
CloudStack Release Notes Documentation

4.9.2.0

Apache CloudStack

2017 01 10

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This document contains information specific to this release of CloudStack, including upgrade instructions from prior releases, new features added to CloudStack, API changes, and issues fixed in the release. For installation instructions, please see the CloudStack Installation Guide. For usage and administration instructions, please see the CloudStack Administrator's Guide.

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Chapter 1

What's New in 4.9

Version 4.9.2.0 includes 180 pull requests and fixes more than 80 bugs since the 4.9.0 release.

The 4.9.2.0 is part of the LTS 4.9.x releases. The 4.9 LTS branch is supported for 20 months, and will receive updates for first 14 months and only security updates in its last 6 months. The 4.9 LTS branch is supported till 1 June 2018.

A LOT changed in this release, so this is not a complete list, but here is a quick summary of some of the changes.

1.1 Networking

- Fixes to ACLs, S2S VPN, Private Gateways, Redundant VRs and other optimizations
- Nuage VSP SDN Plugin got a lot of improvements and some new features

1.2 Database

- MySQL connector changed
- DB optimizations and improvements

1.3 Storage

- Enabled fast snapshots for managed storage using XenServer
- Fixes for some RBD issues
- Fixes multiple Swift object store issues
- Improved VMware disk implementation

1.4 Hypervisor

- Support for XenServer 7
- Support for VMware vSphere 6.0, 6.5
- Support for Ubuntu 16.04 as KVM host

1.5 Usability

- Added user defined roles
- Added configurable root volume size for KVM
- Lots of localization improvements
- Added CentOS 6.x guest OS mappings for VMware

1.6 Operations

- Added Out-of-band power management for hosts (EG: IPMI, iLO, DRAC, etc.)

1.7 Miscellaneous

- Use non-blocking SSL handshake in NioConnection/Link
- Added memory utilization to `listVirtualMachines`
- Multiple fixes related to usage

1.8 QA

- Higher quality releases due to better QA automation, testing and code reviewing

1.9 Build dependency

When building Apache CloudStack with `noredist`, it now require the file `deps/vim25_60.jar` available from vSphere SDK 6.0, VMware-vSphere-SDK-6.0.0-3634981.zip.

Chapter 2

Issues Fixed in 4.9

Apache CloudStack uses Jira to track its issues and Github for pull requests. All new features and bugs for 4.9.2.0 have been merged through Github pull requests. A subset of these changes are tracked in Jira, which have a standard naming convention of “CLOUDSTACK-NNNN” where “NNNN” is the issue number.

2.1 Issues Fixed in 4.9.2.0

Branches	Github	Jira	Type	Prior-ity	Description
4.9	#1764	CLOUDSTACK-9597	Bug	Major	Incorrect updateResourceCount()
4.9	#1781	CLOUDSTACK-9612	Bug	Major	Restart Network with clean up fails for networks whose off
4.9	#1783	CLOUDSTACK-9615	Bug	Major	Ingress Firewall Rules with blank start and End ports does
4.9	#1782	CLOUDSTACK-9617	Bug	Major	Enabling Remote access Vpn Fails when there is a portforwa
4.9	#1804	CLOUDSTACK-9639	Bug	Major	Unable to create shared network with vLan isolation
4.9	#1811	CLOUDSTACK-9649	Bug	Major	In the management server log there is an error related to
4.9		CLOUDSTACK-9662	Improve-ment	Major	Adding XenServer 7 support to Cloudstack
4.9	#1827	CLOUDSTACK-9673	Bug	Criti-cal	Exception occured while creating the CPVM in the VmWare Se
4.9	#1828	CLOUDSTACK-9676	Bug	Criti-cal	Start instance fails after reverting to a VM snapshot, whe
4.9	#1839	CLOUDSTACK-9683	Bug	Major	system.vm.default.hypervisor Does Not Pin Hypervisor Type
4.9	#1846	CLOUDSTACK-9688	Bug	Major	Fix smoke test failures for 4.9

2.2 Issues Fixed in 4.9.1.0

Branches	Github	Jira	Type	Priority	Description
4.9	#1663	CLOUDSTACK-6432	Bug	Major	Prevent VR from response to DNS request from outside
4.9	#1743	CLOUDSTACK-8326	Bug	Major	Bug in cloudstack virtual router (KVM) in Simple zone
4.9	#798	CLOUDSTACK-8830	Bug	Major	[VMware] VM snapshot fails for 12 min after instance
4.9	#828	CLOUDSTACK-8854	Bug	Major	Apple Mac OS/X VM get created without USB control
4.9	#896	CLOUDSTACK-8908	Bug	Major	After copying the template charging for that template is
4.9	#1673	CLOUDSTACK-9071	Bug	Major	stats.output.uri stops the server from starting if the uri
4.9	#1240	CLOUDSTACK-9161	Bug	Critical	Quota Service: fix marvin test
4.9	#1744	CLOUDSTACK-9183	Bug	Major	CS 4.7.0 bash: /opt/cloud/bin/getRouterAlerts.sh: No s
4.9	#1396	CLOUDSTACK-9269	Bug	Major	Missing field for Switch type for Management and Stor
4.9	#1659	CLOUDSTACK-9339	Bug	Major	Virtual Routers don't handle Multiple Public Interfaces
4.9	#1696	CLOUDSTACK-9364	Task	Major	Add Support for Ubuntu 16.04
4.9		CLOUDSTACK-9376	Bug	Major	Using the listTemplates API with the "templatefilter=al
4.9	#1560	CLOUDSTACK-9386	Bug	Major	DS template copies don't get deleted in VMware ESXi
4.9	#1586	CLOUDSTACK-9410	Bug	Minor	Data Disk shown as "detached" in XS
4.9	#1785	CLOUDSTACK-9416	Bug	Major	ACS master GUI: Enabling Static NAT on an associate
4.9	#1621	CLOUDSTACK-9444	Bug	Minor	ERROR c.c.u.d.DriverLoader DB driver type null is no
4.9		CLOUDSTACK-9447	Bug	Major	Fix systemvm template build failure
4.9	#1646	CLOUDSTACK-9449	Bug	Major	Dynamic roles default user description typo and colum
4.9	#1635	CLOUDSTACK-9451	Bug	Minor	stopVirtualMachine ignores forced parameter
4.9	#1634	CLOUDSTACK-9452	Bug	Blocker	CentOS6 kvm hosts stop working after upgrade
4.9	#1641	CLOUDSTACK-9459	Bug	Critical	Database upgrade from 3.0.7 to 4.9.0 fails with a Resul
4.9	#1674	CLOUDSTACK-9460	Bug	Major	Graceful handling of Mysql server connection timeout
4.9	#1647	CLOUDSTACK-9462	Bug	Major	Systemd packaging for Ubuntu 16.04
4.9	#1649	CLOUDSTACK-9463	Bug	Major	Dynamic roles migrate script fails with old commands.
4.9	#1656	CLOUDSTACK-9466	Bug	Major	Upgrading to older CloudStack 4.0.x to 4.1.x causes sq
4.9	#1657	CLOUDSTACK-9467	Bug	Blocker	Fresh installation of cloudstack-usage server fails
4.9		CLOUDSTACK-9468	Improvement	Minor	Alert code documentation out of sync with responses
4.9	#1660	CLOUDSTACK-9470	Improvement	Major	[BLOCKER] Bug in SshHelper affecting interaction w
4.9	#1666	CLOUDSTACK-9480	Bug	Critical	Egress Firewall: Incorrect use of Allow/Deny for ICM
4.9	#1670	CLOUDSTACK-9481	Bug	Major	Convert MyISAM table to InnoDB for consistency
4.9	#1684	CLOUDSTACK-9489	Bug	Blocker	When upgrading, Config.java new configuration are no
4.9	#1681	CLOUDSTACK-9491	Bug	Major	Vmware resource: incorrect parsing of device list to fir
4.9		CLOUDSTACK-9495	Bug	Critical	Egress rules functionality broken when protocol=all spe
4.9	#1680	CLOUDSTACK-9498	Bug	Major	VR CsFile search utility methods fail when search strin
4.9	#1676	CLOUDSTACK-9502	Bug	Major	Target CLOUDSTACK-9386 into 4.9 release branch
4.9	#1745	CLOUDSTACK-9503	Bug	Major	The router script times out resulting in failure of deploy
4.9	#1694	CLOUDSTACK-9509	Bug	Critical	KVM Hosts connect with no storage
4.9	#1724	CLOUDSTACK-9511	Bug	Critical	fix test_privategw_acl.py to handle multiple physical n
4.9		CLOUDSTACK-9514	Bug	Critical	MarvinTests: some host credentials are hardcoded, mal
4.9		CLOUDSTACK-9515	Bug	Critical	internal LB vm is not handled when parsing cmd_line.j
4.9		CLOUDSTACK-9522	Bug	Major	Marvin common.py setNonContiguousVlanIds does no
4.9		CLOUDSTACK-9524	Bug	Major	Some marvin tests don't check hypervisor before execu
4.9		CLOUDSTACK-9526	Bug	Major	Marvin test_deploy_vgpu_enabled_vm.py - Fix a hardc
4.9		CLOUDSTACK-9527	Bug	Major	test_01_test_vm_volume_snapshot making test negativ
4.9		CLOUDSTACK-9529	Bug	Major	Marvin Tests do not clean up properly
4.9		CLOUDSTACK-9531	Bug	Major	Fix tearDown issue in test_vpc_vpn.py
4.9		CLOUDSTACK-9532	Bug	Major	Use macchinina as a template for failing tests
4.9		CLOUDSTACK-9533	Bug	Major	gateway of public IP is not handled correctly when par
4.9	#1701	CLOUDSTACK-9534	Bug	Major	Allow users to destroy VR when in running state
4.9	#1702	CLOUDSTACK-9535	Improvement	Major	[API] listVMSnapshots improvement

TABLE 2.1 –

Branches	Github	Jira	Type	Priority	Description
4.9	#1710	CLOUDSTACK-9538	Bug	Major	Deleting Snapshot From Primary Storage Fails on RBL
4.9	#1742	CLOUDSTACK-9544	Bug	Major	Account API keys vulnerability in Cloudstack with pos
4.9	#1712	CLOUDSTACK-9550	Bug	Major	Metrics view does not filter items based on zone/cluste
4.9	#1728	CLOUDSTACK-9551	Bug	Major	Pull KVM agent's tmp folder usage within its own fold
4.9	#1713	CLOUDSTACK-9552	Bug	Major	KVM Security Groups do not allow DNS over TCP eg
4.9	#1714	CLOUDSTACK-9553	Bug	Major	Usage event is not getting recorded for snapshots in a s
4.9	#1715	CLOUDSTACK-9554	Bug	Major	Juniper Contrail plug-in is publishing events to wrong
4.9	#1737	CLOUDSTACK-9561	Bug	Major	After domain/account deletion, snapshot taken by the d
4.9	#1729	CLOUDSTACK-9564	Bug	Major	Fix memory leak in VmwareContextPool
4.9	#1731	CLOUDSTACK-9565	Bug	Major	Fix intermittent failure in oobm test test_oobm_zchang
4.9	#1738	CLOUDSTACK-9566	Bug	Major	instance-id metadata for baremetal VM returns ID
4.9	#1757	CLOUDSTACK-9583	Bug	Major	VR: In CsDhcp.py preseed both hostname and localho
4.9	#1755	CLOUDSTACK-9584	Bug	Major	Increase component tests coverage in Travis run
4.9	#1766	CLOUDSTACK-9598	Bug	Major	wrong default gateway in guest VM with nics in isolate
4.9	#1791	CLOUDSTACK-9622	Improvement	Trivial	Localisation for 'Project' label on the top of Web UI
4.9	#1793	CLOUDSTACK-9624	Bug	Major	Incorrect hypervisor mapping of guest os Windows 200
4.9	#1796	CLOUDSTACK-9626	Bug	Major	Instance fails to start after unsuccessful compute offerin
4.9	#1799	CLOUDSTACK-9632	Bug	Major	Upgrade bountycastle to 1.55+
4.9		CLOUDSTACK-9634	Bug	Major	fix marvin test test_router_dhcp_opts failure
4.9	#1802	CLOUDSTACK-9635	Bug	Major	fix test_privategw_acl.py
4.9		CLOUDSTACK-9636	Bug	Major	The host alerts box should be named as hosts in Alerts.
4.9	#1805	CLOUDSTACK-9637	Bug	Major	Template create from snapshot does not populate vm_t
4.9	#1809	CLOUDSTACK-9646	Bug	Critical	[Usage] No usage is generated for uploaded templates/
4.9	#1808	CLOUDSTACK-9648	Bug	Major	Checkstyle module version fails to update by build_asf
4.9	#1817	CLOUDSTACK-9654	Bug	Major	Missing hypervisor mapping of various SUSE Linux g
4.9	#1820	CLOUDSTACK-9656	Bug	Blocker	Usage does not gather if you have a project with usage
4.9	#1821	CLOUDSTACK-9659	Bug	Major	mismatch in traffic type in ip_associations.json and ips

