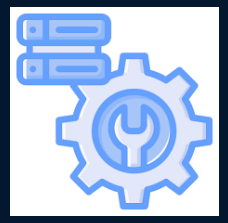
cloud STACK | COLLABORATION CONFERENCE



Management Server Maintenance Mode in CloudStack

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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)

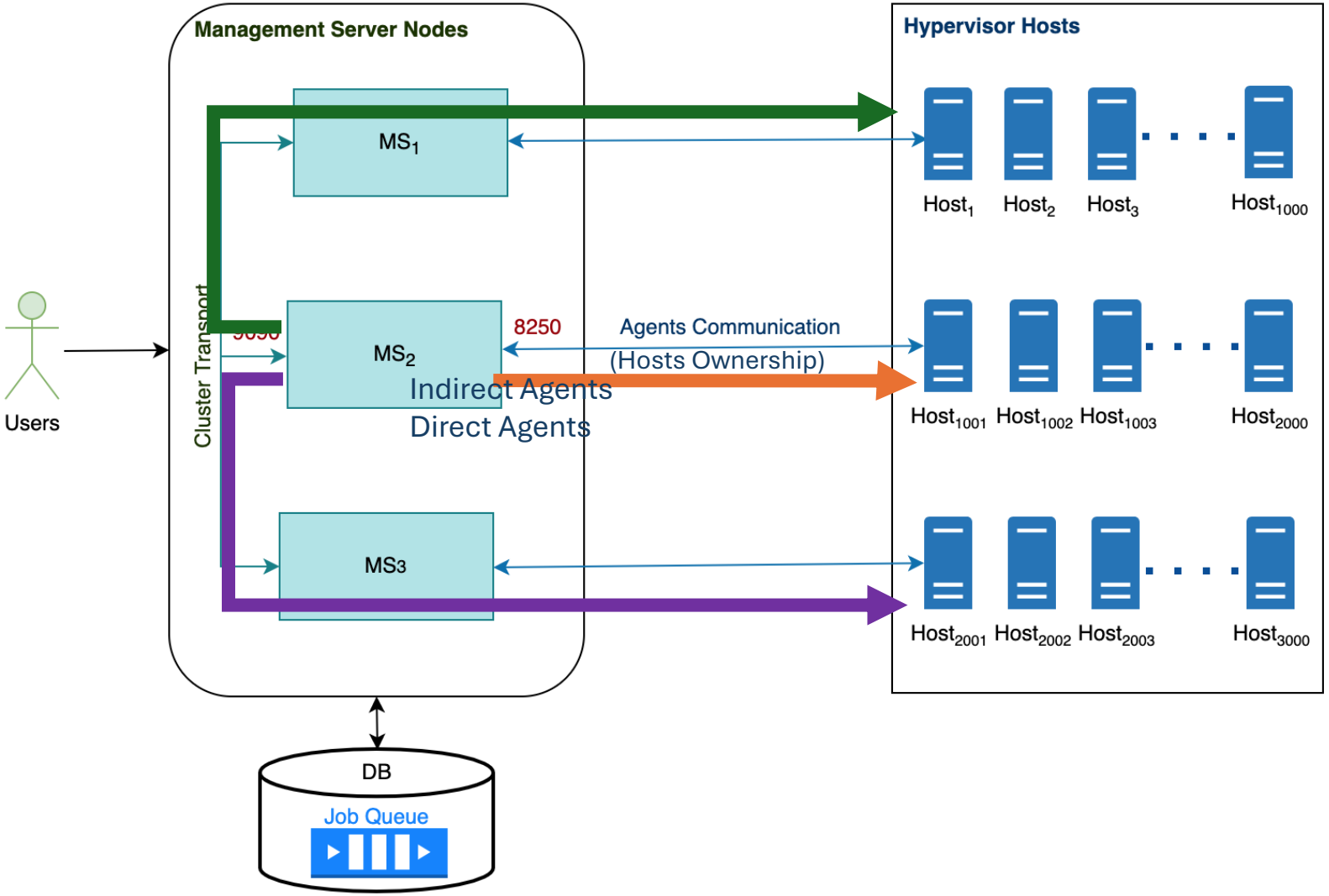
Safe Shutdown of a Management Server
[4.19.0 Onwards]

