



COLLABORATION
CONFERENCE



Management Server Maintenance Mode in CloudStack

- Suresh Kumar Anaparti



November 20 - 22, 2024 | Madrid, Spain

About Me!

@sureshanaparti

- CloudStack Contributor since 2015
- Committer, PMC at Apache CloudStack
- RM for CloudStack 4.16.1, 4.19.1
- Software Architect @ ShapeBlue
- Location: Hyderabad, India



Agenda

- Introduction
- Existing maintenance features
- Problems with current feature
- Proposed Solution
- Demo
- Future Improvement Areas
- References
- Q & A



What is the other most important maintenance feature in CloudStack?

- **Management Server Maintenance Mode**

Safe Shutdown of Management Server (4.19.0)



Shutdown of a Management Server

[Before 4.19.0]

- Cancel all the left over jobs APIs (during MS shutdown or restart)
- Maybe, some inconsistent states, paths for cloud resources (reconcile later)



Safe Shutdown of a Management Server

[4.19.0 Onwards]

- Goal
 - Prevents new jobs from being added
 - Waits for existing jobs to finish
- APIs
 - prepareforshutdown
 - triggershutdown
 - readyforshutdown
 - cancelshutdown
- MS States
 - PrepareForShutdown
 - ReadyForShutdown
 - ShuttingDown

