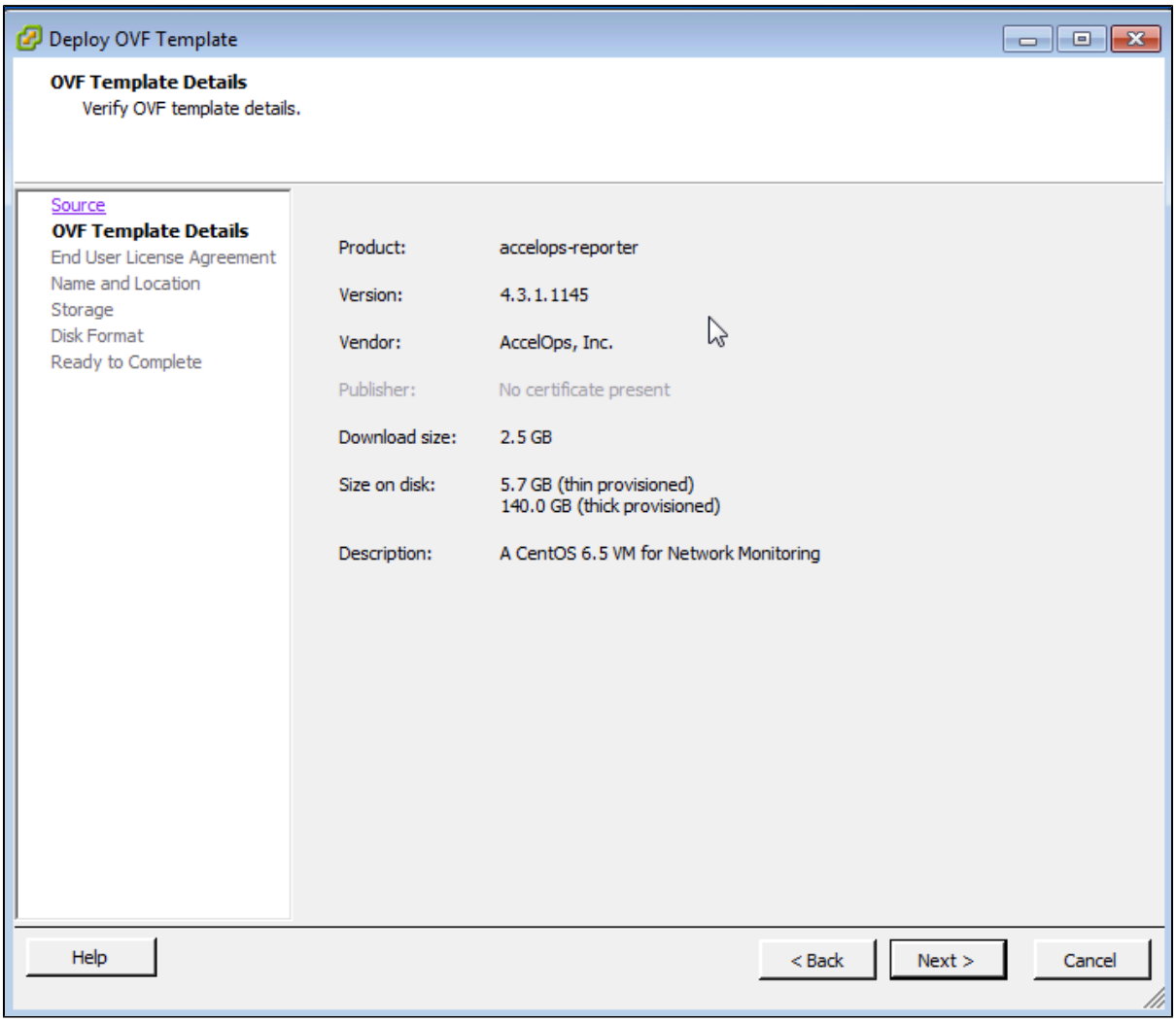

192.168.65.110 - vSphere Client
File Edit View Inventory Administration Plug-ins Help
New
Deploy OVF Template...
Export
Report
Browse VA Marketplace...
Print Maps
Exit
Inventory
esxi65.110.accelops.net VMware ESXi, 5.5.0, 2068190
Getting Started Summary Virtual Machines Resource Allocation Performance
What is a Host?
A host is a computer that uses virtualization software, such as ESX or ESXi, to run virtual machines. Hosts provide the CPU and memory resources that virtual machines use and give virtual machines access to storage and network connectivity.
You can add a virtual machine to a host by creating a new one or by deploying a virtual appliance.
The easiest way to add a virtual machine is to deploy a virtual appliance. A virtual appliance is a pre-built virtual machine with an operating system and software already installed. A new virtual machine will need an operating system installed on it, such as Windows or Linux.
Recent Tasks
Name, Target or Status contains:
Clear



Step 2: Review the Virtual Appliance details

OVF Template details will tell you how big the file is to import and how mush disk space it will take up in your selected ESX server.

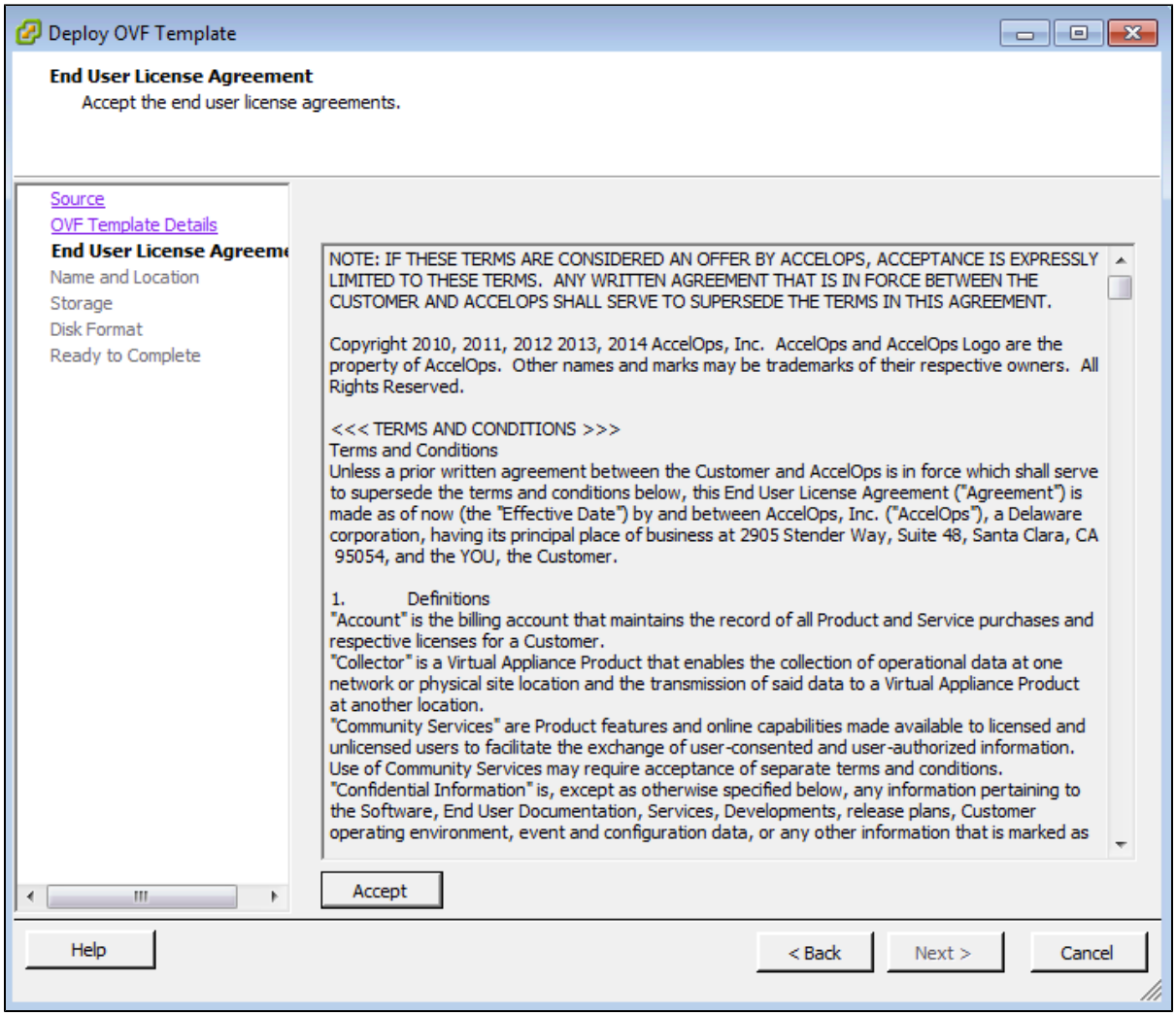
- 1. Click the 'Next' button



Step 3: End User License Agreement

To continue you must accept the End User License Agreement.

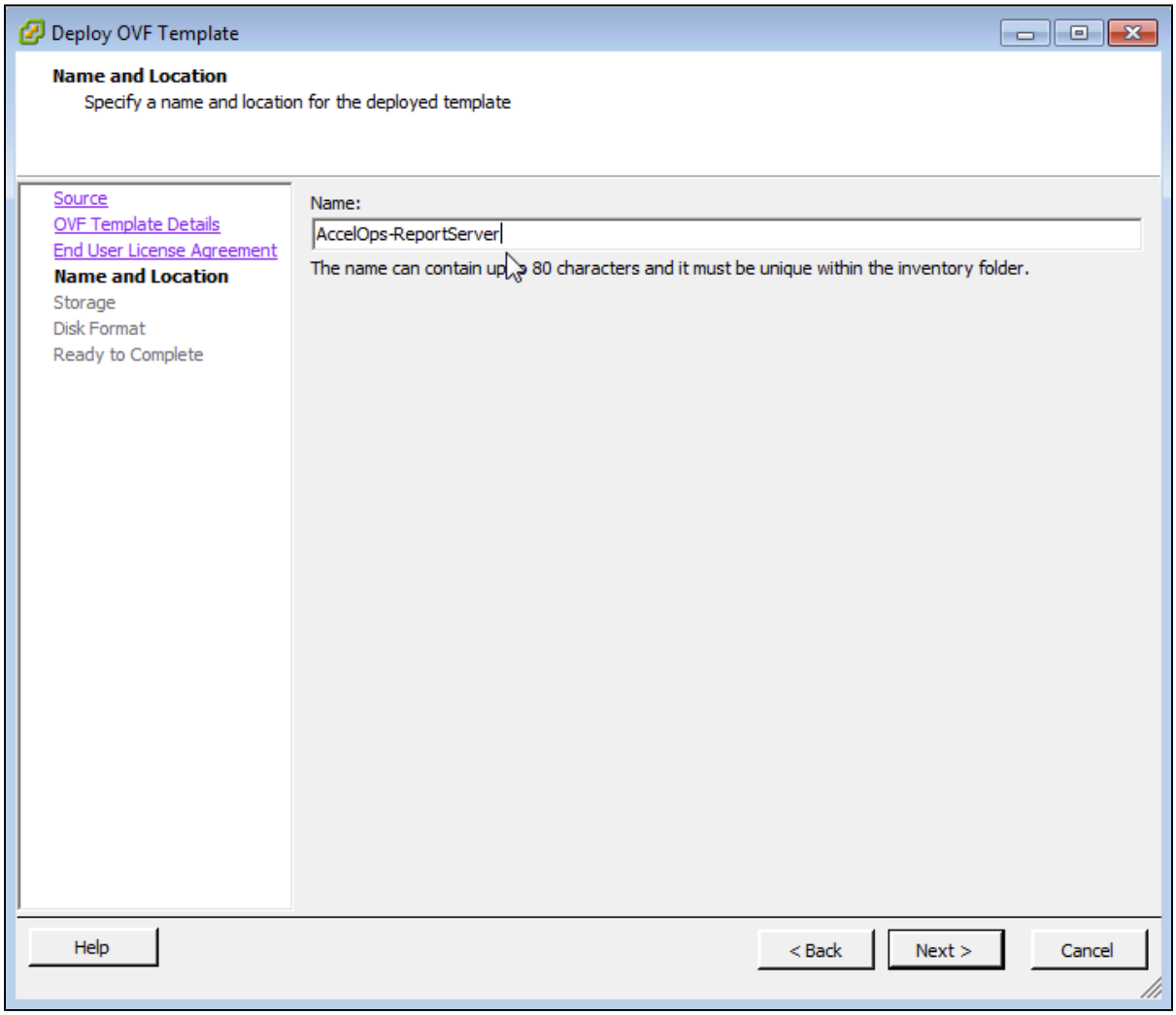
1. Click on 'Accept' button on License Agreement
2. Click on 'Next' button



Step 4: Name and Location

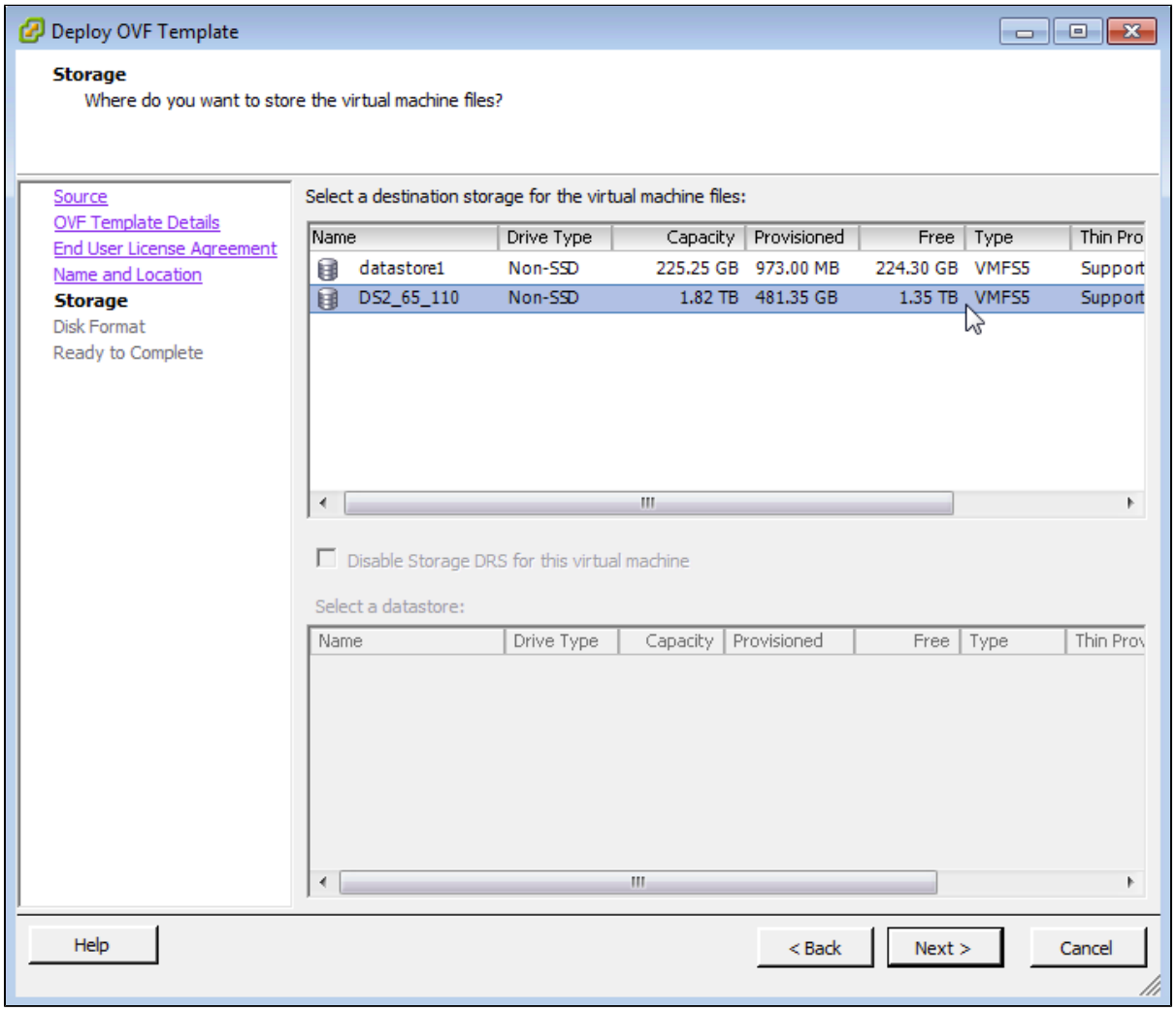
Enter a name for the Virtual Appliance that is being imported. This name is independent of the host name and is only visible within the ESX environment.

