

# **Squid on RSP**

## Deployment Guide

## DEPLOYING SQUID ON RIVERBED SERVICES PLATFORM (RSP)

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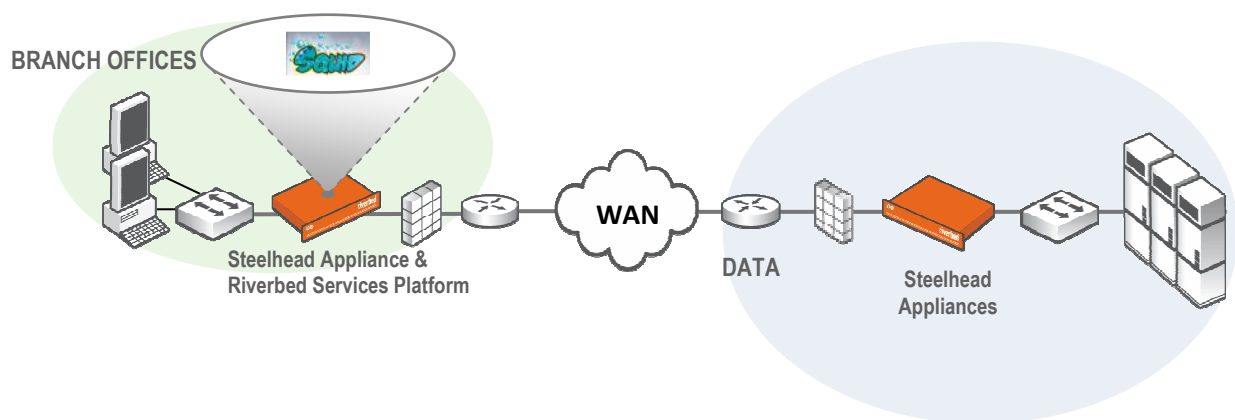
### Introduction

Squid is open source cache and proxy server. It can be deployed on RSP to cache general internet traffic while using the Steelhead to accelerate traffic to the data center. This deployment guide will walk through the steps necessary to deploy Squid on RSP. Though there are many ways to configure and install Squid, this document will focus on installing Squid 3.0 on Ubuntu Linux and configuring Squid as an explicit proxy.

### Required Software and Hardware

- [VMware Server](#)
- RiOS 6.0 or later
- RSP 6.0 or later
- Disk image of [Ubuntu Linux](#)
- RSP Package Creator for RSP 6.0
- 512 MB of RAM available in RSP
- 2 GB of disk available in RSP

### Typical Deployment



### Creating the Virtual Machine

The first step is to create the virtual machine. This can be done on any workstation with VMware Server installed. The following steps are outlined the RSP Package Creation Guide but are reproduced here with minor modifications for ease of installation.

1. Double-click the VMware Server Home Page icon on your workstation desktop to display VMware Infrastructure Web Access.
2. Log in using your workstation user name and password.

3. Place your cursor at the root directory in the **Inventory** panel, click the **Summary** tab, and select **Create Virtual Machine** under the Commands panel to display the **Name and Location** page.
4. On the **Name and Location** page:
  - Enter *Squid* for the name of the virtual machine. The virtual machine name is used in the list of available virtual machines. The name is also used for the automatically created subfolder in the data store. The subfolder contains all the files associated with the virtual machine.
  - Select a data store from the list of available data stores.
  - Click **Next** to display the **Guest Operating System** page.
5. On the **Guest Operating System** page:
  - Select **Linux operating system**.
  - Select the **Ubuntu Linux (32-bit)** from the drop-down list.
  - Optionally, expand **Product Compatibility** to select the virtual machine hardware version.
  - Click **Next** to display the **Memory and Processors** page.
6. On the **Memory and Processors** page:
  - Adjust the memory settings as necessary. The default memory setting is sufficient for Squid.
  - Select **1** from the number of processors for the virtual machine from the drop-down list and click **Next** to display the **Hard Disk** page.
7. On the **Hard Disk** page, select **Create a New Virtual Disk** to display the **Properties** page.
8. On the **Properties** page:
  - Specify the hard disk size and location.
  - Expand **File Options** and specify **Allocate all disk space now**.
  - Expand **Disk Mode**, select **Independent**, and specify **Persistent**.
  - Expand **Virtual Device Node** and perform the following:
    - select an adapter from the drop-down list.
    - select **0** (zero) from the device number drop-down list.
  - Expand **Policies** and select one of the following:
    - Optimize for safety.
    - Optimize for performance.
  - Click **Next** to display the **Network Adapter** page.
9. On the **Network Adapter** page, select **Add a Network Adapter**. This option adds a network adapter to your virtual machine.
  - Select **Bridged** from the type of network drop-down list.
  - Select **Connect at Power On**.
  - Click **Next** to display the Home page.
10. On the CD/DVD Drive page, select **Use an ISO Image**.
  - Copy the Ubuntu disk image to **C:\Virtual Machines** (if workstation is Windows)
  - Click **Browse** to bring up the **Select File** menu. Under the **Inventory** panel select **Standard**. The disk image will now be listed under the **Contents** panel. Select it then click **OK**.
  - Click **Next** to display the **Floppy Drive** page.
11. On the **Floppy Drive** page, select **Don't Use a Floppy Drive**.
  - Click **Next** to display the **USB Controller** page.
12. On the **USB Controller** page, select **Don't Add a USB Controller**.
  - Click **Next** to display the **Ready to Complete** page.
13. On the **Ready to Complete** page, verify your setup and click **Finish** to create the virtual machine. The wizard:
  - Creates the files and hardware for your virtual machine.
  - Saves the files using the filename you previously specified in the virtual machine. On a Windows Operating System, the virtual machine is saved in the **C:\Virtual Machines** folder.
  - Displays the virtual machine under the Inventory panel.

