Installing Red Hat Enterprise Virtualization Offline (RHEV 3.0)

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2/2/2012

EXECUTIVE SUMMARY

Installing a Red Hat Enterprise Virtualization environment for RHEV 3.0 requires access to Red Hat Network software repositories. If you are trying to install your Red Hat Enterprise Virtualization Manager (RHEV-M) or hypervisors on a private network or behind a firewall (with no satellite server available) you may not have direct access to Red Hat Network.

By downloading the packages you need in advance and configuring a local yum repository, you can install a RHEV environment without direct access to Red Hat Network. This Tech Brief describes how to do that.

INSTALLING RHEV OFFLINE FROM A LAPTOP

There are a few ways to gather the software packages you need to install a RHEV environment offline (not connected to the Internet).

One way is to download all necessary software channels and set up an install server (FTP or HTTP) that can be transported to the network containing your RHEV systems. Another is to download and copy the software channels to removable media and install each system from that medium.

This procedure describes the laptop approach. Later, I describe how to do it with removable media.

1. **Install RHEL.** Install a Red Hat Enterprise Linux 6 Server system (this can be done as a virtual machine on a laptop) on a computer that has access to Red Hat Network. This system will be used as an FTP install server to install all systems you need for your RHEV environment.

   NOTE: Make sure there is plenty of disk space available on the disk image or other storage device you use when you install this system. When I ran this procedure, it required about 13GB of disk space to install the the require channels. Leave extra space for future growth as well.

2. **Register RHEL.** Register the system with Red Hat Network. For example:

   ```
   # rhnreg_ks --activationkey="your_activation_key"
   ```

3. **Enable channels from RHN.** For this system, you can go to Red Hat Network and enable the channels you need to later install your RHEV-M and hypervisor systems. Check the [Red Hat Enterprise Virtualization 3.0 Installation Guide](http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Virtualization/3.0/html-single/Installation_Guide/index.html) (http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Virtualization/3.0/html-single/Installation_Guide/index.html) for the channels needed for both RHEV-M and hypervisor systems.
   Beyond those channels, you need to get channels that will be required later to install virtual machines on your hypervisors. Here are some of the channels to consider for RHEV 3.0, in addition to the regular RHEL 6 Server channel (rhel-x86_64-server-6):

RHEV-M Channels

```
Red Hat Enterprise Virtualization Manager (v.3 x86_64)
       rhel-x86_64-server-6-rhevm-3
JBoss Application Platform (v 5 in rpm)
       jbappplatform-5-x86_64-server-6-rpm
RHEL Server Supplementary (v. 6 64-bit x86_64)
       rhel-x86_64-server-supplementary-6
```

Hypervisor Channels

```
Red Hat Enterprise Virt Management Agent (v.6 for x86_64)
       rhel-x86_64-rhev-mgmt-agent-6
```

RHEL Guests

There are "Red Hat Enterprise Virtualization Agent" channels available that include packages
to provide the in-guest agent for RHEL 5 and RHEL 6 virtual machines. Features in these
packages provide the means for monitoring those systems from the RHEV-M. The features include
heartbeating, IP addresses, user reporting, application reporting and single sign-on (the latter for
RHEL 6 only). If you only install RHEL guests for x86_64 server platform, just enable this channel:

```
Red Hat Enterprise Virt Agent (v.6 for x86_64)
       rhel-x86_64-rhev-agent-6-server
```

For any of these channels, tied to different architectures (such as 32-bit) or system types (client or
workstation), you can download packages separately from RHN and copy them to the install server:

```
Red Hat Enterprise Virt Agent (v.6 Server for 32-bit x86)
Red Hat Enterprise Virt Agent (v.6 Server 64-bit AMD64/Intel64)
Red Hat Enterprise Virt Agent (v.5 Server for 32-bit x86)
Red Hat Enterprise Virt Agent (v.5 Server for 64-bit AMD64/Intel64)
Red Hat Enterprise Virt Agent (v.5 Client for 32-bit x86)
Red Hat Enterprise Virt Agent (v.5 Client for 64-bit AMD64/Intel64)
Red Hat Enterprise Virt Agent (v.6 Workstation for 64-bit AMD64/Intel64
Red Hat Enterprise Virt Agent (v.6 Client for 32-bit x86)
Red Hat Enterprise Virt Agent (v.6 Client for 64-bit AMD64/Intel64)
```