2.3 Issues Fixed in 4.9.0

Branches	Github	Jira	Type	Priority	Description
4.9	#1616				Added missing rules on router config, fixed orderi
4.9	#1613	CLOUDSTACK-9436	Bug	Major	vm_network_map table cleanup on expunge co
4.9	#1583				Update L10N resource files with 4.9 strings from
4.9	#1610				Packaging: Add db.X.driver=jdbc:mysql
4.9	#1609	CLOUDSTACK-9430	Bug	Major	Adding a network ACL rule adds it in the wrong c
4.9	#1608				Cleanup RBD contexts after exceptions to prevent
4.9	#1601	CLOUDSTACK-9348	Bug	Major	CloudStack Server degrades when a lot of connect
4.9	#1595				UI: Show resize volume button to all users
4.9	#1455	CLOUDSTACK-9328	Test	Major	Fix VLAN issues from test suite test_privat
4.7, 4.8, 4.9	#1480	CLOUDSTACK-9342	Bug	Critical	PFS not being set correctly for S2S VPN Tunnel
4.9	#1598	CLOUDSTACK-9423	Bug	Major	Object storage should get the correct size for com
4.9	#1547				Fixes for VirtualRouters in Basic Networking, esp
4.7, 4.8, 4.9	#1596	CLOUDSTACK-9353	Bug	Critical	NullPointerException when migrating VMs with l
4.7, 4.8, 4.9	#1581	CLOUDSTACK-9404	Bug	Major	Network ACL rules in VPCs are applied in an inv
4.9	#1585	CLOUDSTACK-9399	Bug	Major	NullPointerException when deleting Host
4.9	#1584	CLOUDSTACK-9409	Bug	Blocker	Usage server fails to work with 4.9 due to missing

TABLE 2.2 –

Branches	Github	Jira	Type	Priority	Description
4.9	#1574				Make sure that the DB drivers are loaded before c
4.9	#1570				Travis: Use <code>ipmitool</code> from Ubuntu repository
4.9	#1569				Fix noredist build because of missing maven depe
4.9	#1423	CLOUDSTACK-9296	Bug	Major	IPsec doesn't get started when enabling client VP
4.9	#1251	CLOUDSTACK-9180	Bug	Major	Optimize concurrent VM deployment operation o
4.9	#1567	CLOUDSTACK-9238	Bug	Major	URL fields in database are to small. Cause malfor
4.7, 4.8, 4.9	#1565				Add <code>lsb-release</code> dependency to mgmt server
4.7, 4.8, 4.9	#1564				Emit template UUID and class type over event bus
4.9	#1561	CLOUDSTACK-9388	Test	Major	Remove string conversion in Assertion statement
4.7, 4.8, 4.9	#1471				Lower the time we wait for interfaces to appear
4.9	#1518	CLOUDSTACK-9368	Bug	Major	Fix for Support configurable NFS version for Seco
4.9	#1424	CLOUDSTACK-8973	Bug	Minor	Unusual response when creating a template from a
4.9	#1360				Re-factor system VM default network creation
4.9	#1552				Add DHCP lease folders for Ubuntu
4.9	#1556				Hyper-V communication broken by change in var
4.9	#1553				Dynamically load drivers before creating our DB
4.9	#1297	CLOUDSTACK-9203	New Feature	Minor	[API] extend <code>updateVirtualMachine</code> to sup
4.9	#1550	CLOUDSTACK-9380	Bug	Critical	<code>listDomains</code> API returns NPE if there is a fail
4.9	#1494	CLOUDSTACK-9294	Bug	Major	Nuage Plugin: VR doesn't get removed from the V
4.9	#1555				Add Java Default Certificate Authorities into the k
4.9	#1533				Convert <code>patchviasocket</code> to python (removes perl d
4.9	#1503	CLOUDSTACK-9358	Bug	Critical	<code>StringIndexOutOfBoundsException</code> wh
4.9	#956	CLOUDSTACK-8970	Bug	Major	CentOS 6.{1,2,3,4,5} guest OS mapping for VMw
4.9	#846	CLOUDSTACK-8870	Bug	Major	External network device usage monitor runs even
4.7, 4.8, 4.9	#1514	CLOUDSTACK-6975	Bug	Major	Service monitoring starts <code>dnsmasq</code> on backup ro
4.7, 4.8, 4.9	#1410	CLOUDSTACK-6928	Bug	Critical	IOPS throttling setting isn't applied to a dynamica
4.9	#1549	CLOUDSTACK-9348	Bug	Major	NioConnection improvements
4.9	#1523	CLOUDSTACK-9365	Bug	Major	<code>updateVirtualMachine</code> with <code>userdata</code> sh
4.9	#1403				Taking fast and efficient volume snapshots with X
4.9	#1516	CLOUDSTACK-9366	Bug	Major	Disable a host also disables storage pool capacity
4.9	#1551				Dynamic Roles: packaging improvements
4.9	#1540	CLOUDSTACK-9377	Bug	Major	Metrics data incorrectly calculated in zone/cluster
4.9	#1414				SystemVM cleanups
4.8, 4.9	#1513	CLOUDSTACK-9362	Bug	Major	Migrating a VM using VXLANs and bridges fails
4.7, 4.8, 4.9	#1331				Fix Sync of <code>template.properties</code> in Swift
4.7, 4.8, 4.9	#1486				Re-implement <code>router.redundant.vrrp.in</code>
4.9	#1532				DAO: Hit the cache for entity flagged as removed
4.9	#1537				Remove extraneous log directory and add <code>catal</code>
4.9	#1520				CPU socket count reporting correction
4.9	#1280	CLOUDSTACK-9199	Bug	Major	<code>deployVirtualMachine</code> API does not throw
4.9	#1376				L10n update master 20160127
4.9	#1543				Fix Nio/CPU issue and CI failures
4.7, 4.8, 4.9	#1536				Honour GS <code>use_ext_dns</code> and redundant VR V
4.9	#1460	CLOUDSTACK-9334	Improvement	Minor	Support <code>jenv</code> and <code>pyenv</code> to manage Java and Python
4.9	#1444	CLOUDSTACK-8800	Bug	Major	Improve the <code>listVirtualMachines</code> API call
4.9	#1453				Remove classes with no references
4.7, 4.8, 4.9	#1456				<code>writeIfNotHere</code> requires an array of strings, not a
4.9	#1385	CLOUDSTACK-9265	Bug	Trivial	Some java classes use <code>commons-httpclient</code>
4.9	#1528	CLOUDSTACK-9373	Bug	Major	Marvin issue with class and instance methods nam

TABLE 2.2 –

Branches	Github	Jira	Type	Priority	Description
4.9	#816				Notify listeners when a host has been added to a c
4.9	#1502	CLOUDSTACK-9299	New Feature	Major	Out-of-band Management for CloudStack
4.7, 4.8, 4.9	#1474				Handle private gateways more reliably
4.7, 4.8, 4.9	#1472				Apply static routes on change to master state
4.7, 4.8, 4.9	#1483	CLOUDSTACK-9287	Bug	Critical	As an User I want to use Private Gateways with R
4.9	#1489	CLOUDSTACK-8562	New Feature	Major	User Definable Roles
4.7, 4.8, 4.9	#1477				When no zone name is available display a default
4.9	#880	CLOUDSTACK-8901	Bug	Major	PrepareTemplate job thread hard-coded to max 8 t
4.9	#1529				Marvin: Replace a <code>timer.sleep(30)</code> with pu
4.9	#1466	CLOUDSTACK-9340	Improvement	Major	General DB Optimization
4.9	#1488				Agent: Enable IPv6 connectivity for KVM Agent
4.9	#1054	CLOUDSTACK-8818	Improvement	Major	Python scripts should depend on <code>mysql.conne</code>
4.9	#1428	CLOUDSTACK-9300	Bug	Minor	MySQL HA feature StaticStrategy throws excepti
4.9	#1440				Removed Unused Void Class
4.9	#1497	CLOUDSTACK-9351	Improvement	Major	Add ids parameter to resource listing API calls
4.9	#1496	CLOUDSTACK-9350	Bug	Major	Local storage hosts get HA tasks, cause issues
4.9	#1124				CID-1338387: Deletion of method <code>endPointSe</code>
4.8, 4.9	#1515				L10n update 4.8 20160422
4.7, 4.8, 4.9	#1527				Update L10N resource files with 4.7 strings from
4.9	#1408				KVM: Acquire lock when running security group
4.9	#1463	CLOUDSTACK-9336	Bug	Trivial	Run <code>baremetal-vr.py</code> only in (normal) route
4.9	#1350				Quota: Consolidated lockable account check to a
4.9	#1230	CLOUDSTACK-8302	Bug	Critical	Cleanup snapshot on KVM with RBD
4.9	#1433	CLOUDSTACK-9305	Bug	Major	CloudStack Usage breaks with DB HA
4.7, 4.8, 4.9	#1485				Set default networkDomain to empty instead of us
4.7, 4.8, 4.9	#1473				Bump ssh retries to prevent false positives of tes
4.7, 4.8, 4.9	#1321	CLOUDSTACK-8847	Bug	Major	ListServiceOfferings is returning incomple
4.7, 4.8, 4.9	#1490				Installing bzip2 since it is required for extracting t
4.7, 4.8, 4.9	#1365				[4.7] VMware: Improve support for disks
4.9	#1409	CLOUDSTACK-9283	Bug	Major	cloudstack-usage fails to start throwing Inte
4.9	#1517				Engine/Schema: Fix upgrade path to work with M
4.9	#1454	CLOUDSTACK-9323	Bug	Major	Canceling host maintenance results in "Internal er
4.7, 4.8, 4.9	#1500	CLOUDSTACK-9349	Bug	Minor	Unable to detach root volume when using Hyperv
4.9	#1270	CLOUDSTACK-9194	Bug	Major	Allow re-sizable windows in IE for VM console
4.9	#1522				Log asynchronous responses in the API log
4.9	#1510				4.9 mvn version safeupgradeonly
4.7, 4.8, 4.9	#1348	CLOUDSTACK-9142	Bug	Critical	Migrate VM changes <code>xmlDesc</code> in an unsafe way
4.9	#826				Fixed: Error given when creating VPN user in one
4.9	#1498	CLOUDSTACK-9352	Test	Minor	Test fails in Windows as the file separator "/" is di
4.9	#1458	CLOUDSTACK-9331	Bug	Major	Automation: Prepare and add the baremetal cfg to
4.9	#1452	CLOUDSTACK-9322	Task	Major	Support for Internal LB functionality with Nuage
4.9	#1271	CLOUDSTACK-9164	Bug	Major	Consoleproxy does not prevent Firefox Quicksear
4.9	#713	CLOUDSTACK-8745	Bug	Major	After a volume is migrated; the usage table still sh
4.9	#1459	CLOUDSTACK-8611	Bug	Major	CS waits indefinitely for <code>CheckS2SVpnConne</code>
4.9	#1308				Test to create VPN customer gateway with hostna
4.9	#1326				New test to validate starting VM after NIC remov
4.9	#1126	CLOUDSTACK-9088	Bug	Major	<code>migrateto</code> parameter associated with migrat
4.9	#1323	CLOUDSTACK-9218	Test	Major	Test to verify restart network after master VR dest
4.9	#1501				Fixing an issue in Marvin around creating a templ

