Troubleshooting Apache CloudStack Environments

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Agenda

- Network Troubleshooting
  - VLANs, Security Groups
  - Hosts, Virtual Routers
  - VMs, Templates
- Log Analysis
  - Files, keywords
- Examples

VLANs

- Symptoms

- Switch misconfiguration

    - All VLANs trunked by default? Or denied?

- (Physical) router problems for shared networks

- Bad or mislabeled cabling

VLANs, continued

- Hypervisor problems
  - NIC drivers
  - Bonding
- Database hacking

Security Groups

- KVM
- XenServer / XCP
  - Switch backend
  - makegofast.sh
    - Holy cow I'm totally going so fast oh $%&#
- vSphere

"Host" Connectivity

- Hypervisors

- System VMs

- Secondary Storage

Virtual Router (VR, DomR)

– Dnsmasq

– HAProxy

– Password resets

  – Client problems (broken script, DHCP client)

  – Server problems (socat on 8080/tcp)

– User- and Meta-data

  – Apache (/var/www/html/)

Templates

- eth0, or is it eth1? Or maybe asdf123jkl456?
- "sysprep" for Windows, your own solution for Linux
- Prepare in CloudStack environment?

Log Analysis

Management Server

- /var/log/cloudstack/management/

- management-server.log

- apilog.log

- The rest (catalina.out, host-manager.log, etc.)

Hypervisor Hosts

- XenServer / XCP
  - /var/log/SMlog, xensource.log
- KVM
  - /var/log/cloudstack/agent/agent.log
  - /var/log/libvirt/libvirtd.log
  - /var/log/messages
- vSphere
  - vCenter logs

Getting Started

- Job ID (UUID) from API, UI (Firebug), database (async_job)
- Error text from UI/API
- VM name, type of task that failed
- Keywords
  - WARN, ERROR, Exception, Unable, Failed, "submit async"
- Hypervisor errors in management-server.log
  - XS: SR_BACKEND_FAILURE
  - KVM: LibvirtException
  - vSphere: Errors/exceptions that sound VMware-related

Next Steps

- Enable TRACE

- "Forwarding Seq"

- Watch out for the "avoid set"

- Are "nearby" entries relevant?

- Down the rabbit hole

  - Jobs and Sequences

TRACE

– Even more verbose than DEBUG

```
2014-03-27 16:14:32,564 TRACE [db.Transaction.Statement]
(AgentTaskPool-3:null) Preparing: UPDATE storage_pool SET
storage_pool.capacity_bytes=?, storage_pool.used_bytes=? WHERE
storage_pool.id = ?
2014-03-27 16:14:32,565 TRACE [db.Transaction.Statement]
(AgentTaskPool-3:null) Closing:
com.mysql.jdbc.JDBC4PreparedStatement@e50f51a:
UPDATE storage_pool SET storage_pool.capacity_bytes=317068410880,
storage_pool.used_bytes=266986225664 WHERE storage_pool.id = 200
```

Jobs and Sequences

- Job ID

- Sequence ID

2013-11-21 09:46:03,728 DEBUG [cloud.async.AsyncJobManagerImpl] (http-8443-9:null) submit async job-114 = [abde18e3-5645-4658-913f-403871d7e54d], details: AsyncJobVO {id:114, userId: 2, accountId: 2, sessionKey: null, instanceType: VirtualMachine, instanceId: 75, cmd: org.apache.cloudstack.api.command.user.vm.DestroyVMCmd, cmdOriginator: null, cmdInfo: {"id":"1363f9bb-b11e-4c12-b32b-606af41cb9e8","response":"json","sessionkey":"<snip>","cmdEventType":"VM.DESTROY","ctxUserId":"2","httpmethod":"GET","_":"1384987402906","ctxAccountId":"2","expunge":"true","ctxStartEventId":"497"}, cmdVersion: 0, callbackType: 0, callbackAddress: null, status: 0, processStatus: 0, resultCode: 0, result: null, initMsid: 2294569461756, completeMsid: null, lastUpdated: null, lastPolled: null, created: null}

Solutions to consider

- Check capacity (CPU, RAM, disk)
- Check network
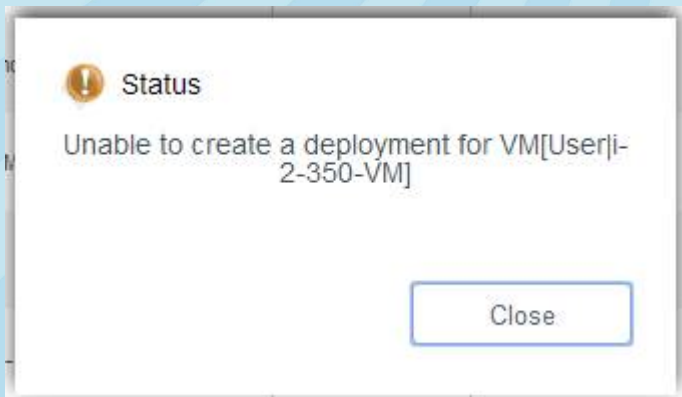- Keep waiting
- Hack the database and retry

