A tour of

from the

COMMAND LINE

featuring:

ssh, git, and rhc

bit.ly/1mq7s5h
socuteurl.com/widdlepuppytail
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AGENDA

1. State of the Open Cloud
2. rhc
3. ssh
4. git
5. Release Management
6. Scaling
STATE OF THE OPEN CLOUD
HAS IT BEEN LIBERATED?

1. The OS ✓
2. The Cloud ?
3. Infrastructure as a service ✓
4. Platform as a service ✓
5. Software as a service ×
CLOUD AUTOPSY
OPENSHIFT IS...

OPEN SOURCE
HOSTING,
BUILD,
and
AUTO-SCALING
for applications
providing instant access to all of this, and more:
these technologies are bundled / made available as CARTRIDGES
rhc cartridge list
On OpenShift, your application environment is securely encapsulated within a 'Gear', providing guaranteed access to system resources.
using **SELinux**, and **Cgroups**
OPENSHIFT PROVIDES A PEACEFUL ENVIRONMENT FOR DEV'S AND SYSADMINS TO WORK TOGETHER IN
• Operations care about stability and performance
• Developers just want environments without waiting
• And neither one wants to have to fight the other to get their work done
rhc makes it easy for developers to talk to your OpenShift REST API

**PRE-REQUISITES:**

rubygems, git

```
sudo gem install rhc
```
Will automatically:

- authenticate your OpenShift account
- verify your local ssh key configuration
- configure your host url identifier
CREATE AN APPLICATION

Start by provisioning your application environment and database in a single step:

```
rhc app create APP_NAME CARTRIDGE CART2 CART3
```

for a basic Node.js and MongoDB application, run:

```
rhc app create scale12x nodejs-0.10 mongodb-2.2
```
Application Options
-------------------
    Namespace: shifter
    Cartridges: nodejs-0.10, mongodb-2.2
    Gear Size: default
    Scaling: no

Creating application 'scale12x' ... done

Waiting for your DNS name to be available ... done

Downloading the application Git repository ...
Cloning into 'scale12x'...

Your application code is now in 'scale12x'
scale12x @ http://scale12x-shifter.rhcloud.com/ (uuid: 5175981a5973ca7a69000501)

Created: 1:05 PM

Gears: 1 (defaults to small)

Git URL:
ssh://5175981a5973ca7a69000501@scale12x-shifter.rhcloud.com/~git

SSH: 5175981a5973ca7a69000501@scale12x-shifter.rhcloud.com

nodejs-0.10 (Node.js 0.10)

Gears: Located with mongodb-2.2

mongodb-2.2 (MongoDB NoSQL Database 2.2)

Gears: Located with nodejs-0.10

Connection URL:
mongodb://$OPENSHIFT_MONGODB_DB_HOST:$OPENSHIFT_MONGODB_DB_PORT/

Database Name: scale12x
Password: PTk4cCetTj2w
Username: admin

RESULT:
Application scale12x was created.
SUCCESS!

You now have a basic node.js and MongoDB skeleton application live on the Internet!

http://scale12x-shifter.rhcloud.com/

Your gear is now configured with:

- it's own git repo
- it's own web server
- ssh access
- logging
- a database
- publicly accessible hostnames, automatic DNS
Application details are always available via:

```
rhc app show scale12x
```

You can tail your remote logs with:

```
rhc tail scale12x
```

or, connect directly to your app via ssh:

```
rhc ssh scale12x
```
SSH
ENVIRONMENT VARIABLES

Allow you to write code that will run anywhere

```javascript
//provide a sensible default for local development
mongodb_connection_string = 'mongodb://127.0.0.1:27017/' + db_name;
//take advantage of openshift env vars when available:
if(process.env.OPENSHIFT_MONGODB_DB_URL) {
    mongodb_connection_string = process.env.OPENSHIFT_MONGODB_DB_URL + db_name;
}

//same advice applies for your webserver's PORT and IP address
var port = process.env.PORT || process.env.OPENSHIFT_NODEJS_PORT || '8080';
var ip = process.env.OPENSHIFT_NODEJS_IP || '127.0.0.1';
```
Application passwords, keys, and secrets can be abstracted using the same technique:

```bash
rhc env set SECRET_KEY=0P3N_S0URC3
rhc env list
rhc env help
```
Team members can supply their own keys during app creation, for a single step clone+deploy:

```
rhc app create scale12x nodejs-0.10 mongodb-2.2 \
--from-code=http://github.com/USER/TEAM_REPO.git \
--env SECRET_KEY=0P3N_S0URC3
```
TEAM COLLABORATION

There are several ways to collaborate:

1. using github or bitbucket
2. using ssh keys
3. or, using OpenShift's new team collaboration tools
GIT
DEPLOYING UPDATES

A standard git development workflow can be used to rebuild and update your remote application:

1. Add your changes to a changeset
   
   ```
   git add index.html
   ```

2. Mark the changeset as a Commit
   
   ```
   git commit -m 'updating H1'
   ```

3. Push the Commit to OpenShift
   
   ```
   git push
   ```
Adding cartridges to existing apps is easy:

```
rhc cartridge add jenkins-1
```

adds jenkins CI to your application's build cycle
RELEASE MANAGEMENT
RELEASE TRACKING & ROLLBACKS

- `rhc deployment show`
- `rhc deployment list`
- `rhc deployment activate CHECKSUM`

Want to deploy a different branch (not 'master')?

- `rhc app configure --deployment-branch MY_BRANCH`

TIPS FOR LOCAL DEVELOPMENT

Use port-forwarding to create a local connection to your remote database instance:

```
rhc port-forward scale12
```

Starting a local webserver is different in each language. For nodejs, you can start a local server with:

```
npm install
npm start
```

https://www.openshift.com/blogs/set-up-local-access-to-openshift-hosted-services-with-port-forwarding
SCALING
Spinning up an auto-scaling Linux environment:

```
rhc app create scale12 -s nodejs-0.10 mongodb-2.2
```

just add "-s" to your app create command
Set a min and max scale

```
rhc cartridge scale nodejs-0.10 -a scale12 --min 2 --max 12
```

or, manually scale an application

```
rhc app scale-up
rhc app scale-down
```
From inside a hosted environment:

```
 haproxy_ctld --up
 haproxy_ctld --down
 haproxy_ctld_daemon start
 haproxy_ctld_daemon stop
 haproxy_ctld_daemon restart
```
GENERATING LOAD

For scalable applications, generate load from the command line to see automatic scaling in action:

```bash
while true ; do ab -n 1000 -c 50 https://scale12-shifter.rhcloud.com ; done
```
HAPROXY WEB UI

http://$YOUR_APP_DNS/haproxy-status/

HAPROXY RAW DATA

http://$YOUR_APP_DNS/haproxy-status;/csv
QUESTIONS?
WANT TO LEARN MORE?

• Come hang out with us on IRC: #openshift on Freenode
• Link to these slides: http://socuteurl.com/widdlepuppytail
• Free hosting on OpenShift: OpenShift Online
• OpenShift source code: OpenShift Origin
• Red Hat Enterprise Support: OpenShift Enterprise

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