Foreman Bonding During Provisioning

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This documentation describes a method to create bonded network interfaces during provisioning. It has not been thoroughly tested due to equipment limitations, but the resultant configuration files should be correct.

Create the Provisioning Template for Bonding

From the Foreman user interface, select **More** and then **Provisioning** from the drop down menu. Select **Provisioning Templates** from the newly presented drop down menu.

Select **New Template** and a **New Template** screen appears. Enter **bond_interfaces** in the **Name** field and select the **Snippet** field to place a checkmark in it.

Place the following code in the Template editor window.

Snippet: bond_interfaces

```
declare -A bonds=<%= @host.params["bonds"] %>
declare -A bond_opts=<%= @host.params["bond_opts"] %>
declare -A bond_ifaces=<%= @host.params["bond_ifaces"] %>

for bond in ${!bonds[@]}
do
  read parms <<< $( tr -d '\r' <<< ${bonds[$bond]} )

  unset bond_info
  declare -A bond_info=(  \
                        [DEVICE]="${bond}" \
                        [PROTO]="dhcp" \
                        [ONBOOT]="no"      \
                        [NM_CONTROLLED]="no"      \
                        )

  for parm in ${parms}
  do
    case $parm in
         onboot ) bond_info[ONBOOT]="yes"
                  ;;

           none ) bond_info[PROTO]="none"
                  ;;

         static ) bond_info[PROTO]="static"
                  ;;

           dhcp ) bond_info[PROTO]="dhcp"
                  ;;

           vlan ) bond_info[VLAN]="yes"
                  ;;

 *.*.*.*/*.*.*.* ) read IP NETMASK <<< $( tr '/' ' ' <<< ${parm} )
                  bond_info[IP]="${IP}"
                  bond_info[NETMASK]="${NETMASK}"
                  ;;
```

```
    esac
  done

  cat << EOB > /etc/sysconfig/network-scripts/ifcfg-${bond}
DEVICE=${bond}
ONBOOT=${bond_info[ONBOOT]}
NM_CONTROLLED=${bond_info[NM_CONTROLLED]}
BOOTPROTO=${bond_info[PROTO]}
BONDING_OPTS="$( tr -d '\r' <<< ${bond_opts[$bond]} )"
EOB

  [[ "${bond_info[PROTO]}" = "static" ]] && cat << EOB >> /etc/sysconfig/network-scripts/ifcfg-${bond}
IPADDR=${bond_info[IP]}
NETMASK=${bond_info[NETMASK]}
EOB

  [[ "${bond_info[VLAN]}" = "yes" ]] && cat << EOB >> /etc/sysconfig/network-scripts/ifcfg-${bond}
VLAN=${bond_info[VLAN]}
EOB

for iface in $( tr -d '\r' <<< ${bond_ifaces[$bond]} )
do
  cat << EOI > /etc/sysconfig/network-scripts/ifcfg-${iface}
DEVICE=${iface}
BOOTPROTO=none
ONBOOT=${bond_info[ONBOOT]}
MASTER=${bond}
SLAVE=yes
NM_CONTROLLED=no
EOI
  done

done
```

Select the **Submit** button at the bottom of the page to save the newly created snippet.

Update the Kickstart Template

The kickstart template must be modified to use the new snippet. Place the following line inside the **%post** section of the **Kickstart Provisioning Template**.

```
<%= snippets "bond_interfaces" %>
```

Configure Host for Bonding

Bonding is configured by setting three Puppet *Class Host Parameters*, the **bonds**, **bond_ifaces**, and **bond_opts** host parameters. These are added by editing the host in the Foreman interface and selecting the **Parameters** tab. The **+ Add Parameter** button is used to create new parameters.

Parameters

The parameters are defined in the format of bash associative arrays. When the parameters are accessed by the snippet, carriage returns are are stripped from the input. This means that carriage returns can be used for readability when setting the Parameter Values. Care should be taken to use carriage returns only between array elements and not withing the array elements themselves.

bonds

The **bonds** parameter specifies the basic bond information. It accepts the following options.

onboot
: The bond is enabled when the system boots. Default is *disabled*.

dhcp | static | none
: The bond gets its network configuration using DHCP, the network configuration is staticaly configured, or the bond has no network configuration. If none are specified, *dhcp* is assumed.

vlan
: This bond is a VLAN.

x.x.x.x/y.y.y.y
: The IP address and Network mask of the interface. Used only when static is specified. Must be in the format presented.

Usage Example:

The following entry defines three bonds: bond0, bond1 and bond1.200. All three bonds are enabled because the onboot option is specified in each definition. bond0 is configured for dhcp. bond1 is configured with no network configuration. bond1.200 is configured as a vlan with static network configuration.

```
( [bond0]="onboot dhcp" [bond1]="onboot none" [bond1.200]="onboot static vlan 192.168.100.10/255.255.255.0"
```

This entry can also be entered into the Foreman interface as:

```
( [bond0]="onboot dhcp"
[bond1]="onboot none"
[bond1.200]="onboot static vlan 192.168.100.10/255.255.255.0" )
```

bond_ifaces

The bond_ifaces parameter specifies the interfaces to use for each bond.