TABLE 2.2 –

Branches	Github	Jira	Type	Priority	Description
4.9	#1200	CLOUDSTACK-9130	Bug	Major	Make <code>RebootCommand</code> similar to start/stop/mig
4.7, 4.8, 4.9	#1505	CLOUDSTACK-9172	Bug	Major	Templates registered with CrossZones cannot be c
4.7, 4.8, 4.9	#1402				Check the existence of <code>forceencap</code> parameter l
4.7, 4.8, 4.9	#1420				systemvm: preserve file permissions, set default u
4.9	#1157	CLOUDSTACK-9100	Bug	Major	ISO.CREATE/TEMPLATE.CREATE event missin
4.7, 4.8, 4.9	#1398	CLOUDSTACK-9270	Bug	Major	UI alignment gone bad in multiple places - VM In
4.7, 4.8, 4.9	#1399	CLOUDSTACK-9272	Bug	Major	No option in UI to add GSLB with service type “F
4.7, 4.8, 4.9	#1394	CLOUDSTACK-9268	Bug	Major	Display VM in Load balancing rule in UI
4.9	#1262				Removed unnecessary code from <code>getGuestOsType</code>
4.9	#1363	CLOUDSTACK-9251	Bug	Major	Error while change instance offering to custom of
4.9	#1263				Removed unused code from <code>com.cloud.api.</code>
4.9	#1445				Fixed Profiler’s unit tests bugs.
4.7, 4.8, 4.9	#1487				Speedup iptables by prefetching the variables
4.7, 4.8, 4.9	#1479	CLOUDSTACK-9285	Bug	Blocker	CloudStack 4.8 can’t connect to XEN and KVM h
4.9	#1287				<code>SecurityGroupRulesCmd</code> code cleanup
4.7, 4.8, 4.9	#1422				Improve ordering of fields of VPC router detail ta
4.7, 4.8, 4.9	#1441	CLOUDSTACK-9297	Bug	Major	Delete snapshot without id is failing with Unabl
4.9	#1462	CLOUDSTACK-9335	Bug	Minor	CloudStack UI has a typo and does not send <code>fet</code>
4.9	#1316	CLOUDSTACK-9215	Test	Major	Marvin test to check VM deployment in VPC tier
4.9	#1481				Travis: Increase build verbosity
4.9	#1457	CLOUDSTACK-9333	Bug	Major	Exclude clusters from OVF operations
4.9	#1254	CLOUDSTACK-9174	Bug	Critical	Quota Service: When a account/user is deleted wi
4.9	#1461				Travis: Fix simulator tests and optimize default gl
4.7, 4.8, 4.9	#1332				Add ability to download templates in Swift
4.9	#1425	CLOUDSTACK-9298	Improvement	Major	Improve performance of resource retrieval that ha
4.9	#1438				Fix new error found in findbugs slow build #3455
4.7, 4.8, 4.9	#1430	CLOUDSTACK-9285	Bug	Blocker	CloudStack 4.8 can’t connect to XEN and KVM h
4.9	#1431	CLOUDSTACK-9304	Task	Major	Add nuagevsp userdata testcase (Cloudstack-9095
4.9	#1434				Change variable <code>ROOK_DISK_CONTROLLER</code> to
4.9	#1426				ADD be explicit about the underlying limitation -
4.7, 4.8, 4.9	#1390	CLOUDSTACK-9267	Bug	Major	String is not localized on create instance wizards.
4.9	#1078	CLOUDSTACK-9066	Improvement	Major	Update testpath to delete account after deleting V
4.9	#1361	CLOUDSTACK-9252	Bug	Major	Support configurable NFS version for Secondary
4.9	#1218	CLOUDSTACK-9140	Test	Major	Testcase to verify if Dedicated cluster is used for v
4.9	#1310	CLOUDSTACK-9211	Bug	Major	Support passing vRAM size over to Esxi hypervis
4.9	#1031	CLOUDSTACK-9026	Improvement	Major	Modifying testpath for adding missing parameter
4.9	#1130	CLOUDSTACK-9091	Improvement	Major	Update testpath for parameter issues
4.9	#1199	CLOUDSTACK-9128	Bug	Major	Testcase to verify if <code>snapshot_store_ref</code> ta
4.9	#684	CLOUDSTACK-8728	Test	Major	Testcase to Verify if VRs IP changes if it is destro
4.9	#1190	CLOUDSTACK-9121	Improvement	Major	Adding VmSnapshot validation in <code>testpath_r</code>
4.9	#869	CLOUDSTACK-8895	Test	Major	Verify if storage can be selected when attaching u
4.7, 4.8, 4.9	#1386	CLOUDSTACK-9266	Bug	Critical	Delete static route on private gateway doesn’t actu
4.7, 4.8, 4.9	#1383	CLOUDSTACK-9264	Bug	Critical	Create of /32 static route on private gateway fails
4.7, 4.8, 4.9	#1384				Display hostname the VPC router runs on
4.9	#1387	CLOUDSTACK-8300	Bug	Minor	Add index on archived field in <code>cloud.event</code> ta
4.6, 4.7, 4.8, 4.9	#1342	CLOUDSTACK-6181	New Feature	Major	Root resize
4.9	#1288				Trailing commas in javascripts removed
4.9	#1274	CLOUDSTACK-9196	Bug	Major	<code>NullPointerException</code> in some scenarios v
4.9	#1261				Removed unused variables from <code>NetworkState</code>

TABLE 2.2 –

Branches	Github	Jira	Type	Priority	Description
4.9	#1048	CLOUDSTACK-8731	Test	Major	Automation: Checking usage event generation for
4.9	#1044	CLOUDSTACK-5822	Bug	Major	SSH keypairs are removed after rebooting VM
4.9	#969				Fixed return type Void to void in DataMotion
4.9	#855				Removal of class AgentBasedStandaloneC
4.9	#831	CLOUDSTACK-8850	Bug	Major	revertSnapshot command does not work
4.9	#830	CLOUDSTACK-8858	Bug	Major	listVolumes API fails for a particular domain
4.9	#1256	CLOUDSTACK-9185	Bug	Major	[VMware DRS] VM sync failed with exception d
4.9	#1240	CLOUDSTACK-9161	Bug	Critical	Quota Service: Fix marvin test
4.9	#1289				Quota: findbug fixes
4.7, 4.8, 4.9	#1364	CLOUDSTACK-9256	Bug	Major	Static routes get lost after network restart
4.9	#1369				Set version to 4.9.0-SNAPSHOT in master branch
4.8, 4.9	#1368				Set version to 4.8.1-SNAPSHOT in 4.8 branch
4.7, 4.8, 4.9	#1367				Set version to 4.7.2-SNAPSHOT in 4.7 branch
4.7, 4.8, 4.9	#1358	CLOUDSTACK-9245	Improvement	Major	As an User I want to be able to delete non-attache
4.7, 4.8, 4.9	#1362	CLOUDSTACK-9254	Bug	Major	Name of logged in user in UI is not always lined c
4.9	#1354				UI: improve filter dropdown width
4.7, 4.8, 4.9	#1356				More VR performance!

Chapter 3

Compatibility Matrix

3.1 Supported OS Versions for Management Server

This section lists the operating systems that are supported for running CloudStack Management Server. Note that specific versions of the operating systems are tested, so compatibility with CentOS 6.3 may not indicate compatibility with CentOS 6.2, 6.1 and so on.

- RHEL versions 6.3, 6.5, 6.6 and 7.0
- CentOS versions 6.8, 7
- Ubuntu 14.04 LTS

3.1.1 Software Requirements

- Java JRE 1.7
- MySQL 5.6 (RHEL 7)
- MySQL 5.1 (RHEL 6.x)

3.2 Supported Hypervisor Versions

CloudStack supports three hypervisor families, XenServer with XAPI, KVM, and VMware with vSphere.

- CentOS 6.2+, 7.0+ with KVM
- Ubuntu 14.04LTS, 16.04LTS with KVM
- Red Hat Enterprise Linux 6.2 with KVM
- XenServer versions 6.1, 6.2 SP1, 6.5 and 7.0 with latest hotfixes

: It is now required to enable HA on the XenServer pool in order to recover from a pool-master failure. Please refer to the XenServer documentation.

- VMware versions 5.0 Update 3, 5.1 Update 3, 5.5 Update 3b, 6.0 Update 2, and 6.5 GA
- LXC Host Containers on RHEL 7

- Windows Server 2012 R2 (with Hyper-V Role enabled)
- Hyper-V 2012 R2
- Oracle VM 3.0+
- Bare metal hosts are supported, which have no hypervisor. These hosts can run the following operating systems:
 - RHEL or CentOS, v6.2 or 6.3

: Use libvirt version 0.9.10 for CentOS 6.3

- Fedora 17
- Ubuntu 12.04

For more information, see the Hypervisor Compatibility Matrix in the ‘CloudStack Installation Guide’.

3.3 Supported External Devices

- Netscaler VPX and MPX versions 9.3, 10.1e and 10.5
- Netscaler SDX version 9.3, 10.1e and 10.5
- SRX (Model srx100b) versions 10.3 to 10.4 R7.5
- F5 11.X
- Force 10 Switch version S4810 for Baremetal Advanced Networks

3.4 Supported Browsers

The CloudStack Web-based UI should be compatible with any modern browser, but it’s possible that some browsers will not render portions of the UI reliably, depending on their support of Web standards. For best results, one of the following browsers recommended:

- Firefox version 31 or later
- Google Chrome version 36.0+
- Safari 6+

Chapter 4

API Changes Introduced in 4.9

For the complete list of API commands and params consult the CloudStack Apidocs.

4.1 New API Commands

Name	Description
configureOutOfBandManagement	Configures a host's out-of-band management interface
disableOutOfBandManagement	Disables out-of-band management for a zone
updateRolePermission	Updates a role permission order
ldapConfig	Configure the LDAP context for this site.
createRole	Creates a role
deleteStratosphereSsp	Removes stratosphere ssp server
searchLdap	Searches LDAP based on the username attribute
enableOutOfBandManagement	Enables out-of-band management for a cluster
getPathForVolume	Get the path associated with the provided volume UUID
listRolePermissions	Lists role permissions
changeOutOfBandManagement	Changes out-of-band management interface password on the host and updates the interface configuration in CloudStack if the operation succeeds, else reverts the old password
listRoles	Lists dynamic roles in CloudStack
updateRole	Updates a role
createRolePermission	Adds a API permission to a role
enableOutOfBandManagement	Enables out-of-band management for a host
disableOutOfBandManagement	Disables out-of-band management for a cluster
deleteRolePermission	Deletes a role permission
getVolumeiScsiName	Get Volume's iSCSI Name
getVolumeSnapshotDetails	Get Volume Snapshot Details
notifyBaremetalProvision	Notify provision has been done on a host. This api is for baremetal virtual router service, not for end user
ldapRemove	Remove the LDAP context for this site.
deleteUcsManager	Delete a Ucs manager
issueOutOfBandManagement	Initiates the specified power action to the host's out-of-band management interface
disableOutOfBandManagement	Disables out-of-band management for a host
deleteRole	Deletes a role
enableOutOfBandManagement	Enables out-of-band management for a zone

4.2 Removed API Commands

Name	Description
issueNuageVspResourceRequest	Issues a Nuage VSP REST API resource request
getSolidFireVolumeIscsiName	Get SolidFire Volume's Iscsi Name

4.3 Parameters Changed API Commands

Name	Description
reconnectHost	Response: <i>New Parameters:</i> outofbandmanagement
copyTemplate	Response: <i>Removed Parameters:</i> tags (*)
addNicToVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
addCluster	Response: <i>New Parameters:</i> resourcedetails
listVolumes	Request: <i>New Parameters:</i> - ids (optional) Response: <i>Removed Parameters:</i> - tags (*)
importLdapUsers	Request: <i>New Parameters:</i> - roleid (optional) <i>Changed Parameters:</i> - accounttype was 'required' and is now 'optional'
createTemplate	Response: <i>Removed Parameters:</i> tags (*)

TABLE 4.1 –

Name	Description
migrateVolume	Response: <i>Removed Parameters:</i> tags (*)
enableAccount	Response: <i>New Parameters:</i> - roleid - rolename - roletype
listClusters	Response: <i>New Parameters:</i> resourcedetails
attachVolume	Response: <i>Removed Parameters:</i> tags (*)
resetSSHKeyForVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
updateVmNicIp	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
updateVolume	Response: <i>Removed Parameters:</i> tags (*)
cancelHostMaintenance	Response: <i>New Parameters:</i> outofbandmanagement

TABLE 4.1 –

Name	Description
addNuageVspDevice	Request: <i>Changed Parameters:</i> • retrycount was ‘required’ and is now ‘optional’ • retryinterval was ‘required’ and is now ‘optional’ • apiversion was ‘required’ and is now ‘optional’ Response: <i>New Parameters:</i> • cmsid
addBaremetalHost	Response: <i>New Parameters:</i> • outofbandmanagement
resizeVolume	Response: <i>Removed Parameters:</i> • tags (*)
recoverVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
listCapabilities	Response: <i>New Parameters:</i> • dynamicrolesenabled
deployVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
enableUser	Response: <i>New Parameters:</i> • roleid • rolename • roletype

TABLE 4.1 –

Name	Description
updateAccount	Response: <i>New Parameters:</i> • roleid • rolename • roletype
addHost	Response: <i>New Parameters:</i> • outofbandmanagement
updateNuageVspDevice	Response: <i>New Parameters:</i> • cmsid
updateHost	Response: <i>New Parameters:</i> • outofbandmanagement
lockAccount	Response: <i>New Parameters:</i> • roleid • rolename • roletype
createUser	Response: <i>New Parameters:</i> • roleid • rolename • roletype
detachVolume	Response: <i>Removed Parameters:</i> • tags (*)
listSnapshots	Request: <i>New Parameters:</i> • ids (optional)
ldapCreateAccount	Request: <i>New Parameters:</i> • roleid (optional) <i>Changed Parameters:</i> • accounttype was 'required' and is now 'optional' Response: <i>New Parameters:</i> • roleid • rolename • roletype

TABLE 4.1 –

Name	Description
registerTemplate	Response: <i>Removed Parameters:</i> tags (*)
createAccount	Request: <i>New Parameters:</i> - roleid (optional) <i>Changed Parameters:</i> - accounttype was 'required' and is now 'optional' Response: <i>New Parameters:</i> - roleid - rolename - roletype
prepareHostForMaintenance	Response: <i>New Parameters:</i> outofbandmanagement
listNuageVspDevices	Response: <i>New Parameters:</i> cmsid
attachIso	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
getUser	Response: <i>New Parameters:</i> - roleid - rolename - roletype
updateCluster	Response: <i>New Parameters:</i> resourcedetails
listTemplates	Request: <i>New Parameters:</i> - ids (optional) Response: <i>Removed Parameters:</i> - tags (*)

