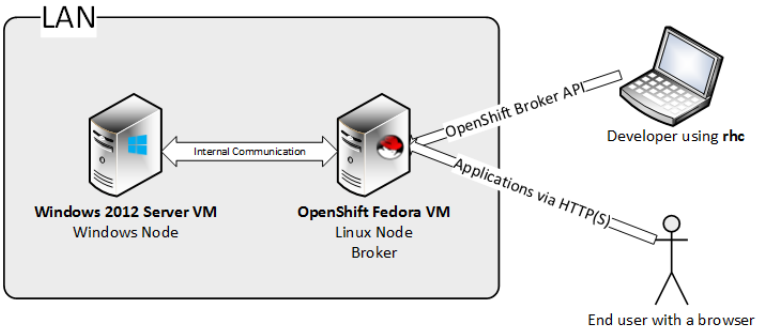
Deploying OpenShift with Windows support

This document provides instructions on how to deploy a 2 node OpenShift environment that has Windows support.
We are going to use an Origin Fedora VM that comes with a full installation - a broker and a node on the same VM.

Next to this we're going to setup a Windows VM that will connect to the Linux OpenShift broker.

Cloud Topology



Setting up things on Linux

You can download the Linux OpenShift VM from here. Make sure to download the `openshift-origin.zip` file. For this deployment manual, we support the version from **December 19th 2013**.

After starting the VM, go to the root console and install the changes required for windows support.

Please make sure that you run all the commands specified in this document as `root`.

The RPM can be found here. Credentials are required to download the packages.

To install and update the local machine, run the following commands:

```
wget http://<user>:<password>@winjenkins.hosts.uhuruos.com/uhuruorigin-0.<version>.rpm
yum remove uhuruorigin
yum install uhuruorigin-0.<version>.rpm
service mcollective restart
service openshift-broker restart
(cd /var/www/openshift/broker/; bundle exec rake tmp:clear)
```

Windows Prerequisites

Please make sure that you execute all the instructions in this document as the `administrator` user .

The supported Windows versions are Windows Server 2012 and Windows Server 2012 R2.

- After installing Windows, activate the following features:
  - NET-Framework-Features
  - NET-Framework-Core
  - NET-Framework-45-Features
  - NET-Framework-45-Core
  - NET-Framework-45-ASPNET
  - NET-WCF-Services45
  - NET-WCF-TCP-PortSharing45
- Install the Visual C++ Redistributable Packages for Visual Studio 2013. You can find it here. Make sure to download the 'vcredist_x64.exe' version.
- Install Internet Information Services
  - Add the Web Server role to Windows, with the following features enabled:

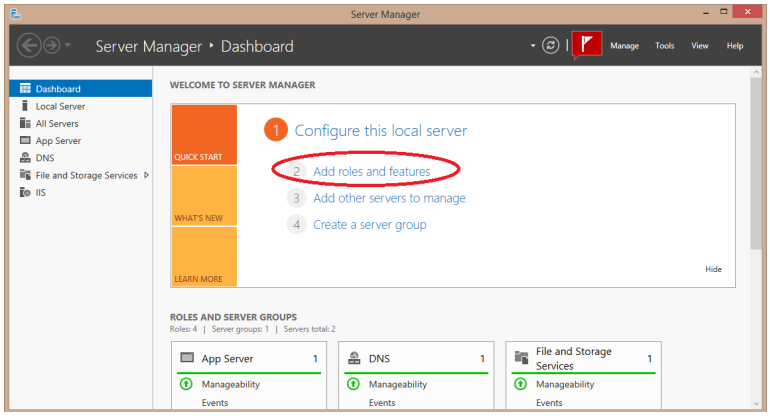
    Web-Server, Web-WebServer, Web-Common-Http, Web-Default-Doc, Web-Dir-Browsing, Web-Http-Errors, Web-Static-Content, Web-Http-Redirect, Web-DAV-Publishing, Web-Health, Web-Http-Logging, Web-Custom-Logging, Web-Log-Libraries, Web-ODBC-Logging, Web-Request-Monitor, Web-Http-Tracing, Web-Performance, Web-Stat-Compression, Web-Dyn-Compression, Web-Security, Web-Filtering, Web-Basic-Auth, Web-CertProvider, Web-Client-Auth, Web-Digest-Auth, Web-Cert-Auth, Web-IP-Security, Web-Url-Auth, Web-Windows-Auth, Web-App-Dev, Web-Net-Ext, Web-Net-Ext45, Web-AppInit, Web-Asp-Net, Web-Asp-Net45, Web-CGI, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Includes, Web-WebSockets, Web-Mgmt-Tools, Web-Scripting-Tools, Web-Mgmt-Service, Web-WHC
- Install SQL Server 2008
  - Install SQL Server with a simple default instance (no extra services, just the database engine)