1. Enter a Report Server name and Click on 'Next' button



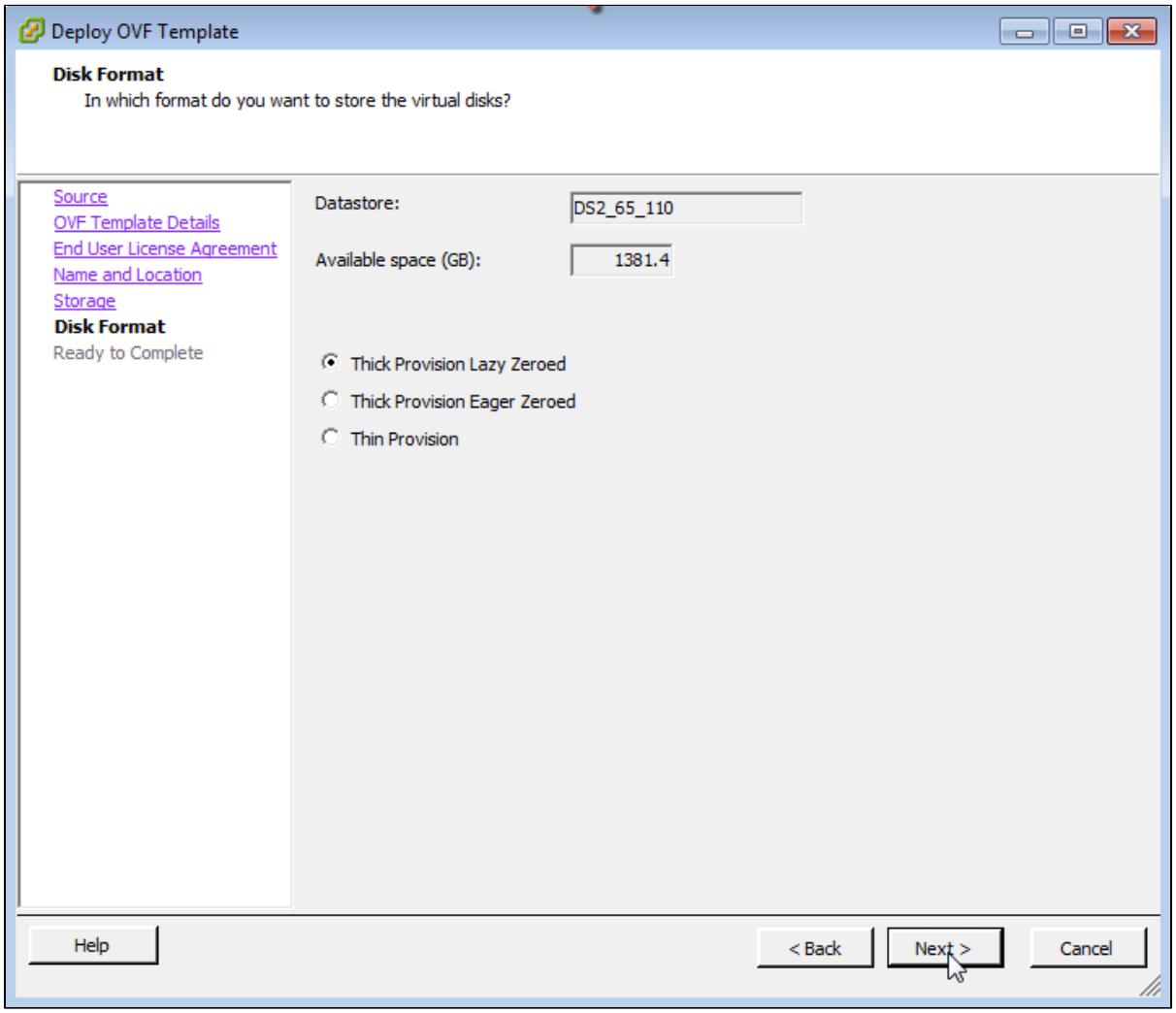
Step 5: Storage

1. Select the desired storage location(Data store) and Click on 'Next' button



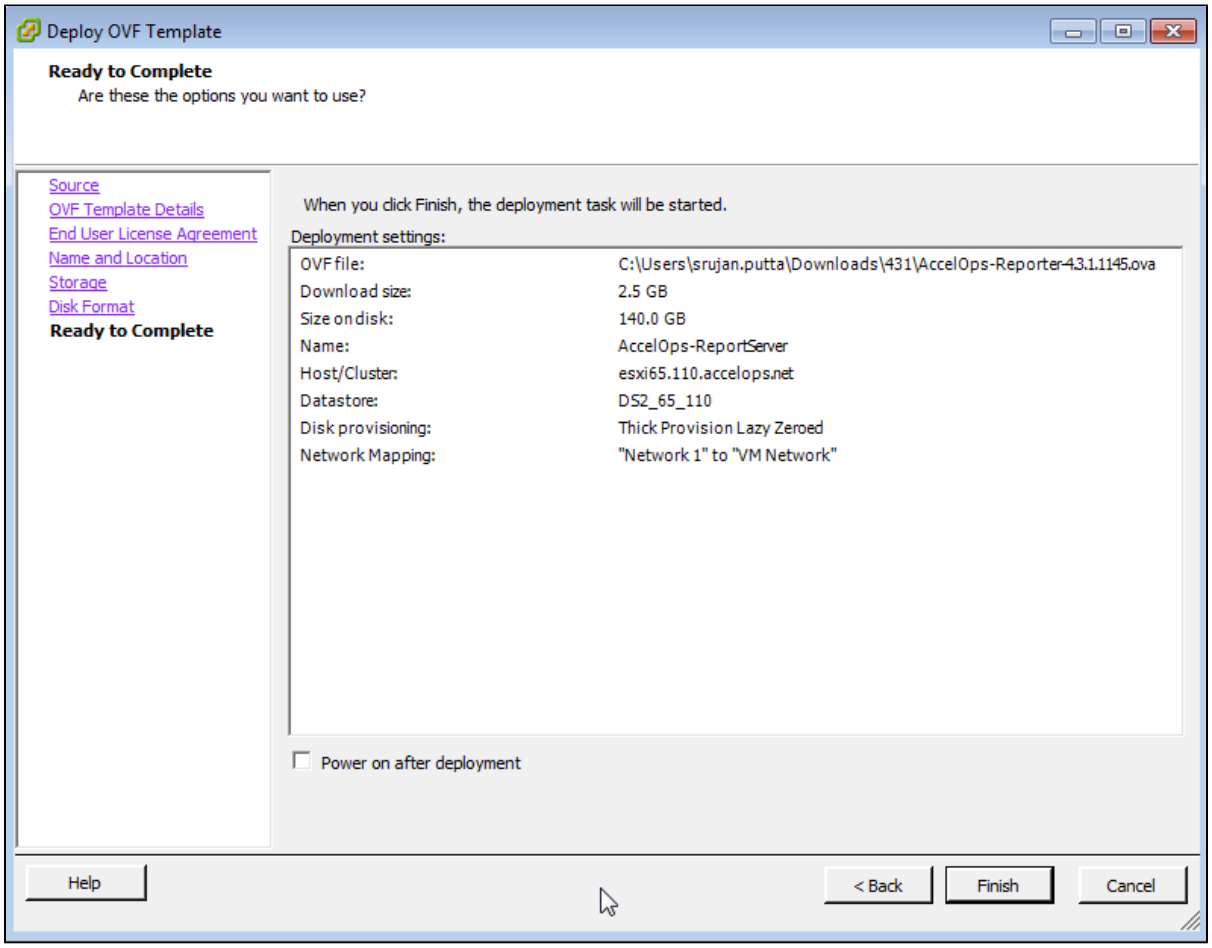
Step 6: Disk Format

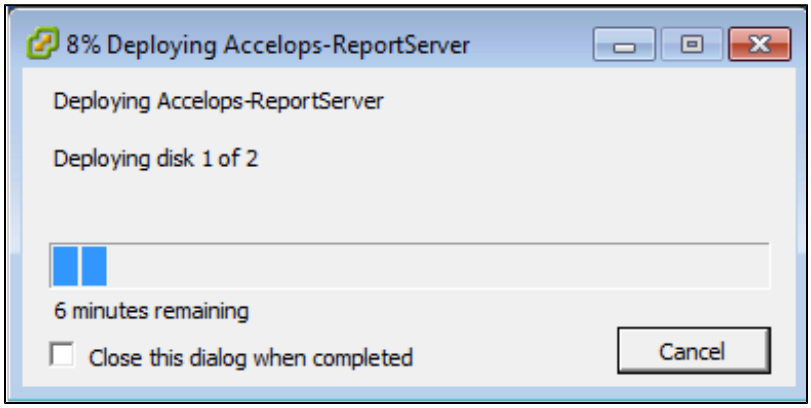
1. Select the Disk format as 'Thick Provision' (recommended) and Click on 'Next' button

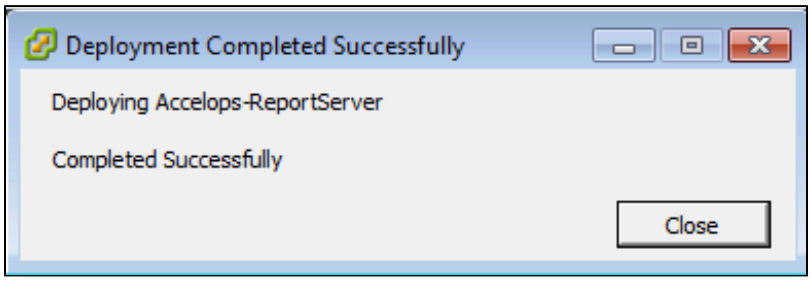


Step 7: Ready to Complete

1. Review the Report server resources and Click on 'Finish' button to begin importing Virtual Appliance
2. Virtual Appliance import will takes 7 to 10mins to complete. Do not turn off or reboot the system during this time.


Deploy OVF Template
Ready to Complete
Are these the options you want to use?
Source
OVF Template Details
End User License Agreement
Name and Location
Storage
Disk Format
Ready to Complete
When you click Finish, the deployment task will be started.
Deployment settings:
OVF file: C:\Users\srujan.putta\Downloads\431\AccelOps-Reporter-4.3.1.1145.ova
Download size: 2.5 GB
Size on disk: 140.0 GB
Name: AccelOps-ReportServer
Host/Cluster: esxi65.110.accelops.net
Datastore: DS2_65_110
Disk provisioning: Thick Provision Lazy Zeroed
Network Mapping: "Network 1" to "VM Network"
Power on after deployment
Help
< Back
Finish
Cancel


8% Deploying Accelops-ReportServer
Deploying Accelops-ReportServer
Deploying disk 1 of 2
6 minutes remaining
Close this dialog when completed
Cancel

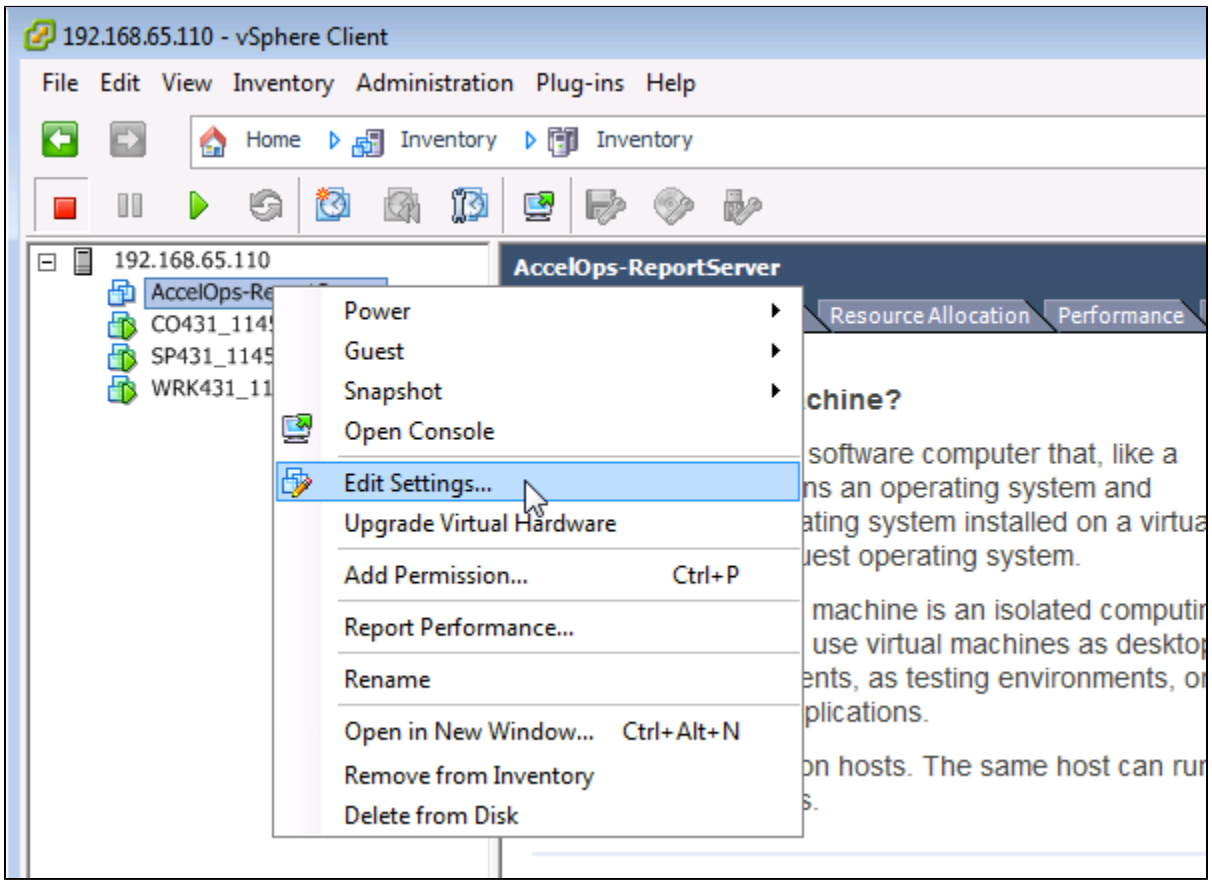


Section 2: Edit the Report Server hardware settings

Prior to starting the Report Server for the first time it is required to make some modifications to the hardware setting for the Virtual Appliance.

Step 1: Edit Settings

1. From the VMware vSphere client, Select the imported Report server Virtual appliance
2. Right mouse click and select Edit Settings



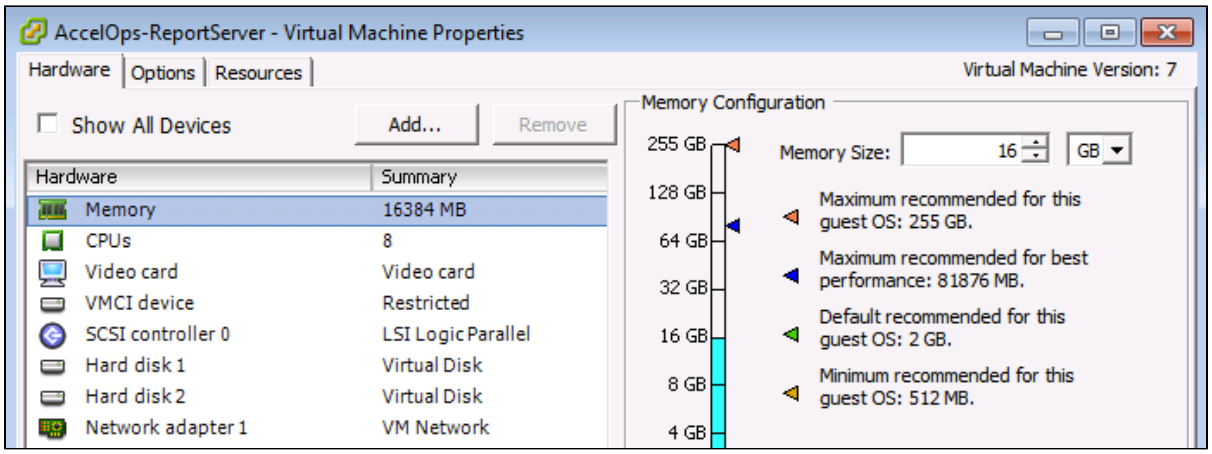
Step 2: Verify Allocated Memory

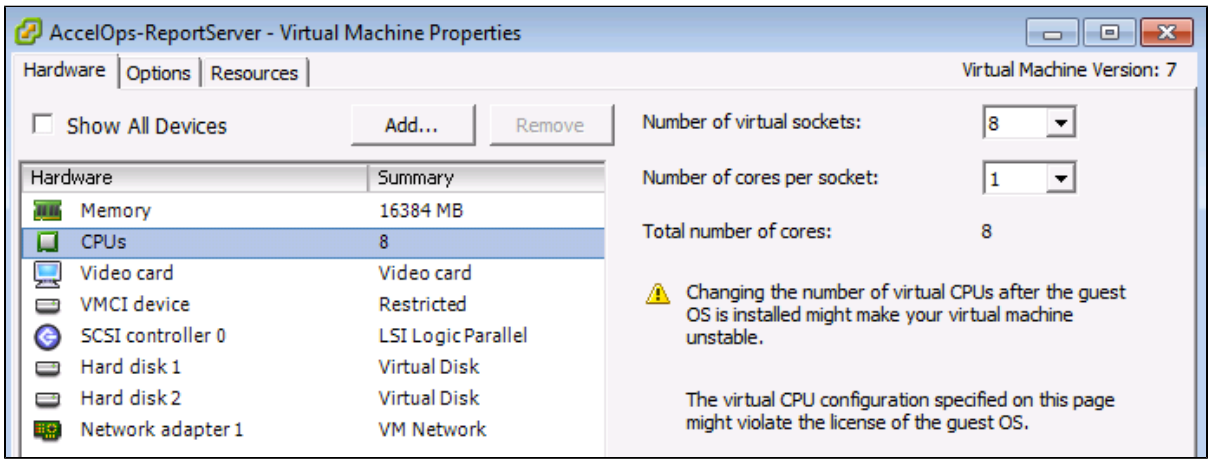
1. On Hardware tab, Click on Memory and verify the memory to at least 16 GB

Allocate more memory for large deployments

For large deployments you should allocate at least 24GB of memory. See the section on Report Server Hardware requirements in the topic Must Read Prior to Install for more information

2. Click on CPUs, verify the CPU cores to at least 8 cores





Section 3: Select mount point to Store Reports data

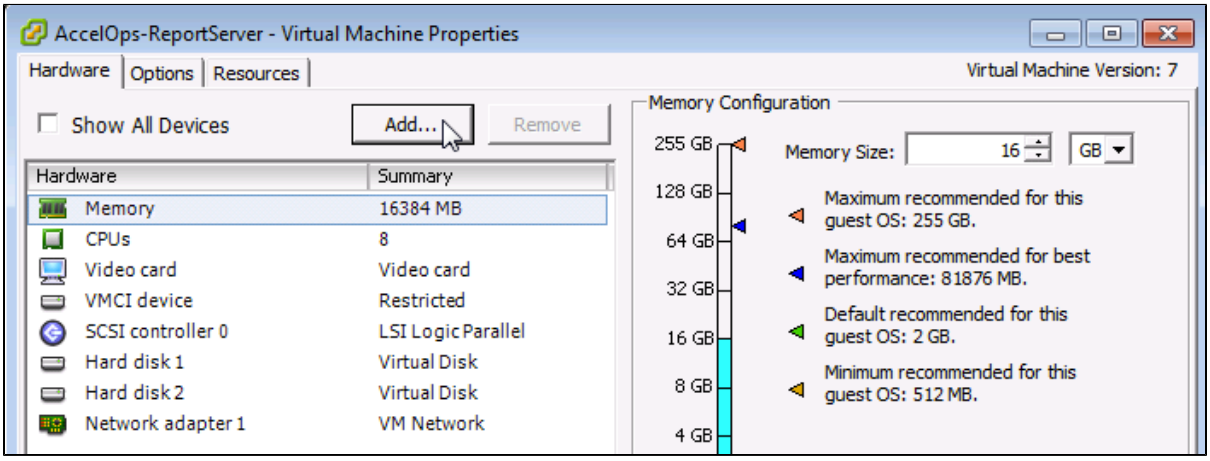
The AccelOps Report Server can be installed using either storage configured within the ESX server or NFS storage.

Note

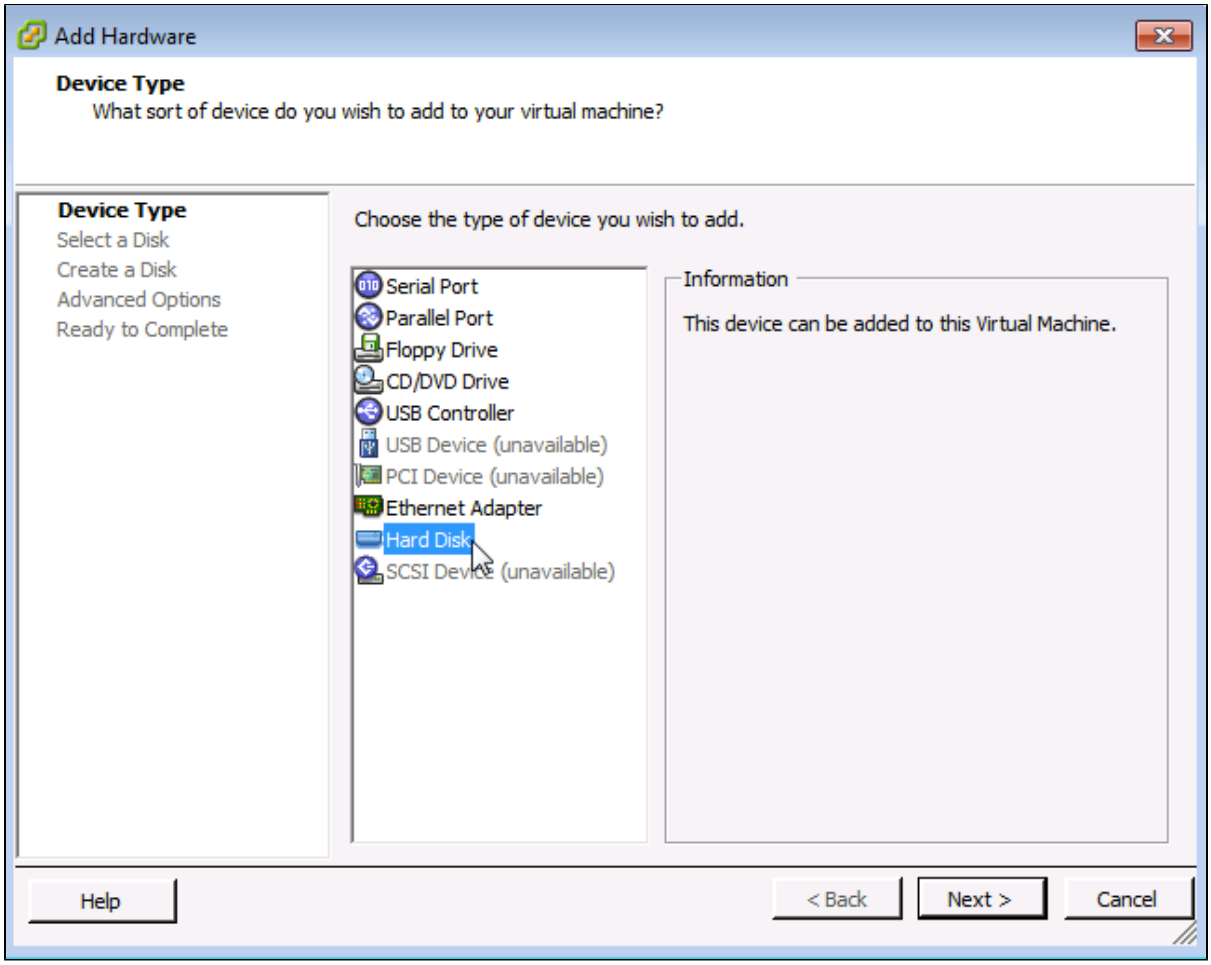
Skip Step 1 if AccelOps Super is used NFS storage to store the events data. Else, continue Step 1 to create local disk to store the reports data.