4. **Add channels on your install server.** For each channel, run the **rhn-channel** command to add
   the channel to the RHEL system running on your laptop. For example:

```
# rhn-channel --add --channel=rhel-x86_64-server-6-rhevm-3
# rhn-channel --add --channel=rhel-x86_64-server-supplementary-6
# rhn-channel --add --channel=rhel-x86_64-rhev-mgmt-agent-6
# rhn-channel --add --channel=rhel-x86_64-rhev-agent-6-server
# rhn-channel --add --channel=jbappplatform-5-x86_64-server-6-rpm
```

5. **Set up FTP server.** To be able to share the repository, you could install and start up an FTP server
   on the laptop. The channels selected need at least 13GB of disk space available in **/var/ftp/pub**:

```
# yum install vsftpd
# chkconfig vsftpd on
# service vsftpd start
# mkdir /var/ftp/pub/rhevrepo
```

6. **Download packages.** To download all the packages from your available channels, change to the directory you want to use to hold the repository and type the following (this may take a few hours to complete, depending on the speed of your network):

```
# cd /var/ftp/pub/rhevrepo
# reposync -l .
```

7. **Create repositories**. Run the **createrepo** command on each of the subdirectories where you downloaded the packages (**/var/ftp/pub/rhevrepo/***). (Run **yum install createrepo** if the command is not yet installed on your system.) Here are a couple of examples:

```
# createrepo /var/ftp/pub/rhevrepo/rhel-x86_64-server-6
# createrepo /var/ftp/pub/rhevrepo/rhel-x86_64-server-rhevm-3
# createrepo /var/ftp/pub/rhevrepo/rhel-x86_64-server-supplementary-6
...
```

8. **Create yum .repo files.** Next create a yum repo file that client systems (the ones where you will install your RHEV-M and hypervisor systems) can use to point to your repository. At this point, connect your laptop to the network on which your RHEV systems are located. Then determine your laptop's host name or IP address. The following file illustrates a .repo file with your laptop located at the IP address 192.168.0.99. (You can call the file something like **rhev.repo**.)

```
[rhel6]
name=Red Hat Enterprise Linux 6
baseurl=ftp://192.168.0.99/pub/rhevrepo/rhel-x86_64-server-6
enabled=1
gpgcheck=0

[rhevm]
name=Red Hat Enterprise Virtualization Manager
baseurl=ftp://192.168.0.99/pub/rhevrepo/rhel-x86_64-server-6-rhevm-3
enabled=1
gpgcheck=0

[jbossapp]
name=JBoss Application Platform (v 5 in rpm)
baseurl=ftp://192.168.0.99/pub/rhevrepo/jbappplatform-5-x86_64-server-6-rpm
enabled=1
gpgcheck=0

[rhelsupp]
name=Red Hat Enterprise Linux Server Supplementary
baseurl=ftp://192.168.0.99/pub/rhevrepo/rhel-x86_64-server-supplementary-6
enabled=1
gpgcheck=0

[rhevagent]
name=Red Hat Enterprise Virt Management Agent
baseurl=ftp://192.168.0.99/pub/rhevrepo/rhel-x86_64-rhev-mgmt-agent-6
enabled=1
gpgcheck=0
```

NOTE: When you are ready to install guest systems on the hypervisors, create a .repo file that points to the "Red Hat Enterprise Virtualization Agent" channels as well. Use that .repo file to get the packages that allow guests to be monitored by the RHEV-M. Here's an example:

www.redhat.com

```
[rhevclient]
name=Red Hat Enterprise Virt Agent
baseurl=ftp://192.168.0.99/pub/rhevrepo/rhel-x86_64-rhev-agent-6-server
enabled=1
gpgcheck=0
```