TABLE 4.1 –

Name	Description
prepareTemplate	Response: <i>Removed Parameters:</i> • tags (*)
rebootVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
updateVMAffinityGroup	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
updateUser	Response: <i>New Parameters:</i> • roleid • rolename • roletype
updateTemplate	Response: <i>Removed Parameters:</i> • tags (*)
disableUser	Response: <i>New Parameters:</i> • roleid • rolename • roletype
removeNicFromVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)

TABLE 4.1 –

Name	Description
updateDefaultNicForVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
registerIso	Response: <i>Removed Parameters:</i> tags (*)
listExternalLoadBalancers	Response: <i>New Parameters:</i> outofbandmanagement
createVolume	Response: <i>Removed Parameters:</i> tags (*)
resetPasswordForVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
changeServiceForVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
startVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)

TABLE 4.1 –

Name	Description
detachIso	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
disableAccount	Response: <i>New Parameters:</i> • roleid • rolename • roletype
migrateVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
listVMSnapshot	Request: <i>New Parameters:</i> • vmsnapshotids (optional)
assignVirtualMachine	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
updateVirtualMachine	Request: <i>New Parameters:</i> • securitygroupids (optional) • securitygroupnames (optional) Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
getSolidFireVolumeSize	Request: <i>Removed Parameters:</i> • storageid

TABLE 4.1 –

Name	Description
restoreVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
copyIso	Response: <i>Removed Parameters:</i> tags (*)
uploadVolume	Response: <i>Removed Parameters:</i> tags (*)
migrateVirtualMachineWithVolume	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
stopVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)
listAccounts	Response: <i>New Parameters:</i> - roleid - rolename - roletype
updateIso	Response: <i>Removed Parameters:</i> tags (*)
destroyVirtualMachine	Response: <i>New Parameters:</i> - memoryintfreekbs - memorykbs - memorytargetkbs <i>Removed Parameters:</i> - tags (*)

TABLE 4.1 –

Name	Description
revertToVMSnapshot	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
markDefaultZoneForAccount	Response: <i>New Parameters:</i> • roleid • rolename • roletype
lockUser	Response: <i>New Parameters:</i> • roleid • rolename • roletype
listVirtualMachines	Response: <i>New Parameters:</i> • memoryintfreekbs • memorykbs • memorytargetkbs <i>Removed Parameters:</i> • tags (*)
listHosts	Request: <i>New Parameters:</i> • outofbandmanagementenabled (optional) • outofbandmanagementpowerstate (optional) Response: <i>New Parameters:</i> • outofbandmanagement
listUsers	Response: <i>New Parameters:</i> • roleid • rolename • roletype
listIsos	Response: <i>Removed Parameters:</i> • tags (*)

Chapter 5

General Upgrade Notes

5.1 Java version upgraded to Java 1.7

As of Apache CloudStack 4.4, Java version required is 1.7 for the management-server, cloudstack-usage, KVM agent and system-VMs.

5.2 Migrating to dynamic roles feature

As of Apache CloudStack 4.9, dynamic roles feature can be enabled after an upgrade. Dynamic roles feature is enabled by default on new installations.

Please read more about using dynamic roles feature and process of migrating to using this after an upgrade.

5.3 OVS plug-in

OVS plug-in functionality is disrupted if ovssdaemon crashes

A critical functionality issue came out with CLOUDSTACK-6779. On XenServer it is observed that on VIF unplug Ovs-Vswitchd is crashing resulting in losing all the openflow rules added to the bridge. Ovs daemon gets started and creates a bridge but configure openflow rules are lost resulting in the disruption of connectivity for the VM's on the host.

5.4 Active-Directory Authentication (LDAP)

If using Active-Directory (LDAP/LDAPs) as user authentication; Upgrading to 4.3 and later require changes in Global Settings. After upgrading CloudStack to 4.3 or latest, following Global Settings must be change:

Global Settings	Default	New
ldap.user.object	inetOrgPerson	user
ldap.username.attribute	uid	sAMAccountName

5.5 SystemVM 32bit deprecated

32bit versions of systemvm templates are in the process of being deprecated. Upgrade instructions from this Release Notes use 64bit templates.

5.6 Explicit JDBC driver declaration

While upgrading, on some environments the following may be required to be added in CloudStack's db.properties file:

```
# Add these to your db.properties file
```

```
db.cloud.driver=jdbc:mysql
```

```
db.usage.driver=jdbc:mysql
```

5.7 Other Notes

If you are experiencing CloudStack UI issues, please consider upgrading your tomcat instance to version 6.0.43 (tested version, but earlier versions prior to 6.0.37 might work as well), to address the tomcat response issues caused by latency between the browser/client and CloudStack Management server.

Chapter 6

Upgrade Instruction from 4.8.x

This section will guide you from CloudStack 4.8.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

: The following upgrade instructions should be performed regardless of hypervisor type.

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Add package repository for MySQL connector
3. Upgrade CloudStack management server(s)
4. Update hypervisors specific dependencies

6.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

6.2 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

-
2. If you are running a usage server or usage servers, stop those as well:

-
-
3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

-
-
-
4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage_pool table:

```
"select id,name,path from cloud.storage_pool where pool_type='Filesystem'
```

If local storage paths are found to have a trailing forward slash, remove it:

```
'update cloud.storage_pool set path="/var/lib/libvirt/images" where path=
```

6.3 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMware or Xen.)

6.3.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

6.4 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to [hypervisors](#) section, then `upg-sysvm48`.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

6.4.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

6.4.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[
    name=
    baseurl=
    enabled=
    gpgcheck=
]
```

If you are using the community provided package repository, change the base url to `http://cloudstack.appt-get.eu/centos/$releasever/4.9/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

2. If you use CloudStack usage server

6.5 Hypervisor: XenServer

(XenServer only) Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

6.6 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

(VMware only) Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

Store the output from this step, we need to add this in `cluster_details` table and `vmware_data_center` tables in place of the plain text password

1. Find the ID of the row of `cluster_details` table that you have to update:

```
select
```

2. Update the plain text password with the encrypted one

```
id = set value = '_ciphertext_from_step_1_'
```

3. Confirm that the table is updated:

```
select
```

4. Find the ID of the correct row of `vmware_data_center` that you want to update

```
select
```

5. update the plain text password with the encrypted one:

```
id = set password = '_ciphertext_from_step_1_'
```

6. Confirm that the table is updated:

```
select
```

6.7 Hypervisor: KVM

6.7.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

6.7.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

=

If not, add the line.

3. Restart the agent:

6.8 Restart management services

1. Now it's time to start the management server

2. If you use it, start the usage server

Chapter 7

Upgrade Instruction from 4.7.x

This section will guide you from CloudStack 4.7.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

: The following upgrade instructions should be performed regardless of hypervisor type.

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Add package repository for MySQL connector
3. Upgrade CloudStack management server(s)
4. Update hypervisors specific dependencies

7.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

7.2 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

2. If you are running a usage server or usage servers, stop those as well:

3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage_pool table:

```
"select id,name,path from cloud.storage_pool where pool_type='Filesystem'
```

If local storage paths are found to have a trailing forward slash, remove it:

```
'update cloud.storage_pool set path="/var/lib/libvirt/images" where path=
```

7.3 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMware or Xen.)

7.3.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

7.4 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to hypervisors section, then `upg-sysvm47`.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

7.4.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

7.4.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[  
    name=  
    baseurl=  
    enabled=  
    gpgcheck=
```

If you are using the community provided package repository, change the base url to `http://cloudstack.appt-get.eu/centos/$releasever/4.9/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

2. If you use CloudStack usage server

7.5 Hypervisor: XenServer

(XenServer only) Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

7.6 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

(VMware only) Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

Store the output from this step, we need to add this in `cluster_details` table and `vmware_data_center` tables in place of the plain text password

1. Find the ID of the row of `cluster_details` table that you have to update:

```
select
```

2. Update the plain text password with the encrypted one

```
id = set value = '_ciphertext_from_step_1_'
```

3. Confirm that the table is updated:

```
select
```

4. Find the ID of the correct row of `vmware_data_center` that you want to update

```
select
```

5. update the plain text password with the encrypted one:

```
id = set password = '_ciphertext_from_step_1_'
```

6. Confirm that the table is updated:

```
select
```

7.7 Hypervisor: KVM

7.7.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

7.7.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

=

If not, add the line.

3. Restart the agent:

7.8 Restart management services

1. Now it's time to start the management server

2. If you use it, start the usage server

Chapter 8

Upgrade Instruction from 4.6.x

This section will guide you from CloudStack 4.6.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

: The following upgrade instructions should be performed regardless of hypervisor type.

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Add package repository for MySQL connector
3. Upgrade CloudStack management server(s)
4. Update hypervisors specific dependencies

8.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

8.2 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

2. If you are running a usage server or usage servers, stop those as well:

3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage_pool table:

```
"select id,name,path from cloud.storage_pool where pool_type='Filesystem'
```

If local storage paths are found to have a trailing forward slash, remove it:

```
'update cloud.storage_pool set path="/var/lib/libvirt/images" where path=
```

8.3 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMware or Xen.)

8.3.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

8.4 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to hypervisors section, then `upg-sysvm46`.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

8.4.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

8.4.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[  
  name=  
  baseurl=  
  enabled=  
  gpgcheck=
```

If you are using the community provided package repository, change the base url to `http://cloudstack.appt-get.eu/centos/$releasever/4.9/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Remove the deprecated dependency for `awsapi`.

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

3. If you use CloudStack usage server

8.5 Hypervisor: XenServer

(XenServer only) Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

8.6 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

(VMware only) Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

Store the output from this step, we need to add this in `cluster_details` table and `vmware_data_center` tables in place of the plain text password

1. Find the ID of the row of `cluster_details` table that you have to update:

```
select
```

2. Update the plain text password with the encrypted one

```
id = set value = '_ciphertext_from_step_1_'
```

3. Confirm that the table is updated:

```
select
```

4. Find the ID of the correct row of `vmware_data_center` that you want to update

```
select
```

5. update the plain text password with the encrypted one:

```
id = set password = '_ciphertext_from_step_1_'
```

6. Confirm that the table is updated:

```
select
```

8.7 Hypervisor: KVM

8.7.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

8.7.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

[REDACTED]

2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

[REDACTED]

If not, add the line.

3. Restart the agent:

[REDACTED]

8.8 Restart management services

1. Now it's time to start the management server

[REDACTED]

2. If you use it, start the usage server

[REDACTED]

Chapter 9

Upgrade Instruction from 4.5.x

This section will guide you from CloudStack 4.5.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

: The following upgrade instructions should be performed regardless of hypervisor type.

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Install new systemvm template
3. Add package repository for MySQL connector
4. Upgrade CloudStack management server(s)
5. Update hypervisors specific dependencies

9.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

9.2 Update System-VM templates

1. While running the existing 4.5.x system, log in to the UI as root administrator.

2. In the left navigation bar, click Templates.
3. In Select view, click Templates.
4. Click Register template.

The Register template dialog box is displayed.

5. In the Register template dialog box, specify the following values (do not change these):

Hypervisor	Description
XenServer	Name: systemvm-xenserver-4.6 Description: systemvm-xenserver-4.6 URL: http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-xen.vhd.bz2 Zone: Choose the zone where this hypervisor is used Hypervisor: XenServer Format: VHD OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down) Extractable: no Password Enabled: no Public: no Featured: no Routing: no
KVM	Name: systemvm-kvm-4.6 Description: systemvm-kvm-4.6 URL: http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-kvm.qcow2.bz2 Zone: Choose the zone where this hypervisor is used Hypervisor: KVM Format: QCOW2 OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down) Extractable: no Password Enabled: no Public: no Featured: no Routing: no
VMware	Name: systemvm-vmware-4.6 Description: systemvm-vmware-4.6 URL: http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-vmware.ova Zone: Choose the zone where this hypervisor is used Hypervisor: VMware Format: OVA OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down) Extractable: no Password Enabled: no Public: no Featured: no Routing: no
HyperV	Name: systemvm-hyperv-4.6 Description: systemvm-hyperv-4.6 URL: http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-hyperv.vhd.zip Zone: Choose the zone where this hypervisor is used Hypervisor: Hyper-V Format: VHD OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)
9.2. Update System-VM templates	Extractable: no Password Enabled: no Public: no Featured: no

6. Watch the screen to be sure that the template downloads successfully and enters the **READY** state. Do not proceed until this is successful.

9.3 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

```
sudo systemctl stop cloudstack-management
```

2. If you are running a usage server or usage servers, stop those as well:

```
sudo systemctl stop cloudstack-usage
```

3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

```
mysqldump --user=root --password=PASSWORD --databases=cloudstack --routines --triggers --events --log-error=/var/log/mysql/cloudstack-backup.log --single-transaction --flush-logs --lock-tables --add-drop-database > /var/lib/mysql/cloudstack-backup-`date +%Y-%m-%d`.sql
```

4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage_pool table:

```
mysql -u root -p -e "select id,name,path from cloud.storage_pool where pool_type='Filesystem'"
```

If local storage paths are found to have a trailing forward slash, remove it:

```
mysql -u root -p -e "update cloud.storage_pool set path='/var/lib/libvirt/images' where path='/var/lib/libvirt/images/'"
```

9.4 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMware or Xen.)

9.4.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

```
deb http://cloudstack.apache.org/repos/repo/ubuntu/4.9.2.0/ .
```

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

9.5 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to [hypervisors](#) section, then *System-VMs and Virtual-Routers*.

: Community Packages: This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

9.5.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

9.5.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

If you are using the community provided package repository, change the base url to `http://cloudstack.apache.org/repos/centos/$releasever/4.9/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Remove the deprecated dependency for `awsapi`.

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

3. If you use CloudStack usage server

9.6 Hypervisor: XenServer

(XenServer only) Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

9.7 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

(VMware only) Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

```
.cli.JasyptPB
```

Store the output from this step, we need to add this in cluster_details table and vmware_data_center tables in place of the plain text password

1. Find the ID of the row of cluster_details table that you have to update:

```
select
```

2. Update the plain text password with the encrypted one

```
id = set value = '_ciphertext_from_step_1_'
```

3. Confirm that the table is updated:

```
select
```

4. Find the ID of the correct row of vmware_data_center that you want to update

```
select
```

5. update the plain text password with the encrypted one:

```
id = set password = '_ciphertext_from_step_1_'
```

6. Confirm that the table is updated:

```
select
```

9.8 Hypervisor: KVM

9.8.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

9.8.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

- ```
=
```
2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

3. Restart the agent:

## 9.9 Restart management services

1. Now it's time to start the management server

2. If you use it, start the usage server

## 9.10 System-VMs and Virtual-Routers

Once you've upgraded the packages on your management servers, you'll need to restart the system VMs. Ensure that the admin port is set to 8096 by using the "integration.api.port" global parameter. This port is used by the `cloudsysvmadm` script at the end of the upgrade procedure. For information about how to set this parameter, see *Setting Global Configuration Parameters* in the *Installation Guide*. Changing this parameter will require management server restart. Also make sure port 8096 is open in your local host firewall to do this.

There is a script that will do this for you, all you need to do is run the script and supply the IP address for your MySQL instance and your MySQL credentials:

```
nohup cloudstack-sysvmadm -d IPaddress -u cloud -p password -a > sysvm.log 2>&1 &
```

You can monitor the log for progress. The process of restarting the system VMs can take an hour or more.

```
tail -f sysvm.log
```

The output to `sysvm.log` will look something like this:

```
1 ()
 ()
1 ()
 ()
4 ()
()
```



## Chapter 10

# Upgrade Instruction from 4.4.x

This section will guide you from CloudStack 4.4.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

---

: The following upgrade instructions should be performed regardless of hypervisor type.

---

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Install new systemvm template
3. Add package repository for MySQL connector
4. Upgrade CloudStack management server(s)
5. Update hypervisors specific dependencies

### 10.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

### 10.2 Update System-VM templates

1. While running the existing 4.4.x system, log in to the UI as root administrator.

2. In the left navigation bar, click Templates.
3. In Select view, click Templates.
4. Click Register template.

The Register template dialog box is displayed.

5. In the Register template dialog box, specify the following values (do not change these):

| Hypervisor                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XenServer                               | Name: systemvm-xenserver-4.6<br>Description: systemvm-xenserver-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-xen.vhd.bz2">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-xen.vhd.bz2</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: XenServer<br>Format: VHD<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no |
| KVM                                     | Name: systemvm-kvm-4.6<br>Description: systemvm-kvm-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-kvm.qcow2.bz2">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-kvm.qcow2.bz2</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: KVM<br>Format: QCOW2<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no             |
| VMware                                  | Name: systemvm-vmware-4.6<br>Description: systemvm-vmware-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-vmware.ova">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-vmware.ova</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: VMware<br>Format: OVA<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no            |
| HyperV                                  | Name: systemvm-hyperv-4.6<br>Description: systemvm-hyperv-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-hyperv.vhd.zip">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-hyperv.vhd.zip</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: Hyper-V<br>Format: VHD<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)                                                                                           |
| <b>10.2. Update System-VM templates</b> | Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

6. Watch the screen to be sure that the template downloads successfully and enters the **READY** state. Do not proceed until this is successful.

### 10.3 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

2. If you are running a usage server or usage servers, stop those as well:

3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage\_pool table:

If local storage paths are found to have a trailing forward slash, remove it:

## 10.4 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

**Community Packages:** This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMWare or Xen.)

### 10.4.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

## 10.5 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to [hypervisors](#) section, then *System-VMs and Virtual-Routers*.

**: Community Packages:** This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

### 10.5.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

#### MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

## 10.5.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

If you are using the community provided package repository, change the base url to `http://cloudstack.apache.org/repos/centos/$releasever/4.9/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Remove the deprecated dependency for `awsapi`.

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

3. If you use CloudStack usage server

## 10.6 Hypervisor: XenServer

**(XenServer only)** Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

### 10.6.1 XenServer HA

As of Apache CloudStack 4.4, CloudStack is not responsible to promote a new pool master on a Citrix XenServer pool. In case of failure of the pool master host, the responsibility of electing a new pool master has been delegated back to the HA feature of XenServer. CloudStack remains responsible to honored HA capability for Compute Offerings of instances. The XenServer HA feature must be enabled only for the pool master, not for virtual-machines.

Make sure XenServer has enabled HA on the pool.

To test if poolHA is currently turned on:

```
params="ha-enabled|ha-config"
```

Output when poolHA is ON:

```
() true
()
```

Output when poolHA is OFF:

```
() false
()
```

To enable poolHA, use something like this:

```
= { } =
```

Please refer to the XenServer documentation, as there are multiple ways of configuring it either on NFS, iSCSI or Fibre Channel. Be aware though, that the timeout setting is not documented. The default is 30 seconds so you may want to bump that towards 120-180 seconds.

## 10.7 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

**(VMware only)** Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

```
.cli.JasyptPB
```

Store the output from this step, we need to add this in cluster\_details table and vmware\_data\_center tables in place of the plain text password

3. Find the ID of the row of cluster\_details table that you have to update:

```
select
```

4. Update the plain text password with the encrypted one

```
set value = '_ciphertext_from_step_1_' id = from_step_2_;
```

5. Confirm that the table is updated:

```
select
```

6. Find the ID of the correct row of vmware\_data\_center that you want to update

```
select
```

7. update the plain text password with the encrypted one:

```
id = set password = '_ciphertext_from_step_1_'
```

8. Confirm that the table is updated:

```
select
```

## 10.8 Hypervisor: KVM

### 10.8.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

### 10.8.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

3. Restart the agent:

## 10.9 Restart management services

1. If upgrading fresh installation of 4.4.0

If you are upgrading fresh installation of CloudStack 4.4.0, the following MySQL command must be executed before restarting the management server. If the system was running pre 4.4 and then upgraded to 4.4.0, the MySQL command is not required. Refer to: CLOUDSTACK-7813

```
use
ALTER TABLE `snapshot_policy` ADD `display` TINYINT 1 NOT NULL DEFAULT '1'
```

2. Now it's time to start the management server

3. If you use it, start the usage server

## 10.10 System-VMs and Virtual-Routers

Once you've upgraded the packages on your management servers, you'll need to restart the system VMs. Ensure that the admin port is set to 8096 by using the "integration.api.port" global parameter. This port is used by the cloud-sysvmadm script at the end of the upgrade procedure. For information about how to set this parameter, see Setting Global Configuration Parameters in the Installation Guide. Changing this parameter will require management server restart. Also make sure port 8096 is open in your local host firewall to do this.

There is a script that will do this for you, all you need to do is run the script and supply the IP address for your MySQL instance and your MySQL credentials:

```
nohup cloudstack-sysvmadm -d IPaddress -u cloud -p password -a > sysvm.log 2>&1 &
```

You can monitor the log for progress. The process of restarting the system VMs can take an hour or more.

```
tail -f sysvm.log
```

The output to `sysvm.log` will look something like this:

```
1 ()
 ()
1 ()
 ()
4 ()
 ()
```



# Chapter 11

## Upgrade Instruction from 4.3.x

This section will guide you from CloudStack 4.3.x to CloudStack 4.9.

Any steps that are hypervisor-specific will be called out with a note.

We recommend reading through this section once or twice before beginning your upgrade procedure, and working through it on a test system before working on a production system.

---

: The following upgrade instructions should be performed regardless of hypervisor type.

---

Upgrade Steps:

1. Backup CloudStack database (MySQL)
2. Install new systemvm template
3. Add package repository for MySQL connector
4. Upgrade CloudStack management server(s)
5. Update hypervisors specific dependencies

### 11.1 Packages repository

Most users of CloudStack manage the installation and upgrades of CloudStack with one of Linux's predominant package systems, RPM or APT. This guide assumes you'll be using RPM and Yum (for Red Hat Enterprise Linux or CentOS), or APT and Debian packages (for Ubuntu).

Create RPM or Debian packages (as appropriate) and a repository from the 4.9 source, or check the Apache CloudStack downloads page at <http://cloudstack.apache.org/downloads.html> for package repositories supplied by community members. You will need them for *Management Server on Ubuntu* or *Management Server on CentOS/RHEL* and *Hypervisor: KVM* hosts upgrade.

Instructions for creating packages from the CloudStack source are in the CloudStack Installation Guide.

### 11.2 Update System-VM templates

1. While running the existing 4.3.x system, log in to the UI as root administrator.

2. In the left navigation bar, click Templates.
3. In Select view, click Templates.
4. Click Register template.

The Register template dialog box is displayed.

5. In the Register template dialog box, specify the following values (do not change these):

| Hypervisor                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| XenServer                        | Name: systemvm-xenserver-4.6<br>Description: systemvm-xenserver-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-xen.vhd.bz2">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-xen.vhd.bz2</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: XenServer<br>Format: VHD<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no |
| KVM                              | Name: systemvm-kvm-4.6<br>Description: systemvm-kvm-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-kvm.qcow2.bz2">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-kvm.qcow2.bz2</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: KVM<br>Format: QCOW2<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no             |
| VMware                           | Name: systemvm-vmware-4.6<br>Description: systemvm-vmware-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-vmware.ova">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-vmware.ova</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: VMware<br>Format: OVA<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)<br>Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no<br>Routing: no            |
| HyperV                           | Name: systemvm-hyperv-4.6<br>Description: systemvm-hyperv-4.6<br>URL: <a href="http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-hyperv.vhd.zip">http://packages.shapeblue.com/systemvmtemplate/4.6/new/systemvm-4.6-hyperv.vhd.zip</a><br>Zone: Choose the zone where this hypervisor is used<br>Hypervisor: Hyper-V<br>Format: VHD<br>OS Type: Debian GNU/Linux 7.0 (64-bit) (or the highest Debian release number available in the drop-down)                                                                                           |
| 11.2. Update System-VM templates | Extractable: no<br>Password Enabled: no<br>Public: no<br>Featured: no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

6. Watch the screen to be sure that the template downloads successfully and enters the **READY** state. Do not proceed until this is successful.

### 11.3 Database Preparation

Backup current database

1. Stop your management server or servers. Run this on all management server hosts:

2. If you are running a usage server or usage servers, stop those as well:

3. Make a backup of your MySQL database. If you run into any issues or need to roll back the upgrade, this will assist in debugging or restoring your existing environment. You'll be prompted for your password.

4. **(KVM Only)** If primary storage of type local storage is in use, the path for this storage needs to be verified to ensure it passes new validation. Check local storage by querying the cloud.storage\_pool table:

If local storage paths are found to have a trailing forward slash, remove it:

## 11.4 Management Server on Ubuntu

If you are using Ubuntu, follow this procedure to upgrade your packages. If not, skip to step *Management Server on CentOS/RHEL*.

**: Community Packages:** This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and APT repository, substitute your own URL for the ones used in these examples.

The first order of business will be to change the sources list for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent. (No changes should be necessary for hosts that are running VMware or Xen.)

### 11.4.1 CloudStack apt repository

Start by opening `/etc/apt/sources.list.d/cloudstack.list` on any systems that have CloudStack packages installed.

This file should have one line, which contains:

We'll change it to point to the new package repository:

Setup the public key for the above repository:

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Now update your apt package list:

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management` package.

3. If you use CloudStack usage server

## 11.5 Management Server on CentOS/RHEL

If you are using CentOS or RHEL, follow this procedure to upgrade your packages. If not, skip to [hypervisors](#) section, then *System-VMs and Virtual-Routers*.

---

**: Community Packages:** This section assumes you're using the community supplied packages for CloudStack. If you've created your own packages and yum repository, substitute your own URL for the ones used in these examples.

---

### 11.5.1 Install new MySQL connector

Apache CloudStack 4.9 require an upgrade of the MySQL connector on CentOS. Starting with 4.9.0, `cloudstack-management` RPM's now depend on `mysql-connector-python` package.

#### MySQL connector RPM repository

Add a new yum repo `/etc/yum.repos.d/mysql.repo`:

```
[
name=
baseurl=
enabled=
gpgcheck=
```

Import GPG public key from MySQL:

Install `mysql-connector`

## 11.5.2 CloudStack RPM repository

The first order of business will be to change the yum repository for each system with CloudStack packages. This means all management servers, and any hosts that have the KVM agent.

(No changes should be necessary for hosts that are running VMware or Xen.)

Start by opening `/etc/yum.repos.d/cloudstack.repo` on any systems that have CloudStack packages installed.

This file should have content similar to the following:

```
[cloudstack]
name=CloudStack RPM Repository
baseurl=http://cloudstack.apache.org/repos/centos/$releasever/cloudstack/
enabled=1
gpgcheck=1
```

If you are using the community provided package repository, change the base url to `http://cloudstack.apache.org/repos/centos/$releasever/cloudstack/`.

Setup the GPG public key if you wish to enable `gpgcheck=1`:

```
gpg --keyserver rpmfusion --recv-keys 3085C2B3A585DCC94FB94BBA792FE72752574CD
```

If you're using your own package repository, change this line to read as appropriate for your 4.9 repository.

1. Remove the deprecated dependency for `awsapi`.

```
cloudstack-management.x86_64 : awsapi < 1.10.0-1.el6.noarch
```

2. Now that you have the repository configured, it's time to upgrade the `cloudstack-management`.

```
yum update cloudstack-management
```

3. If you use CloudStack usage server

```
yum update cloudstack-usage
```

## 11.6 Hypervisor: XenServer

**(XenServer only)** Copy `vhd-utils` file on CloudStack management servers. Copy the file `vhd-utils` to `/usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver`.

```
cp /usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver/vhd-utils /usr/share/cloudstack-common/scripts/vm/hypervisor/xenserver/
```

### 11.6.1 XenServer HA

As of Apache CloudStack 4.4, CloudStack is not responsible to promote a new pool master on a Citrix XenServer pool. In case of failure of the pool master host, the responsibility of electing a new pool master has been delegated back to the HA feature of XenServer. CloudStack remains responsible to honored HA capability for Compute Offerings of instances. The XenServer HA feature must be enabled only for the pool master, not for virtual-machines.

Make sure XenServer has enabled HA on the pool.

To test if `poolHA` is currently turned on:

```
params="ha-enabled|ha-config"
```

Output when poolHA is ON:

```
() true
()
```

Output when poolHA is OFF:

```
() false
()
```

To enable poolHA, use something like this:

```
= { } =
```

Please refer to the XenServer documentation, as there are multiple ways of configuring it either on NFS, iSCSI or Fibre Channel. Be aware though, that the timeout setting is not documented. The default is 30 seconds so you may want to bump that towards 120-180 seconds.

## 11.7 Hypervisor: VMware

: For VMware hypervisor CloudStack management server packages must be build using “noredist”. Refer to Building from Source.

**(VMware only)** Additional steps are required for each VMware cluster. These steps will not affect running guests in the cloud. These steps are required only for clouds using VMware clusters:

1. Stop the Management Server:

2. Generate the encrypted equivalent of your vCenter password:

```
.cli.JasyptPB
```

Store the output from this step, we need to add this in cluster\_details table and vmware\_data\_center tables in place of the plain text password

3. Find the ID of the row of cluster\_details table that you have to update:

```
select
```

4. Update the plain text password with the encrypted one

```
set value = '_ciphertext_from_step_1_' id = from_step_2_;
```

5. Confirm that the table is updated:

```
select
```

6. Find the ID of the correct row of vmware\_data\_center that you want to update

```
select
```

7. update the plain text password with the encrypted one:

```
set password = '_ciphertext_from_step_1_' id = _id_from_st
```

8. Confirm that the table is updated:

```
select
```

## 11.8 Hypervisor: KVM

### 11.8.1 KVM on Ubuntu

(KVM only) Additional steps are required for each KVM host. These steps will not affect running guests in the cloud. These steps are required only for clouds using KVM as hosts and only on the KVM hosts.

1. Configure the *CloudStack apt repository* as detailed above.
2. Stop the running agent.

3. Update the agent software.

4. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

5. Start the agent.

### 11.8.2 KVM on CentOS/RHEL

For KVM hosts, upgrade the `cloudstack-agent` package

1. Configure the *CloudStack RPM repository* as detailed above.

2. Verify that the file `/etc/cloudstack/agent/environment.properties` has a line that reads:

```
=
```

If not, add the line.

3. Restart the agent:

## 11.9 Restart management services

1. Now it's time to start the management server

2. If you use it, start the usage server

### 11.10 System-VMs and Virtual-Routers

Once you've upgraded the packages on your management servers, you'll need to restart the system VMs. Ensure that the admin port is set to 8096 by using the "integration.api.port" global parameter. This port is used by the cloud-sysvmadm script at the end of the upgrade procedure. For information about how to set this parameter, see Setting Global Configuration Parameters in the Installation Guide. Changing this parameter will require management server restart. Also make sure port 8096 is open in your local host firewall to do this.

There is a script that will do this for you, all you need to do is run the script and supply the IP address for your MySQL instance and your MySQL credentials:

```
nohup cloudstack-sysvmadm -d IPaddress -u cloud -p password -a > sysvm.log 2>&1 &
```

You can monitor the log for progress. The process of restarting the system VMs can take an hour or more.

```
tail -f sysvm.log
```

The output to `sysvm.log` will look something like this:

```
1 ()
 ()
1 ()
 ()
4 ()
 ()
```



## Chapter 12

# Known Issues in 4.9.2.0

Apache CloudStack uses Jira to track its issues. All new features and bugs for 4.9.2.0 have been tracked in Jira, and have a standard naming convention of “CLOUDSTACK-NNNN” where “NNNN” is the issue number.

For the list of known issues, see Known Issues in 4.9.2.0.

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-8862 | Issuing multiple attach-volume commands simultaneously can be problematic...        |
| CLOUDSTACK-9734 | VM Expunge Fails sometimes...                                                       |
| CLOUDSTACK-9712 | Establishing Remote access VPN is failing due to mismatch of preshared secrets ...  |
| CLOUDSTACK-9363 | Can't start a Xen HVM vm when more than 2 volumes attached...                       |
| CLOUDSTACK-9692 | Reset password service is not running on Redundant virtual routers....              |
| CLOUDSTACK-9653 | listCapacity API shows incorrect output when sortBy=usage option is added...        |
| CLOUDSTACK-9675 | Cloudstack Metrics: Miscellaneous bug fixes...                                      |
| CLOUDSTACK-9727 | Password reset discrepancy in RVR when one of the Router is not in Running state... |
| CLOUDSTACK-9726 | state of the rvr dose not change to update failed when updating rvrs in sequence... |
| CLOUDSTACK-9668 | disksizeallocated of PrimaryStorage is different from the total size of a volume... |
| CLOUDSTACK-9694 | Unable to limit the Public IPs in VPC...                                            |
| CLOUDSTACK-9716 | baremetal:rvr:vm deployment gets stuck in starting state (waiting for notificati... |
| CLOUDSTACK-9701 | When host is disabled/removed, capacity_state for local storage in op_host_capac... |
| CLOUDSTACK-9569 | VR on shared network not starting on KVM...                                         |
| CLOUDSTACK-8284 | Primary_storage vlaue is not updating in resource_count table after VM deletion...  |
| CLOUDSTACK-9697 | Better error message user if tries to shrink the VM ROOT volume size...             |
| CLOUDSTACK-9693 | Cluster status of an unmanaged cluster still shows enabled...                       |
| CLOUDSTACK-9687 | disksizeallocated of PrimaryStorage is different from the total size of a volume... |
| CLOUDSTACK-9560 | Root volume of deleted VM left unremoved...                                         |
| CLOUDSTACK-9559 | Deleting zone without deleting the secondary storage under the zone should not b... |
| CLOUDSTACK-8896 | Allocated percentage of storage can go beyond 100%...                               |
| CLOUDSTACK-9664 | updateRole: type can not be changed...                                              |
| CLOUDSTACK-9672 | MySQL HA doesn't work...                                                            |
| CLOUDSTACK-9667 | Enable resourcecount.check.interval by default...                                   |
| CLOUDSTACK-9666 | Add configuration validation for the config drive global settings...                |
| CLOUDSTACK-9665 | List hosts api dose not report correct cpu and memory usage...                      |
| CLOUDSTACK-9628 | Fix Template Size in Swift as Secondary Storage...                                  |
| CLOUDSTACK-9626 | Instance fails to start after unsuccesful compute offering upgrade....              |
| CLOUDSTACK-9647 | NIC adapter type becomes e1000 , even after changing the global parameter “vmwar... |
| CLOUDSTACK-9500 | VR configuration not clean properly after Public IP release...                      |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-9175 | [VMware DRS] Adding new host to DRS cluster does not participate in load balanci... |
| CLOUDSTACK-9651 | Fix Docker image build of simulator, marvin and management-server....               |
| CLOUDSTACK-9589 | vmName entries from host_details table for the VM's whose state is Expunging sho... |
| CLOUDSTACK-8849 | Usage job should stop usage generation in case of any exception...                  |
| CLOUDSTACK-9558 | Cleanup the snapshots on the primary storage of Xenserver after VM/Volume is exp... |
| CLOUDSTACK-9637 | Template create from snapshot does not populate vm_template_details...              |
| CLOUDSTACK-9627 | Template Doens't get sync when using Swift as Secondary Storage...                  |
| CLOUDSTACK-9546 | X-Forwarded-For Headers Not Applied for HTTP Traffic in haproxy...                  |
| CLOUDSTACK-9586 | When using local storage with Xenserver prepareTemplate does not work with multi... |
| CLOUDSTACK-9635 | fix test_privategw_acl.py...                                                        |
| CLOUDSTACK-8939 | VM Snapshot size with memory is not correctly calculated in cloud.usage_event (X... |
| CLOUDSTACK-9182 | Some running VMs turned off on manual migration when auto migration failed while... |
| CLOUDSTACK-9638 | Problems caused when inputting double-byte numbers for custom compute offerings...  |
| CLOUDSTACK-9640 | In KVM SSVm and CPVM may use the old cmdline data, if we fail to fetch the new c... |
| CLOUDSTACK-9641 | In KVM SSVm and CPVM may use the old cmdline data, if we fail to fetch the new c... |
| CLOUDSTACK-9642 | API documentation: getVirtualMachineUserData is in the wrong command category 'U... |
| CLOUDSTACK-9634 | fix marvin test test_router_dhcp_opts failure...                                    |
| CLOUDSTACK-9184 | [VMware] vmware.ports.per.dvportgroup global setting is not useful from vCenter ... |
| CLOUDSTACK-9595 | Transactions are not getting retried in case of database deadlock errors...         |
| CLOUDSTACK-9538 | Deleting Snapshot From Primary Storage Fails on RBD Storage if you already delet... |
| CLOUDSTACK-9317 | Disabling static NAT on many IPs can leave wrong IPs on the router...               |
| CLOUDSTACK-9593 | User data check is inconsistent with python...                                      |
| CLOUDSTACK-9598 | wrong default gateway in guest VM with nics in isolated and a shared network...     |
| CLOUDSTACK-9614 | Attaching Volume to VM incorrectly checks resource limits...                        |
| CLOUDSTACK-9572 | Snapshot on primary storage not cleaned up after Storage migration...               |
| CLOUDSTACK-9280 | System VM volumes cannot be deleted when there are no system VMs...                 |
| CLOUDSTACK-8781 | Superfluous field during VPC creation...                                            |
| CLOUDSTACK-9498 | VR CsFile search utility methods fail when search string has char...                |
| CLOUDSTACK-9503 | The router script times out resulting in failure of deployment...                   |
| CLOUDSTACK-9356 | VPC add VPN User fails same error as CLOUDSTACK-8927...                             |
| CLOUDSTACK-9017 | VPC VR DHCP broken for multihomed guest VMs...                                      |
| CLOUDSTACK-9585 | UI doesn't give an option to select the xentools version for non ROOT users...      |
| CLOUDSTACK-9417 | Usage module refactoring...                                                         |
| CLOUDSTACK-9555 | when a template is deleted and then copied over again , it is still marked as Re... |
| CLOUDSTACK-9592 | Empty responses from site to site connection status are not handled properly...     |
| CLOUDSTACK-9601 | Database upgrade algorithm is incorrect...                                          |
| CLOUDSTACK-9596 | migrateVirtualMachine API does not respect affinity group assignment...             |
| CLOUDSTACK-9578 | 6 out of 12 internal Lb rules were added to internal LB with same source ip duri... |
| CLOUDSTACK-9557 | Deploy from VMsnapshot fails with exception if source template is removed or mad... |
| CLOUDSTACK-9370 | Failed to create VPC: Unable to start VPC VR (VM DomainRouter) due to error in ...  |
| CLOUDSTACK-9591 | VMware dvSwitch Requires a Dummy, Standard vSwitch...                               |
| CLOUDSTACK-9405 | listDomains API call takes an extremely long time to respond...                     |
| CLOUDSTACK-8288 | Deleting Instance deletes unrelated snapshots...                                    |
| CLOUDSTACK-9577 | NPE while deleting internal LB rules concurrently...                                |
| CLOUDSTACK-9579 | Internal lb vm display page stuck in loading not showing any vms...                 |
| CLOUDSTACK-9580 | Unexpected exception while deleting vms concurrently...                             |
| CLOUDSTACK-9581 | Error in logs while concurrently creating 100 vms...                                |
| CLOUDSTACK-9582 | Null pointer exceptions while deleting network concurrently...                      |
| CLOUDSTACK-9576 | Nuage VSP Plugin : NPE while creating vpctier with wrong domain template name...    |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-9552 | KVM Security Groups do not allow DNS over TCP egress...                             |
| CLOUDSTACK-9575 | ACS 4.9 + VMware/ESXi 6.0: Sometimes VRs are failing to fully come up into runni... |
| CLOUDSTACK-9226 | Wrong number of sockets reported...                                                 |
| CLOUDSTACK-9553 | Usage event is not getting recorded for snapshots in a specific scenario...         |
| CLOUDSTACK-9554 | Juniper Contrail plug-in is publishing events to wrong message bus...               |
| CLOUDSTACK-9551 | Pull KVM agent's tmp folder usage within its own folder structure...                |
| CLOUDSTACK-9571 | Management server should fence itself when there are recoverable DB errors OR wh... |
| CLOUDSTACK-7827 | storage migration timeout, loss of data...                                          |
| CLOUDSTACK-9514 | MarvinTests: some host credentials are hardcoded, make them to be picked up from... |
| CLOUDSTACK-9533 | gateway of public IP is not handled correctly when parsing the cmd_line.json to ... |
| CLOUDSTACK-9529 | Marvin Tests do not clean up properly...                                            |
| CLOUDSTACK-9357 | DHCP DNS option is incorrect for Redundant Router config...                         |
| CLOUDSTACK-9547 | ACS 4.9 + VMware: Unable to remove one of the NICs of a multi-nic guest VM...       |
| CLOUDSTACK-9474 | When attaching a pool to an instance the askingSize parameter of pool checker is... |
| CLOUDSTACK-9542 | listNics API does not return data as per API documentation...                       |
| CLOUDSTACK-9528 | SSVM Downloads (built-in) template multiple times...                                |
| CLOUDSTACK-9541 | redundant VPC VR: issues when master and backup switch happens on failover...       |
| CLOUDSTACK-9540 | createPrivateGateway create private network does not create proper VLAN network ... |
| CLOUDSTACK-9413 | VmIpFetchTask NullPointerException...                                               |
| CLOUDSTACK-9537 | cloudstack can only get network data of eth0 in the xenserver host ...              |
| CLOUDSTACK-9536 | PVLAN: DhcpPvlanRules command bieng sent before processing finalize start comman... |
| CLOUDSTACK-9518 | test_01_test_vm_volume_snapshot Smoke Test Fails...                                 |
| CLOUDSTACK-9521 | Multiple Failures in the test_vpc_vpn Smoke Test Suite...                           |
| CLOUDSTACK-9520 | test_01_primary_storage_iscsi Smoke Test Fails...                                   |
| CLOUDSTACK-9519 | test_01_RVR_Network_FW_PF_SSH_default_routes_egress_true Smoke Test Failure...      |
| CLOUDSTACK-9512 | listTemplates ids returns all templates instead of the requested ones...            |
| CLOUDSTACK-9508 | Change Script and SshHelper to use Duration instead of long timeout....             |
| CLOUDSTACK-9318 | test_privategw_acl is failing intermittently....                                    |
| CLOUDSTACK-9475 | Attaching to PVLAN on VMware dvSwitch fails on VR reboot...                         |
| CLOUDSTACK-9490 | Cant shrink data volume...                                                          |
| CLOUDSTACK-9483 | In developers.html there is a html <br> tag displayed as a plain text ...           |
| CLOUDSTACK-9371 | Regular user cannot resize volume...                                                |
| CLOUDSTACK-8398 | Changing compute offering checks account quota instead of project quota...          |
| CLOUDSTACK-9473 | Storage pool checker is ignored on resize and migrate volume....                    |
| CLOUDSTACK-9472 | Taking snapshot on a large VMware volume times out...                               |
| CLOUDSTACK-9471 | Cross cluster migration did not kick in when HA is enabled and Host goes down...    |
| CLOUDSTACK-8937 | Xenserver - VM migration with storage fails in a clustered management server set... |
| CLOUDSTACK-9144 | VMware in Basic Zone: VR never leaves the "Starting" state...                       |
| CLOUDSTACK-9454 | cloudstack-agent logs rotation outdated...                                          |
| CLOUDSTACK-9407 | vm_network_map table doesnt get cleaned up properly...                              |
| CLOUDSTACK-9225 | Isolation in Advanced Zone using PVLANS ...                                         |
| CLOUDSTACK-9431 | Network usage stats from VR in VPC are wrong after upgrading to ACS 4.7...          |
| CLOUDSTACK-9433 | Change of VM compute offering with additional storage tags not allowed...           |
| CLOUDSTACK-9439 | Domain admins can and must create service and disk offerings withouts storage an... |
| CLOUDSTACK-9434 | NPE on attempting account/domain cleanup automation...                              |
| CLOUDSTACK-9341 | Cannot upload volume when using Swift as secondary storage...                       |
| CLOUDSTACK-9206 | Input issue on change service offering in Custom...                                 |
| CLOUDSTACK-9432 | Dedicate Cluster to Domain always creates an affinity group owned by the root do... |
| CLOUDSTACK-9367 | Unable to start a HVM VM with more than 2 volumes attached using XenServer 6.5 ...  |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-9227 | service cloudstack-management stop returns [failed] due to log4j:WARN No appende... |
| CLOUDSTACK-9427 | Sudo in wrong place when adding APT repository key...                               |
| CLOUDSTACK-9425 | Storage statistics shown on CloudStack Primary storage is different from the sta... |
| CLOUDSTACK-9426 | CloudStack does not re-scan for new LUNs for an iSCSI based storage on KVM host...  |
| CLOUDSTACK-9385 | Password Server is not running on RvR...                                            |
| CLOUDSTACK-9421 | Cannot add Instance...                                                              |
| CLOUDSTACK-9419 | network_domain is a optional param while creating network, still createIpAlias.s... |
| CLOUDSTACK-9412 | NullPointerException in CapacityManagerImpl...                                      |
| CLOUDSTACK-8921 | snapshot_store_ref table should store actual size of back snapshot in secondary ... |
| CLOUDSTACK-9411 | Resize Root Volume UI Element Not Visible By Domain Admins or Users...              |
| CLOUDSTACK-8922 | Unable to delete IP tag...                                                          |
| CLOUDSTACK-9253 | docker cloudstack simulator “ImportError: No module named marvin” when try to cr... |
| CLOUDSTACK-8944 | Template download possible from new secondary storages before the download is 10... |
| CLOUDSTACK-9394 | HttpTemplateDownloader Causes Hanging Connections...                                |
| CLOUDSTACK-9393 | Wrong information returned for CheckS2SVpnConnectionsCommand when more than one ... |
| CLOUDSTACK-9392 | Networks with redundant network offerings can be implemented with standalone vir... |
| CLOUDSTACK-9390 | Detaching data volume from a running vm created with root and data disk fails...    |
| CLOUDSTACK-9384 | AutoScaling without netscaler problem...                                            |
| CLOUDSTACK-9381 | updateVmNicIp doesn't update the gateway on NIC if the new IP is from a differen... |
| CLOUDSTACK-8237 | add nic with instance throw java.lang.NullPointerException ...                      |
| CLOUDSTACK-8584 | Management Server does not start - “cluster node IP should be valid local addres... |
| CLOUDSTACK-9338 | listAccount returns 0 for cputotal and memorytotal if VMs are using a ComputeOff... |
| CLOUDSTACK-9112 | deployVM thread is holding the global lock on network longer and cause delays an... |
| CLOUDSTACK-8855 | Improve Error Message for Host Alert State...                                       |
| CLOUDSTACK-9372 | Cannot create PPTP VPN from guest instance to endpoint outside of the cloud...      |
| CLOUDSTACK-9360 | Set guest password not working with redundant routers...                            |
| CLOUDSTACK-9224 | XenServer local storage added multiple times...                                     |
| CLOUDSTACK-9346 | Password server on VR is not working correctly when using a custom network offer... |
| CLOUDSTACK-9189 | rVPC ACL doesn't recover after cleaning up through the NetworkGarbageCollector...   |
| CLOUDSTACK-9094 | Multiple threads are being used to collect the stats from the same VR...            |
| CLOUDSTACK-8775 | [HyperV]NPE while attaching Local storage volume to instance whose root volume i... |
| CLOUDSTACK-8787 | Network Update from Standalone VR offering to RVR offering is failing with Runti... |
| CLOUDSTACK-8877 | Show error msg on VPN user add failure....                                          |
| CLOUDSTACK-8912 | listGuestOsMapping doesn't list by id or ostypeid....                               |
| CLOUDSTACK-8918 | [Install] Db Error after install - Unknown column 'iso_id1' in 'field list'...      |
| CLOUDSTACK-8929 | The list of VMs that can be assigned to a load balancer rule is not updated afte... |