## Installing the Guest Operating System

The next step is to install the Guest Operating System, which will be Ubuntu in this case.

1. *Squid* will now be listed under the **Inventory** panel. Select it.
  2. Select the **Console** tab under the *Squid* panel. Power on the virtual machine by clicking anywhere under the **Console** tab.
  3. One the virtual machine has powered on, open up the console window by again clicking anywhere under the **Console** tab.
  4. Double click **Install Ubuntu** and continue through the installation process.
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## Installing Squid

The next step is to install Squid. This will be done using *apt-get*.

1. Open up a terminal emulator (Applications -> Accessories -> Terminal).
2. Type *sudo apt-get install squid3* to install Squid.

## Configuring Squid

Now that Squid is installed, the next step is to configure it.

1. Open up */etc/squid3/squid.conf* with any text editor.
2. Search for *cache\_dir ufs /var/spool/squid3 100 16 256*, it should be commented out with a #.
  - Uncomment this line.
  - The first number parameter specifies the size of the cache in MBs. By default it is 100 MB. Increase this to a more suitable size.
3. Search for *acl localnet src*. There should be three separate lines, all commented out. These are ACLs which will later be used to specify which subnets are allowed access to the proxy.
  - Uncomment one of the lines.
  - Change the IP address and subnet mask to match your local network.
4. Search for *http\_access allow localnet* and uncomment it. This will use the ACL specified in the previous step to restrict access to the proxy.
5. Save and close */etc/squid3/squid.conf*.
6. Type *sudo squid3 -k shutdown*. This will shutdown Squid.
7. Type *sudo squid3 -z*. This will create the cache directory structure and only needs to be executed once.
8. Type *sudo squid3* to restart Squid.

## Creating the RSP Package

These steps are outlined in the RSP Package Creation Guide but again are reproduced here with minor modifications for ease of installation.

### Reconfiguring the virtual machine for RSP

The CD-ROM, Floppy, and USB (if configured) need to be removed prior to RSP package creation.

1. In the **Inventory** panel, select the virtual machine.
2. Verify that the virtual machine is off.
3. Under the Summary - Hardware tab, select the floppy drive, click **Remove** and **Yes**. The floppy drive is removed.
4. Under the Summary - Hardware tab, select the CD-ROM, click **Remove** and **Yes**. The CD-ROM is removed.
5. Under the Summary - Hardware tab, select the USB, click **Remove** and **Yes**. The USB is removed.

### Adding a Serial Port

A serial port is needed for Heartbeat Watchdog functionality.

1. Start the VMware **Add Hardware** wizard and select the virtual machine from the **Inventory** panel.
2. Verify that the virtual machine is powered off. If the virtual machine is on, shut down the guest operating system and click **Power Off** on the tool bar.
3. In the Summary - Commands tab, click **Add Hardware** to display the Add Hardware wizard page.
4. In the Add Hardware wizard:
  - Select **Serial Port** and **Use Named Pipe**.
  - Enter the pathname and filename for the pipe using the following format:
    - On Windows hosts: `\\.\pipe\<namedpipe>`
  - For **Near End**, accept the default setting **Is a server**.
  - For **Far End**, select **Is an application**.
  - Click **Yes** to select **Connect at Power On** (the default) to connect to the named-pipe when you power on the virtual machine.