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

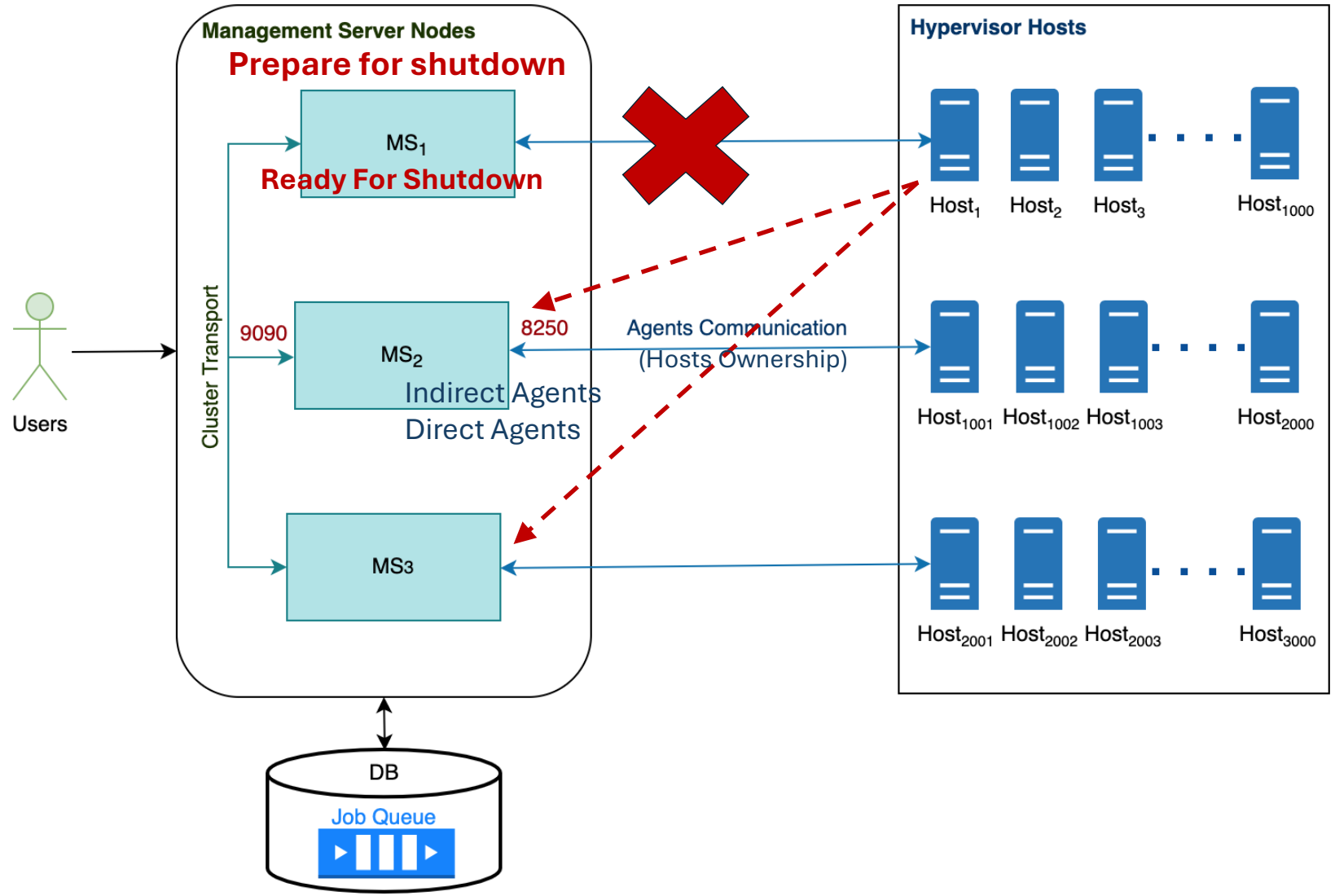
Any Problems with Safe Shutdown?