Examples

UI Error

– Find the error text from the UI in the log

2014-04-10 21:24:47,339 DEBUG [o.a.c.f.j.i.AsyncJobManagerImpl] (API-Job-Executor-28:job-1726) Complete async job-1726, jobStatus: FAILED, resultCode: 530, result: org.apache.cloudstack.api.response.ExceptionResponse/null/{"uuidList": [],"errorcode":533,"errortext":"Unable to create a deployment for VM[User|i-2-350-VM]"}

UI Error (continued)

– Start looking for an explanation

– What's this? My clusters are in "avoid set"!?

```
2014-04-10 21:24:47,261 DEBUG [c.c.d.FirstFitPlanner] (API-Job-Executor-
28:job-1726 ctx-f5491d11) Removing from the clusterId list these
clusters from avoid set: [1, 2, 5]
```

UI Error (continued)

- Keep looking

- Getting warmer...

```
2014-04-10 21:24:47,257 DEBUG [c.c.d.DeploymentPlanningManagerImpl]
(API-Job-Executor-28:job-1726 ctx-f5491d11) Could not find suitable
Deployment Destination for this VM under any clusters, returning.
```

UI Error (continued)

– Keep looking

– Bingo!!

```
2014-04-10 21:24:47,252 DEBUG [c.c.c.CapacityManagerImpl] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Checking if
host: 17 has enough capacity for requested CPU: 2300 and requested RAM:
1073741824 , cpuOverprovisioningFactor: 3.0
...
2014-04-10 21:24:47,254 DEBUG [c.c.c.CapacityManagerImpl] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Host has
enough CPU and RAM available
...
2014-04-10 21:24:47,255 DEBUG [c.c.a.m.a.i.FirstFitAllocator] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Not using host
17; host has cpu capability? false, host has capacity?true
```

Exceptions

– Check the code

```
2014-04-10 21:24:47,338 INFO  [o.a.c.a.c.u.v.DeployVMCmd] (API-Job-Executor-28:job-1726 ctx-f5491d11) Unable to create
a deployment for VM[User|i-2-350-VM]
com.cloud.exception.InsufficientServerCapacityException: Unable to create a deployment for VM[User|i-2-350-
VM]Scope=interface com.cloud.dc.DataCenter; id=1
        at
org.apache.cloudstack.engine.cloud.entity.api.VMEntityManagerImpl.reserveVirtualMachine(VMEntityManagerImpl.java:210)
        at
org.apache.cloudstack.engine.cloud.entity.api.VirtualMachineEntityImpl.reserve(VirtualMachineEntityImpl.java:196)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3620)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3201)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3187)
        at sun.reflect.GeneratedMethodAccessor764.invoke(Unknown Source)
        at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
        at java.lang.reflect.Method.invoke(Method.java:616)
        at org.springframework.aop.support.AopUtils.invokeJoinpointUsingReflection(AopUtils.java:317)
        at
org.springframework.aop.framework.ReflectiveMethodInvocation.invokeJoinpoint(ReflectiveMethodInvocation.java:183)
        at org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:150)
        at com.cloud.event.ActionEventInterceptor.invoke(ActionEventInterceptor.java:50)
        at org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:161)
        at org.springframework.aop.interceptor.ExposeInvocationInterceptor.invoke(ExposeInvocationInterceptor.java:91)
...
```

Wait for it

– A virtual router took a "long time" to reboot

2012-08-31 12:13:06,333 DEBUG [cloud.async.AsyncJobManagerImpl] (catalina-exec-14:null) submit async job-5473, details: AsyncJobVO {id:5473, userId: 161, accountId: 2, sessionKey: null, instanceType: DomainRouter, instanceId: 4054, cmd: com.cloud.api.commands.RebootRouterCmd, cmdOriginator: null, cmdInfo: {"response":"json","id":"4054","sessionkey":"84uOYXRynfqNDk7QTvYO4Nek238\u003d","ctxUserId":"161","_":"1346411586256","ctxAccountId":"2","ctxStartEventId":"22455"}, cmdVersion: 0, callbackType: 0, callbackAddress: null, status: 0, processStatus: 0, resultCode: 0, result: null, initMsid: 345052684411, completeMsid: null, lastUpdated: null, lastPolled: null, created: null}

Wait for it (continued)

– The job initiated Sequence 1415446919, which waited for
 Sequence 1415446801...

2012-08-31 12:13:06,377 DEBUG [agent.transport.Request] (Job-Executor-131:job-5473) Seq 16-1415446919: Waiting for Seq 1415446801 Scheduling: { Cmd , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 100111, [{"StopCommand": {"isProxy":false,"privateRouterIpAddress":"10.255.105.3","vmName":"r-4054-VM","wait":0}}] }
...
2012-08-31 12:41:14,749 DEBUG [agent.transport.Request] (DirectAgent-238:null) Seq 16-1415446919: Executing: { Cmd , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 100111, [{"StopCommand": {"isProxy":false,"privateRouterIpAddress":"10.255.105.3","vmName":"r-4054-VM","wait":0}}] }

Wait for it (continued)

– Success! (eventually)

```
2012-08-31 12:45:54,197 DEBUG [cloud.async.AsyncJobManagerImpl] (Job-Executor-131:job-5473) Complete async job-5473, jobStatus: 1, resultCode: 0, re...
```

Wait for it (continued)

- What happened?

  - Unrelated VM deployment...