- Optionally, you can select **Yield CPU** on poll by expanding the I/O Mode. The target virtual machine kernel uses the virtual serial port in polled mode, not interrupt mode.
  - Click **Next**.
5. Verify your configuration summary and click **Finish**.

### Using the RSP Package Creator Wizard

1. Start the Package Creator wizard to display the Welcome page.
2. Browse to the folder that contains the virtual machine you created. On a Windows operating system, the virtual machine is located in the **C:\virtual machines** folder.
3. Click **Next** to display the **RSP Package Configuration** page.
4. Under the **RSP Package Configuration** page:
  - Fill in values for the **Name**, **Description**, and **Package Version** fields. The values are arbitrary.
  - Leave **Encrypt VMDK Files** unchecked.
  - Fill *Squid* in the **Slot Name** field.
5. Click **Next** to display the **Watchdog Configuration** page.
6. On the **Watchdog Configuration** page:
  - Change Target IP Address to the IP Address planned to be used for Squid.
  - Leave all other fields as default.
7. Click **Next** to display the **Network Interface Preferences** page.
8. Click **Add** under **Optimization Interfaces**.
9. Fill in *VIP* under **Interface Name**.
10. Select *Virtual In-Path* as the **Interface Type**
11. Under **Packet Policies** select **L2 Switch** for both **Policy for IP Traffic...** and **Policy for Non-IP Traffic**. Click **OK** to continue.
12. Click **Next** to display the **Ready to Generate RSP Package** page.
13. Fill in *Squid* under the **Package File Name** field.
14. Click **Create Package** to create the package. This could take several minutes.
15. Click **Finish** to close the wizard.

### Uploading the RSP Package

There are multiple ways to upload the package to the Steelhead. This example uses FTP.

1. From the Steelhead web interface navigate to Configure -> Branch Services -> RSP Packages.
2. Click on *Add a Package*.
3. Select *From URL* and then enter the location of the package.

### Slotting, Enabling, and Powering on the package

Now that the image has been uploaded to the Steelhead, we need to pick a slot for it, enable it, and finally power it on.

1. From the Steelhead web interface navigate to Configure -> Branch Services -> RSP Packages
2. Under **Slots**, click on any available slot.
3. In the pull-down list for "Package File Name", choose *Squid.pkg*. The name of the slot should change to *Squid*.
4. Click on **Update Slot**
5. If successful, message would appear confirming that package has been deployed successfully on slot.
6. Click on *Squid* under **Slots**.
7. Click on **Enable Slot** to power on the package.
8. Wait for the package to power on

### Configuring the VNI

Now that the slot has been powered on we can configure the Virtual Network Interface (VNI).

1. From the Steelhead web interface navigate to Configure -> Branch Services -> RSP Data Flow inpath0\_0. If using a different inpath, navigate to the RSP Data Flow corresponding to that inpath.
2. Click on **Add a VNI**.
3. Under **Interface** select the *Squid:VIP*.
4. Under **Data Flow Position** select **Start** to ensure that Squid is deployed on the LAN side of RiOS.

5. Click **Add** to add the VNI to the data flow.

## Accessing and Final Configuration of the package

The final configuration step is to access the console of the package running on RSP and configure the IP address of the Squid server.

1. From the Steelhead web interface navigate to Configure -> Branch Services -> RSP Packages
2. Under **Slots**, click on *Squid*.
3. Click on **Launch VM Console**
4. A new window/tab will open. Login as **admin** and enter the Steelhead password
5. Click **Login**
6. Click in the black window to open Ubuntu console.
7. From the Ubuntu console:
  - Navigate to System -> Preferences -> Network Connections
  - Select the network interface and click **Edit**. This will open up a new window.
  - Click on the **IPv4 Settings** tab.
  - Fill in the desired IP information and click **Apply**.

## Testing the installation

The configuration is now complete and all that remains is to test the solution.

1. With Firefox:
  - Navigate to Tools -> Options
  - Click on the **Network** tab.
  - Under **Connection** click on **Settings...** This should open up a new window.
  - Select **Manual proxy configuration**.
  - Fill in the IP address of the Squid server and 3128 for the port. 3128 is the default port which can be changed by editing */etc/squid3/squid.conf*.
  - Click **OK** and attempt to load a web page.
2. With Internet Explorer:
  - Navigate to Tools -> Internet Options
  - Click on the **Connections** tab.
  - Click on **LAN Settings**.
  - Under **Proxy Server** click the **Use a proxy server...** checkbox
  - Fill in the IP address of the Squid server and 3128 for the port. 3128 is the default port which can be changed by editing */etc/squid3/squid.conf*.
  - Click **OK** and attempt to load a web page.