Step 1: Adding an Additional Hard Disk to store the Reports data

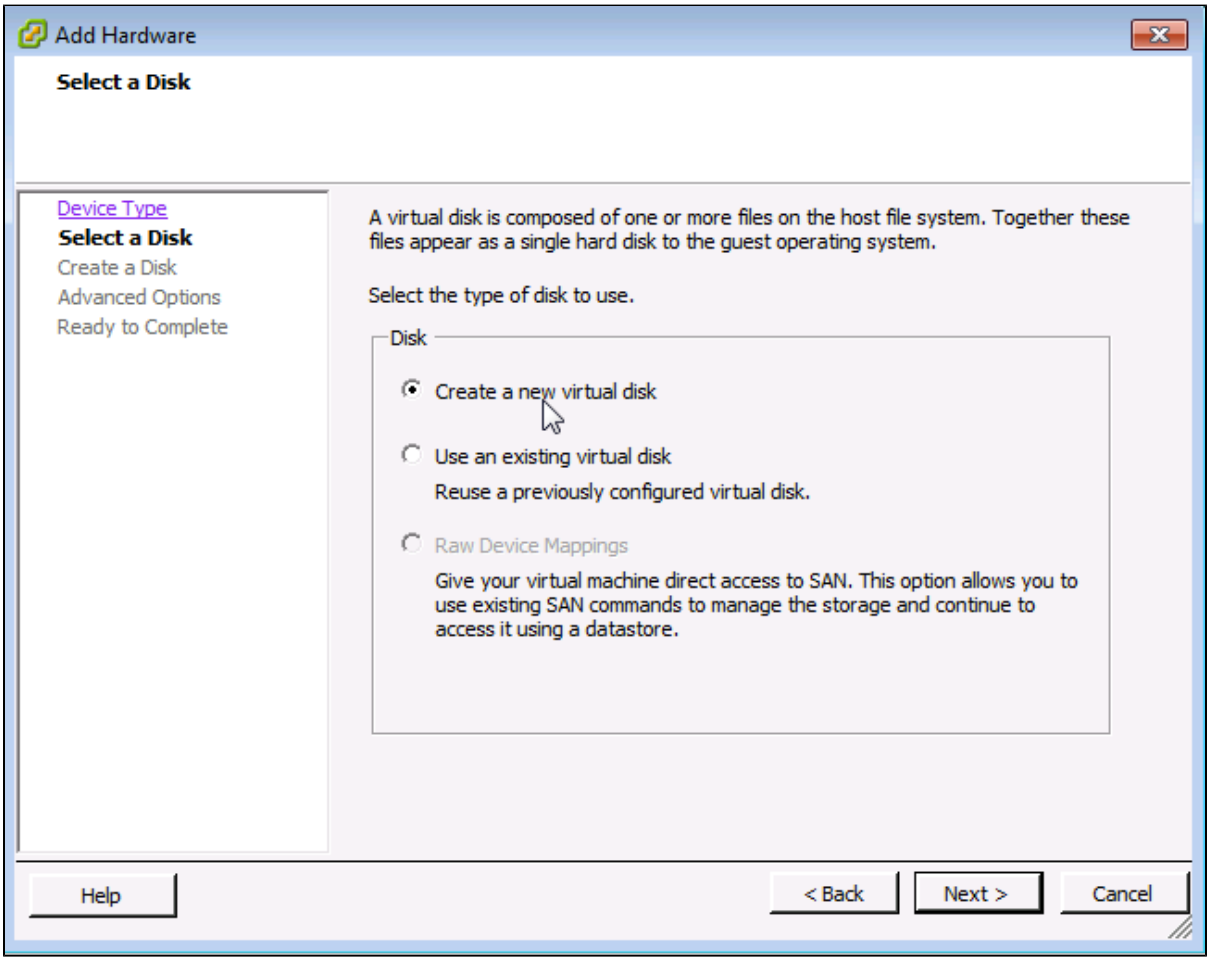
1. On Hardware tab, Click on the 'Add' button



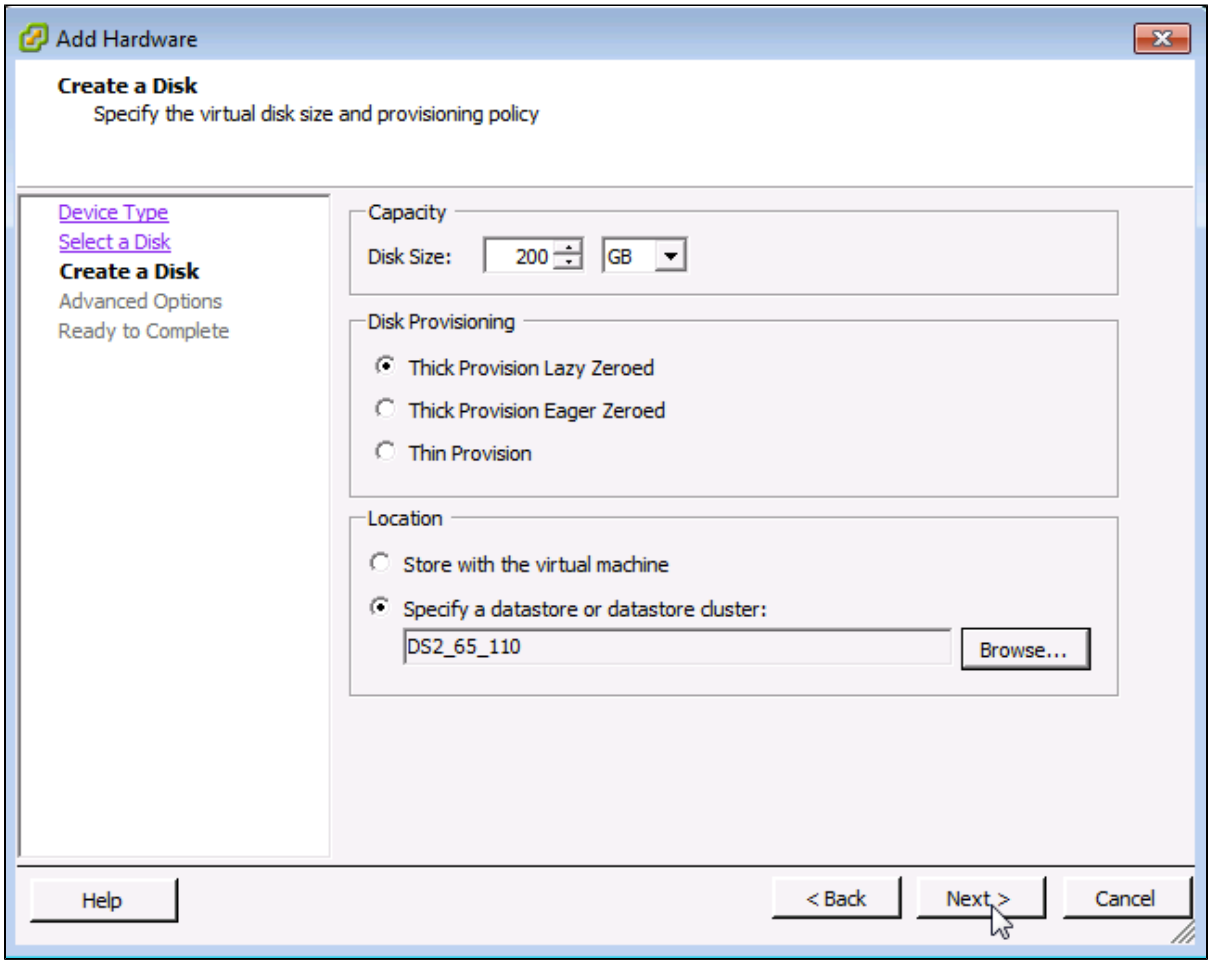
2. On Hardware pop-up, Select 'Hard Disk' and click on 'Next' button



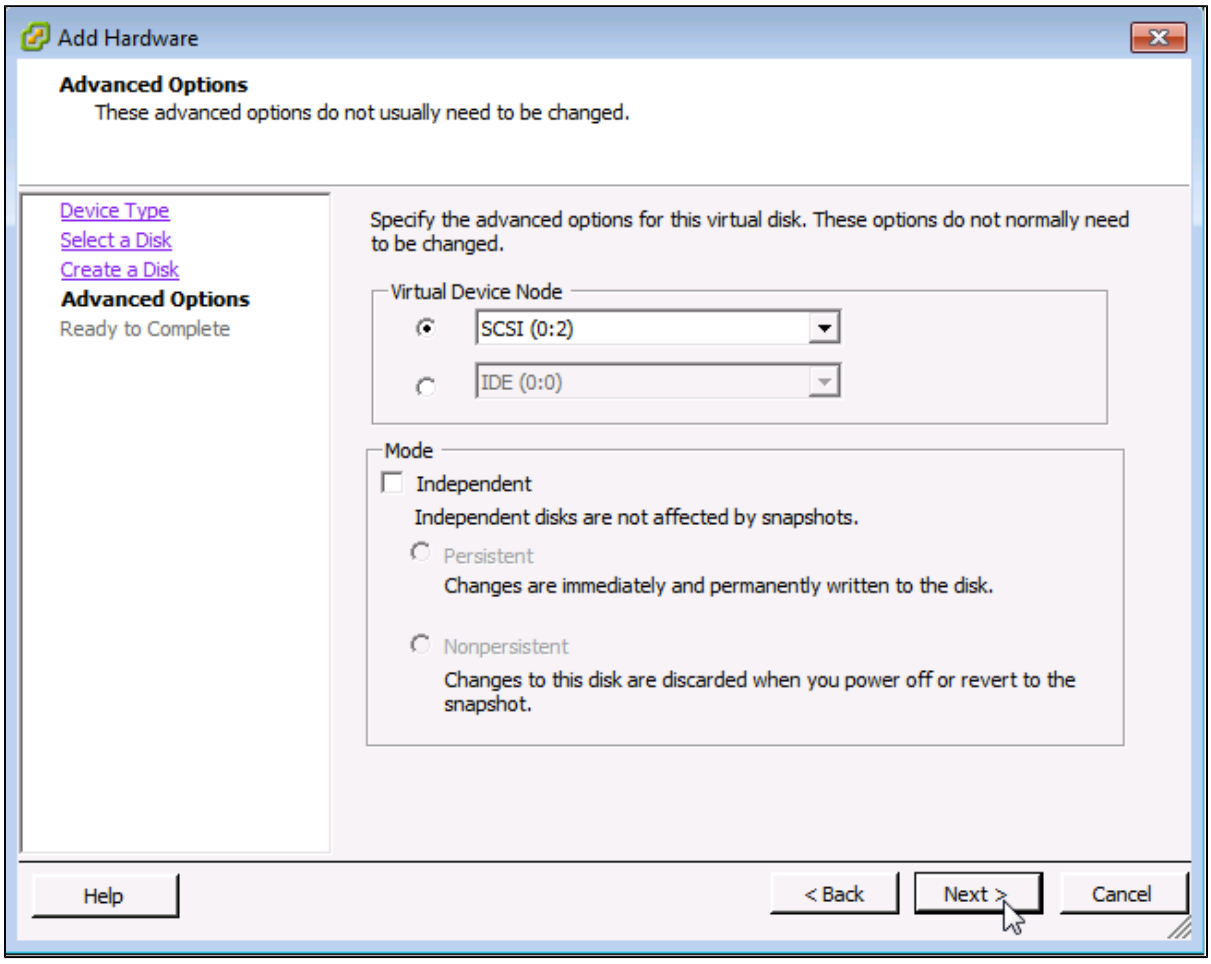
3. Select 'Create a new virtual disk' and click on 'Next' button



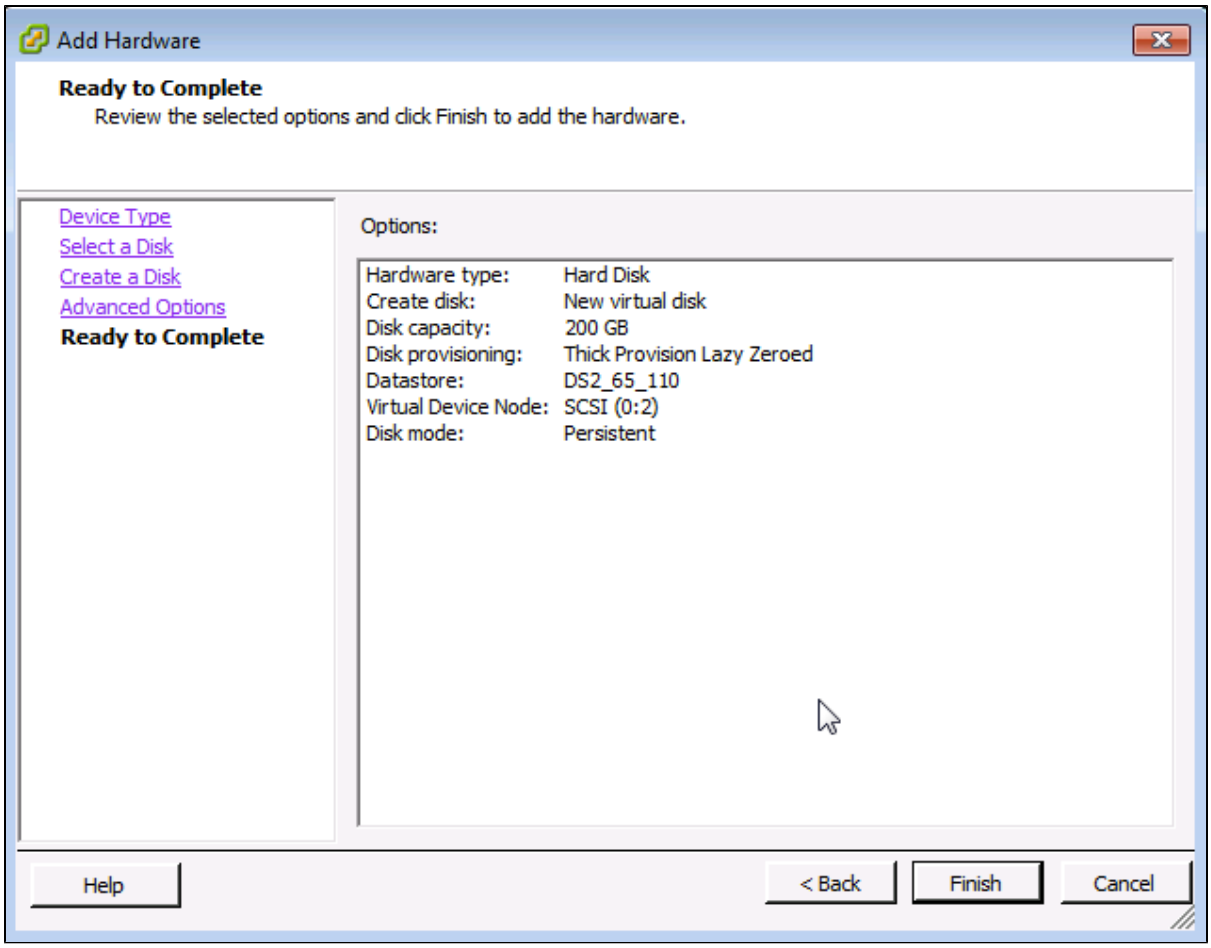
4. Enter the Disk size and click on 'Next' button
   Refer to Hardware Requirements for Report Server nodes



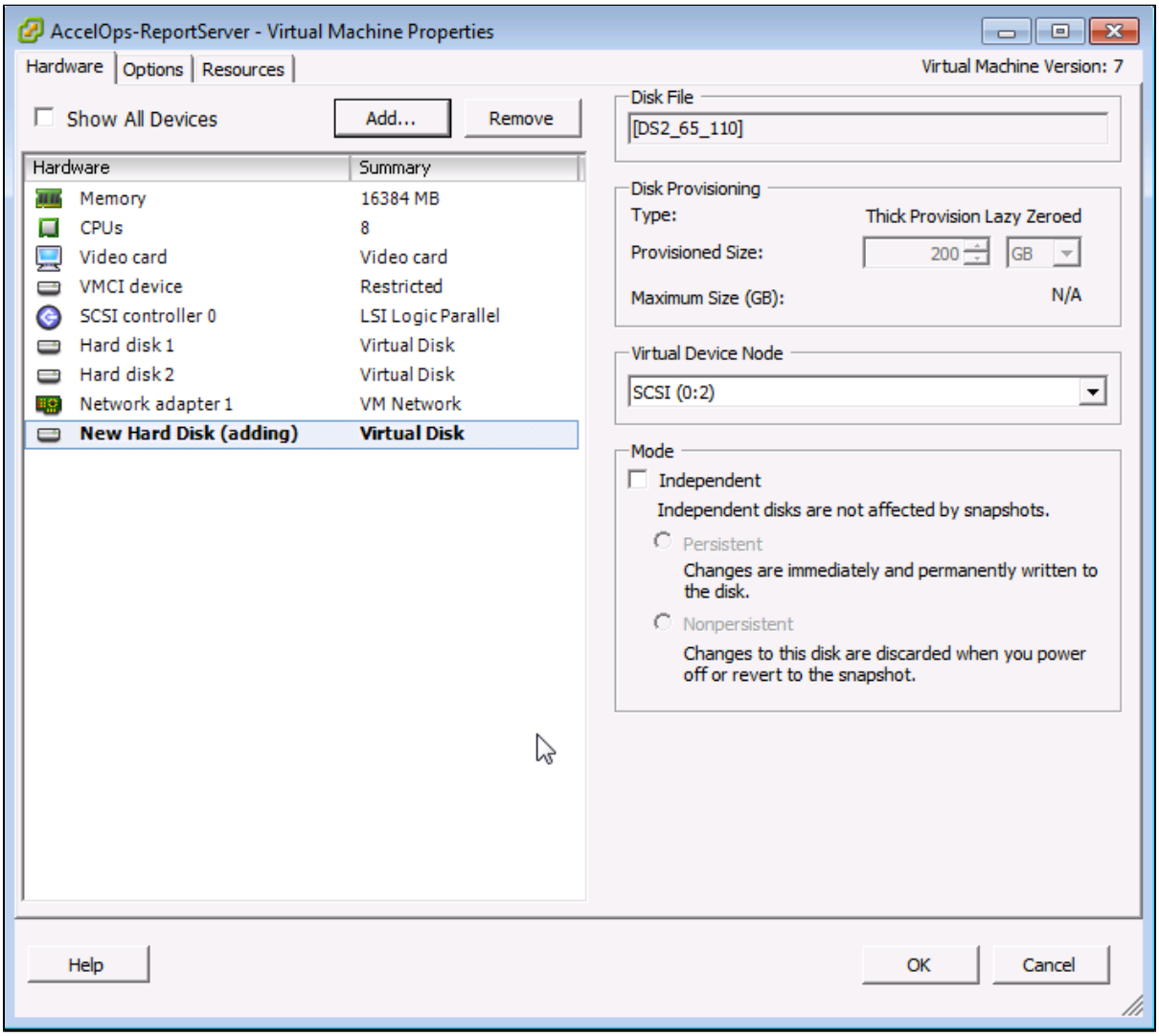
5. Ensure that 'Independent' is not checked and click on 'Next' button



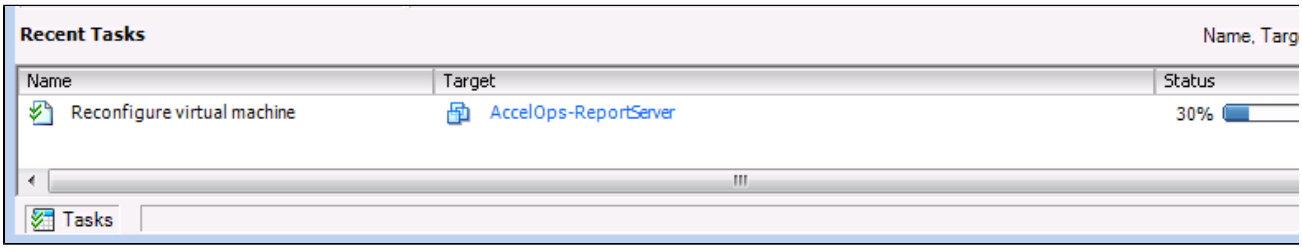
6. Confirm the Options are correct and click the 'Finish' button



7. Click 'OK' on Virtual Machine properties pop-up



8. Wait for until Adding Disk task complete on vSphere client



Note

Skip Step 2 if you choose Step 1 to store the AccelOps event data in local Hard disk. Else, continue Step 2 to create NFS mount point to store the reports data.

