

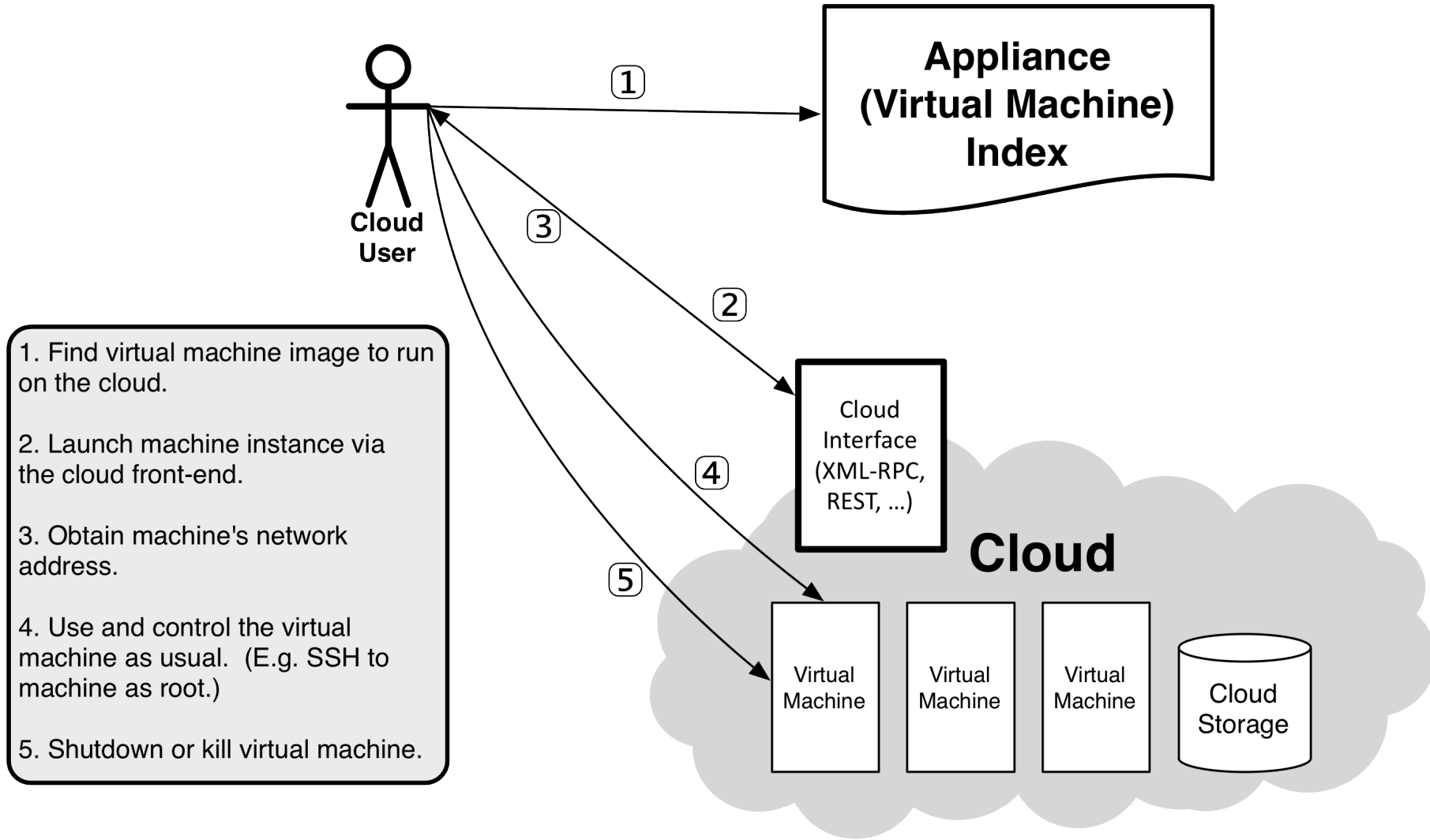


Virtual Machine Lifecycle

StratusLab Tutorial (Orsay, France)

28 November 2012

Virtual Machine Lifecycle



Virtual Machine Lifecycle Commands



Lifecycle consists of these commands:

2. Deploy: `stratus-run-instance Marketplace_ID`
3. Describe: `stratus-describe-instance VM_ID`
4. Login: `ssh root@134.158.75.xxx` OR
`stratus-connect-instance VM_ID`
5. Delete: `stratus-kill-instance VM_ID`

Deploy a VM from the Marketplace



Find ttylinux machine image in Marketplace:

- Browse the Marketplace: <https://marketplace.stratuslab.eu>
- `export TTYLINUX_ID=BN1EEkPiBx87_uLj2-sdybSI-Xb`