| CLOUDSTACK-9035 | [rVR] Password file is stored only with Master when we Reset Password on the VM...  |
| CLOUDSTACK-9176 | VMware: Shared datastore is accidentally picked up as a local datastore...          |
| CLOUDSTACK-9330 | Cloudstack creates a malformed meta-data file for baremetal instances...            |
| CLOUDSTACK-9329 | cloud-set-guest-password doesn't work on CentOS 7...                                |
| CLOUDSTACK-9079 | ipsec service is not running after restarting virtual router...                     |
| CLOUDSTACK-9316 | Problem to install in CentOS7 4.8...                                                |
| CLOUDSTACK-9311 | User cant resize VM root disk for XenServer...                                      |
| CLOUDSTACK-9312 | Duplicate instance IPs addresses...                                                 |
| CLOUDSTACK-9310 | vpn user creation throwing error , but showing entry for the same user in VR con... |
| CLOUDSTACK-9309 | Adding primary storage pool (basic rbd/DefaultPrimary) doesn't work if the rados... |
| CLOUDSTACK-9307 | You can't mix two different linux distributions in a (KVM) Cluster...               |
| CLOUDSTACK-9303 | Cloudstack can't connect to CEPH with “/” in the user pw...                         |
| CLOUDSTACK-8845 | list snapshot without id is failing with Unable to determine the storage pool of... |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-8977 | cloudstack UI creates a session for users not yet logged in...                      |
| CLOUDSTACK-9295 | EGRESS left on ACCEPT on isolated network...                                        |
| CLOUDSTACK-9292 | Failed to create snapshot with Swift on KVM...                                      |
| CLOUDSTACK-9286 | Delete Domain not working: Failed to clean up domain resources and sub domains, ... |
| CLOUDSTACK-9284 | CloudStack usage service tries to get access to “cloud.event_usage” table only v... |
| CLOUDSTACK-7857 | CitrixResourceBase wrongly calculates total memory on hosts with a lot of memory... |
| CLOUDSTACK-9258 | listDomains API fails with NPE when getVolumeTotal is null...                       |
| CLOUDSTACK-9247 | Templates go into “Not Ready” state after restarting management server with Swi...  |
| CLOUDSTACK-9232 | Usage data does not reflect changes of VM parameters...                             |
| CLOUDSTACK-9212 | Cannot Connect to VPN with Public IP on Windows 7 L2TP IPSEC VPN Client...          |
| CLOUDSTACK-9243 | createVlanIpRange API unusable because forced to used DB IDs...                     |
| CLOUDSTACK-9234 | Problem increasing value of vm.password.length global parameter...                  |
| CLOUDSTACK-8966 | listCapacity produces wrong result for CAPACITY_TYPE_MEMORY and CAPACITY_TYPE_CP... |
| CLOUDSTACK-6448 | VPC router won't be created when a private gateway is defined. ...                  |
| CLOUDSTACK-9193 | Once password has been fetched, the state does not get updated to “saved_passwor... |
| CLOUDSTACK-9191 | ACS 4.6 Custom Offer Signature mismatch “ERROR : “unable to verify user credenti... |
| CLOUDSTACK-9190 | ACs is falling to identify the version of pure Xen hypervisor + XAPI hosts...       |
| CLOUDSTACK-8806 | Powered off VM's not showing up in WebUI...                                         |
| CLOUDSTACK-9170 | Register template in UI does not show zones in dropdown listbox...                  |
| CLOUDSTACK-9173 | new Quota plugins: CPU Used column is CPU Free column...                            |
| CLOUDSTACK-9171 | Templates registered with CrossZones have no zone name listed...                    |
| CLOUDSTACK-9169 | createNetwork API call takes a long time when ispersistent=True...                  |
| CLOUDSTACK-9141 | Userdata is not validated for valid base64...                                       |
| CLOUDSTACK-9167 | Restore VM - Missing action events for started and completed states...              |
| CLOUDSTACK-9090 | Cannot delete zone if it was used and not all elements were cleanly removed...      |
| CLOUDSTACK-8936 | wrong values from network.throttling.rate / vm.network.throttling.rate...           |
| CLOUDSTACK-9096 | Deleted projects cannot be billed...                                                |
| CLOUDSTACK-9061 | cannot deploy Instance when using Swift as Secondary Storage...                     |
| CLOUDSTACK-9089 | Static route added to VPC Private Gateway doesn't become active...                  |
| CLOUDSTACK-9085 | Creation of a instance on a Guest Network with Secondary VLAN fail...               |
| CLOUDSTACK-8807 | Cloudstack WebUI sometimes bothers about the selected project, sometimes not...     |
| CLOUDSTACK-9036 | IPV6 CIDR not recognized (Parser BUG)...                                            |
| CLOUDSTACK-9057 | upgrade to 4.6 requires 4.5 templates...                                            |
| CLOUDSTACK-9059 | Snapshot on S3 fails when delta is zero...                                          |
| CLOUDSTACK-9060 | Create volume / template from S3 snapshot fails...                                  |
| CLOUDSTACK-7375 | [UI] RBD not available under list of protocols for primary storage during zone c... |
| CLOUDSTACK-9028 | GloboDNS doesn't work with “Shared Networks”...                                     |
| CLOUDSTACK-8902 | Restart Network fails in EIP/ELB zone...                                            |
| CLOUDSTACK-8994 | Activity of the password server isn't logged....                                    |
| CLOUDSTACK-8889 | Primary Storage count for an account does not decrease when a Data Disk is delet... |
| CLOUDSTACK-8982 | Disk Offering properties do no show the domain which are included in...             |
| CLOUDSTACK-8724 | Multiple IP's on management server break patchviasocket.pl...                       |
| CLOUDSTACK-8945 | rp_filter=1 not set on VPC private gateway initially, but is set after restart o... |
| CLOUDSTACK-8942 | snapshot of root drives failing...                                                  |
| CLOUDSTACK-8938 | Assigning portforward in Isolated “Offering for Isolated networks with Source Na... |
| CLOUDSTACK-8914 | cannot delete pod, NPE...                                                           |
| CLOUDSTACK-8909 | Web Console not working with Hyper-V Windows Server 2012 R2...                      |
| CLOUDSTACK-8771 | [Automation]Volume migration between pools times out in ACS, but the migration c... |
| CLOUDSTACK-8782 | If pagesize is greater than default.page.size in API call, and default.page.size... |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-8846 | Performance issue in GUI - API command listVirtualMachines ...                      |
| CLOUDSTACK-8839 | close concurrent ip disable static nat commands for virtual router will cause so... |
| CLOUDSTACK-8831 | Powered off VM's are not removed from ESXi Host when putting the Host in Mainten... |
| CLOUDSTACK-7853 | Hosts that are temporary Disconnected and get behind on ping (PingTimeout) turn ... |
| CLOUDSTACK-8747 | The agent doesn't reconnect if there are stopped VMs...                             |
| CLOUDSTACK-8809 | Secondary Storage does not clean-up after time-out...                               |
| CLOUDSTACK-8796 | the api call linkdomaintoldap should fail if admin is given and an account isnt...  |
| CLOUDSTACK-7591 | Dynamic scaling doesn't work in CloudStack 4.4 with vmware...                       |
| CLOUDSTACK-8437 | Automation: test_04_create_multiple_networks_with_lb_1_network_offering - Fails...  |
| CLOUDSTACK-8732 | Unable to resize RBD volume: "Cannot determine resize type from pool type RBD"...   |
| CLOUDSTACK-8631 | [Automation]fixing test/integration/component/test_ss_max_limits.py...              |
| CLOUDSTACK-8142 | [Hyper-V] While creating system vms attach systemvm.iso directly from sec storag... |
| CLOUDSTACK-8448 | Attach volume - throws an exception, preferably should give a proper error on UI... |
| CLOUDSTACK-8770 | [HyperV]Proper Message should be displayed when snapshot fails on Hyper-V...        |
| CLOUDSTACK-8768 | [HyperV]Migrating volume from cluster wide storage to Zone wide storage or vicev... |
| CLOUDSTACK-7839 | Unable to live migrate an instance to another host in a cluster from which the t... |
| CLOUDSTACK-7364 | NetScaler won't create the Public VLAN and Bind the IP to it...                     |
| CLOUDSTACK-7618 | Baremetal - AddHost() API docs should include parameters - cpunumber,cpuspeed,me... |
| CLOUDSTACK-8389 | Volume to Template Conversion Broken...                                             |
| CLOUDSTACK-8442 | [VMWARE] VM Cannot be powered on after restoreVirtualMachine ...                    |
| CLOUDSTACK-8699 | Extra acquired public ip is assigned to wrong eth device...                         |
| CLOUDSTACK-8694 | monitorServices.py is not running as a cron job in VR...                            |
| CLOUDSTACK-8691 | deployVirtualMachine should not error when userdata is provided if at least one ... |
| CLOUDSTACK-8328 | NPE while deleteing instance which has custom compute offering...                   |
| CLOUDSTACK-8695 | Dashboard Alerts for VR Service failures does not contain the service's name...     |
| CLOUDSTACK-8684 | Upgrade from 4.3.1 to 4.5.1 does not update resource for existing XenServer 6.0...  |
| CLOUDSTACK-8680 | problem parsing RabbitMQ events...                                                  |
| CLOUDSTACK-8679 | Changes to RabbitMQ events notification framework not documented anywhere...        |
| CLOUDSTACK-8674 | Custom ISO with reboot -eject in kickstart does not get detached at reboot...       |
| CLOUDSTACK-8670 | Delay in VM's console...                                                            |
| CLOUDSTACK-8657 | java.awt.HeadlessException exception in console proxy on mouse clicks in XenServ... |
| CLOUDSTACK-8639 | fixing calculation mistakes in component/test_ss_domain_limits.py...                |
| CLOUDSTACK-8588 | Remove redundant skip test for LXC ...                                              |
| CLOUDSTACK-8556 | Unable to delete attached volume in cleanup...                                      |
| CLOUDSTACK-8549 | Update assert statements in testpath_disable_enable_zone.py testpath ...            |
| CLOUDSTACK-8626 | [Automation]fixing test/integration/component/test_ps_max_limits.py for lxc hyp...  |
| CLOUDSTACK-8627 | Unable to remove IP from NIC....                                                    |
| CLOUDSTACK-8620 | [Automation-lxc]skip test cases if rbd storage is not available in lxc setup ...    |
| CLOUDSTACK-8158 | After the host reboots, the system will run out vm management IP, no matter how ... |
| CLOUDSTACK-8583 | [Automation]fixing issue related to script test/integration/component/test_stop...  |
| CLOUDSTACK-8619 | Adding secondary IP address results in error...                                     |
| CLOUDSTACK-8618 | Name or displaytext can not be same across different templates...                   |
| CLOUDSTACK-8614 | Usage records have no valid records for migrated volumes...                         |
| CLOUDSTACK-8577 | [Automation] fixing script test/integration/component/maint/testpath_disable_en...  |
| CLOUDSTACK-8587 | Storage migration issue on secondary storage...                                     |
| CLOUDSTACK-8578 | listVirtualMachines does not return deleted machines when zone is specified...      |
| CLOUDSTACK-8574 | Skip testcases including data disk creation for LXC if storagePool type is not R... |
| CLOUDSTACK-8576 | Skip tests as snapshots and template are not supported on LXC...                    |
| CLOUDSTACK-8572 | Unable to deploy VM as no storage pool found in UP state in setup...                |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-8555 | Skip testcase for HyperV as it doesn't support volume resize operationa...          |
| CLOUDSTACK-8201 | KVM Snapshot to Template to New Instance is not working...                          |
| CLOUDSTACK-8148 | dvSwitch Broken with java.lang.NumberFormatException...                             |
| CLOUDSTACK-8558 | KVM snapshots are failing at Ubuntu 14.04 LTS...                                    |
| CLOUDSTACK-8557 | Issue while starting Cloud-Manager...                                               |
| CLOUDSTACK-8553 | Unable to launch VM from template because of permission issue...                    |
| CLOUDSTACK-8550 | Attempt to delete already deleted VM...                                             |
| CLOUDSTACK-8547 | Modify hypervisor check in testpath_snapshot_hardning.py testpath...                |
| CLOUDSTACK-8552 | Update test_concurrent_snapshots_limits.py asert statement...                       |
| CLOUDSTACK-8544 | IP Stuck in Releasing State Prevents VM Create...                                   |
| CLOUDSTACK-8532 | Modification in setupClass to skip testcases rather than throwing exception...      |
| CLOUDSTACK-8533 | Local variable accessed as a class variable...                                      |
| CLOUDSTACK-8354 | [VMware] restoreVirtualMachine should forcefully power off VM...                    |
| CLOUDSTACK-8519 | SystemVMs do not connect to MS running on Java 8...                                 |
| CLOUDSTACK-8451 | Static Nat show wrong remote IP in VM behind VPC...                                 |
| CLOUDSTACK-8470 | Available Primary Storage Capacity Displayed Incorrectly after Upgrade to ACS 4.... |
| CLOUDSTACK-7907 | UI heavily broken...                                                                |
| CLOUDSTACK-8469 | wrong global config mount.parent - /var/lib/cloud/mnt ...                           |
| CLOUDSTACK-8446 | VM reboot operation should make sure there's a VR running...                        |
| CLOUDSTACK-8436 | Computing offering with High availability does not work properly....                |
| CLOUDSTACK-8435 | When the ssvm agent restarts, every template generated from a VM snapshot disapp... |
| CLOUDSTACK-8434 | tag filtering hanging on returning values for listVirtualMachines...                |
| CLOUDSTACK-8408 | unused i18n keys...                                                                 |
| CLOUDSTACK-8173 | listCapacity api call returns less response tags than expected...                   |
| CLOUDSTACK-8371 | Unable to Delete VPC After configuring site-to-site VPN...                          |
| CLOUDSTACK-8370 | volume download link will not be deleted...                                         |
| CLOUDSTACK-8358 | Cloudstack 4.4.2 Error adding devcloud host IOException scp error: Invalid locat... |
| CLOUDSTACK-8281 | VPN Gateway don't create when create Site-to-Site VPN...                            |
| CLOUDSTACK-8297 | vnc listen address...                                                               |
| CLOUDSTACK-8228 | Allow adding hosts from different subnets in same POD...                            |
| CLOUDSTACK-8260 | listLBStickinessPolicies with lbruleid as argument gives empty return...            |
| CLOUDSTACK-8242 | Cloudstack install Hosts for vmware...                                              |
| CLOUDSTACK-7449 | "CloudRuntimeException: Can not see storage pool" after trying to add a new host... |
| CLOUDSTACK-8202 | Templates /IOS items order list is not persistent...                                |
| CLOUDSTACK-8199 | Incorrect size when volumes and templates created from image snapshots...           |
| CLOUDSTACK-8189 | security group can't enable...                                                      |
| CLOUDSTACK-7640 | Failed to delete template that failed to download...                                |
| CLOUDSTACK-8185 | GUI and failed async commands issue...                                              |
| CLOUDSTACK-7365 | Upgrading without proper systemvm template corrupt cloudstack management server...  |
| CLOUDSTACK-8092 | Unable to start instance due to failed to configure ip alias on the router as a ... |
| CLOUDSTACK-8073 | listNetworkACLItem does not return cidrs...                                         |
| CLOUDSTACK-8004 | Xenserver Thin Provisioning...                                                      |
| CLOUDSTACK-7789 | I was updated from version 4.4.0 of Apache CloudStack to 4.4.1. It does not work... |
| CLOUDSTACK-7988 | Template status is empty while the template is creating....                         |
| CLOUDSTACK-7936 | System VM's are getting stuck in starting mode after Hypervisor reboot...           |
| CLOUDSTACK-7858 | Implement separate network throttling rate on VR's Public NIC...                    |
| CLOUDSTACK-7342 | Fail to delete template while using Swift as Secondary Storage...                   |
| CLOUDSTACK-7782 | The 4.4.1 web UI is missing "Acquire new IP address" buton in NIC section...        |
| CLOUDSTACK-7819 | Cannot add tags to project...                                                       |

TABLE 12.1 –

| Bug ID          | Description                                                                         |
|-----------------|-------------------------------------------------------------------------------------|
| CLOUDSTACK-7813 | Management server is stuck after upgrade from 4.4.0 to 4.4.1...                     |
| CLOUDSTACK-7751 | Autoscaling without netscaler...                                                    |
| CLOUDSTACK-7750 | Xen server can not mount secondary CIFS storage...                                  |
| CLOUDSTACK-7578 | XenServerInvestigator should do better investigation in case of OVS or other net... |
| CLOUDSTACK-7406 | Templates using Swift provider reports physical size, and not the virtual size i... |
| CLOUDSTACK-7443 | Cannot launch SSVMs when using Swift as Secondary Storage...                        |