2012-08-31 11:31:59,772 DEBUG [cloud.async.AsyncJobManagerImpl] (catalina-exec-3:null) submit async job-5461, details: AsyncJobVO {id:5461, userId: 188, accountId: 35, sessionKey: null, instanceType: VirtualMachine, instanceId: 4157, cmd: com.cloud.api.commands.DeployVMCmd, cmdOriginator: null, cmdInfo: {"id":"4157","templateId":"210","ctxUserId":"188","hypervisor":"VMWare","serviceOfferingId":"14","ctxAccountId":"35","ctxStartEventId":"22391","apiKey":"asdf","signature":"asdf","displayname":"TESTVM","zoneId":"4"}, cmdVersion: 0, callbackType: 0, callbackAddress: null, status: 0, processStatus: 0, resultCode: 0, result: null, initMsid: 345052684411, completeMsid: null, lastUpdated: null, lastPolled: null, created: null}

Wait for it (continued)

– Template copy sent to host 16

2012-08-31 11:32:10,144 DEBUG [agent.transport.Request] (Job-Executor-112:job-5461) Seq 16-1415446801: Sending { Cmd , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 100111, [{"storage.PrimaryStorageDownloadCommand":{"localPath":"/mnt/5a3dad9f-4c1a-3304-99e7-4975a6943605","poolUuid":"a08b0cef-d377-3d84-82c1-bf04e40bd6e2","poolId":237,"secondaryStorageUrl":"nfs://10.x.x.3/NFS_FS1", "primaryStorageUrl":"nfs://VMFS datastore: /dc/LUN1/dc/LUN1","url":"nfs://10.x.x.3/NFS_FS1/template/tmpl/2/210//1ae89 570-60e5-3872-9ecb-60d90da295c3.ova","format":"OVA","accountId":2,"name":"210-2-ce858db7-4f87-39f8-bf3b-d46dcaf378f1","wait":10800}}] }
...
2012-08-31 12:41:14,749 DEBUG [agent.transport.Request] (DirectAgent-238:null) Seq 16-1415446801: Processing: { Ans: , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 110, [{"storage.PrimaryStorageDownloadAnswer": {"installPath":"d40cb5b0-14c9-3ca3-a19b-

Try a shortcut

– Destroying a router "didn't work" (right away)

– Database hack "solved it"

```
2012-06-13 09:05:36,321 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Destroying vm VM[DomainRouter|r-9218-VM]
...
2012-06-13 09:05:36,387 DEBUG [agent.transport.Request] (Job-Executor-
88:job-135158) Seq 57-57802800: Sending { Cmd , MgmtId: 345050807280, via:
57, Ver: v1, Flags: 100111, [{"storage.DestroyCommand":{"vmName":"r-9218-
VM","volume":{"id":10062,"name":"ROOT-
9218","mountPoint":"/pools/HKPool/kvm-primary","path":"/mnt/25a4ee3a-7463-
3bca-9e0e-cb0418f91557/09284c44-a940-4ec8-bec4-
a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFi
lesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-
cb0418f91557","deviceId":0},"wait":0}}] }
```

Try a shortcut (continued)

– Actually, the job completed successfully

```
2012-06-13 09:44:20,863 DEBUG [agent.transport.Request] (Job-Executor-
88:job-135158) Seq 57-57802800: Received: { Ans: , MgmtId: 345050807280,
via: 57, Ver: v1, Flags: 110, { Answer } }
2012-06-13 09:44:20,863 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Cleanup succeeded. Details Success
2012-06-13 09:44:20,883 DEBUG [cloud.storage.StorageManagerImpl] (Job-
Executor-88:job-135158) Volume successfully expunged from 208
2012-06-13 09:44:20,883 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Expunged VM[DomainRouter|r-9218-VM]
```

Try a shortcut (continued)

- Check agent.log... hmmm...

```
2012-06-13 09:00:43,501 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Lost connection to the server. Dealing with the remaining commands...
2012-06-13 09:00:48,502 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Reconnecting...
2012-06-13 09:00:48,520 INFO [utils.nio.NioClient] (Agent-Selector:null)
Connecting to 192.168.114.102:8250
2012-06-13 09:00:48,799 ERROR [utils.nio.NioConnection] (Agent-
Selector:null) Unable to connect to remote
...
2012-06-13 09:14:48,275 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Reconnecting...
2012-06-13 09:14:48,276 INFO [utils.nio.NioClient] (Agent-Selector:null)
Connecting to 192.168.114.102:8250
2012-06-13 09:14:50,936 INFO [utils.nio.NioClient] (Agent-Selector:null)
SSL: Handshake done
```

Try a shortcut (continued)

- The Sequence eventually shows up (see agent.log) and succeeds!

2012-06-13 21:44:20,660 DEBUG [cloud.agent.Agent] (agentRequest-Handler-4:null) Request:Seq 57-57802800: { Cmd , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 100111, [{"storage.DestroyCommand":{"vmName":"r-9218-VM","volume":{"id":10062,"name":"ROOT-9218","mountPoint":"/pools/HKPool/kvm-primary","path":"/mnt/25a4ee3a-7463-3bca-9e0e-cb0418f91557/09284c44-a940-4ec8-bec4-a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFilesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-cb0418f91557","deviceId":0},"wait":0}}] }
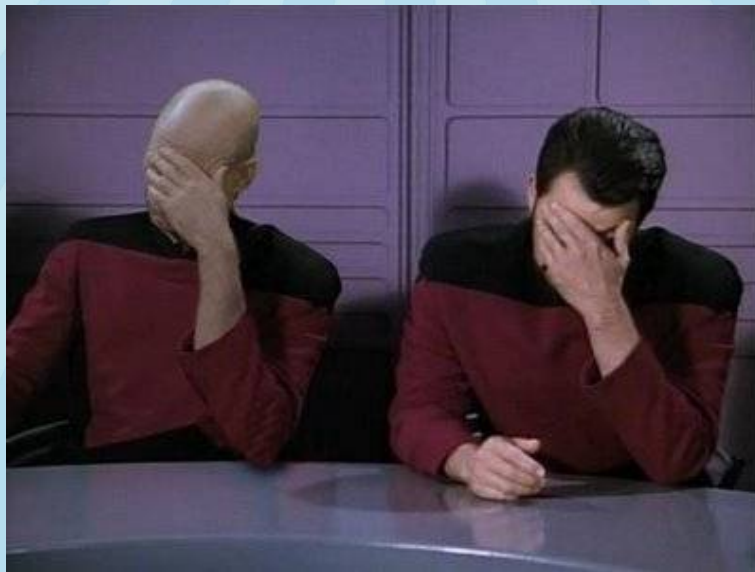...
2012-06-13 21:44:20,672 DEBUG [cloud.agent.Agent] (agentRequest-Handler-4:null) Seq 57-57802800: { Ans: , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 110, [{"Answer":{"result":true,"details":"Success","wait":0}}] }

Try a shortcut (continued)

– 20 minutes after the first attempt...

```
2012-06-13 09:26:27,038 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-100:job-135208) Destroying vm VM[DomainRouter|r-9218-VM]
```

Try a shortcut (continued)

– The new Sequence has to wait for the original one!

2012-06-13 09:26:27,050 DEBUG [agent.transport.Request] (Job-Executor-100:job-135208) Seq 57-57802807: Waiting for Seq 57802800 Scheduling: { Cmd , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 100111, [{"storage.DestroyCommand":{"vmName":"r-9218-VM","volume": {"id":10062,"name":"ROOT-9218","mountPoint":"/pools/HKPool/kvm-primary","path":"/mnt/25a4ee3a-7463-3bca-9e0e-cb0418f91557/09284c44-a940-4ec8-bec4-a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFilesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-cb0418f91557","deviceId":0},"wait":0}}] }

Try a shortcut (continued)

- New Sequence sent after original one succeeded.

  - New Sequence fails since original one succeeded.

```
2012-06-13 09:44:29,004 DEBUG [agent.manager.AgentAttache] (AgentManager-
Handler-9:null) Seq 57-57802807: Sending now. is current sequence.
...
2012-06-13 09:44:31,788 DEBUG [agent.transport.Request] (AgentManager-
Handler-16:null) Seq 57-57802807: Processing: { Ans: , MgmtId:
345050807280, via: 57, Ver: v1, Flags: 110, [{"Answer":
{"result":false,"details":"org.libvirt.LibvirtException: Storage volume
not found: no storage vol with matching key","wait":0}}] }
```

Q&A

Subsection Title

- Click to edit Master text style

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Agenda

- Network Troubleshooting
  - VLANs, Security Groups
  - Hosts, Virtual Routers
  - VMs, Templates
- Log Analysis
  - Files, keywords
- Examples

VLANs

- Symptoms
- Switch misconfiguration
    - All VLANs trunked by default? Or denied?
- (Physical) router problems for shared networks
- Bad or mislabeled cabling

Symptom – cannot ping across hosts, VMs cannot get DHCP sometimes (when DHCP server is on another host).

Detection – Where does the traffic stop?

XS (bridge) / KVM: tcpdump; ESXi, XS (OVS): dummy VMs? Check ARP / MAC address table.

Switch misconfiguration – common.

Confirm switchport is in trunk mode, not access; confirm whether VLANs are actually allowed.

Cabling – traffic "randomly" dropped, traffic showing up on wrong switchports or not at all.

Solution – Fix the switch/router config, replace switches/router/cables.

VLANs, continued

- Hypervisor problems
  - NIC drivers
  - Bonding
- Database hacking

Bad drivers – What, you actually want to use VLANs?
NIC bonding:
Symptoms – similar to switch misconfiguration.
Detection – NIC drivers / bonding – similar to switch misconfiguration, but traffic stopped elsewhere. Bonding – check config (XS), check if traffic is dropped on the bond interface (ifconfig); disable one slave NIC, or force failover; confirm subinterfaces are on the right interface (the bond); change bond mode (active-passive vs. SLB).
DB hacking – "wrong" VLANs in use (not all tables hacked "correctly").
Solutions – Update drivers, replace NICs, unhack db.

Security Groups

- KVM
- XenServer / XCP
  - Switch backend
  - makegofast.sh
    - Holy cow I'm totally going so fast oh $%&#
- vSphere

Symptoms – VMs inaccessible (ingress), cannot reach something (egress) (partial, complete).

KVM/XS – check iptables/ebtables.

XS – Confirm bridge backend for all XS hosts

Don't "optimize" XS. It only looks like a CentOS machine. General optimization doesn't apply.

vSphere – no SG support.

SGs are at the host level – migrate VM to another host and see what happens.

"Host" Connectivity

- Hypervisors
- System VMs
- Secondary Storage

Symptoms – connectivity, HA errors in log

Other network problems – firewall blocking ports; "weird" problems with application layer firewall (e.g. ping, nmap to 22 work, ssh fails); bad load balancer (for use with "host" Global Setting)

Requirements – Mgmt to hypervisor, vice versa – varies by hypervisor

XS: SSH (root), HTTPS; KVM: SSH; vSphere: 443/tcp to vCenter

System VMs to mgmt – 8250/tcp ("host" param)

System VMs to Internet (ping gateway)

Mgmt to system VMs – ssh via hypervisor (KVM, XS) or direct (vSphere) – 3922/tcp

Mgmt to sec store, hypervisors to sec store – varies by hypervisor; SSVM to sec store

Mgmt to Mgmt (w/ multi-Mgmt) – 9090, 8250/tcp

CPVM must reach mgmt server and hypervisors (management/private network) and end-user (public network)

CPVM proxies VNC from hypervisors to end-user

Public IPs must be accessible to end-users

Virtual Router (VR, DomR)

- Dnsmasq
- HAProxy
- Password resets
  - Client problems (broken script, DHCP client)
  - Server problems (socat on 8080/tcp)
- User- and Meta-data
  - Apache (/var/www/html/)

DNS/DHCP provided by Dnsmasq.
HAProxy. LB function.
Reset script problems – Check DHCP
   client and version for the template/VM.
Check domR for daemon problems
   (8080/tcp on virtual router / socat
   process, serve_password.sh)
User/Meta-data - Apache on 80/tcp
   (Standard location - /var/www/html)

Templates

- eth0, or is it eth1? Or maybe asdf123jkl456?
- "sysprep" for Windows, your own solution for Linux
- Prepare in CloudStack environment?

Templates preparation should follow best practices from OS vendor.

Use "sysprep" for Windows, scripts / deployment tools for Linux.

Linux suggestions – clear udev persistent network device names, SSH keys, bash history, logs, temp files.

It can be easier to prepare templates outside of CS (especially PV mode Ubuntu (XS) much easier) not always an option (e.g. slow connectivity to CS environment).

Setup password reset script.

Log Analysis

Management Server

- /var/log/cloudstack/management/
- management-server.log
- apilog.log
- The rest (catalina.out, host-manager.log, etc.)

management-server.log and apilog.log most useful
catalina.out will contain thread dump
access_log to find out who did what
rest not usually useful

Hypervisor Hosts

- XenServer / XCP
  - /var/log/SMlog, xensource.log
- KVM
  - /var/log/cloudstack/agent/agent.log
  - /var/log/libvirt/libvirtd.log
  - /var/log/messages
- vSphere
  - vCenter logs

XS – CS logs mainly to SMlog – Storage Manager log. Errors encountered by hypervisor often go to xensource.log.

KVM – agent.log for CloudStack errors – note: not DEBUG by default; libvirtd.log for libvirt errors.

vSphere – host logs not useful, check vCenter logs.

XS/KVM - /var/log/messages can be useful – libvirt and qemu errors – host problems (power failure).

Getting Started

- Job ID (UUID) from API, UI (Firebug), database (async_job)
- Error text from UI/API
- VM name, type of task that failed
- Keywords
  - WARN, ERROR, Exception, Unable, Failed, "submit async"
- Hypervisor errors in management-server.log
  - XS: SR_BACKEND_FAILURE
  - KVM: LibvirtException
  - vSphere: Errors/exceptions that sound VMware-related

CS problems usually have something error-related to grep for – WARN, ERROR, etc.

Often too many false positives to grep for errors in general.

Also, grep can removes useful entries

I normally use "less".

If there is a specific problem, grep for things specific to it. VM name, task type, etc.

UI/API errors can be useful to grep for – Quote the exact text for best results.

Next Steps

- Enable TRACE
- "Forwarding Seq"
- Watch out for the "avoid set"
- Are "nearby" entries relevant?
- Down the rabbit hole
  - Jobs and Sequences

With multiple management servers, sequences started on one server can be forwarded to another. Check the logs on the other server.

Hosts in avoid set is not a problem itself, rather it means there was already a problem (so look earlier in the log)

Avoid set status is temporary (per job)

Nearby entries NOT necessarily relevant – look for something to connect them

TRACE

– Even more verbose than DEBUG

```
2014-03-27 16:14:32,564 TRACE [db.Transaction.Statement]
(AgentTaskPool-3:null) Preparing: UPDATE storage_pool SET
storage_pool.capacity_bytes=?, storage_pool.used_bytes=? WHERE
storage_pool.id = ?
2014-03-27 16:14:32,565 TRACE [db.Transaction.Statement]
(AgentTaskPool-3:null) Closing:
com.mysql.jdbc.JDBC4PreparedStatement@e50f51a:
UPDATE storage_pool SET storage_pool.capacity_bytes=317068410880,
storage_pool.used_bytes=266986225664 WHERE storage_pool.id = 200
```