Step 2: Create new NFS mount point to store the Reports data

1. Log into NFS server, Create new directory to store Reports data

> **Note**
>
> Do not use AccelOps Supervisor mount point location.

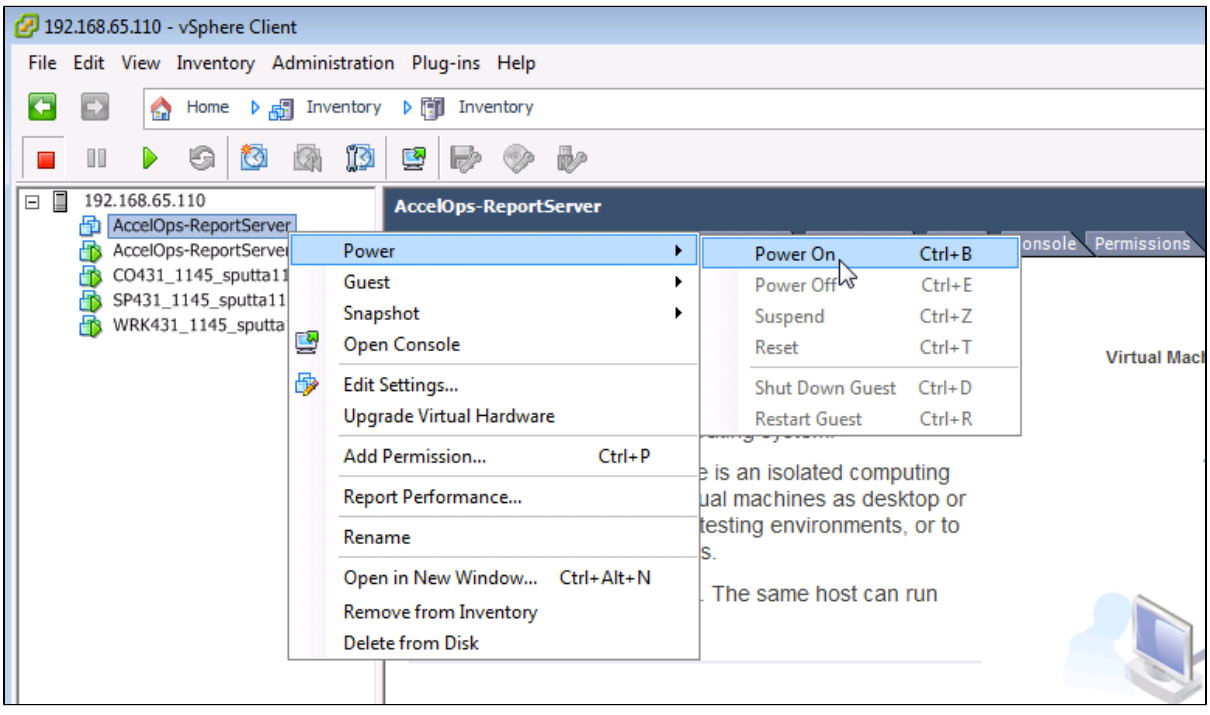
2. Refer to NFS documentation to check NFS directory permission

Section 4: Configure the Report Server from the VMware Console

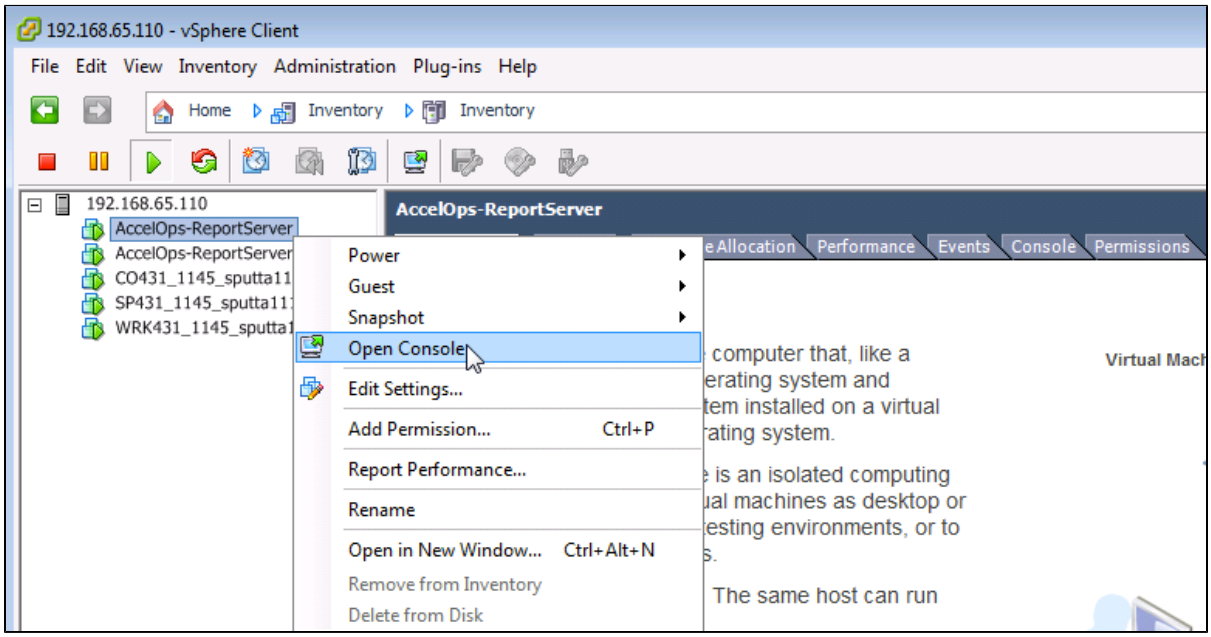
> **Note**
>
> While in the VM console window do not press any control keys during the installation. Doing so might cause the installation to stop and not to precede any further. For example Ctrl – C or Ctrl – Z. If this occurs you must erase the VA and start over from the beginning.

Step 1: Start Report Server

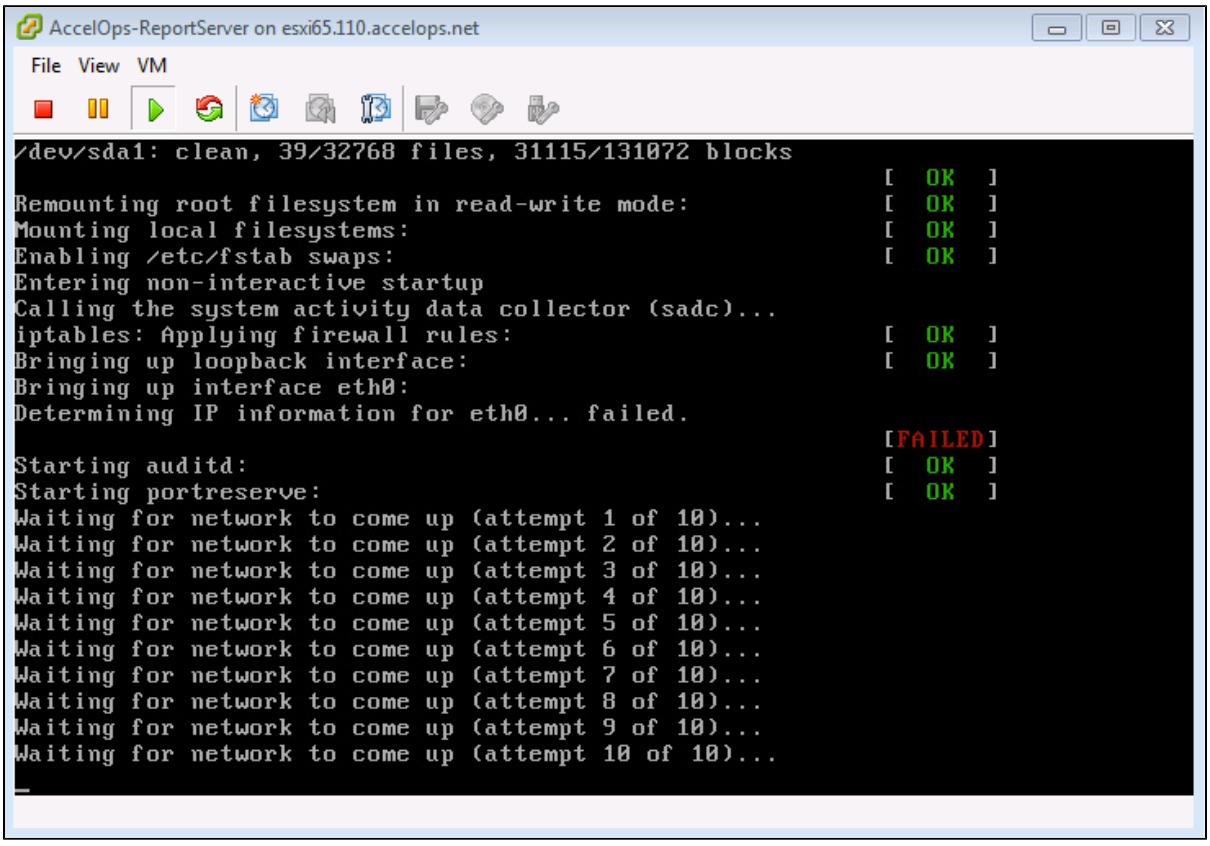
1. From the VMware vSphere client, Select recently imported Report server Virtual appliance and Power On (Right click > Power > Power On)



2. Open Report server VM Console (Right click > Open Console)



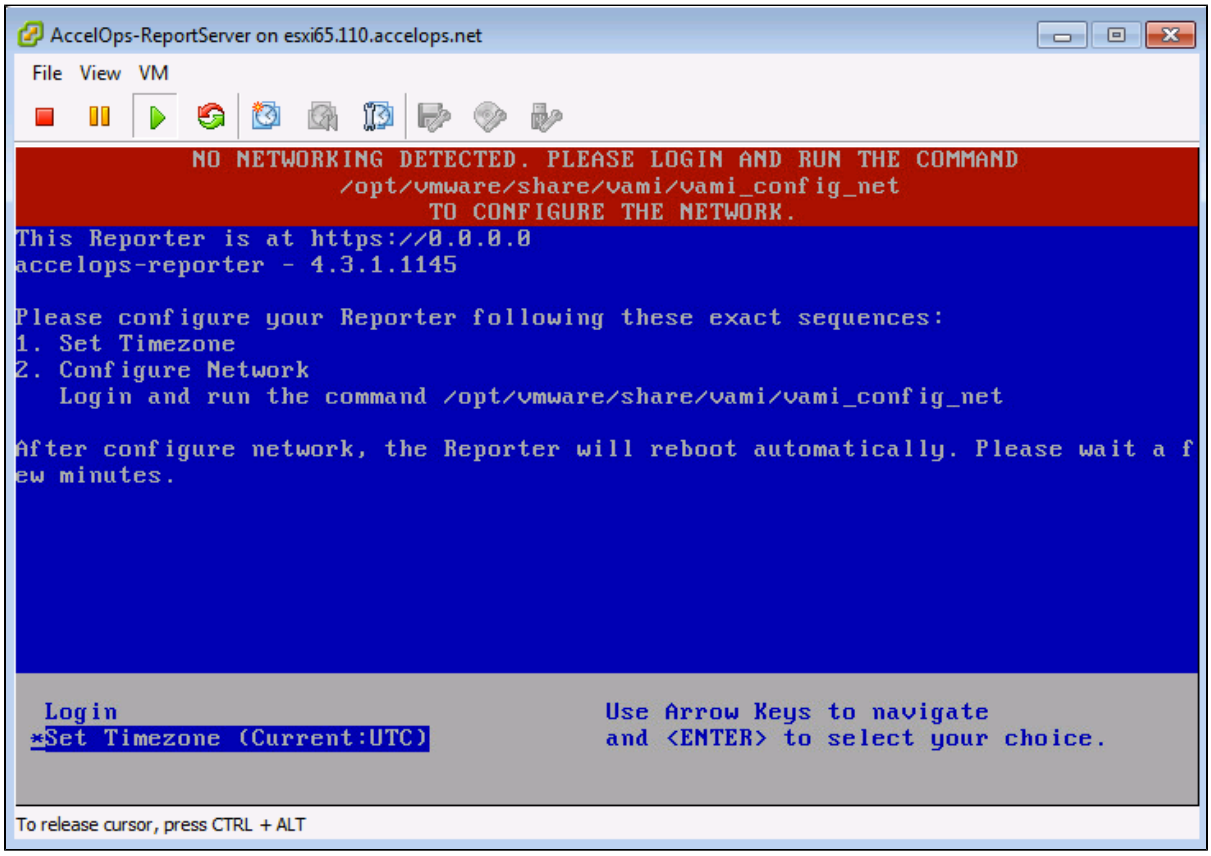
3. Network eth0 Failed message may appear on the screen during the loading, but this is to be expected the first time the AccelOps Report server is started.



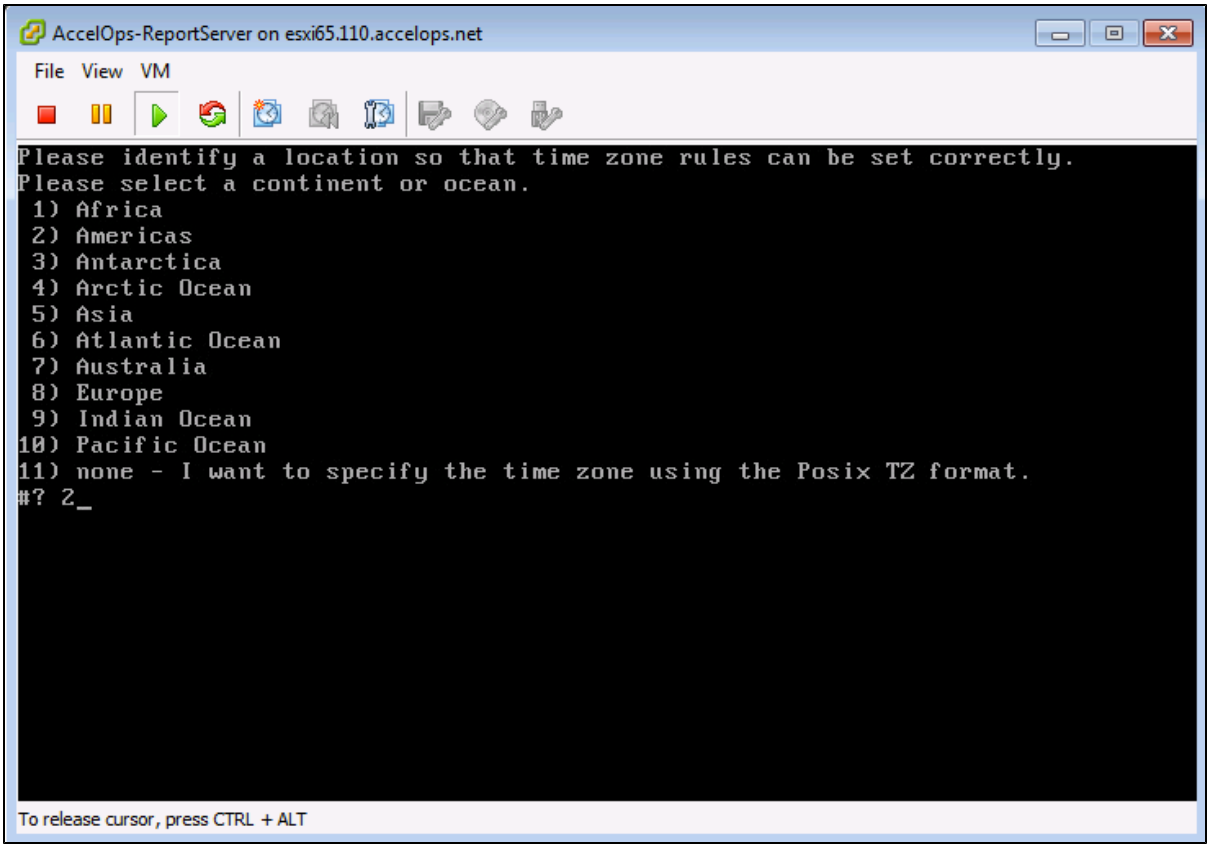
Step 2: Configure the Timezone

It is important to select the correct time zone that you are located in.

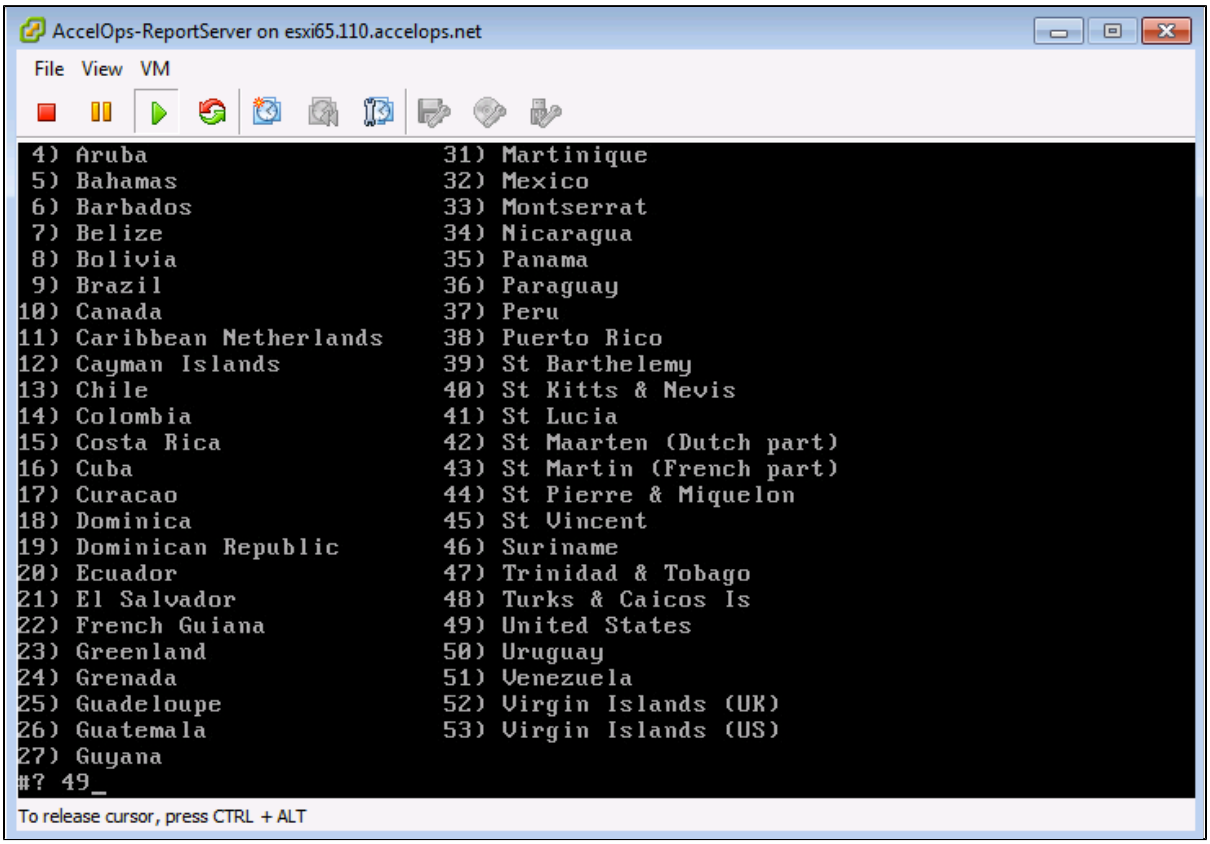
1. On VM console, Select 'Set Timezone' and press the 'Enter' key