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

Cluster / Agent Communication



Management Server – Safe Shutdown (4.19.0)

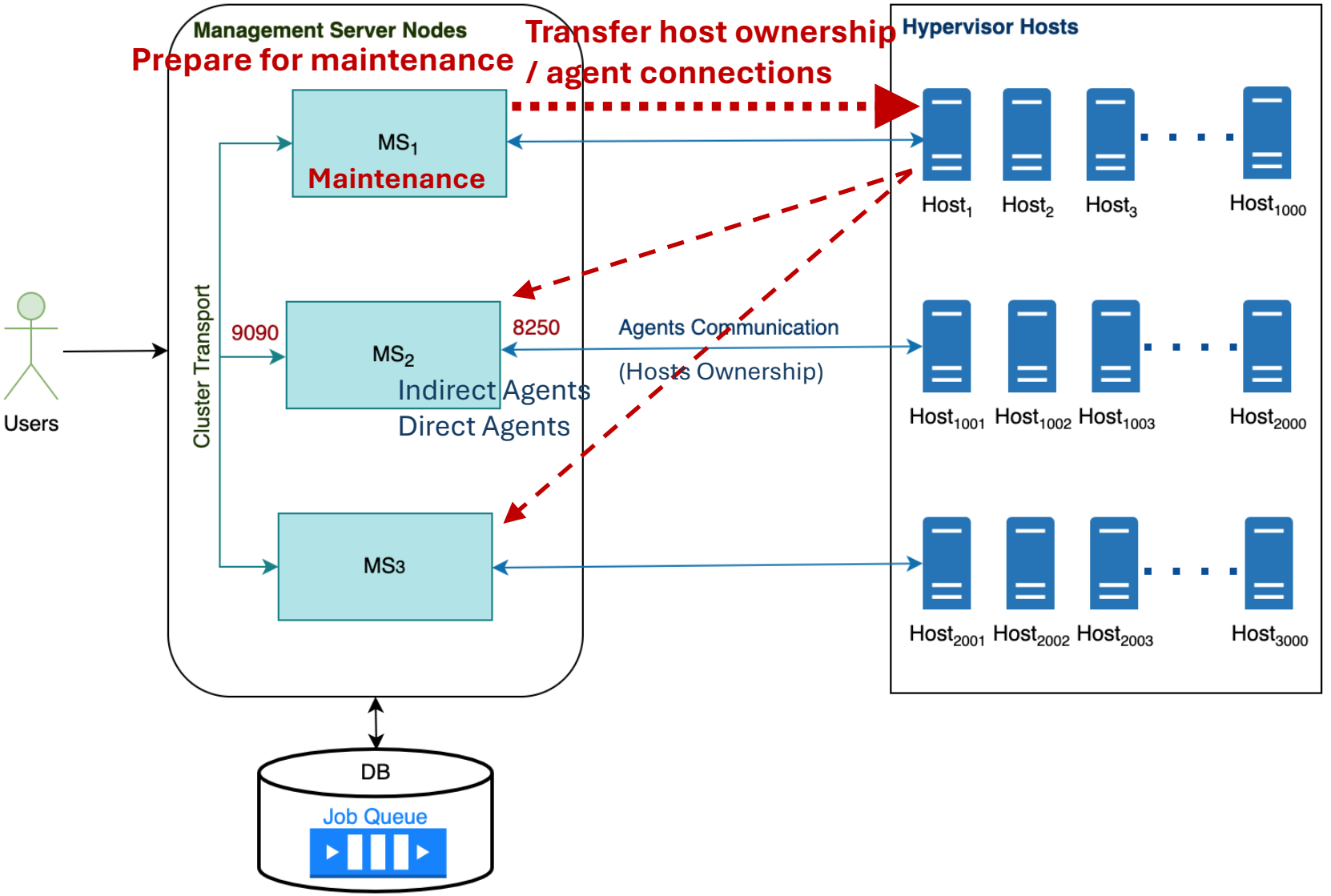