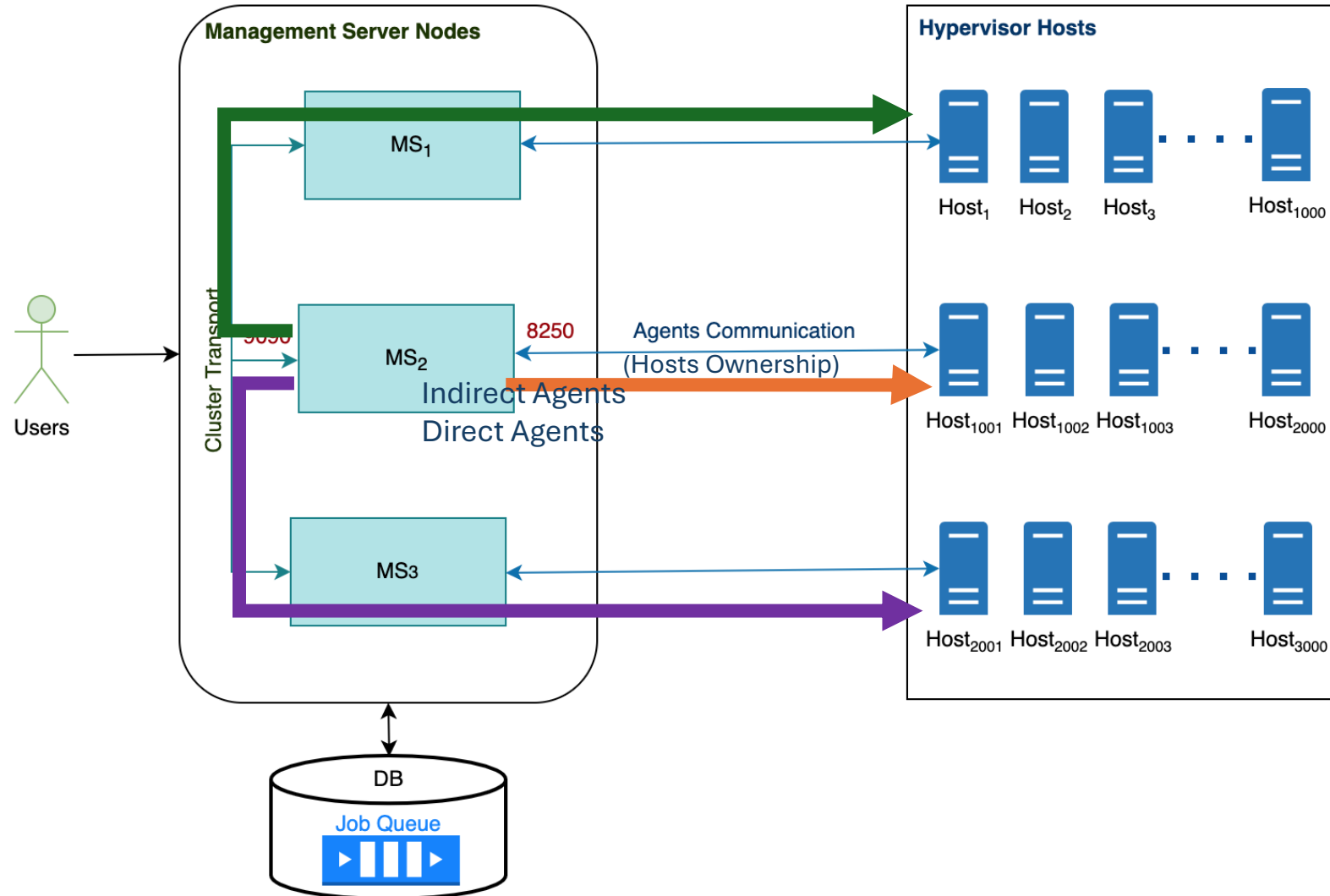


Any Problems with Safe Shutdown?

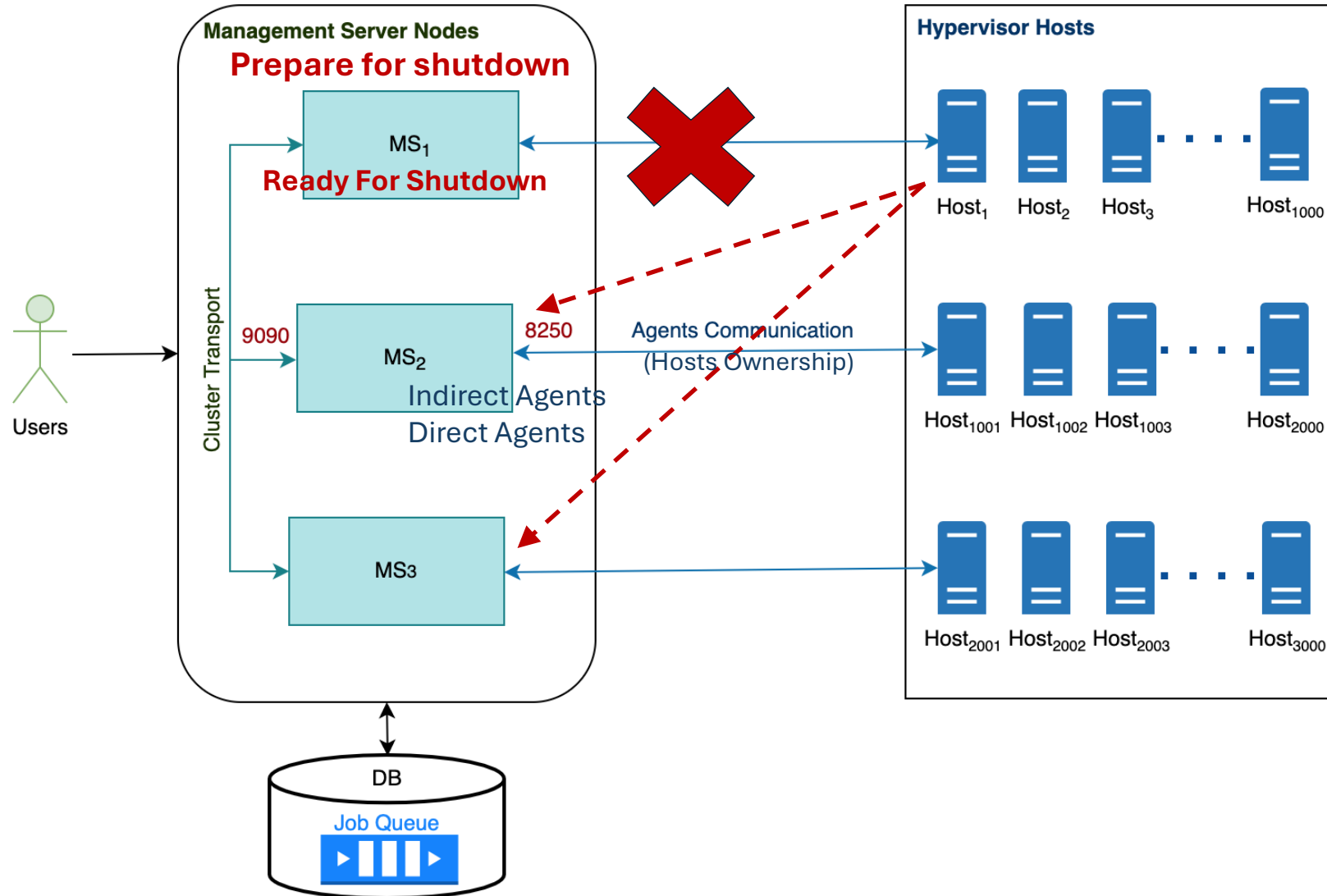
- Host Ownership
- New Agent Connections
- Background Tasks
- Agent Reconnections (during rolling restarts / shutdown)