- Make sure you set it up with mixed authentication
- Please note the password you set for the `sa` account - you will need to configure the OpenShift node with it
- After the installation is complete, stop the `SQL Server (MSSQLSERVER)` Windows Service, then disable it (the Windows Node installation script will check to see if this was setup correctly)

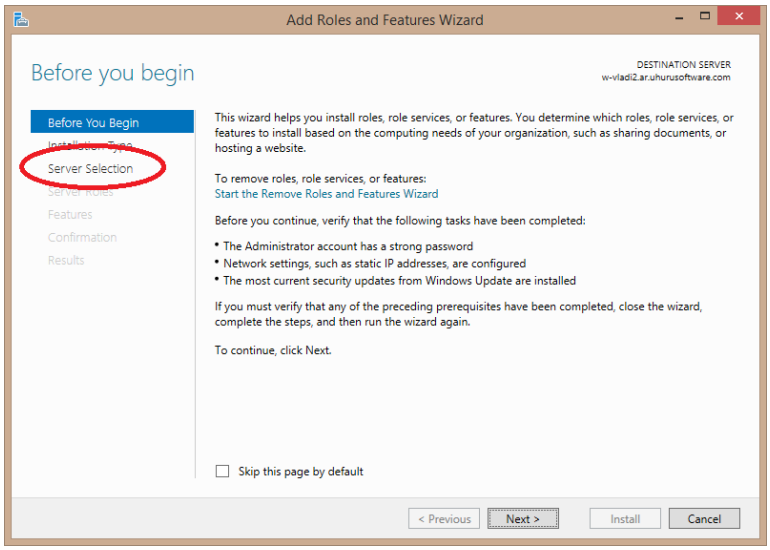
Screenshots

The screenshots below detail the installation steps for the Windows Roles and Features that have to be installed.
This walk-through assumes you are managing the server locally, not remotely.

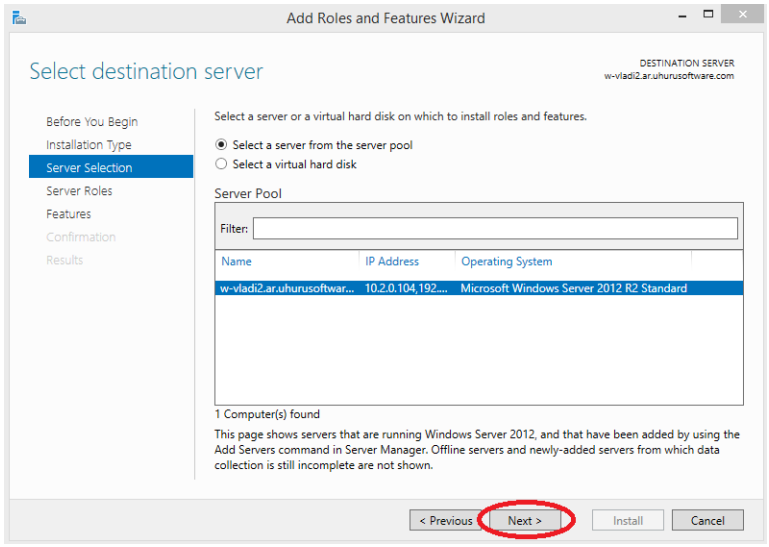
Step 1 - Open Server Manager and start the "Add roles and features" wizard