Proposed Solution - Management Server Maintenance Mode

- 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

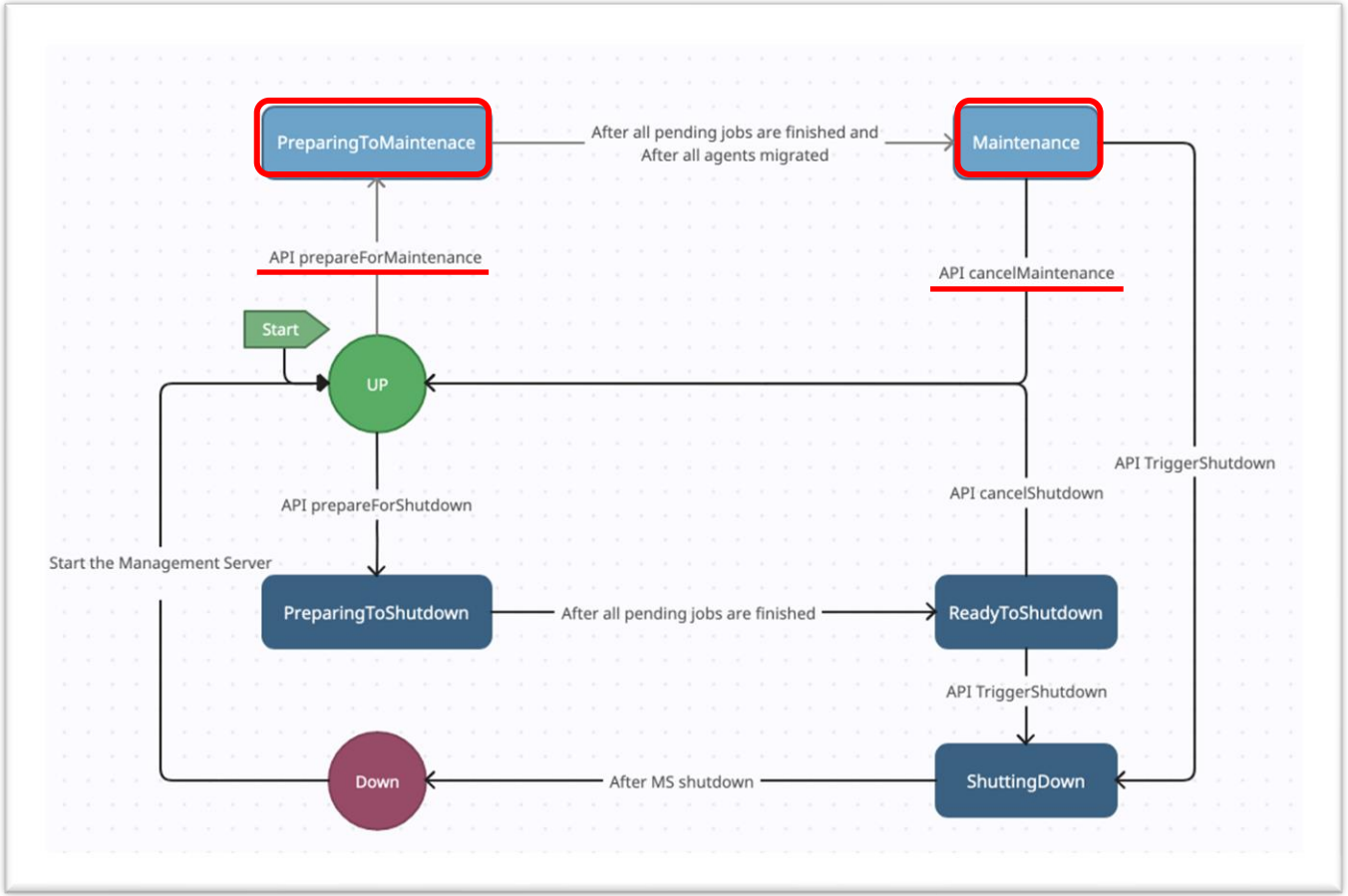
Proposed Solution contd.