Cluster / Agent Communication



Management Server – Safe Shutdown (4.19.0)



Proposed Solution - Management Server Maintenance Mode

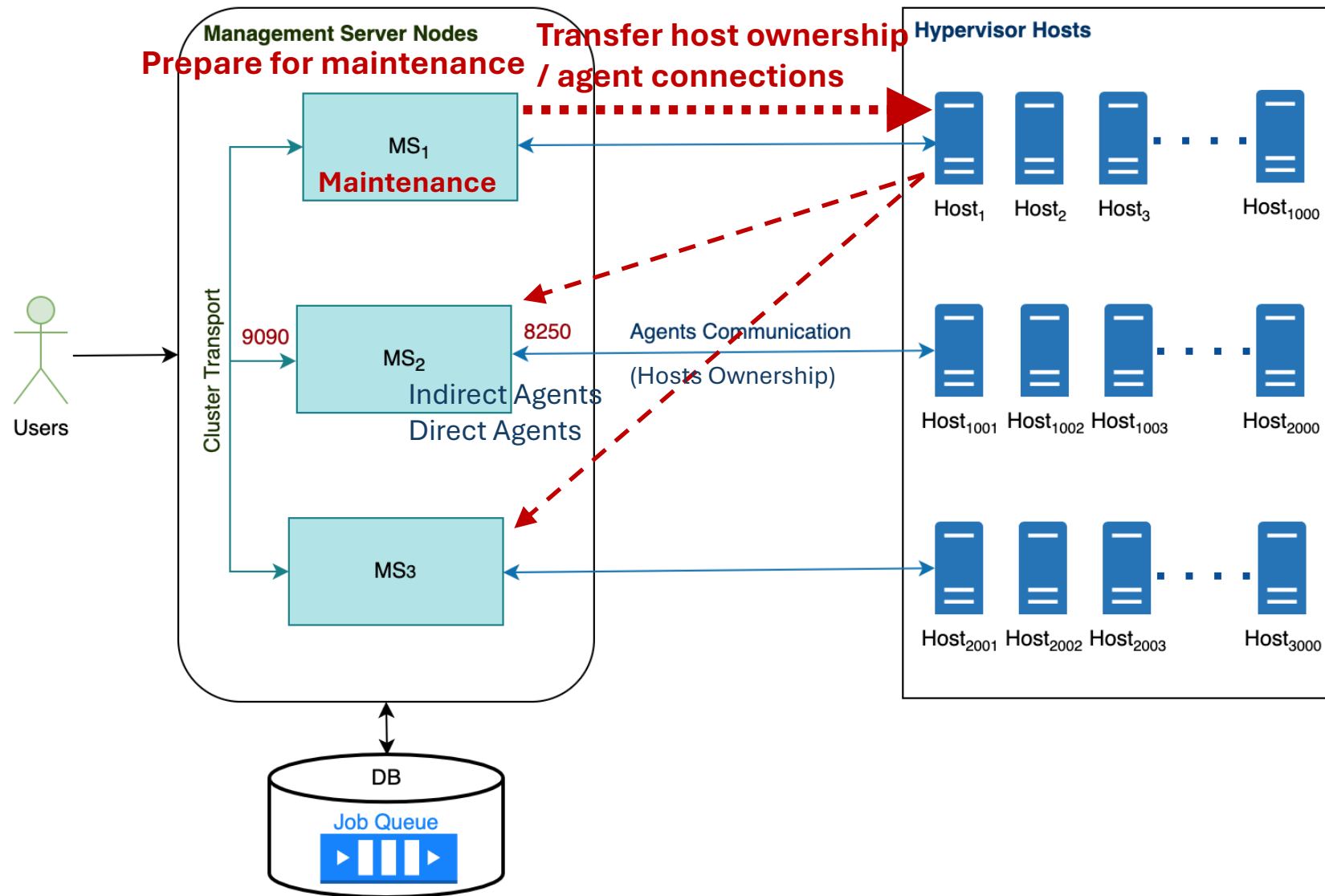
- Host Ownership
- New Agent Connections
- Background Tasks
- Agent Reconnections (during rolling restarts / shutdown)