Jobs and Sequences

- Job ID
- Sequence ID

```
2013-11-21 09:46:03,728 DEBUG [cloud.async.AsyncJobManagerImpl] (http-
8443-9:null) submit async job-114 = [ abde18e3-5645-4658-913f-403871d7e54d
], details: AsyncJobVO {id:114, userId: 2, accountId: 2, sessionKey: null,
instanceType: VirtualMachine, instanceId: 75, cmd:
org.apache.cloudstack.api.command.user.vm.DestroyVMCmd, cmdOriginator:
null, cmdInfo: {"id":"1363f9bb-b11e-4c12-b32b-
606af41cb9e8","response":"json","sessionkey":"<snip>","cmdEventType":"VM.D
ESTROY","ctxUserId":"2","httpmethod":"GET","_":"1384987402906","ctxAccount
Id":"2","expunge":"true","ctxStartEventId":"497"}, cmdVersion: 0,
callbackType: 0, callbackAddress: null, status: 0, processStatus: 0,
resultCode: 0, result: null, initMsid: 2294569461756, completeMsid: null,
lastUpdated: null, lastPolled: null, created: null}
```

Jobs can contain sequences.

Sequences can depend on each other, even across jobs – this can make a job get "stuck".

They can go to hosts - Look for "Executing request" and "Response received".

Or to other management servers - Look for "Forwarding Seq <id>".

This entry from CS 4.2 has the job ID (a UUID) that would be available via API or UI (via Firebug), or in apilog.log. This might have been changed in CS 4.3.

Solutions to consider

- Check capacity (CPU, RAM, disk)
- Check network
- Keep waiting
- Hack the database and retry

Capacity – beware, there may be errors about capacity that are not the real error. Look at the job from beginning to end before making a conclusion.

Network – "no route to host"; "connection refused" - "it's the network".

Patience – they don't say it's a virtue for nothing.
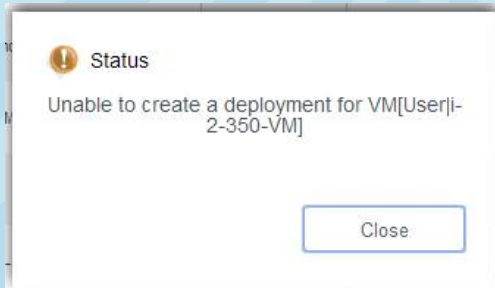
Please, don't hack the database.

Examples

UI Error

– Find the error text from the UI in the log


```
2014-04-10 21:24:47,339 DEBUG [o.a.c.f.j.i.AsyncJobManagerImpl] (API-
Job-Executor-28:job-1726) Complete async job-1726, jobStatus: FAILED,
resultCode: 530, result:
org.apache.cloudstack.api.response.ExceptionResponse/null/{"uuidList":
[],"errorcode":533,"errortext":"Unable to create a deployment for
VM[User|i-2-350-VM]"}
```

UI Error (continued)

– Start looking for an explanation

– What's this? My clusters are in "avoid set"!?

```
2014-04-10 21:24:47,261 DEBUG [c.c.d.FirstFitPlanner] (API-Job-Executor-
28:job-1726 ctx-f5491d11) Removing from the clusterId list these
clusters from avoid set: [1, 2, 5]
```

UI Error (continued)

– Keep looking

  – Getting warmer...

```
2014-04-10 21:24:47,257 DEBUG [c.c.d.DeploymentPlanningManagerImpl]
(API-Job-Executor-28:job-1726 ctx-f5491d11) Could not find suitable
Deployment Destination for this VM under any clusters, returning.
```

UI Error (continued)

- Keep looking

- Bingo!!

```
2014-04-10 21:24:47,252 DEBUG [c.c.c.CapacityManagerImpl] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Checking if
host: 17 has enough capacity for requested CPU: 2300 and requested RAM:
1073741824 , cpuOverprovisioningFactor: 3.0
...
2014-04-10 21:24:47,254 DEBUG [c.c.c.CapacityManagerImpl] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Host has
enough CPU and RAM available
...
2014-04-10 21:24:47,255 DEBUG [c.c.a.m.a.i.FirstFitAllocator] (API-Job-
Executor-28:job-1726 ctx-f5491d11 FirstFitRoutingAllocator) Not using host
17; host has cpu capability? false, host has capacity?true
```

Exceptions

– Check the code

```
2014-04-10 21:24:47,338 INFO  [o.a.c.a.c.u.v.DeployVMCmd] (API-Job-Executor-28:job-1726 ctx-f5491d11) Unable to create
a deployment for VM[User|i-2-350-VM]
com.cloud.exception.InsufficientServerCapacityException: Unable to create a deployment for VM[User|i-2-350-
VM]Scope=interface com.cloud.dc.DataCenter; id=1
        at
org.apache.cloudstack.engine.cloud.entity.api.VMEntityManagerImpl.reserveVirtualMachine(VMEntityManagerImpl.java:210)
        at
org.apache.cloudstack.engine.cloud.entity.api.VirtualMachineEntityImpl.reserve(VirtualMachineEntityImpl.java:196)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3620)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3201)
        at com.cloud.vm.UserVmManagerImpl.startVirtualMachine(UserVmManagerImpl.java:3187)
        at sun.reflect.GeneratedMethodAccessor764.invoke(Unknown Source)
        at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
        at java.lang.reflect.Method.invoke(Method.java:616)
        at org.springframework.aop.support.AopUtils.invokeJoinpointUsingReflection(AopUtils.java:317)
        at
org.springframework.aop.framework.ReflectiveMethodInvocation.invokeJoinpoint(ReflectiveMethodInvocation.java:183)
        at org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:150)
        at com.cloud.event.ActionEventInterceptor.invoke(ActionEventInterceptor.java:50)
        at org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:161)
        at org.springframework.aop.interceptor.ExposeInvocationInterceptor.invoke(ExposeInvocationInterceptor.java:91)
...
```

Wait for it

– A virtual router took a "long time" to reboot

2012-08-31 12:13:06,333 DEBUG [cloud.async.AsyncJobManagerImpl] (catalina-exec-14:null) submit async job-5473, details: AsyncJobVO {id:5473, userId: 161, accountId: 2, sessionKey: null, instanceType: DomainRouter, instanceId: 4054, cmd: com.cloud.api.commands.RebootRouterCmd, cmdOriginator: null, cmdInfo: {"response":"json","id":"4054","sessionkey":"84uOYXRynfqNDk7QTvYO4Nek238\u003d","ctxUserId":"161","_":"1346411586256","ctxAccountId":"2","ctxStartEventId":"22455"}, cmdVersion: 0, callbackType: 0, callbackAddress: null, status: 0, processStatus: 0, resultCode: 0, result: null, initMsid: 345052684411, completeMsid: null, lastUpdated: null, lastPolled: null, created: null}

Wait for it (continued)

– The job initiated Sequence 1415446919, which waited for
Sequence 1415446801...

```
2012-08-31 12:13:06,377 DEBUG [agent.transport.Request] (Job-Executor-
131:job-5473) Seq 16-1415446919: Waiting for Seq 1415446801 Scheduling:
{ Cmd , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 100111,
[{"StopCommand":
{"isProxy":false,"privateRouterIpAddress":"10.255.105.3","vmName":"r-4054-
VM","wait":0}}] }
...
2012-08-31 12:41:14,749 DEBUG [agent.transport.Request] (DirectAgent-
238:null) Seq 16-1415446919: Executing: { Cmd , MgmtId: 345052684411, via:
16, Ver: v1, Flags: 100111, [{"StopCommand":
{"isProxy":false,"privateRouterIpAddress":"10.255.105.3","vmName":"r-4054-
VM","wait":0}}] }
```

Wait for it (continued)

– Success! (eventually)

```
2012-08-31 12:45:54,197 DEBUG [cloud.async.AsyncJobManagerImpl] (Job-
Executor-131:job-5473) Complete async job-5473, jobStatus: 1, resultCode:
0, re...
```

Wait for it (continued)

- What happened?

  - Unrelated VM deployment...

2012-08-31 11:31:59,772 DEBUG [cloud.async.AsyncJobManagerImpl] (catalina-exec-3:null) submit async job-5461, details: AsyncJobVO {id:5461, userId: 188, accountId: 35, sessionKey: null, instanceType: VirtualMachine, instanceId: 4157, cmd: com.cloud.api.commands.DeployVMCmd, cmdOriginator: null, cmdInfo: {"id":"4157","templateId":"210","ctxUserId":"188","hypervisor":"VMWare","serviceOfferingId":"14","ctxAccountId":"35","ctxStartEventId":"22391","apiKey":"asdf","signature":"asdf","displayname":"TESTVM","zoneId":"4"}, cmdVersion: 0, callbackType: 0, callbackAddress: null, status: 0, processStatus: 0, resultCode: 0, result: null, initMsid: 345052684411, completeMsid: null, lastUpdated: null, lastPolled: null, created: null}

Wait for it (continued)

– Template copy sent to host 16

2012-08-31 11:32:10,144 DEBUG [agent.transport.Request] (Job-Executor-112:job-5461) Seq 16-1415446801: Sending { Cmd , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 100111, [{"storage.PrimaryStorageDownloadCommand":{"localPath":"/mnt/5a3dad9f-4c1a-3304-99e7-4975a6943605","poolUuid":"a08b0cef-d377-3d84-82c1-bf04e40bd6e2","poolId":237,"secondaryStorageUrl":"nfs://10.x.x.3/NFS_FS1", "primaryStorageUrl":"nfs://VMFS datastore: /dc/LUN1/dc/LUN1","url":"nfs://10.x.x.3/NFS_FS1/template/tmpl/2/210//1ae89 570-60e5-3872-9ecb-60d90da295c3.ova","format":"OVA","accountId":2,"name":"210-2-ce858db7-4f87-39f8-bf3b-d46dcaf378f1","wait":10800}}] }
...
2012-08-31 12:41:14,749 DEBUG [agent.transport.Request] (DirectAgent-238:null) Seq 16-1415446801: Processing: { Ans: , MgmtId: 345052684411, via: 16, Ver: v1, Flags: 110, [{"storage.PrimaryStorageDownloadAnswer": {"installPath":"d40cb5b0-14c9-3ca3-a19b-

Try a shortcut

- Destroying a router "didn't work" (right away)
- Database hack "solved it"

```
2012-06-13 09:05:36,321 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Destroying vm VM[DomainRouter|r-9218-VM]
...
2012-06-13 09:05:36,387 DEBUG [agent.transport.Request] (Job-Executor-
88:job-135158) Seq 57-57802800: Sending { Cmd , MgmtId: 345050807280, via:
57, Ver: v1, Flags: 100111, [{"storage.DestroyCommand":{"vmName":"r-9218-
VM","volume":{"id":10062,"name":"ROOT-
9218","mountPoint":"/pools/HKPool/kvm-primary","path":"/mnt/25a4ee3a-7463-
3bca-9e0e-cb0418f91557/09284c44-a940-4ec8-bec4-
a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFi
lesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-
cb0418f91557","deviceId":0},"wait":0}}] }
```

The admin reported they tried to destroy a virtual router. "It didn't work" and the router was "stuck" in Stopping state.

Then they hacked the db to put virtual router back to "Running" state, tried to destroy the router again, and it worked.

Why did it fail the first time?

Try a shortcut (continued)

– Actually, the job completed successfully

```
2012-06-13 09:44:20,863 DEBUG [agent.transport.Request] (Job-Executor-
88:job-135158) Seq 57-57802800: Received: { Ans: , MgmtId: 345050807280,
via: 57, Ver: v1, Flags: 110, { Answer } }
2012-06-13 09:44:20,863 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Cleanup succeeded. Details Success
2012-06-13 09:44:20,883 DEBUG [cloud.storage.StorageManagerImpl] (Job-
Executor-88:job-135158) Volume successfully expunged from 208
2012-06-13 09:44:20,883 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-88:job-135158) Expunged VM[DomainRouter|r-9218-VM]
```

Try a shortcut (continued)

– Check agent.log... hmmm...

```
2012-06-13 09:00:43,501 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Lost connection to the server. Dealing with the remaining commands...
2012-06-13 09:00:48,502 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Reconnecting...
2012-06-13 09:00:48,520 INFO [utils.nio.NioClient] (Agent-Selector:null)
Connecting to 192.168.114.102:8250
2012-06-13 09:00:48,799 ERROR [utils.nio.NioConnection] (Agent-
Selector:null) Unable to connect to remote
...
2012-06-13 09:14:48,275 INFO [cloud.agent.Agent] (Agent-Handler-1:null)
Reconnecting...
2012-06-13 09:14:48,276 INFO [utils.nio.NioClient] (Agent-Selector:null)
Connecting to 192.168.114.102:8250
2012-06-13 09:14:50,936 INFO [utils.nio.NioClient] (Agent-Selector:null)
SSL: Handshake done
```

Try a shortcut (continued)

– The Sequence eventually shows up (see agent.log) and succeeds!

2012-06-13 21:44:20,660 DEBUG [cloud.agent.Agent] (agentRequest-Handler-4:null) Request:Seq 57-57802800: { Cmd , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 100111, [{"storage.DestroyCommand":{"vmName":"r-9218-VM","volume":{"id":10062,"name":"ROOT-9218","mountPoint":"/pools/HKPool/kvm-primary","path":"/mnt/25a4ee3a-7463-3bca-9e0e-cb0418f91557/09284c44-a940-4ec8-bec4-a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFilesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-cb0418f91557","deviceId":0},"wait":0}}] }
...
2012-06-13 21:44:20,672 DEBUG [cloud.agent.Agent] (agentRequest-Handler-4:null) Seq 57-57802800: { Ans: , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 110, [{"Answer":{"result":true,"details":"Success","wait":0}}] }

Try a shortcut (continued)
  – 20 minutes after the first attempt...

```
2012-06-13 09:26:27,038 DEBUG [cloud.vm.VirtualMachineManagerImpl] (Job-
Executor-100:job-135208) Destroying vm VM[DomainRouter|r-9218-VM]
```

Try a shortcut (continued)

– The new Sequence has to wait for the original one!

2012-06-13 09:26:27,050 DEBUG [agent.transport.Request] (Job-Executor-100:job-135208) Seq 57-57802807: Waiting for Seq 57802800 Scheduling:
{ Cmd , MgmtId: 345050807280, via: 57, Ver: v1, Flags: 100111,
[{"storage.DestroyCommand":{"vmName":"r-9218-VM","volume":
{"id":10062,"name":"ROOT-9218","mountPoint":"/pools/HKPool/kvm-
primary","path":"/mnt/25a4ee3a-7463-3bca-9e0e-cb0418f91557/09284c44-a940-
4ec8-bec4-
a44bf63f3576","size":2097152000,"type":"ROOT","storagePoolType":"NetworkFi
lesystem","storagePoolUuid":"25a4ee3a-7463-3bca-9e0e-
cb0418f91557","deviceId":0},"wait":0}}] }

Try a shortcut (continued)

– New Sequence sent after original one succeeded.

– New Sequence fails since original one succeeded.

```
2012-06-13 09:44:29,004 DEBUG [agent.manager.AgentAttache] (AgentManager-
Handler-9:null) Seq 57-57802807: Sending now. is current sequence.
...
2012-06-13 09:44:31,788 DEBUG [agent.transport.Request] (AgentManager-
Handler-16:null) Seq 57-57802807: Processing: { Ans: , MgmtId:
345050807280, via: 57, Ver: v1, Flags: 110, [{"Answer":
{"result":false,"details":"org.libvirt.LibvirtException: Storage volume
not found: no storage vol with matching key","wait":0}}] }
```

Moral – figure out what is actually happening before jumping to conclusions

Solve the real problem (in this case, network connectivity for the host) instead of wasting time hacking the database

Q&A

Subsection Title

– Click to edit Master text style