Usage Example:

The following entry assigns eth1, eth4, and eth5 to bond0 and eth0 and eth3 to bond1.

```
( [bond0]="eth1 eth4 eth5" [bond1]="eth0 eth3" )
```

bond_opts

The bond_opts parameter specifies the bonding options to use for each bond. It accepts any valid interface

bonding parameters.

Usage Example:

```
( [bond0]="mode=1 miimon=10" [bond1]="mode=802.3ad" )
```

Example Configuration with Bonds and VLANs

The following configuration will configure 5 vlans across two bonds. The first bond uses eth1, eth4, and eth5 for vlans 141, 151, and 170. The second bond uses eth0 and eth3 for VLANs 140 and 150. Both bonds are confgiured for 802.3ad bonding mode. Each VLAN is assigned an IP address on its respective network.

Eth2 is not bonded and is used for provisioning.

Configuration

Create a parameter with a **Name** of **bonds**. Enter the following for its **Value**.

```
( [bond0]="onboot none"
[bond1]="onboot none"
[bond0.141]="onboot static vlan 192.168.141.2/255.255.255.0"
[bond0.151]="onboot static vlan 192.168.151.2/255.255.255.0"
[bond0.170]="onboot static vlan 192.168.170.2/255.255.255.0"
[bond1.140]="onboot static vlan 192.168.140.2/255.255.255.0"
[bond1.150]="onboot static vlan 192.168.150.2/255.255.255.0" )
```

Create a parameter with a **Name** of **bond_ifaces**. Enter the following for its **Value**.

```
( [bond0]="eth1 eth4 eth5"
[bond1]="eth0 eth3" )
```

Create a parameter with a **Name** of **bond_opts**. Enter the following for its **Value**.

```
( [bond0]="mode=803.3ad"
[bond1]="mode=802.3ad" )
```

Screenshot

Resultant Configuration Files

ifcfg-bond0

```
DEVICE=bond0
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=none
BONDING_OPTS="mode=803.3ad"
```

ifcfg-bond0.141

```
DEVICE=bond0.141
```

```
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
BONDING_OPTS=""
IPADDR=192.168.141.2
NETMASK=255.255.255.0
VLAN=yes
```

ifcfg-bond0.151

```
DEVICE=bond0.151
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
BONDING_OPTS=""
IPADDR=192.168.151.2
NETMASK=255.255.255.0
VLAN=yes
```

ifcfg-bond0.170

```
DEVICE=bond0.170
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
BONDING_OPTS=""
IPADDR=192.168.170.2
NETMASK=255.255.255.0
VLAN=yes
```

ifcfg-bond1

```
DEVICE=bond1
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=none
BONDING_OPTS="mode=802.3ad"
```

ifcfg-bond1.140

```
DEVICE=bond1.140
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
BONDING_OPTS=""
IPADDR=192.168.140.2
NETMASK=255.255.255.0
VLAN=yes
```

ifcfg-bond1.150

```
DEVICE=bond1.150
ONBOOT=yes
NM_CONTROLLED=no
BOOTPROTO=static
BONDING_OPTS=""
IPADDR=192.168.150.2
NETMASK=255.255.255.0
VLAN=yes
```

ifcfg-eth0

```
DEVICE=eth0
BOOTPROTO=none
ONBOOT=yes
MASTER=bond1
SLAVE=yes
NM_CONTROLLED=no
```

ifcfg-eth1

```
DEVICE=eth1
BOOTPROTO=none
ONBOOT=yes
MASTER=bond0
SLAVE=yes
NM_CONTROLLED=no
```

ifcfg-eth2 - Original Configuration, configured by Foreman standard provisioning.

```
DEVICE="eth2"
BOOTPROTO="dhcp"
DHCP_HOSTNAME="testhost.example.org"
HOSTNAME="testhost.example.org"
HWADDR="02:00:00:00:60:F0"
IPV6INIT="yes"
MTU="1500"
NM_CONTROLLED="yes"
ONBOOT="yes"
TYPE="Ethernet"
UUID="f7527188-d3a3-4e6a-bff0-c9cc010f8a43"
```

ifcfg-eth3

```
DEVICE=eth3
BOOTPROTO=none
ONBOOT=yes
MASTER=bond1
SLAVE=yes
NM_CONTROLLED=no
```

ifcfg-eth4

```
DEVICE=eth4
BOOTPROTO=none
ONBOOT=yes
MASTER=bond0
SLAVE=yes
NM_CONTROLLED=no
```

ifcfg-eth5

```
DEVICE=eth5
BOOTPROTO=none
ONBOOT=yes
MASTER=bond0
SLAVE=yes
NM_CONTROLLED=no
```

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