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# RHEL6 Networking

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# Agenda

- **RHEL6 Network Features**
- **Network Manager**
- **Bridges and Bonds**
- **VLAN Tagging**
- **IPv6**

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# RHEL6 Network Features

- Enhanced Support for IPv6
  - Mobile IPv6
  - Optimistic Duplicate Address Detection
  - Intra-Site Automatic Tunnel Addressing Protocol
- Netlabel
  - Labels network packets for Linux Security Modules
- Generic Receive Offload

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# NetworkManager

- Daemon to control network interfaces dynamically
  - Wireless
  - DSL
  - 3G ..
- Enabled by default if installed
- uses PolicyKit



# IPv6

- Motivation:
  - Last IPv4 network to be assigned next year
  - More and more mobile gadgets
- Advantages:
  - Much bigger address space (128bit vs. 32bit)
  - Better autoconfiguration options
  - No NAT required



# IPv6 Addresses

- General form:
  - 8 sections of 4 hex digits separated by colons  
2001:0DB8:0000:0000:0216:41FF:FE59:0255
  - Leading zeros can be omitted **or** a single series of zeros replaced by ::  
2001:0DB8::0216:41FF:FE59:0255
  - Loopback: ::1/128
  - Multicast: FF00::/8
    - IPv6 does not support Broadcast



# Segmentation

- Addresses usually divided in /64 “prefixes”
- followed by a Interface Identifier (can be derived from the MAC address)



# IPv6 Configuration

- Statically:

```
/etc/sysconfig/network-scripts/ifcfg-<device>:  
IPV6ADDR=<address>/<prefix>  
IPV6ADDR_SECONDARIES=<address>/<prefix>  [...]
```

- Dynamically:

- By Router Advertisement (e.g. radvd)

```
IPV6_AUTOCONF=true  
IPV6_PRIVACY=rfc3041
```

- Or by DHCPv6



# Bonding

- `/etc/sysconfig/network-scripts/ifcfg-<device>:`

```
DEVICE=eth0
```

```
MASTER=bond0
```

```
SLAVE=yes
```

- `/etc/sysconfig/network-scripts/ifcfg-bond0:`

```
IPADDR=1.2.3.4
```

```
BONDING_OPTS="mode=active-backup"
```

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# Bridges

- Configuration
  - `/etc/sysconfig/network-scripts/ifcfg-<bridge>:`  
TYPE=Bridge  
IPADDR=1.2.3.4
  - `/etc/sysconfig/network-scripts/ifcfg-<device>:`  
BRIDGE=bridgename
- Manual control:
  - `brctl addbr <bridge>`
  - `brctl addif <bridge> <interface>`



# VLAN tagging (802.1q)

- Switches can be zoned using virtual LANs
- Multiple Zones can be assigned to the same port
- Each VLAN can be reached individually
  - Device: `eth0.<vlan number>`
  - Tool: `vconfig`
  - `/proc/net/vlan/config`
- Do not use VLAN 1 (reserved for switch management)
- Can be combined with bonding



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