Deploy your virtual machine:

- `stratus-run-instance ${TTYLINUX_ID}`
- Response should give the VM ID and Public IP address:

```
$ export TTYLINUX_ID=BN1EEkPiBx87_uLj2-sdybSI-Xb
$ stratus-run-instance ${TTYLINUX_ID}
```

```
.....
:: Starting machine(s) ::
.....
:: Starting 1 machine
:: Machine 1 (vm ID: 165)
   Public ip: 134.158.75.201
:: Done!
```

Status of Virtual Machines



List all active machines:

- `stratus-describe-instance`

```
$ stratus-describe-instance
id state vcpu memory cpu% host/ip name
165 Running 1 0 0 vm-201.lal.stratuslab.eu one-165
166 Pending 1 0 0 vm-202.lal.stratuslab.eu one-166
```

State of a single machine:

- `stratus-describe-instance VM_ID`

```
$ stratus-describe-instance 165
id state vcpu memory cpu% host/ip name
165 Running 1 131072 1 vm-201.lal.stratuslab.eu one-165
```

- More details with `-v`, `-vv`, and `-vvv` options
- Verbose options especially helpful when machines fail!

Connect to the Virtual Machine



Ping machine to see when machine is accessible:

- `ping VM_NAME`

```
$ ping vm-201.lal.stratuslab.eu
PING vm-201.lal.stratuslab.eu (134.158.75.201): 56 data bytes
Request timeout for icmp_seq 0
64 bytes from 134.158.75.201: icmp_seq=1 ttl=63 time=0.876 ms
64 bytes from 134.158.75.201: icmp_seq=2 ttl=63 time=0.761 ms
64 bytes from 134.158.75.201: icmp_seq=3 ttl=63 time=0.850 ms
...
```

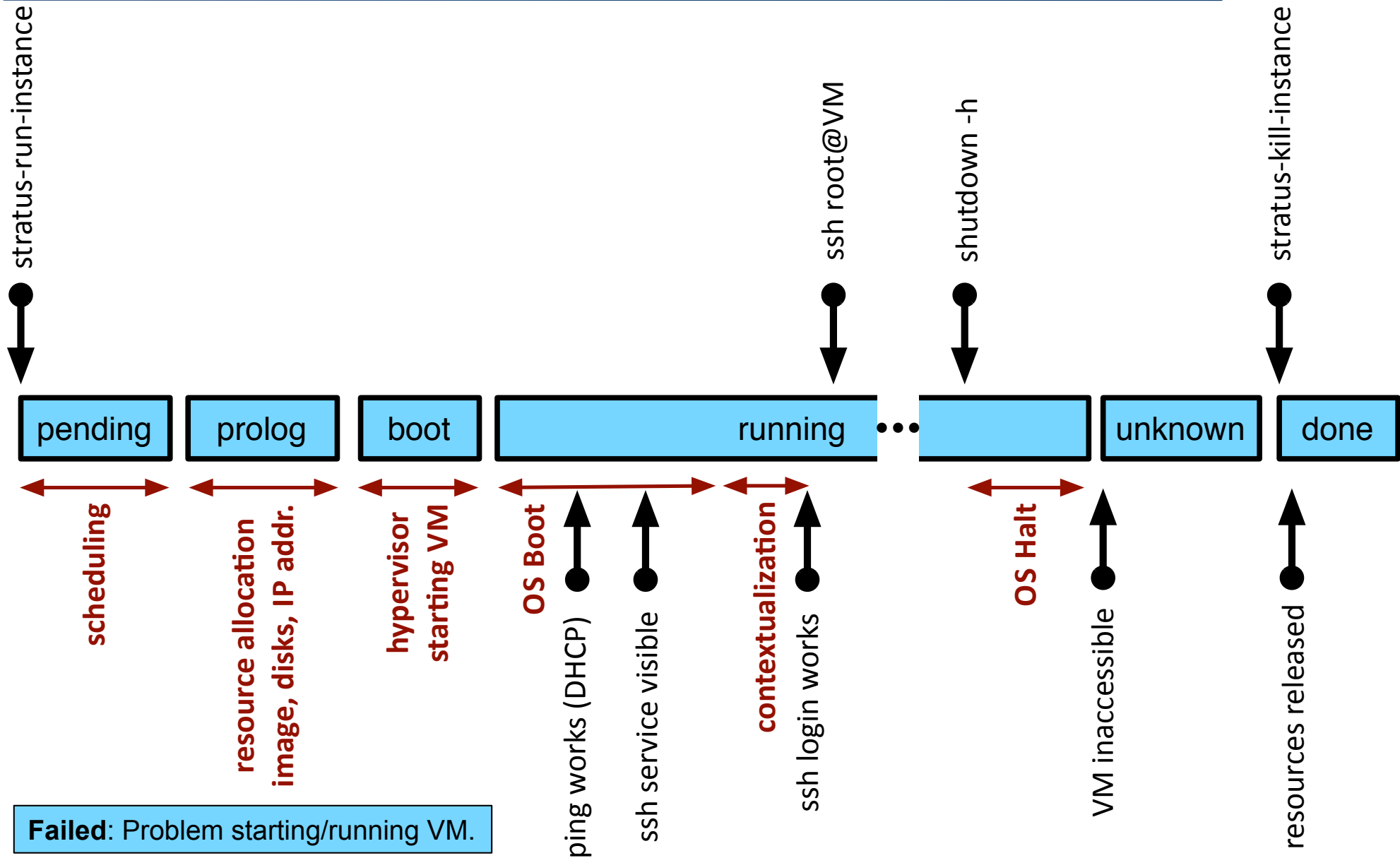
Log into machine as root:

- `ssh root@VM_NAME`

```
$ ssh root@vm-201.lal.stratuslab.eu
#
# echo $USER
root
#
```

- OR `stratus-connect-instance VM_ID`

Machine Timeline and States



Graceful Shutdown



Safely stop all services and halt machine:

- From within machine: `shutdown -h`

```
# shutdown -h
#
Connection to vm-201.lal.stratuslab.eu closed by remote host.
Connection to vm-201.lal.stratuslab.eu closed.
```

- Kill (remove) machine when in “unknown” state or no longer visible:

```
$ stratus-describe-instance 165
id state vcpu memory cpu% host/ip name
165 Unknown 1 131072 0 vm-201.lal.stratuslab.eu one-165

$ stratus-kill-instance 165
$
```

This mechanism ensures that resources (esp. data volumes) are shut down cleanly and released.

Forced Machine Halt



Kill (remove) the machine immediately:

- `stratus-kill-instance VM_ID`

```
$ stratus-kill-instance 166
$
$ stratus-describe-instance 166
id state vcpu memory cpu% host/ip name
166 Done 1 131072 0 vm-202.lal.stratuslab.eu one-166
```

- Information can be obtained from completed machines, but the VM ID needs to be known.

Resources Allocated to VMs



You control the number of CPUs, amount of RAM and swap space allocated to the VM.

StratusLab has a number of predefined machine configs.:

- `stratus-run-instance --list-type`
- Default is marked with an asterisk!

```
$ stratus-run-instance --list-type
Type          CPU      RAM      SWAP
c1.medium     1 CPU    256 MB   1024 MB
c1.xlarge     4 CPU    2048 MB  2048 MB
m1.large      2 CPU    512 MB   1024 MB
* m1.small    1 CPU    128 MB   1024 MB
m1.xlarge     2 CPU    1024 MB  1024 MB
t1.micro      1 CPU    128 MB   512 MB
```

- Maximum values determined by the largest single physical machine.

Non-standard Machine Types



What happens when you need resource allocations different from the predefined types?

Use resource options to override the defaults:

- `--cpu` for changing number of CPU cores
- `--ram` for changing the available memory (in MB)
- `--swap` for changing the available swap space (in MB)

Can also edit machine template for full control:

- `$HOME/stratuslab/share/vm/schema.one`

NOTE: Machine images must be capable of using multiple CPUs, additional RAM, etc.

Deploy a Large VM



Deploy a VM of type “m1.xlarge”:

- `stratus-run-instance --type=m1.xlarge ${TTYLINUX_ID}`

```
$ stratus-run-instance --quiet --type=m1.xlarge ${TTYLINUX_ID}
167, 134.158.75.203

$ stratus-describe-instance 167
id state vcpu memory cpu% host/ip name
167 Running 2 1048576 5 vm-203.lal.stratuslab.eu one-167
```

- CPUs and memory can be seen from the command line
- Swap space can be seen from within the machine
- (Note: ttylinux doesn't use swap space!)

Questions and Discussion

Exercises: Deploy Machines



Deploy Virtual Machines

- Try different operating systems (ttylinux, Ubuntu, CentOS) using the recommended image identifiers
- Change the machine types and allocated resources and ensure that the resources are actually allocated
- Try both graceful shutdowns and kills
- It is often useful to have a custom name for a machine. What option allows this? Does it work?

Create a Web Site

- Deploy virtual machine with a web server
- Customize landing page or other content
- Verify that you can access the site with your browser, showing the customized content



<http://www.stratuslab.eu>

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