• Goal

- Transfer of host ownership
- Stop listen for new connections
- Stop Background tasks
- Improve the performance of agent reconnections



Proposed Solution contd.

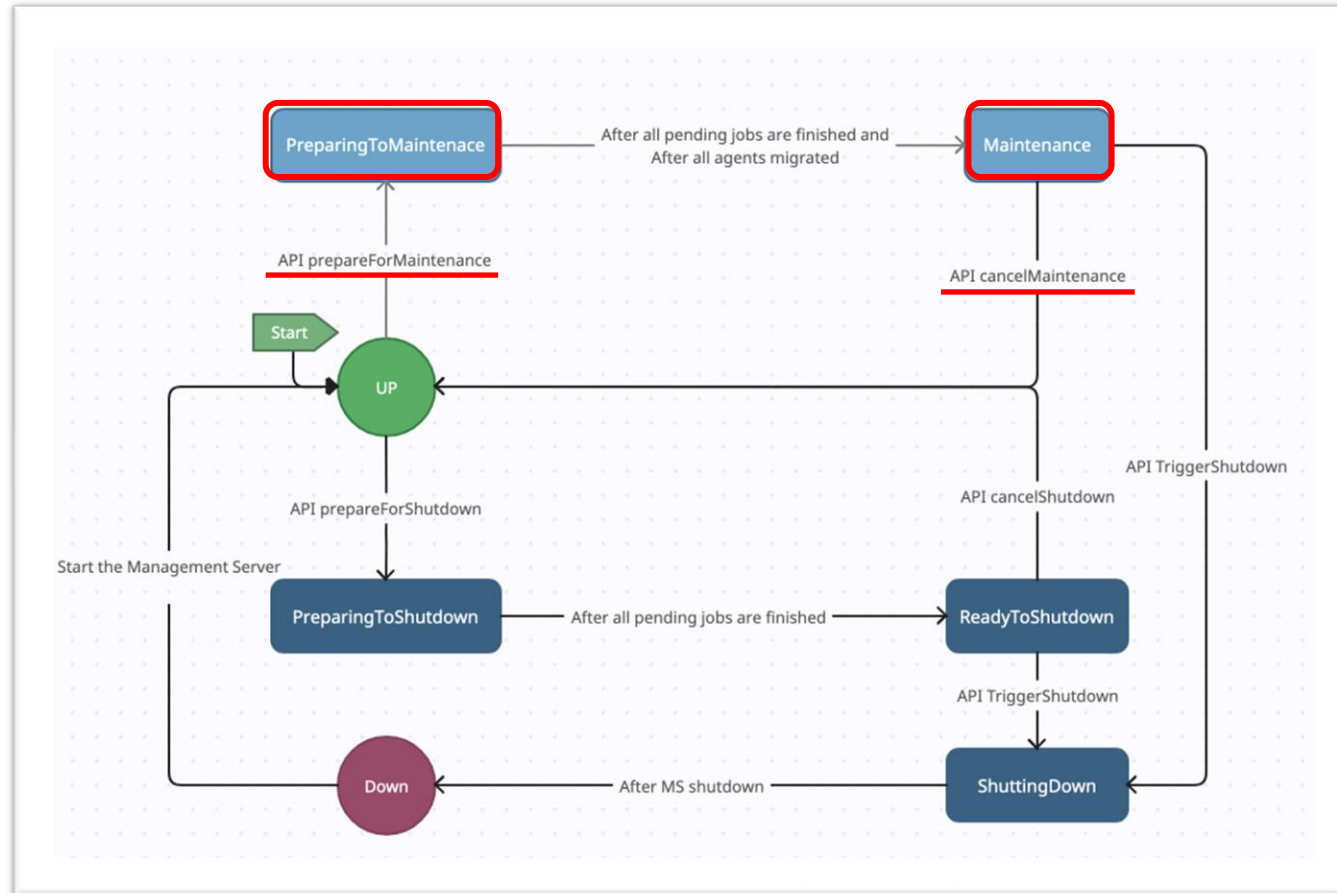


Management Server Maintenance Mode

- APIs
 - prepareformaintenance
 - cancelmaintenance
- MS States
 - PrepareForMaintenance
 - Maintenance
- Configuration
 - *management.server.maintenance.timeout*
- Available in CloudStack in 4.21.0 onwards



Updated API Work Flow



DEMO

- **Safe Shutdown of Management Server**
- **Maintenance Mode of Management Server**



MS – Pending Jobs

Details Pending Jobs Connected Agents Comments

Command	Resource type	Account	Domain	Created
StartVMCmdByAdmin	VirtualMachine	admin	ROOT	2024-11-07T14:25:23+0000
StartVMCmdByAdmin	VirtualMachine	admin	ROOT	2024-11-07T14:25:23+0000
StartVMCmdByAdmin	VirtualMachine	admin	ROOT	2024-11-07T14:25:23+0000
StartVMCmdByAdmin	VirtualMachine	admin	ROOT	2024-11-07T14:25:23+0000
StartVMCmdByAdmin	VirtualMachine	admin	ROOT	2024-11-07T14:25:23+0000



MS - Ready To Shutdown

Shutdown has been triggered. This Management Server will not accept new jobs

Compute Storage Network Images Events Projects Roles Accounts Domains Infrastructure Summary Zones Pods Clusters Hosts Primary storage Secondary storage Object Storage

Default view Create admin cloud

Management servers Refresh Metrics Search

Name	State	Service IP	Version	OS distribution	Number Of connected agents
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt1.sofia.shapeblue.com	ReadyToShutDown	10.0.33.230	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	8
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt2.sofia.shapeblue.com	Up	10.0.35.217	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	4
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt3.sofia.shapeblue.com	Up	10.0.33.28	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	0

Showing 1-3 of 3 items < 1 > 20 / page

Licensed under the Apache License, Version 2.0.
CloudStack 4.20.0.0-SNAPSHOT | Ask a question or Report an issue



MS – Maintenance Mode

Maintenance has been initiated. This Management Server will not accept new jobs

Compute Storage Network Images Events Projects Roles Accounts Domains Infrastructure Summary Zones Pods Clusters Hosts Primary storage Secondary storage Object Storage

Default view Create admin cloud

Management servers Refresh Metrics Search

Name	State	Service IP	Version	OS distribution	Number Of connected agents
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt1.sofia.shapeblue.com	Maintenance	10.0.33.230	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	0
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt2.sofia.shapeblue.com	Up	10.0.35.217	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	8
ref-trl-7651-k-Mol8-suresh-anaparti-mgmt3.sofia.shapeblue.com	Up	10.0.33.28	4.20.0.0-SNAPSHOT	Oracle Linux Server 8.6	4

Showing 1-3 of 3 items < 1 > 20 / page

Licensed under the Apache License, Version 2.0.
CloudStack 4.20.0.0-SNAPSHOT | Ask a question or Report an issue



Future Improvement Areas

- Restart Management Server
- Improve Agent Transfer / Rebalancing
- Threads Management



References

- Safe Shutdown Feature PR (4.19.0):
<https://github.com/apache/cloudstack/pull/6755>
- Management Server Maintenance Mode Wiki:
<https://cwiki.apache.org/confluence/display/CLOUDSTACK/Management+Server+Maintenance+Mode>
- Management Server Maintenance Feature PR (4.21.0 onwards):
<https://github.com/apache/cloudstack/pull/9854>



Q & A



Thank you!

#CSCollab24
@CloudStack

