CloudStack Troubleshooting

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About me

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Agenda

- General troubleshooting
- System VM troubleshooting
- Tips and tools
- Q & A

General troubleshooting

General troubleshooting - Theory

Useful file on management server

- Management server log
  - /var/log/cloudstack/management/management-server.log
  - /var/log/cloudstack/management/apilog.log

- Database configuration fie:
  - /etc/cloudstack/management/db.properties

- Log levels
  - /etc/cloudstack/management/log4j-cloud.xml

How to locate the log

- # find / -name *api*log*

General troubleshooting - Theory

Useful file on hypervisor

- XenServer
  - /var/log/messages
  - /var/log/xensource.log
  - /var/log/SMlog
- KVM:
  - /var/log/cloudstack/agent/agent.log
- vSphere logs
  - /var/log/hostd.log
  - /var/log/vpxa.log

General troubleshooting - Example 1

Common issue: Unable to create a deployment for VM

General troubleshooting - Example 1

What does VM need in deployment:

- Template
- Service offering
- Disk offering
- Network

General troubleshooting - Example 1

Troubleshooting process:

- Issues that can be reproduced:
  - tailf /var/log/cloudstack/management/management-server.log
  - Redeploy VM
  - View log from “unable to” to the first record of API call
  - Locate which resource is unavailable
- Issues that don’t exist and cause finding
  - grep –i “unable to ” /var/log/cloudstack/management/management-server.log
  - grep –i “job-202” /var/log/cloudstack/management/management-server.log

General troubleshooting - Example 1

Identify error cause:

- Error as UI display:

  Line 696: 2015-03-28 04:31:15,439 ERROR [c.c.v.VmWorkJobDispatcher] (Work-Job-Executor-6:ctx-566c4733 job-201/job-202) (logid:1b3d2a8d) Unable to complete AsyncJobVO {id:202, userId: 2, accountId: 2, instanceType: null, instanceId: null, cmd: com.cloud.vm.VmWorkStart, cmdVersion: 0, status: IN_PROGRESS, processStatus: 0, resultCode: 0, result: null, initMsid: 345050463789, completeMsid: null, lastUpdated: null, lastPolled: null, created: Sat Mar 28 04:30:55 CST 2015}, job origin:201

  com.cloud.exception.InsufficientServerCapacityException: Unable to create a deployment for VM[User|i-2-24-VM]Scope=interface com.cloud.dc.DataCenter; id=1

- The actual error is

  Line 634: 2015-03-28 04:31:15,279 INFO [c.c.v.VirtualMachineManagerImpl] (Work-Job-Executor-6:ctx-566c4733 job-201/job-202 ctx-0201d167) (logid:1b3d2a8d) Unable to contact resource com.cloud.exception.ResourceUnavailableException: Resource [DataCenter:1] is unreachable: Unable to apply dhcp entry on router

General troubleshooting - Example 1

Global setting accounts for insufficient capacity:

- 'cluster.cpu.allocated.capacity.disablethreshold’
- 'cluster.memory.allocated.capacity.disablethreshold’
- 'pool.storage.allocated.capacity.disablethreshold’
- 'pool.storage.capacity.disablethreshold’

Tip for locating global setting:

- SELECT * FROM cloud.configuration where name like "%disable%";

General troubleshooting – Theory

Enable trace to view how table is selected or updated:

- [root@ccp45 ~]# service cloudstack-management stop
- [root@ccp45 ~]# vi /etc/cloudstack/management/log4j-cloud.xml

```
<!-- ================ -->
<!-- Limit categories -->
<!-- ================ -->

<category name="com.cloud">
  <priority value="DEBUG"/>
</category>
```

- [root@ccp45 ~]# service cloudstack-management start

General troubleshooting – Example 2

How “Primary Storage Allocated” is calculated:

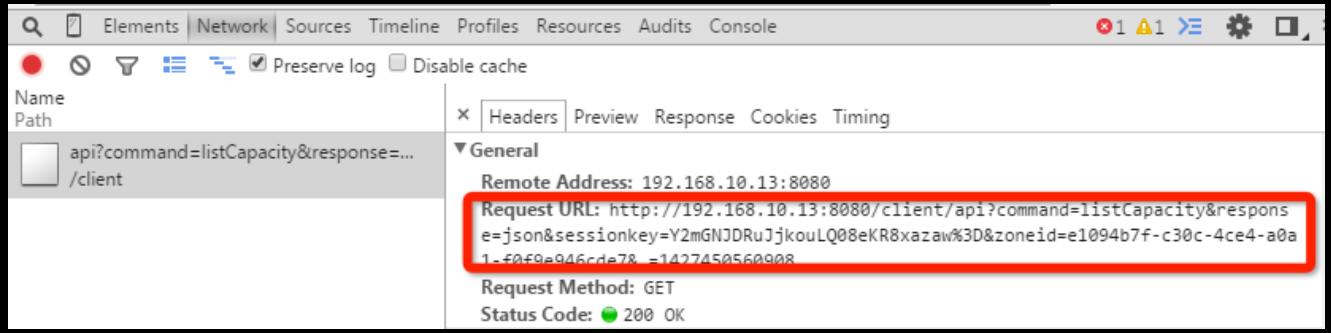
General troubleshooting – Example 2

Analyze process:

- Enable TRACE instead of DEBUG on log4j-cloud.xml
- View API call with Chrome inspect element
- Determine capacity type with API Reference
- Read management-server.log for database query detail
- Change TRACE back to DEBUG when test is finished

General troubleshooting – Example 2

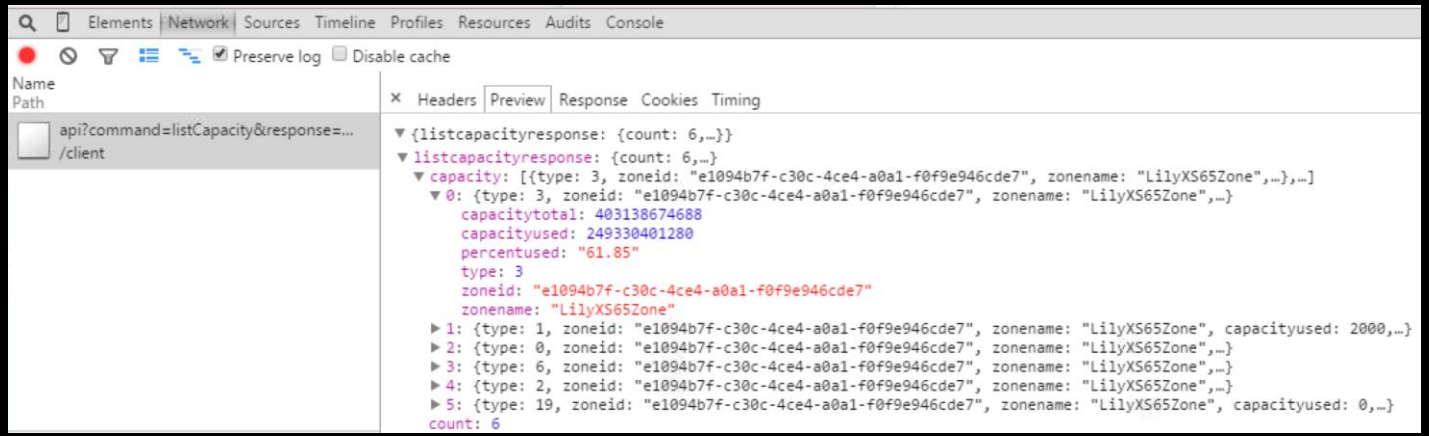
- View API call with Chrome inspect element



General troubleshooting – Example 2

- Determine capacity type with API Reference:
  - http://cloudstack.apache.org/docs/api/apidocs-4.4/root_admin/listCapacity.html

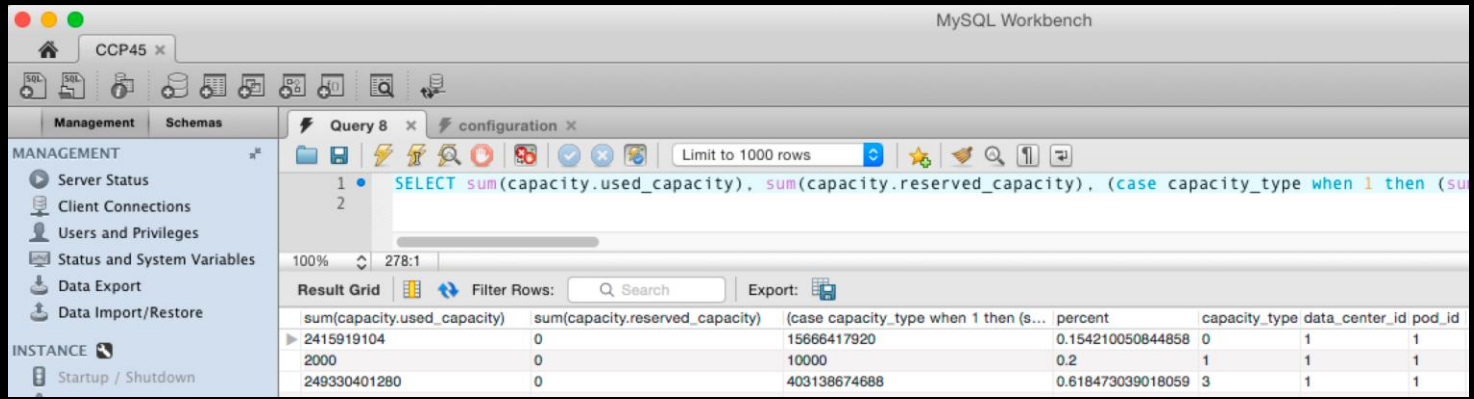
typelists capacity by type CAPACITY_TYPE_MEMORY = 0* CAPACITY_TYPE_CPU = 1* CAPACITY_TYPE_STORAGE = 2* CAPACITY_TYPE_STORAGE_ALLOCATED = 3* CAPACITY_TYPE_VIRTUAL_NETWORK_PUBLIC_IP = 4* CAPACITY_TYPE_PRIVATE_IP = 5* CAPACITY_TYPE_SECONDARY_STORAGE = 6* CAPACITY_TYPE_VLAN = 7* CAPACITY_TYPE_DIRECT_ATTACHED_PUBLIC_IP = 8* CAPACITY_TYPE_LOCAL_STORAGE = 9.*



General troubleshooting – Example 2

- Read management-server.log for database query detail:

SELECT sum(capacity.used_capacity), sum(capacity.reserved_capacity), (case capacity_type when 1 then (sum(total_capacity) * (select value from `cloud`.`cluster_details` where cluster_details.name= 'cpuOvercommitRatio' AND cluster_details.cluster_id=capacity.cluster_id)) when '0' then (sum(total_capacity) * (select value from `cloud`.`cluster_details` where cluster_details.name= 'memoryOvercommitRatio' AND cluster_details.cluster_id=capacity.cluster_id))else sum(total_capacity) end),((sum(capacity.used_capacity) + sum(capacity.reserved_capacity)) / (case capacity_type when 1 then (sum(total_capacity) * (select value from `cloud`.`cluster_details` where cluster_details.name= 'cpuOvercommitRatio' AND cluster_details.cluster_id=capacity.cluster_id)) when '0' then (sum(total_capacity) * (select value from `cloud`.`cluster_details` where cluster_details.name= 'memoryOvercommitRatio' AND cluster_details.cluster_id=capacity.cluster_id)) else sum(total_capacity) end)) percent,capacity.capacity_type, capacity.data_center_id, pod_id FROM `cloud`.`op_host_capacity` capacity WHERE total_capacity > 0 AND data_center_id is not null AND capacity_state='Enabled' AND capacity.data_center_id = 1 GROUP BY capacity_type;



System VM Troubleshooting

Overview

Secondary Storage Virtual Machine:

- Importing (Registering) a new Template to a Zone (from a URL)
- Exporting (Extracting) a Template from a Zone (to a URL)
- Copying Templates between Zones
- Copying a Template from Secondary Storage to Primary Storage when a VM is created for the first time on a particular Cluster
- Snapshot backups

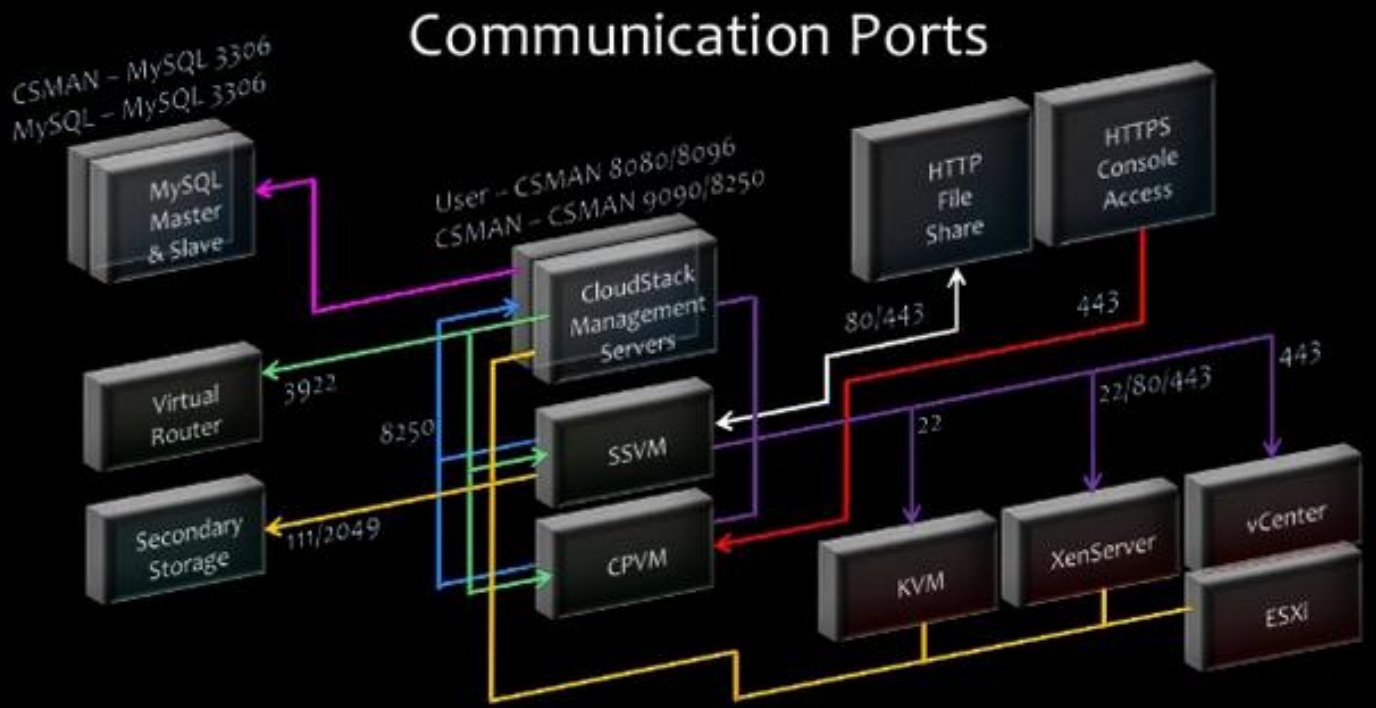
Console Proxy Virtual Machine:

- Presenting a console view via the web UI

Virtual Router:

- Service provider that offers DHCP, DNS, LB, Port Forwarding, VPN, Static NAT, Source NAT, Firewall, Gateway, Network ACL, Security Groups, User Data

Overview


Communication Ports
CSMAN – MySQL 3306
MySQL – MySQL 3306
MySQL Master & Slave
User – CSMAN 8080/8096
CSMAN – CSMAN 9090/8250
CloudStack Management Servers
HTTP File Share
HTTPS Console Access
80/443
443
Virtual Router
3922
8250
SSVM
22
22/80/443
443
Secondary Storage
111/2049
CPVM
KVM
XenServer
vCenter
ESXi

Secondary Storage Virtual Machine (SSVM)

- Login via ssh
  - ssh -i /root/.ssh/id_rsa.cloud -p 3922 root@LinkLocal ip
- Check agent status
  - service cloud status
- System info check
  - cat /proc/cmdline
- Log for more info
  - tailf /var/log/cloud.log
- Health check
  - sh /usr/local/cloud/systemvm/ssvm-check.sh
- Common troubleshooting method:
  - https://cwiki.apache.org/confluence/display/CLOUDSTACK/SSVM,+templates,+Secondary+storage+troubleshooting

Console Proxy Virtual Machine (CPVM)

- General troubleshooting as SSVM
- User’s browser to the VNC port via the hypervisor for the console of the Guest
- Confirm http/ssl traffic type (secstorage.encrypt.copy)
- Whether connection is established
  - 2015-03-26 00:12:44,393 DEBUG [cloud.consoleproxy.ConsoleProxyGCThread] (Console Proxy GC Thread:null) Report load change : {
  - "connections": [
  - {
  - "id": 1,
  - "clientInfo": "",
  - "host": "192.168.10.4",
  - "port": -1,
  - "tag": "1e3417af-4629-4fba-9b27-cc0f9a3cb1c2",
  - "createTime": 1427587956540,
  - "lastUsedTime": 1427587961457
  - }
  -]
  - }No single component failure can cause cloud-wide outage
- Check console proxy related global setting

Virtual Router (VR)

- General troubleshooting as ssvm
- Understanding provided service
  - DNS – dnsmasq
  - Firewall – iptables
  - Port Forwarding – iptables
  - Load Balance – haproxy
- Shell script at VR /opt/cloud/bin

```
root@r-4-VM:~# ls /opt/cloud/bin
baremetal_snat.sh        ilb.sh               vpc_guestnw.sh
baremetal-vr.py          ipassoc.sh           vpc_ipassoc.sh
bumpup_priority.sh       ipsectunnel.sh       vpc_loadbalancer.sh
checkbatchs2svpn.sh      loadbalancer.sh      vpc_netusage.sh
checks2svpn.sh           monitor_service.sh   vpc_passwd_server
cloud-nic.sh             netusage.sh          vpc_portforwarding.sh
createIpAlias.sh         passwd_server        vpc_privateGateway.sh
deleteIpAlias.sh         passwd_server_ip     vpc_privategw_acl.sh
dnsmasq.sh               patchsystemvm.sh     vpc_snat.sh
edithosts.sh             prepare_pxe.sh       vpc_staticnat.sh
firewall_egress.sh       savepassword.sh      vpc_staticroute.sh
firewall_ingress.sh      serve_password.sh    vpn_l2tp.sh
firewall_nat.sh          vmdata.py            vr_cfg.sh
getRouterAlerts.sh       vpc_acl.sh
get_template_version.sh  vpc_func.sh
```

- Shell script at management server
  - /usr/share/cloudstack-common/scripts/network/domr/router_proxy.sh

Tips and tools

Tips and tools

- MySQL workbench
- Notepad++/ Sublime
- xshell/ xftp/ putty
- Google
- Community resource
- Slideshare/ Shapeblue

Q & A

Thanks!