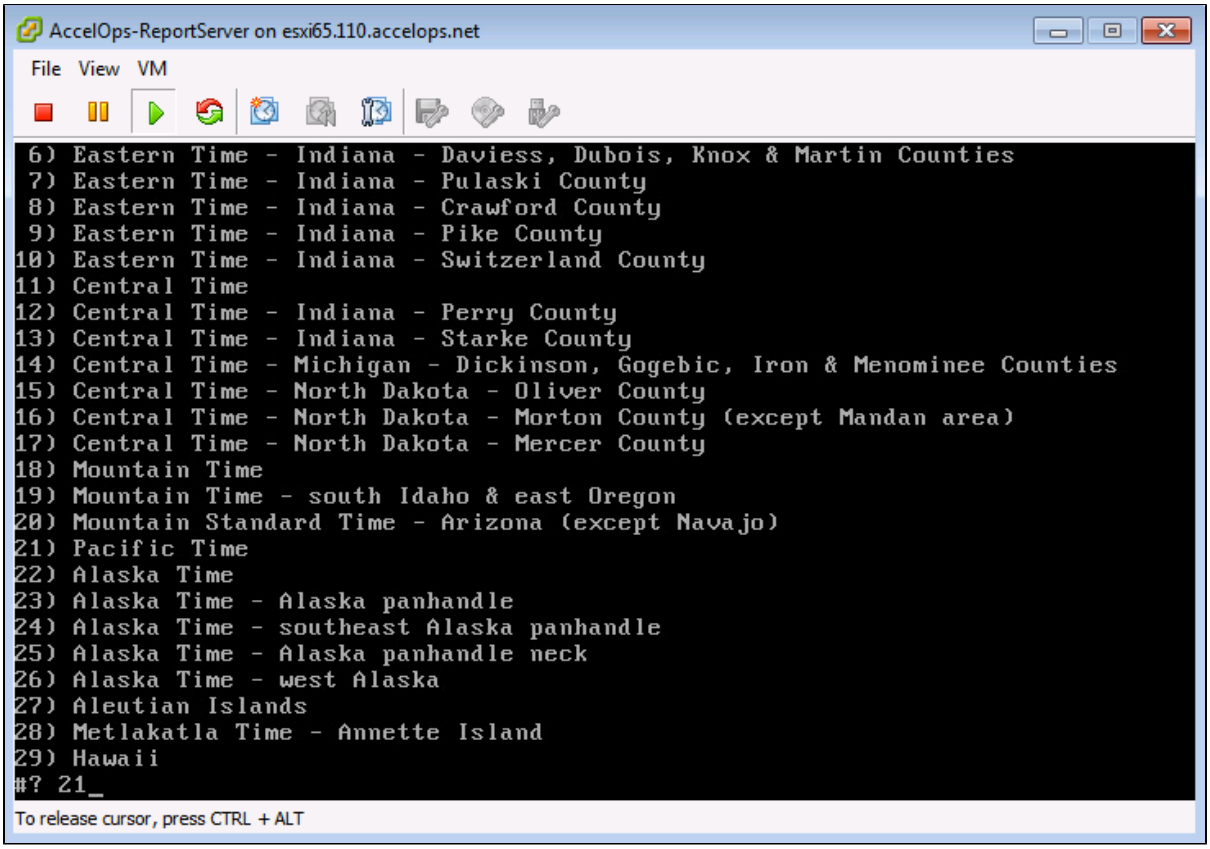
2. Select your Location and press the 'Enter' key



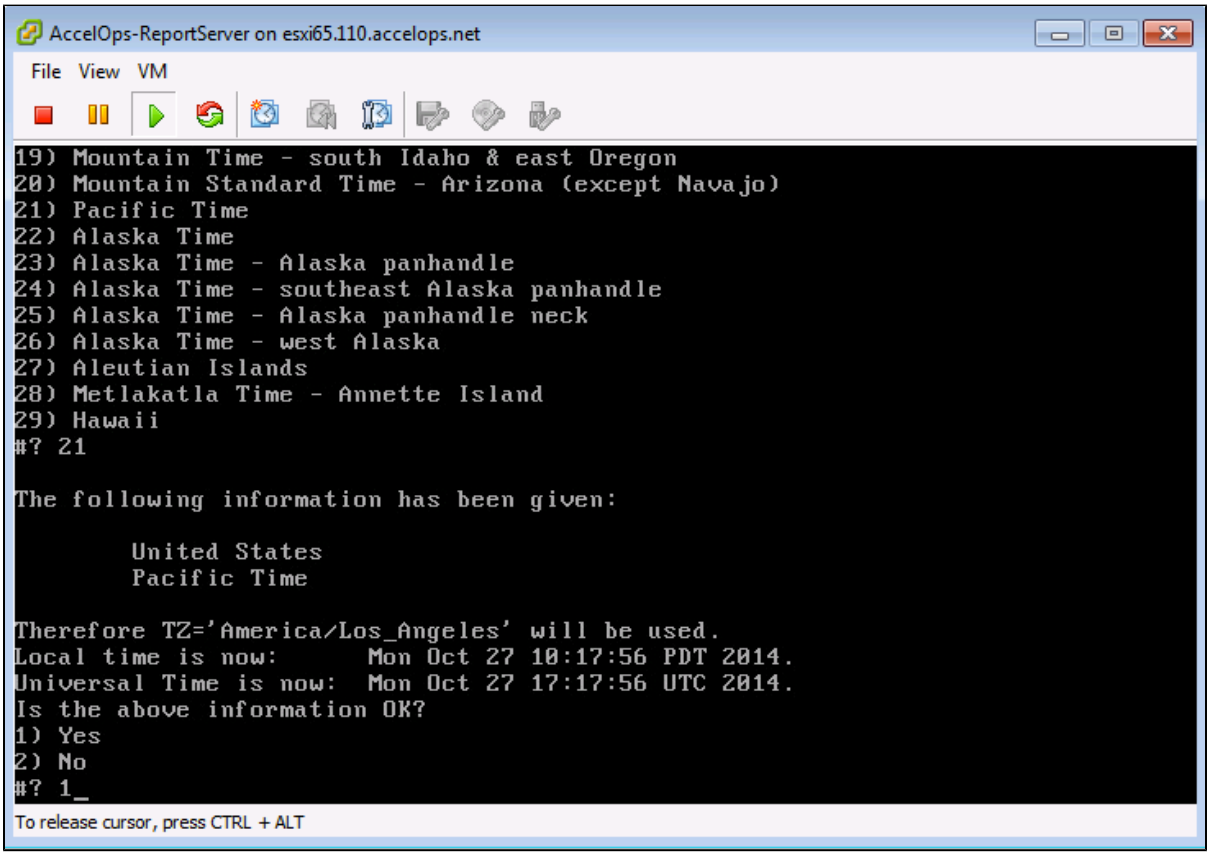
3. Select your Country and press the 'Enter' key



4. Select your Timezone and press the 'Enter' key

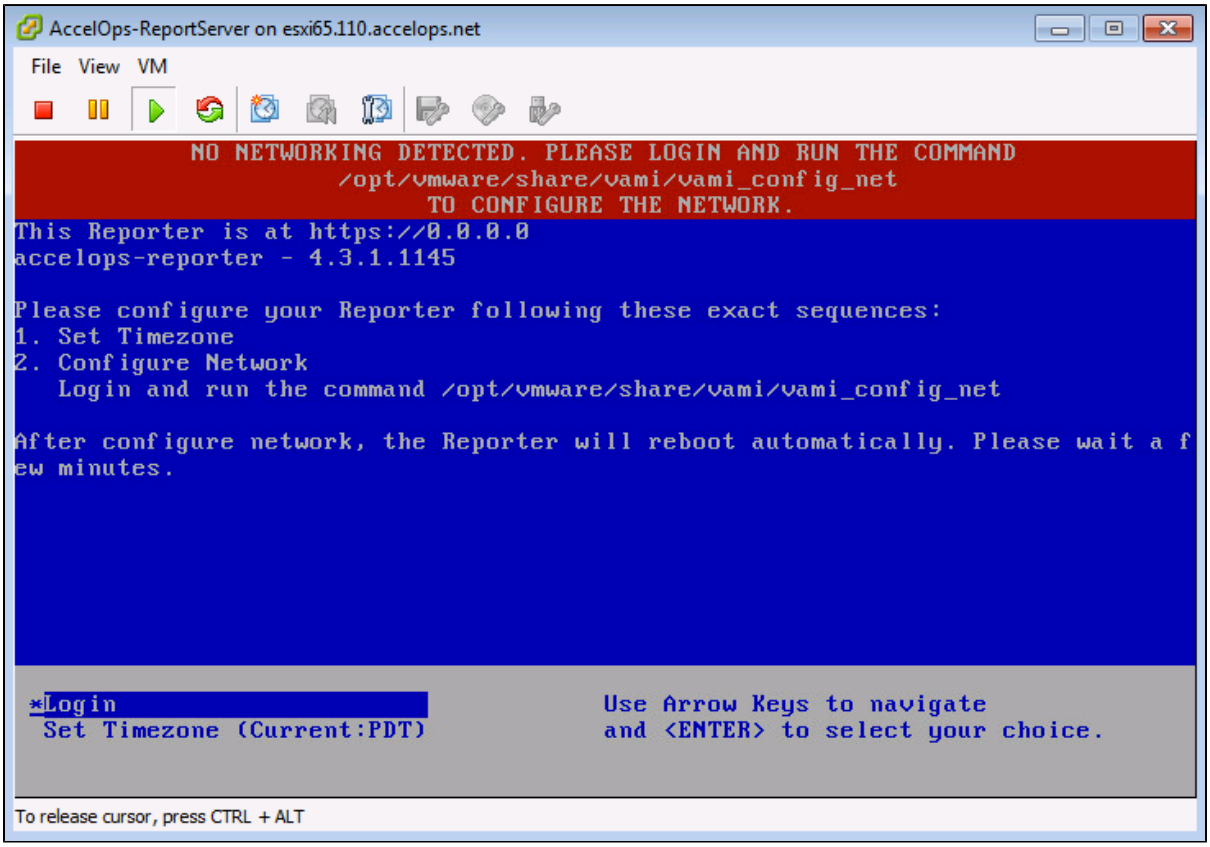


5. Review and Confirm your Timezone selection

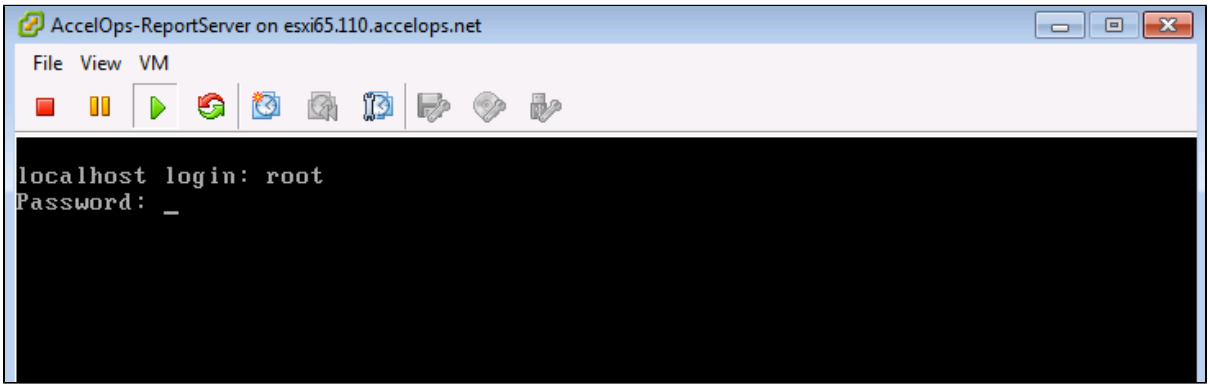


Step 3: Configure the Network

1. On VM console, Select 'Login' and press the 'Enter' key



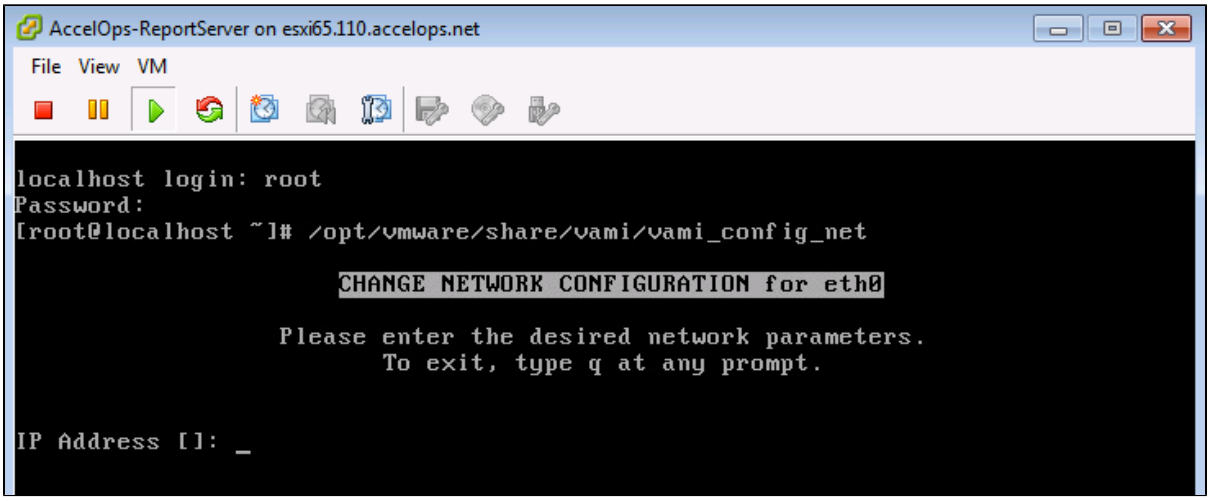
2. Enter default log in information.
   Login: root
   Password: ProspectHills



3. Run vami_config_net script to configure network and installing AccelOps Report server

Configure the Network

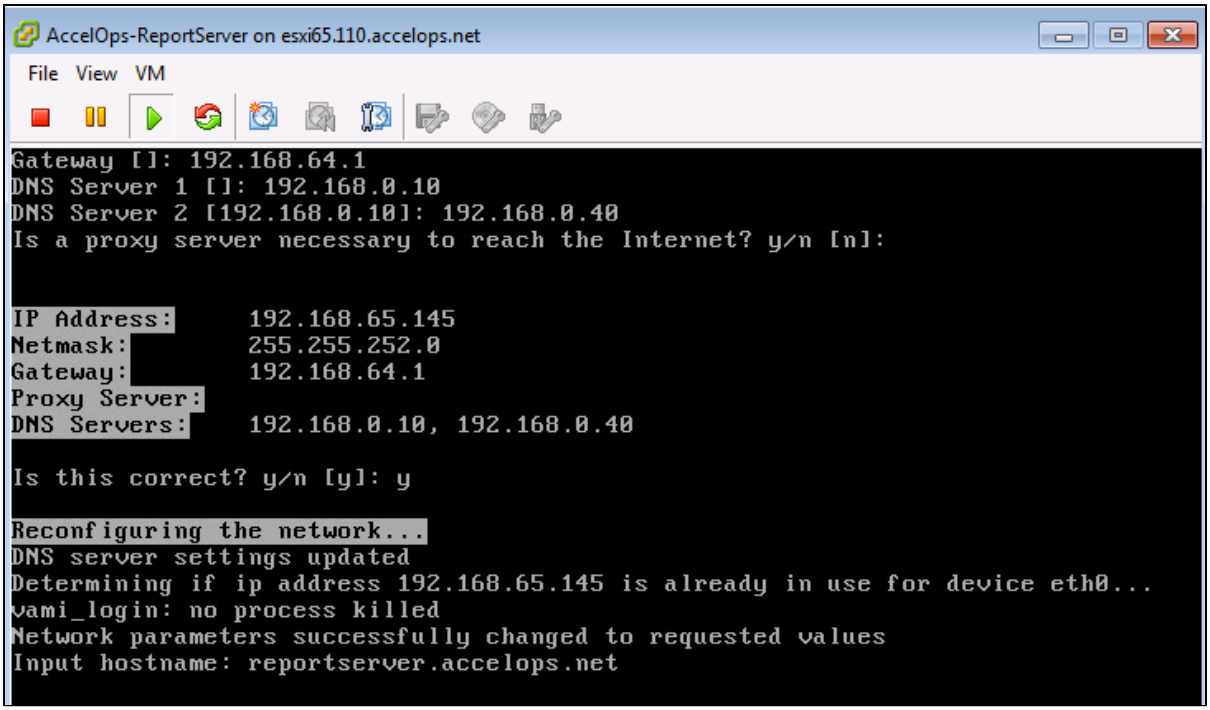
```
/opt/vmware/share/vami/vami_config_net
```



4. Configure Network with Static IP address
    a. The following information is required to configure Static IP address:
        i. IP Address
        ii. Netmask
        iii. Gateway
        iv. DNS Server(s)

> **Proxy Server**
>
> Do not configure the proxy server setting.

    b. Press the 'y' key to accept the changes
    c. Enter 'Host name' and press 'Enter' key



Step 4: Select Mount Point to store your data

The AccelOps Report Server can be installed using either storage configured within the ESX server or NFS storage.

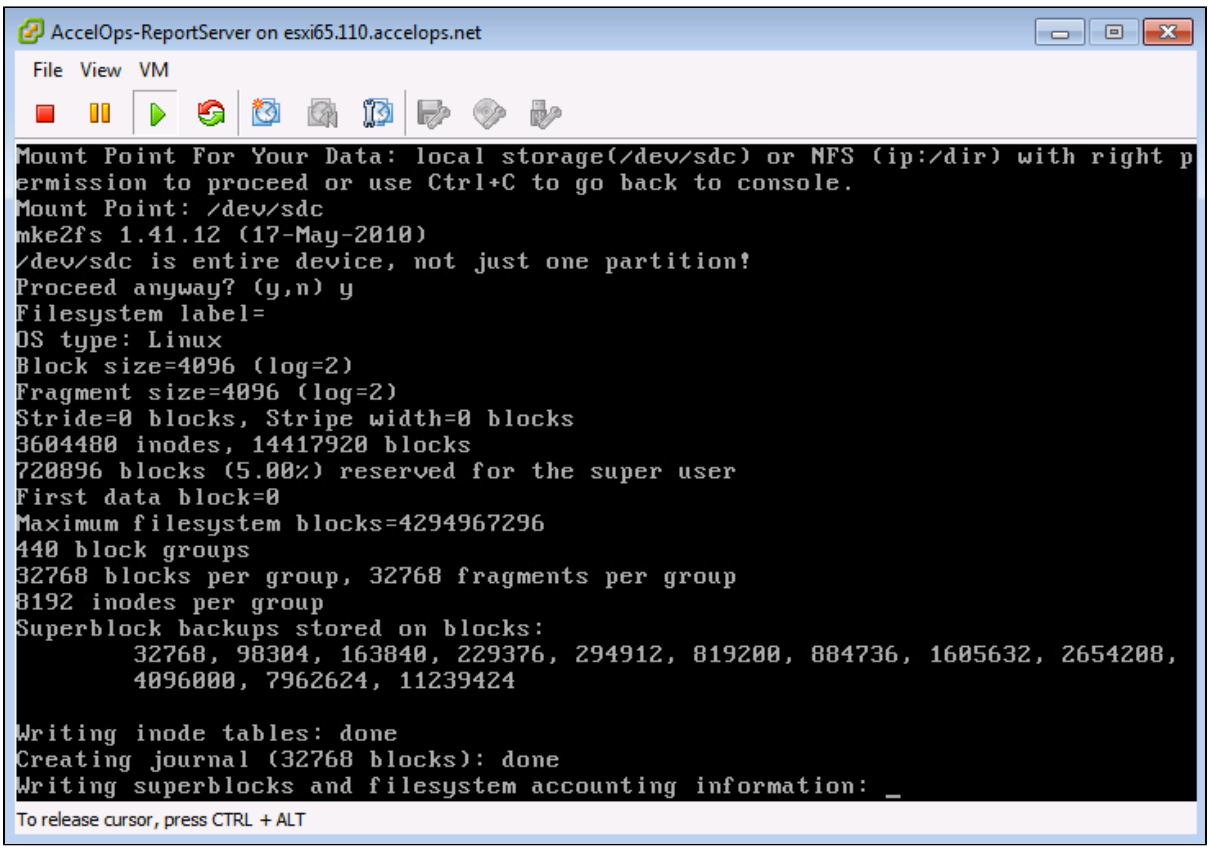
Choose only following Step 4.1 or 4.2 based on Section 3

1. Enter your Local hard disk mount point

> **Note**
>
> Skip Step 4.1 if AccelOps Super is used NFS storage to store the events data. Else, continue below steps.

