

FUJITSU Cloud Service S5

Setup and Configure yum Software Package Manager with CentOS Servers

This guide details the steps to setup and configure package installation, update, and removal using the yum software package manager with CentOS Servers on the FUJITSU Cloud Service S5.

Introduction

The yum package supplied with CentOS is a software package manager that installs, updates, and removes packages on RPM-based systems. It can automatically perform system updates, including dependency analysis and obsolete processing based on "repository" metadata. It can also perform installation of new packages, removal of old packages and perform queries on the installed and/or available packages. Yum makes use of an external XML repository accessed via HTTP. In order to enable yum we first need to enable DNS and then allow HTTP access through the virtual system (v-sys) firewall. Several tasks are required to enable yum,

- Configure a Public IP Address: Setup a virtual system (v-sys) on the FUJITSU Cloud Service S5 for Internet connectivity.
- Configure Firewall for DNS: Enable DNS services to the Internet through the firewall.
- Configure Network Address Translation (NAT): Create NAT between the Global IP Address and the Private IP Address in the DMZ zone.
- Configure Firewall Rules: Modify the firewall settings to allow DNS and HTTP traffic.
- Configure yum to use the FUJITSU Cloud Service S5 repository.
- Configure VM to use DNS: Setup the local resolver on each VM requiring DNS services.

Assumptions

- User Account, Certificate and connectivity to the FUJITSU Cloud Service S5
- Familiarity with the FUJITSU Cloud Service S5 Portal basic configuration and administration tasks.
- Familiarity with the FUJITSU Cloud Service S5 Portal System Manager and Design Studio.
- Familiarity with Linux / CentOS configuration and administration tasks.
- At least one CentOS Economy Server on the FUJITSU Cloud Service S5 located in a DMZ zone.

For VMs to communicate with the Internet, the following steps must be taken:

Configure a Public IP Address

Setup and configure the virtual system (v-sys) on the FUJITSU Cloud Service S5 for Internet connectivity.

1. Using **System Manager**, select the v-sys and press the **Reconfigure** button.
2. Left click on the **DMZ** title bar to display the virtual system connectivity.
3. Enable **Internet** connectivity.
4. Left click on the firewall icon.
5. Press **Add IP Address** button to assign a Public IP Address to the virtual system.
6. Press the **Next** button, check **I agree to Terms of Service** check-box and press the **Final Confirmation** button to complete the change.
7. When the change has completed, go back to the v-sys in **System Manager**, select the firewall. On the **Public IP Address** tab, click the **Enable** button.



NOTE: In this example Public IP Address: 137.172.209.248 is used.

Configure Firewall for DNS

Set the DNS on the firewall to enable DNS services to the Internet.

8. Using **System Manager**, select the v-sys and select the firewall icon, from the **System Details** window.
9. Click **DNS Settings**.
10. Check either the **Standard DNS** or alternatively choose **Set Manually** (this option requires the primary DNS IP address to be entered manually in the **Primary** section) radio button options.
11. Click **OK** to save the change and press **OK** to confirm and complete the change.

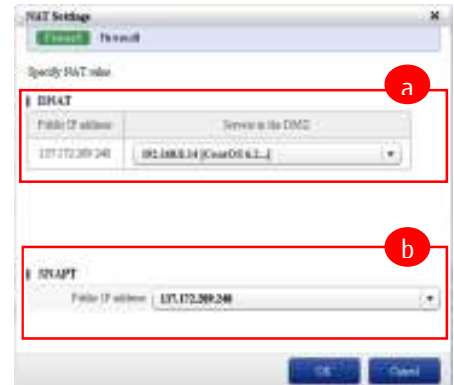
NOTE: IP Address of the Primary DNS on the FUJITSU Cloud Service S5 is 137.172.209.9
The Primary DNS IP Address is used later in this guide.



Configure Network Address Translation (NAT)

Create NAT between the Global IP Address and the Private IP Address in the DMZ zone.