9. **Begin installing your RHEV-M**. In this step, you start by installing a RHEL 6.x X86_64 system that will contain the RHEV-M. You need some RHEL 6.1 installation medium to start the installation. I acquired the RHEL 6.1 DVD (rhel-server-6.1-x86_64-dvd.iso) and did a basic server install (I also added a GNOME desktop, although that is not required).

10. **Add .repo file to your RHEV-M**. Copy the .repo file you created two steps earlier to the **/etc/yum.repos.d/** directory on the RHEV-M system.

11. **Update packages on your RHEV-M**. With the repository file in place, type the following to get the latest versions of each package installed on your system:

    # **yum update**

12. **Install the rhevm-setup package on your RHEV-M**. At this point, run **yum install rhevm-setup** on the RHEV-M system. If the repositories are set up properly and available, the necessary packages are installed. You can then continue with the RHEV-M configuration described in the Red Hat Enterprise Virtualization 3.0 Installation Guide. If you have problems, check out the Troubleshooting Red Hat Enterprise Virtualization Manager Installation (RHEV 3.0) tech brief.

13. **Begin installing your Hypervisors**. For a RHEL 6.1 host, in general, follow the description for installing a RHEL hypervisor from the Red Hat Enterprise Virtualization 3.0 Installation Guide, with the exception that once the base system is installed, you can add the .repo file you created earlier to the **/etc/yum.repos.d/** directory before updating your system (**yum update**) and activating it to the RHEV-M.
    For a RHEV-H host, likewise do an installation based on descriptions in the installation guide, but be sure to get the RHEV-H ISO image to install from.

14. **Begin installing your VMs**. Begin planning and installing the virtual guests you want to run on your hypervisors, as described in the Red Hat Virtualization 3.0 Administration Guide. After a guest is installed, you can copy the .repo file that identifies the "Red Hat Enterprise Virtualization Agent" channel software needed to allow the RHEV-M to communicate with the guest.

INSTALLING RHEV OFFLINE FROM REMOVABLE MEDIA

Instead of using a laptop as an install server, you can gather all the packages you need to a USB drive or other removable media and use that to install your RHEV-M and RHEV hypervisor systems. Follow the same procedure as you did for setting up a RHEL system running on a laptop (or virtual machine on a laptop) to the point where the packages are downloaded and you have created repositories.

After that, copy the directory structure (in this case, starting at **/var/ftp/pub/rhevrepo**) to a USB drive or other removable media that can hold the packages from all the channels. Connect that drive to the RHEV-M or hypervisor after the base install is done. Then use the same .repo file, but change the **ftp://192.168.0.99/pub/rhevrepo** for each entry to the location of the file system on the removable media (such as **file:///media/disk/rhevrepo/**, depending on where it is mounted).

If you don't have a DVD drive available for every install, you can simply copy the contents of the DVD on to a Web

server or FTP server (as shown previously). Then make that server accessible to the installer when you begin installing Red Hat Enterprise Linux.

UPDATING YOUR RHEV SYSTEMS

As updated RPM packages become available, you will probably want to bring those packages across from Red Hat Network to use with your RHEV systems. To do that, simply repeat the procedure for syncing and sharing the channels (add the -n option to reposync to only get new packages: **reposync -l -n .**). Next, make sure the channels containing the updated packages are copied to the laptop or server that's serving those packages. And finally, run **yum update** from each VM and hypervisor system.

SUMMARY

To install RHEV systems (RHEV-M and hypervisors) that are disconnected from the Internet or otherwise unable to access Red Hat Network, you need a way of getting the necessary rpm packages to those disconnected systems. This document describes how to do that by setting up an install server on a laptop or by gathering and copying the packages to removable media.