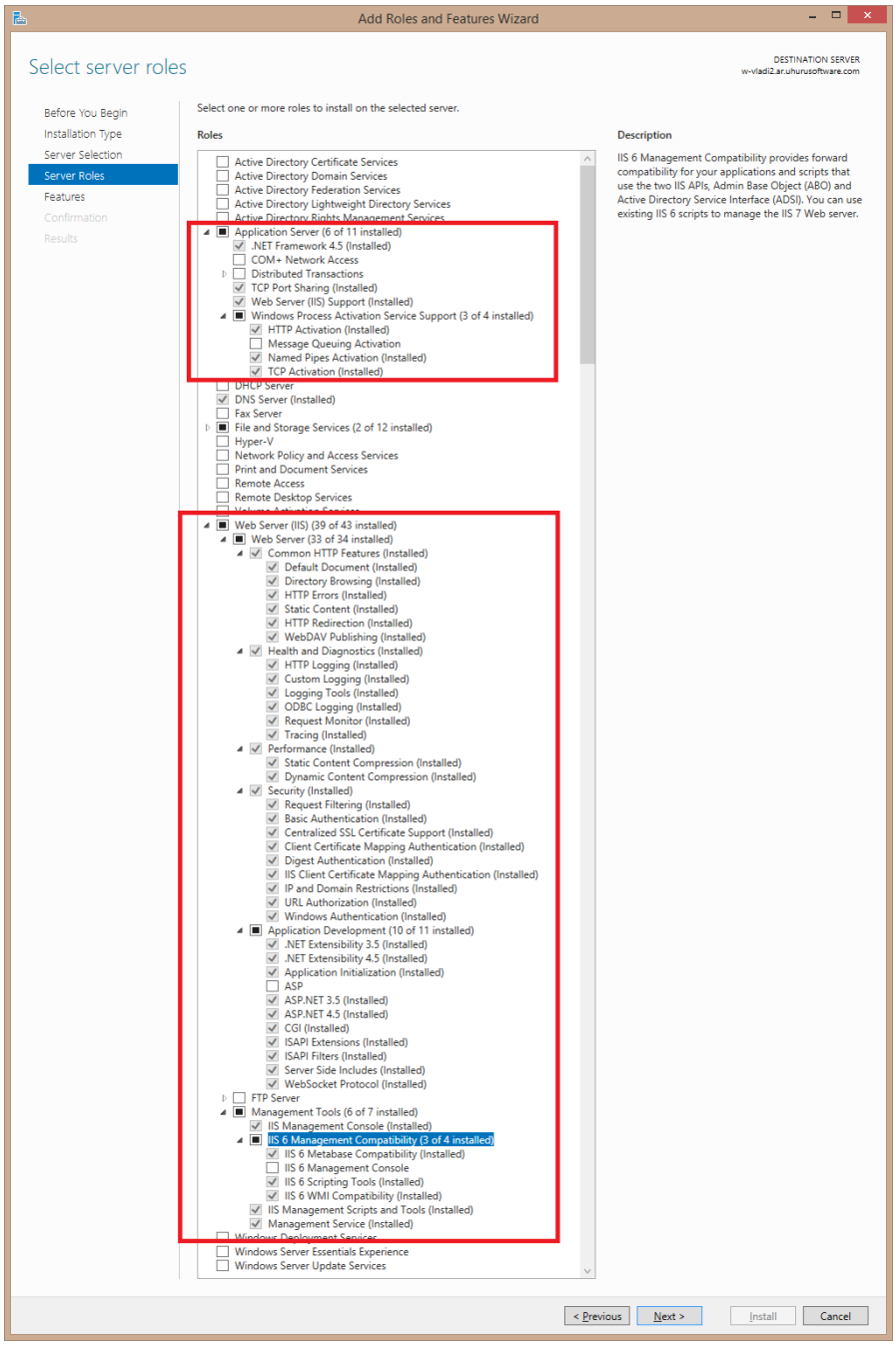
Step 2 - Go to Server Selection



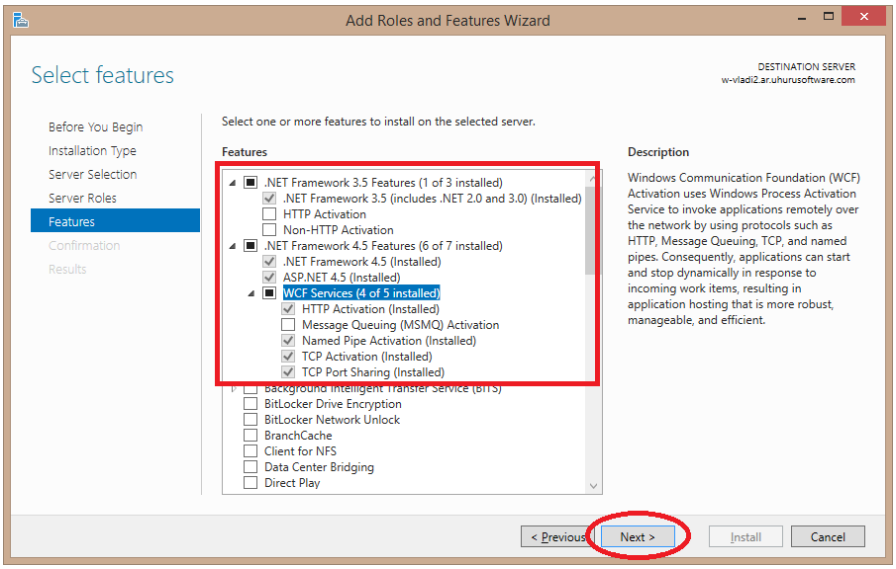
Step 3 - In the server selection page, select the local server, then hit "Next"