12. Using **System Manager**, select the v-sys and select the firewall icon, from the **System Details** window.
13. Press the **NAT Settings** button.
14. Specify NAT rules as follows,
 - a. Under the **DNAT** section, select any VM from the **Servers in the DMZ** drop down list. In this example the Public IP Address 137.172.209.248 is translated to the VM with the IP Address 192.168.8.14.
 - b. Under the **SNAPT** section, select the **Public IP Address**. In this example the Public IP address is 137.172.209.248.
15. Click **OK** to make the change and click **OK** again to confirm the update.



NOTE: Irrespective of your choice of v-sys architecture e.g. 1, 2 or 3 tier skeletons, the DNAT must be mapped to **any one** of the VMs in the DMZ network zone.

Configure Firewall Rules

Add firewall rules to allow DNS and HTTP traffic to pass.

16. Using **System Manager** select the v-sys, left click on the firewall icon and press the **FW Settings** button.
17. Select the network zone (e.g. **DMZ** etc.) containing the VM out of the options presented in the **FROM** drop-down list.
18. Select **Internet** out of the **TO** drop-down list.
19. Click the **Refined Search** button, and then press the **Add** button to create a new rule. Additional rules will be added for each zone:
 - a. DNS from DMZ to Internet using UDP over port 53.
 - i. ID: 101
 - ii. Select **any** from the **Source** drop-down list.
 - iii. Select **DNS** from the **Service** drop-down list.
 - b. YUM from DMZ:
 - i. ID: 102
 - ii. Select **any** from the **Source** drop-down list.
 - iii. Select **YUM** from the **Service** (Source) drop-down list.
 - c. HTTP from DMZ to Internet using TCP over port 80.
 - i. ID: 103
 - ii. Select **any** from the **Source** drop-down list.
 - iii. Type **any** into the Target/Service text box.
 - iv. Select **http (80)** from the **Target Port** drop-down list.

- Press the **Confirm** button, answering **Yes** to confirm the change the firewall rules. Sample rules are next,

FROM	TO	ID	Source	Source Port	Target/Service	Target Port	Protocol	Action	Log
DMZ	Internet	45101	any	any	DNS	---	---	Accept	On
DMZ	Internet	45102	any	any	yum	---	---	Accept	On
DMZ	Internet	45103	any	any	http(S)	---	TCP	Accept	On

Configure yum to use the FUJITSU Cloud Service S5 repository

It is essential that yum is configured to use the local FUJITSU Cloud Service S5 repository to locate packages. Packages on the default CentOS repository will not be supported.

- For each VM requiring DNS services, create a remote SSH connection and perform the following steps:
- Change to the `/etc/yum.repos.d` directory and verify whether a copy of the `CentOS-Base.repo` file already exists (if it does exist rename as `CentOS-Base.repo.default`).

```
[root@localhost ~]# cd /etc/yum.repos.d/
[root@localhost ~]# mv CentOS-Base.repo CentOS-Base.repo.default
```

- Using an editor of your choice, create a new `CentOS-Base.repo` file, copy the text below and save,

```
Centos 5.X
[base]
name=CentOS-$releasever - Base
#mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=os
#baseurl=http://mirror.centos.org/centos/$releasever/os/$basearch/
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/5.6/os/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-5

[updates]
name=CentOS-$releasever - Updates
#mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=updates
#baseurl=http://mirror.centos.org/centos/$releasever/updates/$basearch/
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/5.6/updates/$basearch/
gpgcheck=1

[addons]
name=CentOS-$releasever - Addons
#mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=addons
#baseurl=http://mirror.centos.org/centos/$releasever/addons/$basearch/
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/5.6/addons/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-5
#additional packages that may be useful

[extras]
name=CentOS-$releasever - Extras
#mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=extras
#baseurl=http://mirror.centos.org/centos/$releasever/extras/$basearch/
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/5.6/extras/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-5
#additional packages that extend functionality of existing packages
```

```
[centosplus]
name=CentOS-$releasever - Plus
gpgcheck=1
enabled=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-5

#contrib - packages by Centos Users
[contrib]
name=CentOS-$releasever - Contrib
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/5.6/centosplus/$basearch/
gpgcheck=1
enabled=0
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-5
```

Centos 6.X

```
[base]
name=CentOS-$releasever - Base
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/6.2/os/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6

[addons]
name=CentOS-$releasever - Addons
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/6.2/addons/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
enabled=0
#additional packages that may be useful

[extras]
name=CentOS-$releasever - Extras
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/6.2/extras/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
#additional packages that extend functionality of existing packages

[centosplus]
name=CentOS-$releasever - Plus
gpgcheck=1
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/6.2/centosplus/$basearch/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
#contrib - packages by Centos Users

[contrib]
name=CentOS-$releasever - Contrib
baseurl=http://yum.globalcloud.fujitsu.com.au/centos/6.2/contrib/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
```

Configure VM to use primary DNS

Setup the local resolver on each VM requiring DNS. Every VM in the v-sys requiring DNS services requires this change irrespective of the network zone they reside.

24. For each VM requiring DNS services, create a remote SSH connection and perform the following steps:

For Centos 5:

- Use a file editor of choice (vi is used in this example), edit the local resolver file, `/etc/resolv.conf`
- Add the line `nameserver <fcgp-dns-ip-address>` to the bottom of the resolver file,

```
nameserver 137.172.209.9
```

NOTE: 137.172.209.9 is the Primary DNS server on the FUJITSU Cloud Service S5.

- Save the changes and exit the editor.
- Reload the resolv.conf configuration using the command `/etc/init.d/nscd restart`

```
[root@localhost ~]# /etc/init.d/nscd restart
Stopping nscd: [ OK ]
Starting nscd: [ OK ]
```

For Centos 6:

- Use a file editor of choice (vi is used in this example), edit the IP config file `/etc/sysconfig/network-scripts/ifcfg-eth0`, and add an entry as add the line `DNS1= <fcgp-dns-ip-address>` to the bottom of the resolver file (PUTTY may stop responding, so close and reopen if it does).

```
DNS1=137.172.209.9
```

NOTE: 137.172.209.9 is the Primary DNS server on the FUJITSU Cloud Service S5.

```
DEVICE="eth0"
BOOTPROTO="dhcp"
DHCPV6C="yes"
IPV6INIT="yes"
IPV6_AUTOCONF="no"
NM_CONTROLLED="no"
ONBOOT="yes"
TYPE="Ethernet"
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV6_FAILURE_FATAL="yes"
IPV6_DEFROUTE="yes"
IPV6_FAILURE_FATAL="no"
NAME="System eth0"
UUID="26d2c7fa-7090-e181-ae1a-560bfc91ed06"
DNS1=137.172.209.9
-- INSERT --
```

- Save the changes and exit the editor.
25. yum is now setup and configured
26. Confirm the correct local DNS configuration using `nslookup` in interactive mode,

```
[root@localhost ~]# nslookup
> server
Default server: 137.172.209.9
Address: 137.172.209.9#53
> exit
[root@localhost ~]#
```

27. Finally test the ability of DNS to resolve a familiar domain name using the following **nslookup** syntax,

```
[root@localhost sbin]# nslookup www.google.com.au
Server:          137.172.209.9
Address:         137.172.209.9#53

Non-authoritative answer:
Name:   www.google.com.au
Address: 74.125.237.95
Name:   www.google.com.au
Address: 74.125.237.87
Name:   www.google.com.au
Address: 74.125.237.88
[root@localhost sbin]#
```

yum is now setup and configured.

Update CentOS using YUM Service

28. To refresh the YUM service, run the command **yum clean all**

```
[root@localhost ~]# yum clean all
Loaded plugins: fastestmirror, refresh-packagekit, security
Cleaning repos: base centosplus contrib extras
Cleaning up Everything
Cleaning up list of fastest mirrorsUpdated Packages
[root@localhost ~]#
```