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

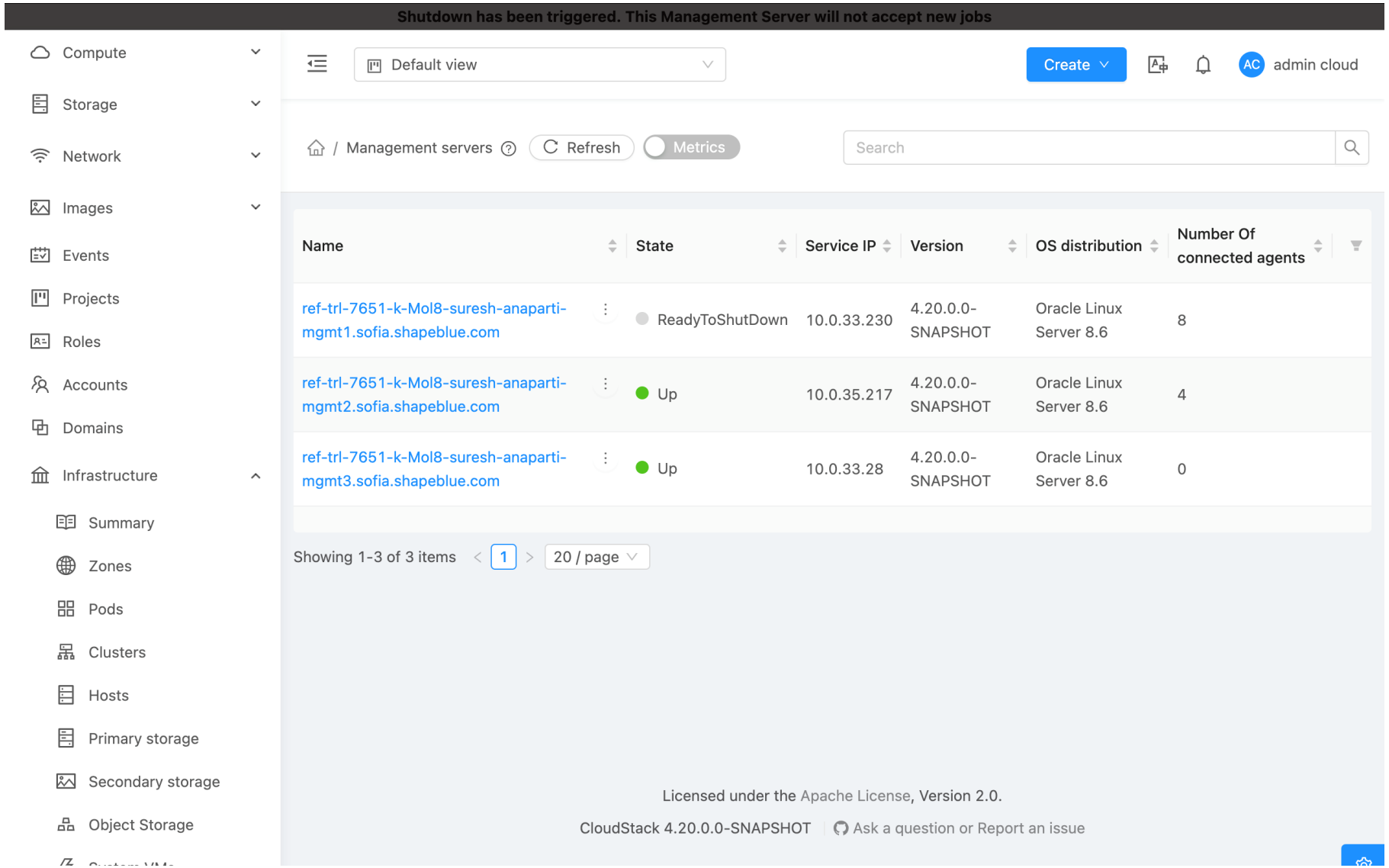
- Safe Shutdown of Management Server
- Maintenance Mode of Management Server