Step 4 - Make sure you select all the required roles and their features, as detailed in the documentation and screenshot, then click "Next"



Step 5 - On the features page, make sure you select everything as detailed in the documentation and screenshot



Step 6 - On the confirmation page, click "Install" and wait for the installation process to complete

Setting up hosts

Before proceeding with the Windows installation, you have to setup the hosts files on both Windows and Linux (the OpenShift VM uses multicast DNS and Windows does not have a proper solution for this).

- on Linux, edit `/etc/hosts`, add an entry like

  e.g.: `10.2.0.104 winnode.openshift.local`

- on Windows, edit `c:\windows\system32\drivers\etc\hosts`, and add an entry for the broker:

  e.g.: `10.2.0.21 broker-a211bd.openshift.local`

Installing the OpenShift Windows Node

Download the windows installer from here. Credentials are required.

- Run the installer
- It will unpack the build in a temporary folder and drop you in PowerShell
- From there you can run the installation script
- You can simply run ./install.ps1 and the script will ask you for needed information
- If you need special settings, please read the manual included below and run the script with the appropriate settings

Restarting services on the broker

After finishing the installation on Windows, clear the cache on the Linux machine using the following command:

```
oo-admin-broker-cache --console
```

Install Script Manual

DESCRIPTION

```
This script installs all the components of the OpenShift Windows Node.
It does not install prerequisites such as Internet Information Services or Microsoft Sql Server.
Before the installation is started this script will verify that all prerequisites are present and properly installed.
```