29. To update CentOS, run the command **yum update**
 30. During the update process (after the updates have been verified) you will be presented with the prompt: is this ok [y/N]: Enter y to complete the process Note: it may take sometime to perform the update.

```
[root@localhost ~]# yum update
Loaded plugins: fastestmirror, refresh-packagekit, security
Determining fastest mirrors
base                               | 3.7 kB    00:00
base/primary_db                    | 4.5 MB    00:00
centosplus                          | 3.5 kB    00:00
centosplus/primary_db              | 1.7 MB    00:00
contrib                             | 951 B     00:00
contrib/primary                    | 203 B     00:00
extras                             | 3.5 kB    00:00
extras/primary_db                  | 8.9 kB    00:00
Setting up Update Process
Resolving Dependencies
--> Running transaction check
--> Package kernel.x86_64 0:2.6.32-220.23.1.el6.centos.plus will be installed
--> Package kernel-devel.x86_64 0:2.6.32-220.23.1.el6.centos.plus will be installed
```

```

---> Package kernel-firmware.noarch 0:2.6.32-220.el6 will be updated
---> Package kernel-firmware.noarch 0:2.6.32-220.23.1.el6.centos.plus will be an update
---> Package kernel-headers.x86_64 0:2.6.32-220.el6 will be updated
---> Package kernel-headers.x86_64 0:2.6.32-220.23.1.el6.centos.plus will be an update
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package          Arch    Version                               Repository      Size
=====
Installing:
kernel           x86_64  2.6.32-220.23.1.el6.centos.plus      centosplus     25 M
kernel-devel    x86_64  2.6.32-220.23.1.el6.centos.plus      centosplus     7.3 M
Updating:
kernel-firmware noarch  2.6.32-220.23.1.el6.centos.plus      centosplus     6.3 M
kernel-headers  x86_64  2.6.32-220.23.1.el6.centos.plus      centosplus     1.6 M

Transaction Summary
=====
Install          2 Package(s)
Upgrade         2 Package(s)

Total download size: 40 M
Is this ok [y/N]: Y
Downloading Packages:
(1/4): kernel-2.6.32-220.23.1.el6.centos.plus.x86_64.rpm | 25 MB    00:01
(2/4): kernel-devel-2.6.32-220.23.1.el6.centos.plus.x86_ | 7.3 MB    00:00
(3/4): kernel-firmware-2.6.32-220.23.1.el6.centos.plus.n | 6.3 MB    00:00
(4/4): kernel-headers-2.6.32-220.23.1.el6.centos.plus.x8 | 1.6 MB    00:00
-----
Total                               13 MB/s | 40 MB    00:03
warning: rpmts_HdrFromFdno: Header V3 RSA/SHA1 Signature, key ID c105b9de: NOKEY
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
Importing GPG key 0xC105B9DE:
  Userid : CentOS-6 Key (CentOS 6 Official Signing Key) <centos-6-key@centos.org>
  Package: centos-release-6-2.el6.centos.7.x86_64 (@anaconda-CentOS-201112102333.x86_64/6.2)
  From   : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
Is this ok [y/N]: Y
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
Warning: RPMDB altered outside of yum.
  Updating   : kernel-firmware-2.6.32-220.23.1.el6.centos.plus.noarch      1/6
  Installing : kernel-2.6.32-220.23.1.el6.centos.plus.x86_64              2/6
  Installing : kernel-devel-2.6.32-220.23.1.el6.centos.plus.x86_64        3/6
  Updating   : kernel-headers-2.6.32-220.23.1.el6.centos.plus.x86_64     4/6
  Cleanup    : kernel-firmware-2.6.32-220.el6.noarch                      5/6
  Cleanup    : kernel-headers-2.6.32-220.el6.x86_64                       6/6
Installed:
kernel.x86_64 0:2.6.32-220.23.1.el6.centos.plus    kernel-devel.x86_64 0:2.6.32-220.23.1.el6.centos.plus

Updated:
kernel-firmware.noarch 0:2.6.32-220.23.1.el6.centos.plus
kernel-headers.x86_64 0:2.6.32-220.23.1.el6.centos.plus

```

```
Complete!
```

```
[root@localhost ~]#
```

31. Once complete, the OS version can be verified by running **cat /etc/*release***

```
[root@localhost ~]# cat /etc/*release*  
CentOS release 6.2 (Final)  
CentOS release 6.2 (Final)  
CentOS release 6.2 (Final)  
cpe:/o:centos:linux:6:GA [root@localhost ~]#
```

Contact

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