Local Storage Mount point

```
/dev/sdc
```

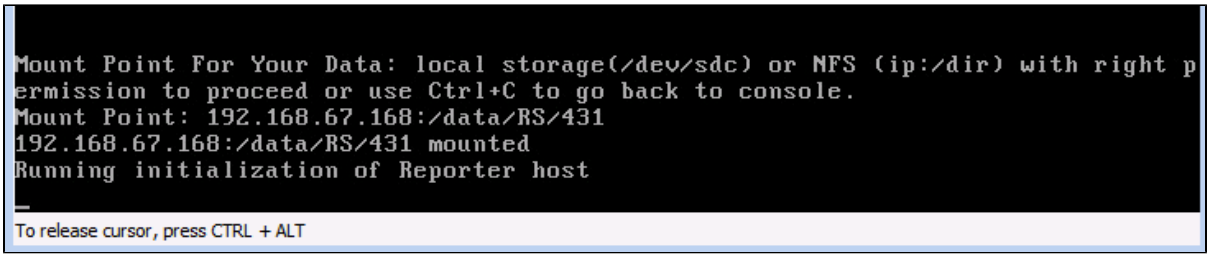


2. Enter your NFS mount point

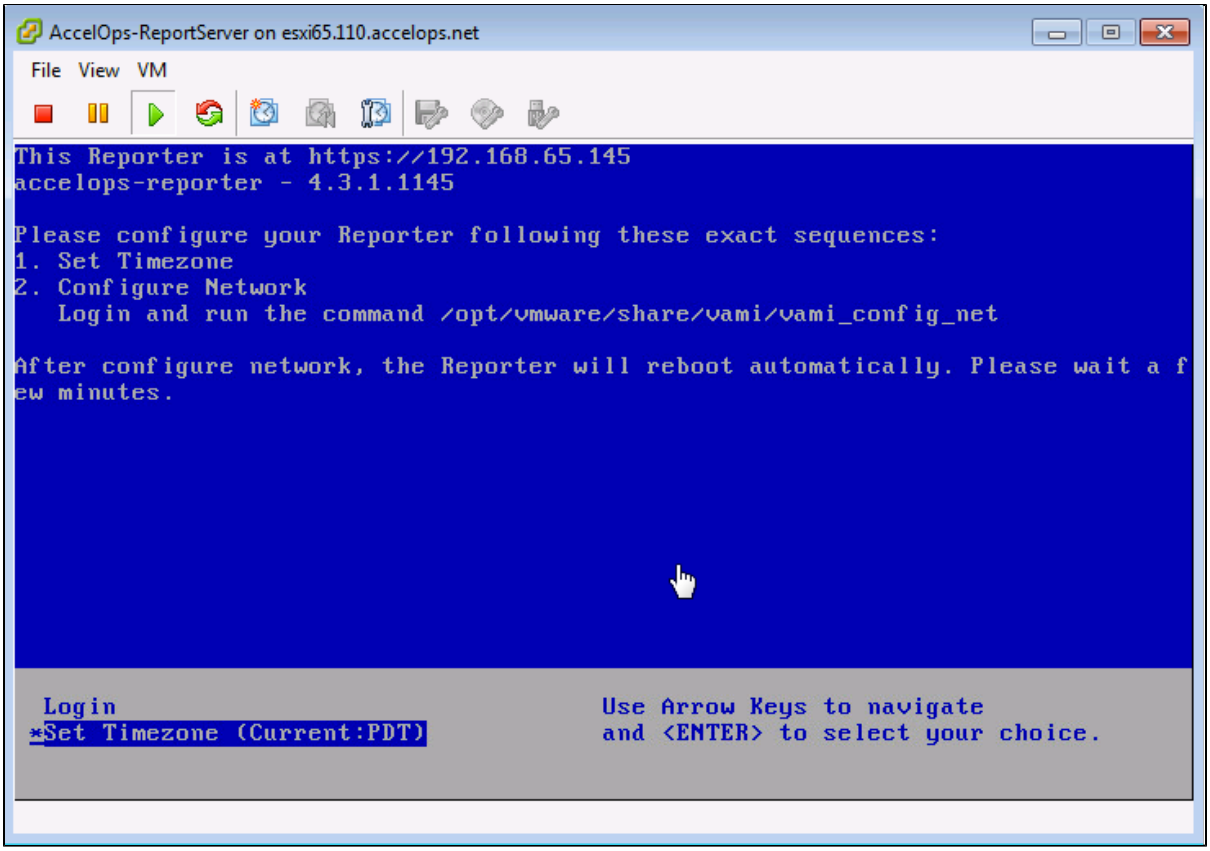
> **Note**
>
> Skip Step 4.2 if you choose Step 4.1 to store Reports data in local Hard disk. Else, continue below steps.

NFS Mount point

```
<NFS_Server_IP_Address>:/<Directory_Path>
```



3. After mount point, Report server will reboot automatically
   In 5 to 10mins, Report server will be configure successful.

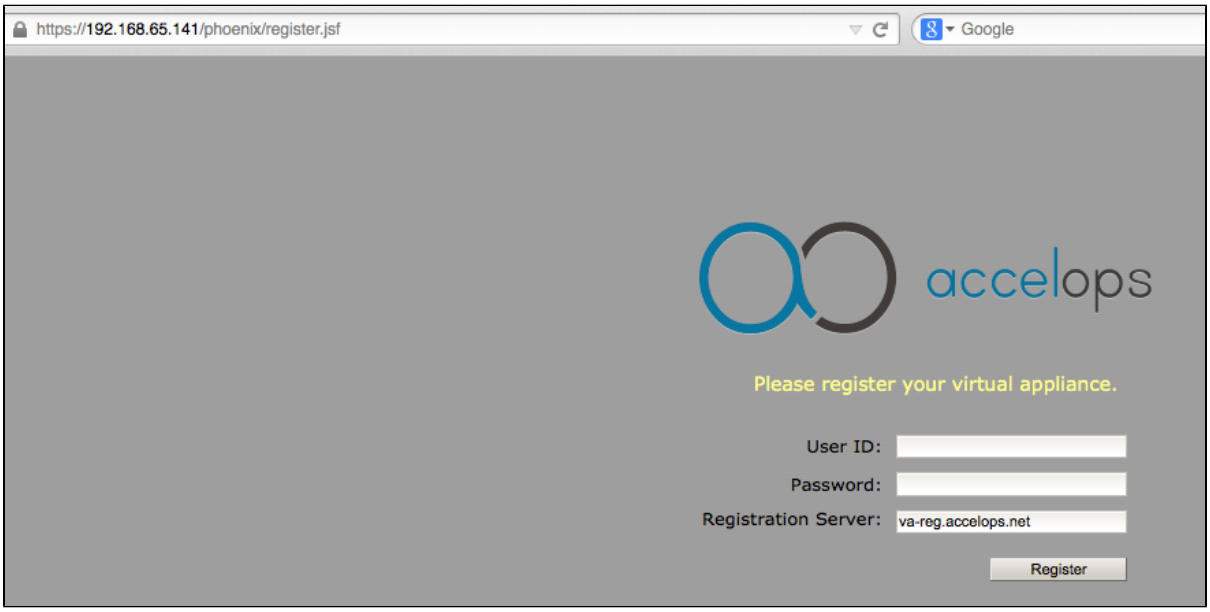


Section 5: Register the Report Server to Supervisor

> **Note**
>
> A new license is required to enable Report Server. Contact AccelOps support for Report Server License. You can skip this step if a Report Server license is already registered with the Supervisor.

Step 1: Re-register AccelOps Supervisor with new license

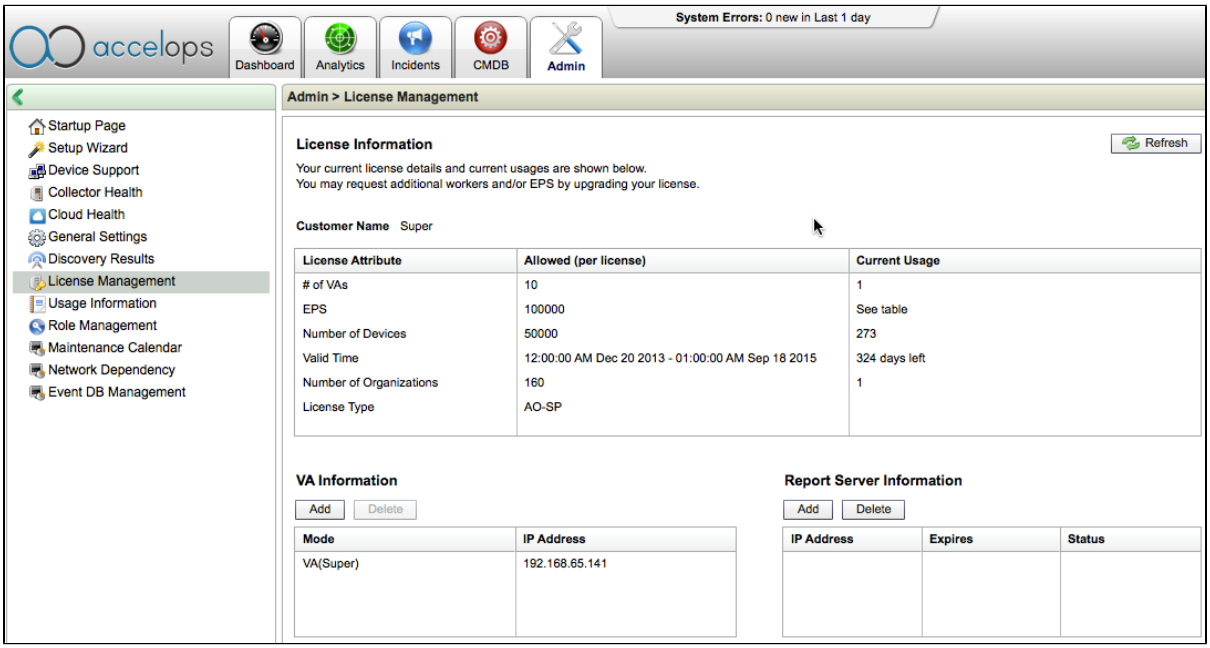
1. In browser windows, enter 'https://<Supervisor IP>/phoenix/register.jsf'



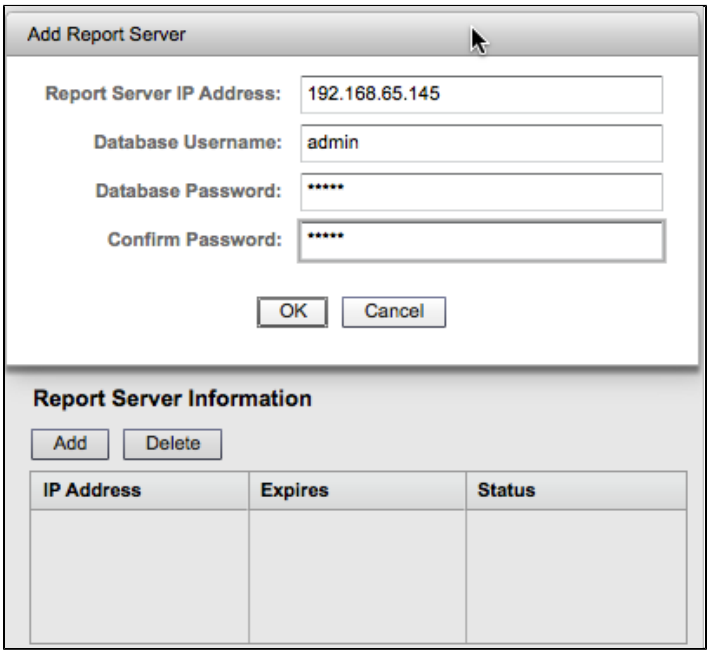
2. Enter license user name and password

Step 2: Add Report Server on Supervisor UI

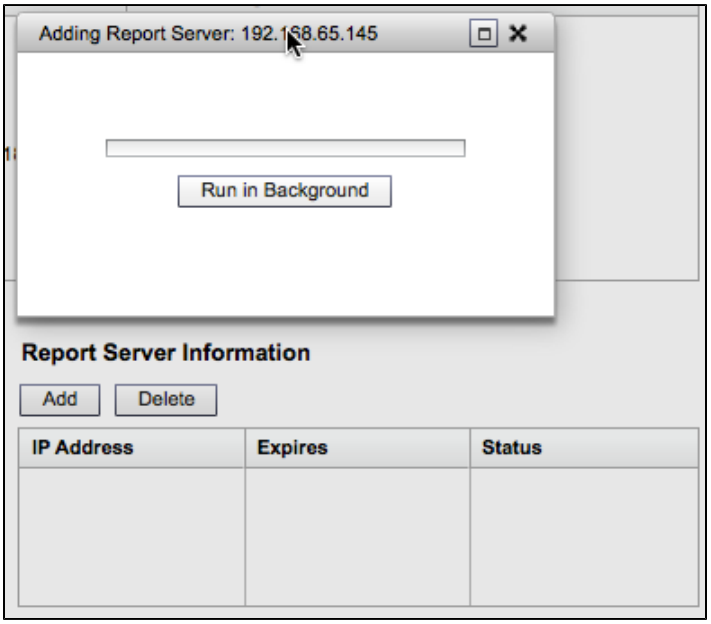
1. Go to Admin > License Management. You will see a section called 'Report Server Information'



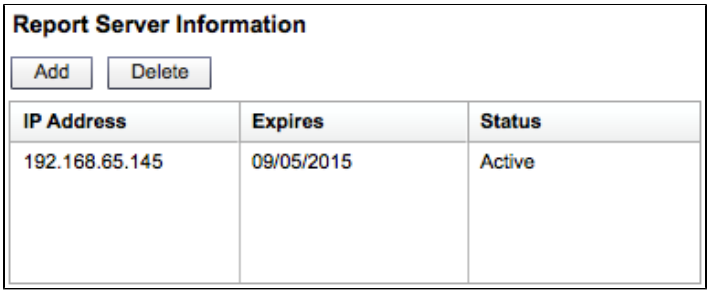
2. Click 'Add' to register the Report Server Node
    a. Enter Report Server IP Address
    b. Enter Read only credentials that will be used by the AccelOps Visualization Analytics Server to read the data in the PostgreSQL tables in the Report Server



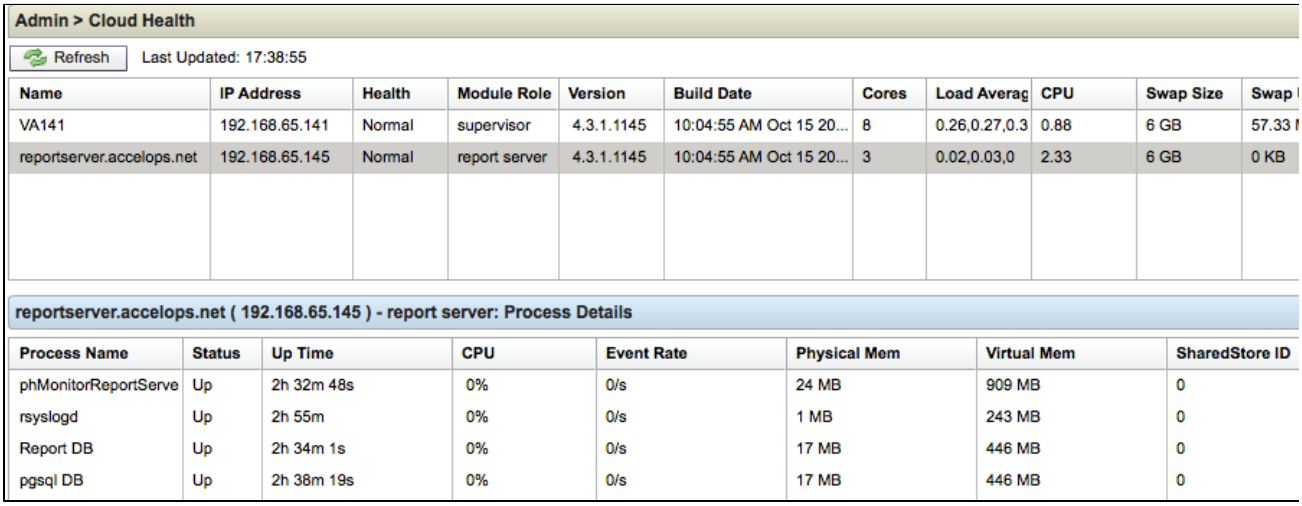
3. Report Server registration will takes 3mins to complete when Supervisor's CMDB size is <1 GB.
   Else, it takes more time to complete registration based Supervisor's CMDB size. You can 'Run in Background' when Supervisor's CMDB size is > 1GB.



4. Click 'OK' on Confirmation pop-up. The Supervisor node will configure the Report Server



5. Make sure Report Server appears in Admin > Cloud health



Admin > Cloud Health

Refresh Last Updated: 17:38:55

Name	IP Address	Health	Module Role	Version	Build Date	Cores	Load Averag	CPU	Swap Size	Swap
VA141	192.168.65.141	Normal	supervisor	4.3.1.1145	10:04:55 AM Oct 15 20...	8	0.26,0.27,0.3	0.88	6 GB	57.33
reportserver.accelops.net	192.168.65.145	Normal	report server	4.3.1.1145	10:04:55 AM Oct 15 20...	3	0.02,0.03,0	2.33	6 GB	0 KB

reportserver.accelops.net (192.168.65.145) - report server: Process Details

Process Name	Status	Up Time	CPU	Event Rate	Physical Mem	Virtual Mem	SharedStore ID
phMonitorReportServe	Up	2h 32m 48s	0%	0/s	24 MB	909 MB	0
rsyslogd	Up	2h 55m	0%	0/s	1 MB	243 MB	0
Report DB	Up	2h 34m 1s	0%	0/s	17 MB	446 MB	0
pgsql DB	Up	2h 38m 19s	0%	0/s	17 MB	446 MB	0

Installing and Configuring Visual Analytics Server

Prerequisites

Before you begin installing Visual Analytics Server, make sure you have read the section on **Visual Analytics Server** in Requirements for AccelOps Visual Analytics. This contains information on the Administrator Account and Ports that you will need during the configuration process. The Visual Analytics Server is powered by Tableau Server, and you may want to also consult the Tableau Server Administration Guide before you begin the installation process.

Installation

1. Download the Visual Analytics Server installation file from Tableau Software.
2. Double-click the installation file to launch the Visual Analytics Server Setup Wizard.
3. When the Setup Wizard launches, click **Next** to begin the installation process.
4. Enter a **Destination Location** where you want to install the server files, and then click **Next**.
5. When the system verification process completes, click **Next**.
6. Enter a location for the Start Menu folder, or use the default location, and then click **Next**.
7. Click **Install** to complete the installation process.
8. Click **Next** to begin the server activation process.

Activation

1. If you are evaluating Visual Analytics Server, click **Start trial now**. Otherwise, click **Activate the product** to enter a license key.
2. If you enter a license key, click **Activate**.
3. Click **Continue** to launch the Visual Analytics Server configuration process.

Configuration

1. In the Configuration dialog, enter a **User Name** and **Password** for the domain admin account that you will use to administer the Visual Analytics Server.
2. If necessary, enter a **Gateway** port through which you will connect to the server over HTTP.
3. Click **OK**.
   The initialization process will launch and complete within several minutes.
4. Click **Finish** to complete the configuration process.
5. Launch the Visual Analytics Server user interface by entering the URI for the server in a browser window.
   The URI will be be in the format of `http://<Windows_Server_IP_Address>:<Port_Number_Used_In_Step_2>`
6. Sign in to the server by entering the credentials for the domain admin account that you created in Step 1, and then click **Sign In**.
7. Click the **Admin** tab and select **Maintenance**.
8. Under **Status**, check to make sure that all systems are up and running.

You are now ready to install Visual Analytics Desktop. After you have completed the Visual Analytics Desktop installation process and connect to Report Server for the first time to create a sheet, as described in Creating a Single Sheet Workbook, you will also establish the connection between AccelOps Report Server and Visual Analytics Server.

Installing and Configuring Visual Analytics Desktop

Prerequisites

1. Make sure you have read the section on Visual Analytics Desktop in Requirements for AccelOps Visual Analytics.
2. You should set up the Visual Analytics Server before you install the Visual Analytics Desktop, as you will connect Visual Analytics Desktop and Visual Analytics Server using the Domain Admin account and IP address that you used to configure Visual Analytics Server.
3. Download and install the Postgres SQL data source driver from Tableau Software and install it on your desktop.

Installation and Activation

1. Download the Visual Analytics Desktop installation file from Tableau Software.
   The downloader will automatically detect the operating system of the device you are using to download, so you should be sure to initiate the download from the machine where you want to install Analytics Desktop.
2. Double-click the installation file to launch the Setup Wizard.
3. In the Setup Wizard, click **Install**.
4. In the **User Account Control** dialog, click **Yes**.
   The installation will complete within a few minutes, and the Activation dialog will launch.
5. Click **Start Free Trial** to begin evaluation of Analytics Desktop, or click **Activate the Product** if you have a license key.
6. Click **Continue** to launch Visual Analytics Desktop.

Connecting Visual Analytics Desktop to Visual Analytics Server

1. Launch Visual Analytics Desktop.
2. In the **Server** menu, select **Sign In**.
3. Enter the IP address and HTTP port for the Visual Analytics Server.
4. Click **Connect**.
5. Enter the user name and password for the Admin user you created during the Visual Analytics Server set up process, and then click **Sign In**.
   Your Visual Analytics Desktop application will now be connected to the Visual Analytics Server.

Creating and Managing Workbooks

This section contains information on using Visual Analytics Desktop to create sheets and workbooks that are based on AccelOps reports, and then publishing them for others to use.

Viewing Workbooks

1. Log in to Visual Analytics Server.
2. Click the **Content** tab and select **Workbooks**.
3. Click on a workbook.
   The workbook along with the various worksheets are displayed.
4. Select a workbook or worksheet.
5. You will be prompted for credentials that will allow the workbook or worksheet to access database information. Enter the Admin credential that you used to set up Accelops Report Server and click **OK**.
6. When your credential is accepted, the chart associated with the selected workbook or worksheet will be displayed.

Creating and Publishing Workbooks

Workbooks are collections of AccelOps reports that have been synced to AccelOps Report Server, and which are then the basis for charts and dashboards that can be published to Visual Analytics Server for access by other users. Information in this section describes how to create single and multiple sheets of report information, and then make them accessible to other users.

Creating a Single Sheet Workbook

These instructions demonstrate how to create a single-sheet workbook that will chart the CPU and memory utilization trend for various servers. This example uses the **Servers by CPU, Memory** report and its associated table, but any report with a table in the reportdb database can also be used. The Tableau Desktop online Help also contains extensive information about building sheets and workbooks with the Tableau Desktop editor, which powers the AccelOps Visual Analytics Desktop.

Prerequisites

- Follow the instructions in Syncing an AccelOps Report with Report Server to sync the report you want to use for your worksheet.
- You will need to know the name of the parent table for your synced report. Follow the instructions in Viewing reportdb Organization to find the table that corresponds to your report.

Procedure

Create the Sheet

1. Launch AccelOps Visual Analytics Desktop.
2. Connect to AccelOps Report Server with the **Username** and **Password** that you used during Report Server installation.
   For **Database**, enter **reportdb**.
   For **Port**, enter **30000**.

   > **Connecting to Port 30000**
   >
   > It's important to make sure you enter the correct port to connect to the reportdb database. If you leave this option blank you will connect to the default PostgreSQL database port, which will connect you with phoenixdb instead of reportdb. For more information about the databases contained in Report Server, see Report Server Architecture: phoenixdb and reportdb.
3. Under **Tables**, select the parent table for your report.
   For the steps following, we will use the **Servers by CPU, Memory** table and its associated columns.
4. Drag the table to the **View** pane and click **Update Now**.
   The data in the table will load into the pane below. Note that the table columns match closely to the Report Display Columns in AccelOps.
5. For **Connection**, select **Live**.
6. Click **Go to Worksheet**.
   In the worksheet view you will see that a set of **Dimensions** and **Measures** are populated for the table.
7. Under **Measures**, select **Report Time** and drag it to the **Dimensions** section to create Report Time as a calculated measurement.
8. Under **Dimensions**, right-click on **Report Time** to edit the calculation formula and convert it to a human-readable format from UNIX time.
   The formula should look like `DATEADD('second',INT([Report Time]),#1969-12-31 16:00:00#)`

   > You may also want to rename **Report Time** to **Time** to make it easier to read on the resulting chart.
9. Drag **Report Time** from **Dimensions** to **Columns**.
10. Under **Columns**, right-click on **Report Time** and select **Exact Date**.
    You should now see dates and time increments in your chart as the X-axis.
11. Under **Measures**, select and drag **AVG(cpuUtil)** and **AVG(memUtil)** to **Rows**.
12. Set the aggregation of both **AVG(cpuUtil)** and **AVG(memUtil)** to **AVG**.
    For example, **AVG(AVG(cpuUtil))** and **AVG(AVG(memUtil)).**
    You should now see both measures on the Y-axis of your chart.
13. Under **Dimensions**, drag **Host Name** to the **Color** section under **Marks**.
    Each host will be assigned a color and added to the chart.
14. Change the chart display name for AVG(cpuUtil) and AVG(memUtil) by clicking on each in the Y-axis to launch the Edit Y-Axis dialog.
    You can now edit the **Title** and **Range**, as well as other attributes, for each measure.
15. Under **Data**, click on the data source to open the Options menu, then click **Refresh**.
16. Rename the sheet by clicking on the data source to open the Options menu, then select **Rename** and enter a new name.

Your sheet is now complete. Hover your mouse over a trend line to view information about a specific host.

Create the Workbook

1. Click the **Dashboard** tab  on the bottom of the Sheet editor to open the **Dashboard** editor.
2. Under **Dashboard**, select an appropriate **Size** and screen resolution.
3. Under **Dashboard**, select the sheet and drag it into the display pane.
4. Open the **Dashboard** options menu and select **Rename**.
   Change the name of the dashboard from **Server CPU/Memory Trend** to **Server Performance**.
5. In the **File** menu, select **Save**.

Publish the Workbook

1. In the **Server** menu, select **Sign In...**
2. Enter the IP address and port number for the Visual Analytics Server.
3. Enter the **Username** and **Password** for the Visual Analytics Server admin user, and then click **Sign In**.
4. In the **Server** menu, select **Publish Workbook**.
5. Enter attributes for the workbook, such the associated **Project**, **Name**, **View Permissions**, and **Views to Share**.
   See Adding Users to Workbooks for more information about user permissions for workbooks.
6. Click **Publish**.

Creating a Multiple Sheet Workbook

These instructions demonstrate how to create a multiple-sheet workbook that will contain a set of charts related to Network Health. This example uses the **Network Devices by Ping RTT**, **Network Interfaces By Utilization**, and **Network Devices By CPU, Memory** reports, but any report with an associated table and views in the reportdb database could be used. The Tableau Desktop online Help also contains extensive information about building sheets and workbooks with the Tableau Desktop editor, which powers the AccelOps Visual Analytics Desktop.

Prerequisites

- Follow the instructions in Syncing an AccelOps Report with Report Server to sync the reports you want to use for your worksheet.
- You will need to know the name of the parent table for your synced reports. Follow the instructions in Viewing reportdb Organization to find the table that corresponds to your report.

Procedure

Create a View

Each report you want to include in your workbook corresponds to a table in the AccelOps reportdb. These tables need to be joined to cross-link the information that will appear in your workbook. In the case of a Network Health workbook that includes the sheets Network Devices by Ping RTT, Network Interfaces By Utilization, and Network Devices By CPU, Memory, the joining keys are **host name** and **time**.

1. Follow the instructions in Viewing reportdb Organization to find the parent tables for the reports you want to join.
   For each report there is one parent table and multiple child tables containing data for a particular month.
2. Create a SQL statement in pgAdmin to join the tables.
   In this example data is captured for one day. This enables quick generation of the data visualization.

```
 SELECT cpu.report_time, cpu."hostName", cpu."hostIpAddr", cpu."AVG(cpuUtil)",
cpu."AVG(memUtil)",
       uptime."SUM(sysDownTime)", uptime."AVG(avgDurationMSec)",
uptime."LAST(sysUpTime)",
       uptime."SUM(pollIntv)", util."intfName", util."intfAlias",
       util."AVG(inIntfUtil)" AS "totalAvgInIntfUtil", util."AVG(outIntfUtil)" AS
"totalAvgOutIntfUtil",
       util."AVG(recvBitsPerSec)" AS "totalAvgRecvBitsPerSec",
       util."AVG(sentBitsPerSec)" AS "totalAvgSentBitsPerSec",
       util."AVG(outQLen)", util."AVG(intfSpeed64)"

FROM "Network Devices By CPU, Memory_1278492569_1" cpu,
     "Network Devices by Ping RTT_2021056235_1" uptime,
     "Network Interfaces By Utilization_382117475_1" util

WHERE ((cpu.report_time * 1000)::double precision * '00:00:00.001'::interval +
'1969-12-31 16:00:00-08'::timestamp with time zone) >= (now() - 1::double
precision * '1 day'::interval)
     AND ((uptime.report_time * 1000)::double precision *
'00:00:00.001'::interval + '1969-12-31 16:00:00-08'::timestamp with time zone) >=
(now() - 1::double precision * '1 day'::interval)
     AND ((util.report_time * 1000)::double precision * '00:00:00.001'::interval
+ '1969-12-31 16:00:00-08'::timestamp with time zone) >= (now() - 1::double
precision * '1 day'::interval)
     AND cpu.report_time = uptime.report_time AND cpu."hostName" =
uptime."hostName" AND uptime.report_time = util.report_time AND uptime."hostName"
= util."hostName";
```

3. Click the **Play** icon in pgAdmin to execute the query.
   Make sure the output pane contains data that is the result of the query execution.
4. Modify the SQL statement to create a view.
   Add this command at the top of the SQL statement:

```
 CREATE OR REPLACE VIEW ph_network_health_view AS
```

   Add this command at the bottom of the SQL statement:

```
 grant select on ph_network_health_view TO public;
```

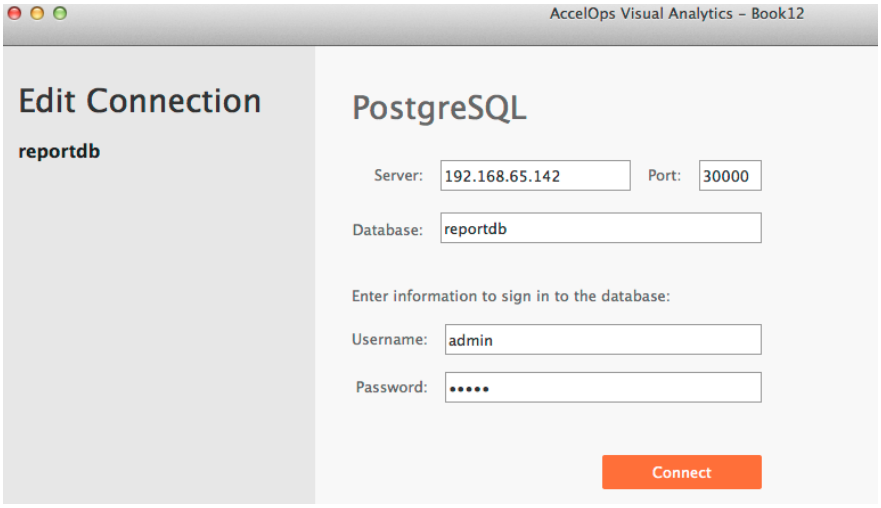
   Your complete SQL statement should look like this:

```
CREATE OR REPLACE VIEW ph_network_health_view AS

SELECT cpu.report_time, cpu."hostName", cpu."hostIpAddr", cpu."AVG(cpuUtil)",
cpu."AVG(memUtil)",
       uptime."SUM(sysDownTime)", uptime."AVG(avgDurationMSec)",
uptime."LAST(sysUpTime)",
       uptime."SUM(pollIntv)", util."intfName", util."intfAlias",
       util."AVG(inIntfUtil)" AS "totalAvgInIntfUtil", util."AVG(outIntfUtil)" AS
"totalAvgOutIntfUtil",
       util."AVG(recvBitsPerSec)" AS "totalAvgRecvBitsPerSec",
       util."AVG(sentBitsPerSec)" AS "totalAvgSentBitsPerSec",
       util."AVG(outQLen)", util."AVG(intfSpeed64)"

FROM "Network Devices By CPU, Memory_1278492569_1" cpu,
     "Network Devices by Ping RTT_2021056235_1" uptime,
     "Network Interfaces By Utilization_382117475_1" util

WHERE ((cpu.report_time * 1000)::double precision * '00:00:00.001'::interval +
'1969-12-31 16:00:00-08'::timestamp with time zone) >= (now() - 1::double
precision * '1 day'::interval)
     AND ((uptime.report_time * 1000)::double precision *
'00:00:00.001'::interval + '1969-12-31 16:00:00-08'::timestamp with time zone) >=
(now() - 1::double precision * '1 day'::interval)
     AND ((util.report_time * 1000)::double precision * '00:00:00.001'::interval
+ '1969-12-31 16:00:00-08'::timestamp with time zone) >= (now() - 1::double
precision * '1 day'::interval)
     AND cpu.report_time = uptime.report_time AND cpu."hostName" =
uptime."hostName" AND uptime.report_time = util.report_time AND uptime."hostName"
= util."hostName";

grant select on ph_network_health_view TO public;
```

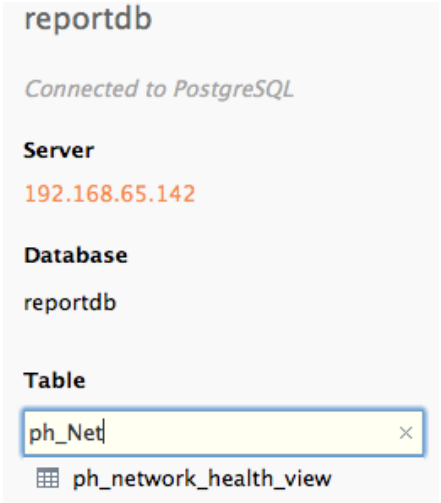
5. In pgAdmin, click the **Play** icon to execute the statement.
6. Using pgAdmin, navigate to the **Views** and make sure the `ph_network_health_view` has been created.
7. Right-click on `ph_network_health_view` to open the **Options** menu, then select **View Data > View Last 100 Rows** to make sure the view contains data.

Create a Workbook that Uses the View

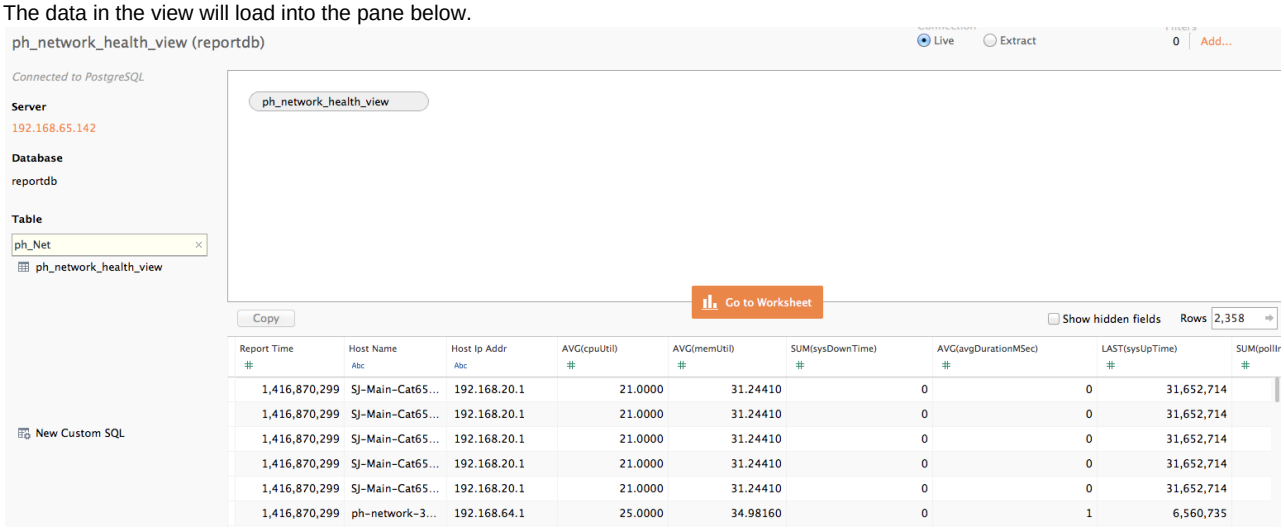
1. Launch AccelOps Visual Analytics Desktop.
2. Connect to AccelOps Report Server with the **Username** and **Password** that you used during Report Server installation.
   For **Database**, enter **reportdb**.
   For **Port**, enter **30000**.



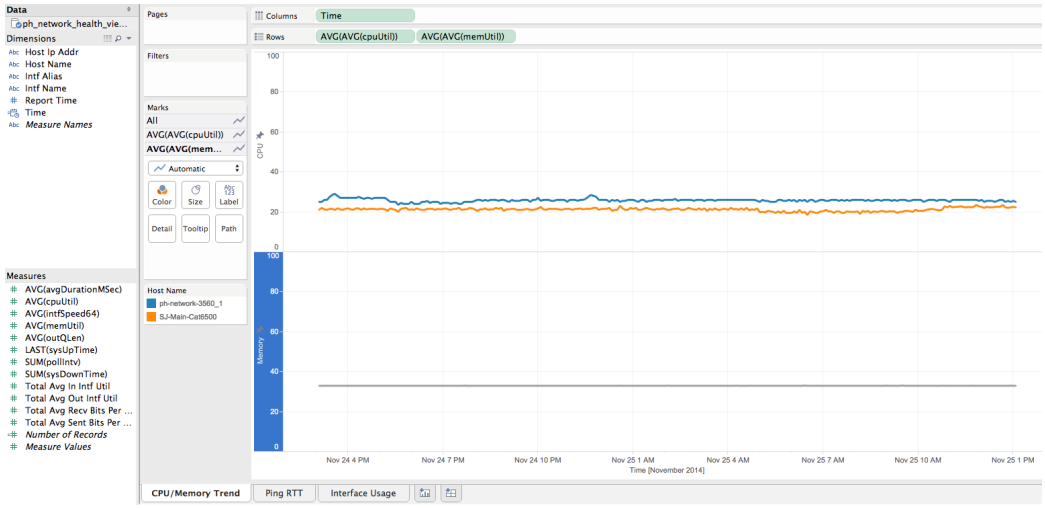
3. Under **Tables**, enter the name of the view you created in the search box to locate the view.



4. Drag the view into the **Join** pane and click **Update Now**.
   The data in the view will load into the pane below.



5. For **Connection**, select **Live**.
6. Click **Go to Worksheet**.
   In the worksheet view you will see that a set of **Dimensions** and **Measures** are populated for the view.

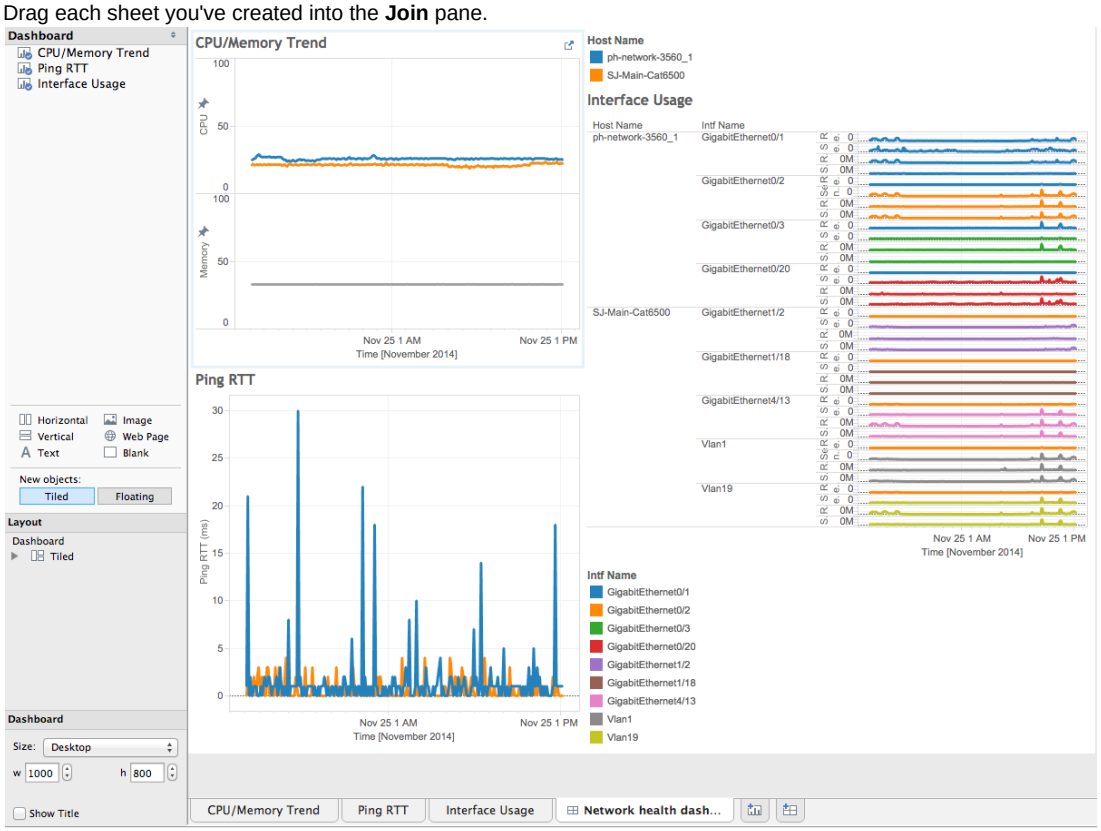


An example worksheet showing CPU and Memory Utilization with several Dimensions and Measures populated from the original table.

7. For each report in your workbook you can now create an individual sheet, as described in Creating a Single Sheet Workbook.

Create the Workbook

1. Click the **Dashboard** tab  on the bottom of the Sheet editor to open the **Dashboard** editor.
2. Drag each sheet you've created into the **Join** pane.



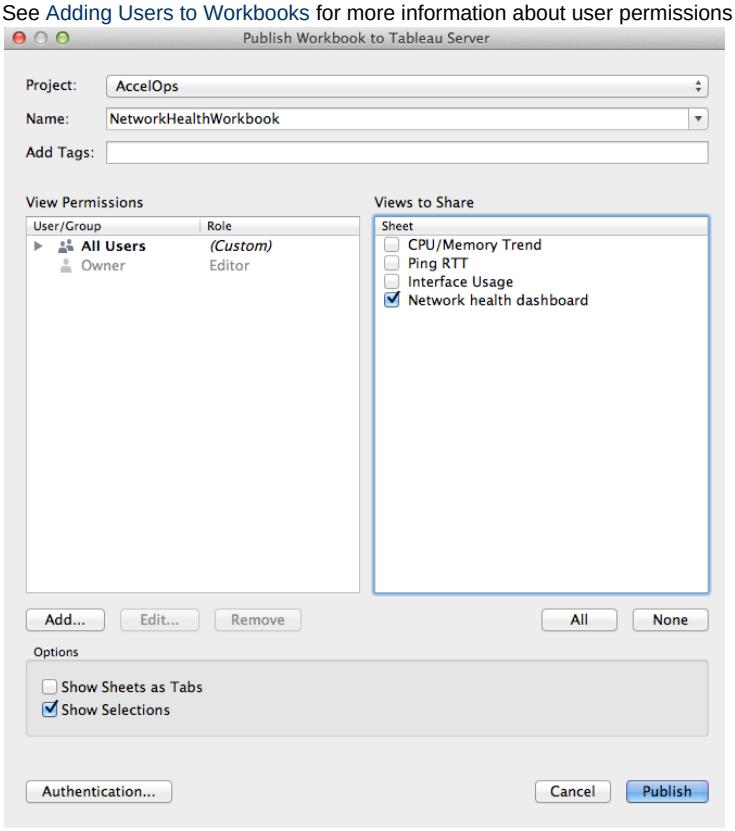
An example of three worksheets loaded into the Dashboard Join pane.

3. Under **Dashboard**, select an appropriate **Size** and screen resolution.

4. Open the Dashboard **Options** menu and select **Rename**.
5. In the **File** menu, select **Save**.

Publish the Workbook

1. In the **Server** menu, select **Sign In...**
2. Enter the IP address and port number for the Visual Analytics Server.
3. Enter the **Username** and **Password** for the Visual Analytics Server admin user, and then click **Sign In**.
4. In the **Server** menu, select **Publish Workbook**.
5. Enter attributes for the workbook, such the associated **Project**, **Name**, **View Permissions**, and **Views to Share**. See Adding Users to Workbooks for more information about user permissions for workbooks.



6. Click **Publish**.

Using AccelOps Workbooks with Tableau Visual Analytics Desktop and Server

You can use any of the workbooks provided by AccelOps, which are attached to this page, to create visualizations of AccelOps data.

1. Download a workbook attached to this page to your local device where Tableau Visual Analytics Desktop is installed.
2. In Visual Analytics Desktop, go to **File > Open....**
3. Browse to the file you downloaded and open it.
4. You can make any changes you want to the workbook, but you can upload it to the server and start using it as is. Follow the instructions in the **Publish the Workbook** section of Creating a Single Sheet Workbook to publish to the Tableau Visual Analytics Sever, and add user permissions as described in Adding Users to Workbooks.

File	Modified
Accelops Incidents.twbx	Dec 08, 2014 by Phil Gochenour

Drag and drop to upload or browse for files

Adding Users to Workbooks

Only the workbook publisher can give access to specific users during report creation time. As the AccelOps Visual Analytics Server Administrator, you can add users to the system and view which workbooks users can access.

Adding Users to Visual Analytics Server

1. Log in to AccelOps Visual Analytics Server.
2. In the **Admin** tab click **Users**.
3. Click **Add**.
4. Enter the user name as it appears in Active Directory.
5. Select the **License Level** for the user and assign **User Rights** as necessary.
6. Click **OK**.

Viewing User Access to Workbooks

1. Log in to Visual Analytics Server.
2. In the **Admin** tab click **Users**.
3. Select a user name to see the workbooks that the user can access.

Working with AccelOps Report Server

This section contains information on AccelOps Report Server architecture, viewing and querying CMDB and Event data in contained in the Report Server databases, and database maintenance.

Report Server Architecture: phoenixdb and reportdb

AccelOps Report Server contains two databases:

- **phoenixdb**
  This database contains the entire AccelOps CMDB and is populated via asynchronous PostgreSQL replication (slony) in near-real time.
- **reportdb**
  This database contains the results of event queries.

Topics in this section describe how to view the tables in these databases, and how those tables are organized. For viewing the tables, we recommend using the pgAdmin PostgreSQL database utility, which you can download from the pgAdmin website.

Working with CMDB Data in AccelOps Report Server

Data from the AccelOps CMDB database is populated to the AccelOps Report Server and stored in the Report Server phoenixdb. This section contains information on how to view the organization of phoenixdb, and write queries against the data it contains.

Viewing phoenixdb Organization

This database contains the contents of the entire AccelOps CMDB database, including incidents.

1. In the pgAdmin utility, go to **File > Add Server**.
2. In the **New Server Registration** dialog, enter connection details for AccelOps Report Server.
   For **Maintenance DB**, select **phoenixdb**.
   For **Username** and **Password**, use the read-only user name and password that you created when you provisioned the Report Server.
3. Click **OK**.
   When the connection to the AccelOps Report Server is established, phoenixdb will load in the Object browser. There are approximately 197 tables in phoenixdb, which are replicated from the AccelOps cluster.
4. Select a table to view, then right-click to open the **Options** menu.
5. In the **Options** menu, select **View Data**, and then select an option for which rows you want to view.
   For example, to view the contents of the `ph_device` table, which contains CMDB information about discovered devices, you would select and then right click on `ph_device`, then select **View Data > View All Rows**.

You can also use this method to examine Views and other objects in the phoenixdb database.

Querying Incident Data in AccelOps Report Server

There are two ways to look at the incident data inside AccelOps Report Server:

- **Incident Tables** (`ph_incident` and `ph_incident_detail`)
  Contains the incidents
- **Incident View** (`ph_incident_view`)
  This is a database view that adds other context to the incident tables by joining with other tables in the database. Added information includes location and business service. Some information is parsed out for easier query, such as host names and IP address fields from `incident_source,` and `incident_target` fields in `ph_incident` are parsed out as separate fields in `ph_incident_view`.

This topic describes how to view the data contained in **Incident View**.

1. Follow the instructions in Viewing phoenixdb Organization to access the phoenixdb database in AccelOps Report Server.
2. Go to **Views > ph_incident_view > Columns** to view the table columns.
3. Go to **Views > ph_incident_view > View Data >** View Last 100 Rows to view the incidents.

Reference: Attribute Columns in the ph_incident_view Table

Column Name	Format	Description
incident_id	integer	Unique id for an incident
cust_org_id	integer	Customer Id (for AO-SP)
first_seen_time	integer	The time when the incident was first seen. The format is UNIX time but with milliseconds granularity. It is defined as the number of milliseconds that have elapsed since 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970
last_seen_time	integer	The time when the incident was last seen. The format is UNIX time but with milliseconds granularity. It is defined as the number of milliseconds that have elapsed since 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970
incident_et	string	Incident event type id e.g. PH_RULE_SERVER_HW_CRITICAL
incident_status	integer	0: Active 1: Auto Cleared 2: Manually Cleared 3: System Cleared
incident_count	integer	The number of times this exact incident (with the same parameters: source, destination etc has happened)
biz_name	string	Associated business service name
severity	integer	Numerical severity of the incident - range 0-10
severity_cat	string	Incident severity category: 0-4: LOW, 5-8: MEDIUM and 9-10: HIGH
orig_device_ip	string	IP address of the device that reported the incident
ph_incident_category	string	Category of infrastructure affected by this incident: possible valies: Network, Server, Storage, Virtualization, Application, Internal
incident_src	string	Incident Source string formatted as a list of <Attribute>:Value; e.g. srcIpAddr:10.1.1.1,srcName:JoeLaptop
src_ip_addr	string	Source IP parsed out from incident_src field
src_name	string	Source Name parsed out from incident_src field
src_device_location	string	(Geo) Location display name string for the object specified in incident_src
src_country	string	(Geo) Country name string for the object specified in incident_src
src_state	string	(Geo) State name for the object specified in incident_src
src_building	string	(Geo) Building name for the object specified in incident_src
src_floor	string	(Geo) Floor for the object specified in incident_src
src_latitude	double	(Geo) Latitude for the object specified in incident_src
src_longitude	double	(Geo) Latitude for the object specified in incident_src
incident_target	string	Incident Destination string formatted as a list of <Attribute>:Value; e.g. "destIpAddr:10.1.1.1,destName:JoeLaptop" or "hostIpAddr:10.1.1.1,hostName:JoeLaptop"
dest_ip_addr	string	Destination IP parsed out from incident_target field
dest_name	string	Destination Name parsed out from incident_target field
dest_device_location	string	(Geo) Location display name string for the object specified in incident_target
dest_country	string	(Geo) Country name string for the object specified in incident_target
dest_state	string	(Geo) State name for the object specified in incident_target
dest_building	string	(Geo) Building name for the object specified in incident_target
dest_floor	string	(Geo) Floor for the object specified in incident_target
dest_latitude	double	(Geo) Latitude for the object specified in incident_target

dest_longitude	double	(Geo) Longitude for the object specified in incident_target
host_ip_addr	string	Host IP address parsed out from incident_target field
host_name	string	Host Name parsed out from incident_target field
host_device_location	string	(Geo) Location display name string for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_country	string	(Geo) Country name string for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_state	string	(Geo) State name for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_building	string	(Geo) Building name for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_floor	string	(Geo) Floor for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_latitude	double	(Geo) Latitude for the object specified in incident_target - populated if incident_target contains hostIpAddr
host_longitude	double	(Geo) Longitude for the object specified in incident_target - populated if incident_target contains hostIpAddr
vm_name	string	VM Name if incident involves a Virtual machine - populated if incident_target contains vmName
user_attr	string	User name if incident involves user, i.e. incident_target contains user
target_user_attr	string	Target user name if incident involves user, i.e. incident_target contains targetUser
ldap_domain	string	Domain if incident involves user, i.e. incident_target contains domain
computer	string	Computer name incident_target contains computer
target_computer	string	Target Computer name incident_target contains targetComputer
incident_details	string	Incident Details containing evidence on why the incident triggered e.g. Triggered Event Count = 90 or AVG(CPUUtil) = 90 etc

Sample Incident Queries

Show Incident Categories with Severity and Frequency Occurrence

This query will show which parts of the infrastructure are triggering events.

1. Follow the instructions in Viewing phoenixdb Organization to access the phoenixdb in AccelOps Report Server.
2. Under **Views**, select `ph_incident_view`.
3. In pgAdmin, click on the **SQL** icon in the menu bar to open the SQL query window.
4. Enter this SQL query:

```
SELECTph_incident category, incident_et, severity_cat, src_ip_addr, host_name, COUNT(*)
FROMph_incident_view
GROUPBYph_incident category, incident_et, severity_cat, src_ip_addr, host_name
ORDERBYCOUNT(*) DESC;
```

5. When the query executes, you will see a list of matching incidents in the Output Pane.

Show Incident Location

1. Follow the instructions in Viewing phoenixdb Organization to access the phoenixdb in Accelops Report Server.
2. Under **Views**, select `ph_incident_view`.
3. In pgAdmin, click on the **SQL** icon in the menu bar to open the SQL query window.
4. Enter this SQL query:

```
SELECT host_device_location, severity_cat, ph_incident_category, COUNT(*)
FROM ph_incident_view
GROUP BY host_device_location, ph_incident_category, severity_cat
ORDER BY host_device_location ASC, severity_cat ASC COUNT(*) DESC;
```

5. When the query executes, you will see a list of incidents and their locations in the Output Pane.

Querying Other CMDB Tables in AccelOps Report Server

Querying Device Vendor and Model Distribution for Discovered Devices

Querying Discovered Devices

Working with Event Data in AccelOps Report Server

Data from the AccelOps EventDB database is populated to the AccelOps Report Server and stored in the Report Server reportdb. This section contains information on how to view the organization of reportdb, and write queries against the data it contains.

Viewing reportdb Organization

This database contains the reports that are synched from the AccelOps cluster.

1. In the pgAdmin utility, go to **File > Add Server**.
2. In the **New Server Registration** dialog, enter connection details for AccelOps Report Server.
   For **Maintenance DB**, select **reportdb**.
   For **Username** and **Password**, use the read-only user name and password that you created when you provisioned the Report Server.
3. Click **OK**.
   When the connection to the Report Server is established, reports will load in the Object browser.
4. Select a table to view, then right-click to open the **Options** menu.
5. In the **Options** menu, select **View Data**, and then select an option for which rows you want to view.

Syncing an AccelOps Report with Report Server

1. Log in to AccelOps.
2. Go to **Analytics > Reports**.
3. Select a report.
   Any reports with a **Sync** checkbox can be synced. Run the report to make sure it contains some data.
4. For each report you want to sync, select the **Sync** checkbox.

   > **AO-SP**
   >
   > In the **Sync Details** dialog, select the organizations whose data needs to be synced.

5. Click **OK**.
6. After several minutes, follow the instructions in Viewing reportdb Organization to view the reportdb database.
7. Under **Tables**, you should now see the synced reports.

Table Structure for Synced Reports

When you sync an AccelOps report to AccelOps Report Server, two pairs of tables are created in reportdb, one pair for each organization in the case of AO-SP. For each organization, multiple tables are created:

1. A **parent table** containing data for all months: the table name is of the form `<Report Name>_<ID>_<custId>`
2. A **child table** for the current month: `<Report Name>_<ID>_<custId>_<yYYYYmMM>` where `YYYY` is the year and `MM` is the month.

Queries should be written using the parent table. To see data in the parent table, follow the instructions in Viewing reportdb Organization . The re portdb database fields are generated from the display fields in AccelOps report definitions. Only the field `report_time` is added to the Report Server table definitions to capture the time when the particular report is generated. For example, if you synced the report **Network Devices by CPU, Memory**, you would see these fields:

Field	Description
`report_time`	UNIX time at which the report is generated. **Unix time** (or **POSIX time** or **Epoch time**) is a system for describing instants in time, defined as the number of seconds that have elapsed since 00:00:00 Coordinated Universal Time (UTC), Thursday, 1 January 1970 not counting leap seconds.
`hostName`	Host Name of the device for which CPU and memory are being measured
`hostIpAddr`	Access IP of the device for which CPU and memory are being measured
`AVG(cpuUtil)`	Average of all the CPU utilization metrics within the last 5 minutes ending with report_time
`AVG(memUtil)`	Average of all the CPU utilization metrics within the last 5 minutes ending with report_time

Deleting a Report from AccelOps Report Server

1. Log in to AccelOps.
2. In **Analytics > Reports > Synced Reports**, select the report you want to delete.
3. In the **Sync Details** dialog, clear the **Sync** option for the report, and then click **OK**.
   The report will no longer be synced with Report Server. You can verify this by making sure the **Sync** option is not selected for the report on the **Analytics > Reports > Synced Reports** page. You can now delete the report from AccelOps Report Server.
4. Log in to AccelOps Report Server via SSH and navigate to the directory `/opt/phoenix/deployment/jumpbox`.
5. Run the `phreportdbmanager.py` command, along with the table name and date as arguments, to delete the report.

```
 phreportdbmanager.py --remove tablenames='"Network Devices By CPU,
Memory_1278492569_1"'reporttimes=2014-10
```

> **Viewing the Names of Reports in Report Sever**
>
> Use the pgAdmin utility to view the names of all tables and reports in Report Server, as described in Viewing reportdb Organization.

When the deletion process completes, you will see a command line output like this:

```
[admin@RS142 jumpbox]$ pwd
/opt/phoenix/deployment/jumpbox
[admin@RS142 jumpbox]$ phreportdbmanager.py
Usage: --remove reporttimes=yyyy-mm[,yyyy-mm,...]
Usage: --remove tablenames='tablename[|tablename[| ...]]' reporttimes=yyyy-mm[,yyyy-mm,...]
Usage: --archive reporttimes=yyyy[-mm][,yyyy[-mm],...] archivepath=path-to-archiving-directory
[admin@RS142 jumpbox]$ phreportdbmanager.py --remove tablenames='"Network Devices By CPU, Memory_1278492569_1"' reporttimes=2014-10
Connected to reportdb
dropping child tables for report table  "Network Devices By CPU, Memory_1278492569_1"
dropping child table  "Network Devices By CPU, Memory_1278492569_1_y2014m10"
dropped child table  "Network Devices By CPU, Memory_1278492569_1_y2014m10"
[admin@RS142 jumpbox]$
```

6. After you have deleted the table containing the report information, you will need to delete the parent table, which will now be empty of content, using the same `phreportdbmanager.py` command.

Modifying an Existing Report in AccelOps Report Server

Suppose a system rule is synced and exported to AccelOps Report Server. When you modify that report in AccelOps, you must rename it, at which point it becomes a user report. When you then sync that report for Accelops Report Server, a new table is created on the AccelOps Report Server.

Suppose now that you have a user-defined report that is already synced to the AccelOps Report Server, but you modify it inline in AccelOps, which means that you have changed the report conditions without changing the report name. This will cause a change in the table, but a new table will not be created. Here are some examples of inline modifications, and how they affect the structure of the table as well as the data collected in the table:

Modification	Effect
GROUP BY field added	The corresponding table has the new GROUP BY field, but only newer data populates the field
GROUP BY field removed	There is no change in the corresponding table, and newer data does not populate the field
GROUP BY field changed	For example, the field `srclpAddr` is changed to `destlpAddr`. Both fields are retained, but newer data populates d `estlpAddr`.
Aggregated fields added	The corresponding table has the new field, but only newer data populate that field
Aggregated field removed	There is no change in the corresponding table, and newer data does not populate the field
Aggregated Field Changed	For example, `AVG(cpUutil)` is changed to `MAX(cpuUtil)`. Both fields are retained, but newer data populates `MA X(cpuUtil)`.

Database Maintenance

Checking the Size of Tables

Creating Indices for Faster Queries

Deleting Old Tables