MS – Pending Jobs

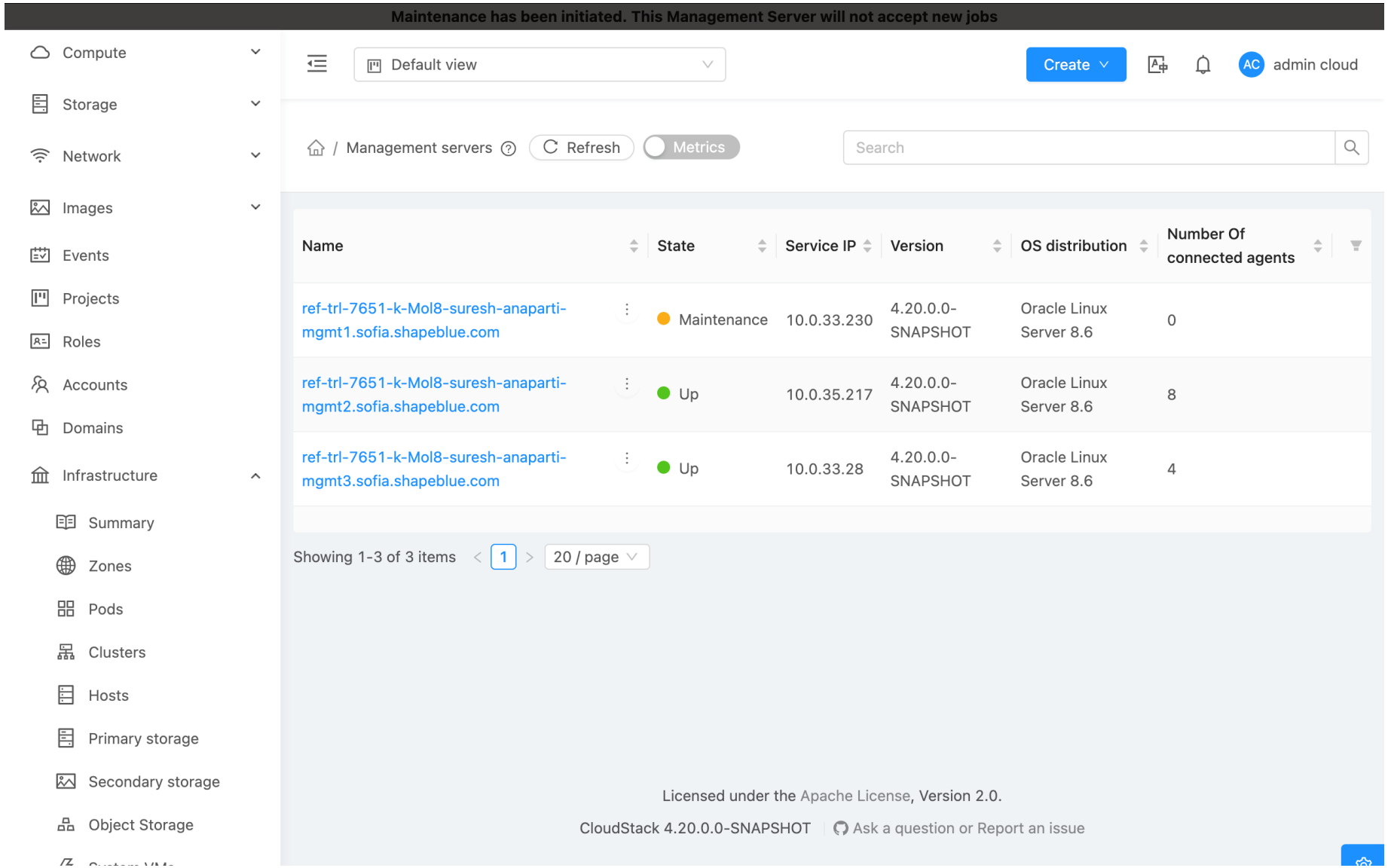
Details | Pending Jobs | Connected Agents | Comments

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



MS – Maintenance Mode



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!

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