PARAMETERS

```
-binLocation <String>
    Target bin directory. This is where all the OpenShift binaries will be copied.
    Required?                   no
    Default value               c:\openshift\bin\

-publicHostname <String>
    Public hostname of the machine. This should resolve to the public IP of this node.
    Required?                   yes

-brokerHost <String>
    Hostname of the OpenShift broker.
```

```
    Required?                   yes

-cloudDomain <String>
    The domain of the cloud (e.g. mycloud.com).
    Required?                   yes

-sqlServerSAPassword <String>
    The password for the sa account for the installed instance of SQL Server.
    Required?                   yes

-externalEthDevice <String>
    Public ethernet device.
    Required?                   no
    Default value               Ethernet

-internalEthDevice <String>
    Internal ethernet device.
    Required?                   no
    Default value               Ethernet

-publicIp <String>
    Public IP of the machine (default is 'the first IP on the public ethernet card').
    Required?                   no
    Default value               First IP of the public Ethernet card

-gearBaseDir <String>
    Gear base directory. This is the where application files will live.
    Required?                   no
    Default value               c:\openshift\gears\

-gearShell <String>
    Gear shell. This is the shell that will be run when users ssh to the gear.
    Required?                   no

-gearGecos <String>
    Gecos information. This will be the same for all gears.
    Required?                   no

-cartridgeBasePath <String>
    Cartridge base path. This is where cartridge files will be copied.
    Required?                   no
    Default value               c:\openshift\cartridges\

-platformLogFile <String>
    Log file path. This is where the OpenShift Windows Node will log information.
    Required?                   no
    Default value               c:\openshift\log\platform.log

-platformLogLevel <String>
    Log level. The level of detail to use when logging information.
    Required?                   no
    Default value               DEBUG

-containerizationPlugin <String>
    Container used for securing OpenShift gears on Windows.
    Required?                   no
    Default value               uhuru-prison

-rubyDownloadLocation <String>
    Ruby 1.9.3 msi package download location. The installer will download this msi and install it.
    Required?                   no
    Default value               http://dl.bintray.com/oneclick/rubyinstaller/rubyinstaller-1.9.3-p448.exe?direct

-rubyInstallLocation <String>
    Ruby installation location. This is where ruby will be installed on the local machine.
    Required?                   no
    Default value               c:\openshift\ruby\

-mcollectiveActivemqServer <String>
    ActiveMQ Host. This is where the ActiveMQ messaging service is installed.
    It is usually setup in the same place as your broker.
    Required?                   no
    Default value               Broker Host

-mcollectiveActivemqPort <Int32>
    ActiveMQ Port. The port to use when connecting to ActiveMQ.
    Required?                   no
    Default value               61613

-mcollectiveActivemqUser <String>
    ActiveMQ Username. The default ActiveMQ username for an OpenShift installation is 'mcollective'.
```

```
    Required?                    no
    Default value                mcollective

-mcollectiveActivemqPassword <String>
    ActiveMQ Password. The default ActiveMQ password for an ActiveMQ installation is 'marionette'.
    Required?                    no
    Default value                marionette

-sshdCygwinDir <String>
    Location of sshd installation. This is where cygwin will be installed.
    Required?                    no
    Default value                c:\openshift\cygwin

-sshdListenAddress <String>
    This specifies on which interface should the SSHD service listen. By default it will listen on all interfaces.
    Required?                    no
    Default value                0.0.0.0

-sshdPort <Int32>
    SSHD listening port.
    Required?                    no
    Default value                22

-skipRuby [<SwitchParameter>]
    This is a switch parameter that allows the user to skip downloading and installing Ruby.
    This is useful for testing, when the caller is sure Ruby is already installed in the
    directory specified by the -rubyInstallLocation parameter.
    Required?                    no

-skipCygwin [<SwitchParameter>]
    This is a switch parameter that allows the user to skip downloading and installing Cygwin.
    This is useful for testing, when the caller is sure Cygwin is present in the
    directory specified by the -sshdCygwinDir parameter.
    Note that sshd will NOT be re-configured if you skip this step.
    Required?                    no

-skipMCollective [<SwitchParameter>]
    This is a switch parameter that allows the user to skip downloading and installing MCollective.
    This is useful for testing, when the caller is sure MCollective is already present in c:\openshift\mcollective.
    Configuration of MCollective will still happen, even if this parameter is present.
    Required?                    no

-skipChecks [<SwitchParameter>]
    This is a switch parameter that allows the user to skip checking for prerequisites.
    This should only be used for debugging/development purposes.
    Required?                    no

-skipGlobalEnv [<SwitchParameter>]
    This is a switch parameter that allows the user to skip setting up global environment variables and aliases.
    This is useful for testing, when the user wants to manually set these variables.
    Required?                    no

-skipServicesSetup [<SwitchParameter>]
    This is a switch parameter that allows the user to skip setting up Windows Services for MCollective and SSHD.
    This is useful in development environments, when it's not necessary to restart services:
        e.g. the developer only wants to update the .NET binaries
    Required?                    no

-skipBinDirCleanup [<SwitchParameter>]
    This is a switch parameter that allows the user to skip cleaning up the binary directory.
    This is useful in development environments, when persistence of logs and configurations is required.
    Required?                    no

-verbose
    This switch enables verbose output
```

EXAMPLES

- Install the node by passing the minimum information required.

```
.\install.ps1 -publicHostname winnode-001.mycloud.com -brokerHost broker.mycloud.com -cloudDomain mycloud.com -sqlServerSAPassword mysapassword
```

- Install the node by also passing the public IP address of the machine.

```
.\install.ps1 -publicHostname winnode-001.mycloud.com -brokerHost broker.mycloud.com -cloudDomain mycloud.com -sqlServerSAPassword mysapassword -publicIP 10.2.0.104
```

Creating your first Windows application

From a client machine, use rhc to connect to your OpenShift cloud.

Before creating your app, add the app's hostname to your local hosts file, pointing to the Linux machine, so the git client and your browser know how to resolve that hostname.

All OpenShift applications that contain a Windows cartridge must be configured as scalable.
When you use `rhc` to create a Windows application, make sure to specify the `-s` flag.

Example:

```
rhc create-app myapp dotnet -s
```

Add a MS SQL Server cartridge

```
rhc add-cartridge mssql -a myapp
```

A Windows application deployed on OpenShift has the following topology: