

Transitioning from i40evf to iavf

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Overview

Intel created the Intel® Adaptive Virtual Function (iavf) driver to provide a consistent, future-proof virtual function (VF) interface for Intel® Ethernet controllers. Previously, when you upgraded your network hardware, you replaced the drivers in each virtual machine (VM) with new drivers that were capable of accessing the new VF device provided by the new hardware. The iavf driver allows you to upgrade your network hardware without the need to update the VF driver in your existing VMs.

Support for adaptive virtual functions was initially added to the existing i40evf drivers (for Microsoft* Windows* and Linux* operating systems) and ixl driver (for the FreeBSD* operating system). Intel renamed the driver from i40evf/ixl to iavf to clarify that the iavf driver will be the VF driver for future devices beyond the devices supported by the i40e/ixl driver. Release 23.5.2 was the last release that contained i40evf/ixl. Release 24.0 is the first release that contains iavf.

Supported Devices

The iavf driver supports devices based on the Intel® Ethernet Controller 800 Series and Intel® Ethernet Controller 700 Series.

Supported Operating Systems

- Linux*
- FreeBSD*
- Microsoft Windows Server*

Transition i40evf to iavf on Linux Operating Systems

NOTES:

- Do not use the i40evf device as your primary interface to access the VM. You must have another way to interact with the VM so you don't lose the connection when you disable the i40evf driver.
- If you are using a kernel/distro that does not contain iavf, and you update your kernel/distro, make sure that iavf is still loaded after the update.

The iavf driver is available in the following kernels/distros:

- Linux 4.20
- RHEL 8.0
- SLE-15-SP1

Update Kernel

If you only use the drivers in the kernel or distro, you do not need to do anything until you update to a kernel or distro that contains the iavf driver. At that point you will need to update any scripts that call the driver by name.

If you update from kernel.org you will automatically get the iavf driver.

Using Linux RPM

1. Copy the iavf driver tar file to your VM image.
2. Unload the previous driver.

```
rmmod i40evf
```

3. Compile the driver module.

```
rpmbuild -tb /path/to/the/driver/file/iavf-[version].tar.gz
```

4. Install the driver.

- a. RHEL:

```
rpm -i /root/rpmbuild/RPMS/x86_64/iavf-[version]-1.x86_64.rpm
```

- b. SLES:

```
rpm -i /usr/src/packages/RPMS/x86_64/iavf-[version]-1.x86_64.rpm
```

5. Load the new driver module.

```
modprobe iavf
```

Install Using Linux tarball

1. Copy the iavf driver tar file to your VM image.
2. Untar the file.

```
tar xzf iavf-<x.x.x>.tar.gz
```

where

<x.x.x> is the version number for the driver tar file.

3. Change to the src directory under the unzipped driver file.
4. Compile the driver module.

```
make
```

```
make install
```

5. Make sure that any older i40evf drivers are removed from the kernel before loading the new module.

```
rmmod i40evf
```

6. Load new driver module

```
modprobe iavf
```



NOTES: The "make install" command:

- Creates `/etc/modprobe.d/iavf-blacklist-i40evf.conf` that contains `blacklist i40evf`.
- Adds the line "alias i40evf iavf" to the modprobe configuration,

Linux Questions

I only use kernel/distro inbox drivers. Do I have to do anything?

There is nothing for you to do until you upgrade the operating system in your VM. If you update your VM kernel/distro to one that contains iavf, you will need to update any scripts that call the driver.

What if I want to keep i40evf and only update the PF driver to the latest version?

This is not a supported configuration. Please transition your driver to iavf when you update your PF driver. Release 23.5.2 was the last release that supported the i40evf driver.

What if I want to keep the old PF and only transition the VM to iavf?

There should be not issues with this scenario. If you run into problems, updating your PF driver may resolve them.

I have scripts that reference the VF drivers by name, do I have to change the scripts?

Yes. You must change the driver name in your scripts, rather than using an alias.

If I decide not to transition to the new iavf drivers, how long will Intel provide fixes for the old i40evf drivers?

Intel changed the name of the i40evf driver to iavf. All future updates and fixes will be published to the iavf driver.

Do I need to uninstall the i40evf driver?

This is not absolutely necessary, but we do recommend you uninstall the i40evf driver.

Is there any possibility of conflicts or situations where both drivers may exist in a system

Both drivers can be installed in the system. Installing the iavf driver tells the system that the iavf driver should be used instead of the i40evf driver. So when the system probes for new devices and finds a device that is supported by i40evf and iavf drivers, the system is told to always use the iavf driver.

Transition i40evf to iavf on Microsoft Windows Operating Systems

NOTES:

- Do not use the i40evf device as your primary interface to access the VM. You must have another way to interact with the VM so you don't lose the connection when you disable the i40evf driver.

1. Copy the iavf installer package to your VM image.
2. Use Add/Remove Programs to remove the i40evf driver.
3. Run the iavf install package to install the iavf driver.

If the i40evf driver does not show up in Add/Remove Programs, use Device Manager to remove it from all virtual NIC devices:

1. Open Device Manager.
2. Under Network Adapters, select the virtual NIC device.
3. Right-click and select Uninstall.
4. In the popup window, select the option to **Delete the driver software for this device.**
5. Click OK.

Windows Questions

What if I want to keep i40evf and only update the PF driver to the latest version?

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What if I want to keep the old PF and only transition the VM to iavf?

There should be not issues with this scenario. If you run into problems, updating your PF driver may resolve them.

Are the existing i40evf registry entries replaced or is a new registry created with the iavf driver names for the same port?

The i40evf registry entries are replaced.

What happens to i40evf driver files in system32? Are they deleted?

Not all of them. Some will remain.

Transition i40evf to iavf on FreeBSD Operating Systems

NOTES:

- Do not use the i40evf device as your primary interface to access the VM. You must have another way to interact with the VM so you don't lose the connection when you disable the i40evf driver.
- If you are using a kernel that does not contain iavf, and you update your kernel, make sure that iavf is still loaded after the update.

1. Copy the iavf driver tar file to your VM image.
2. Untar the file.

```
tar xzf iavf-<x.x.x>.tar.gz
```

where

<x.x.x> is the version number for the driver tar file.

3. Change to the src directory under the unzipped driver file.
4. Compile the driver module.

```
make load
```

5. To assign an IP address to the interface, enter the following:

```
ifconfig ixl<interface_num> <IP_address>
```

6. If you want the driver to load automatically when the system is booted:

```
cd iavf-x.x.x/src
make
make install
```

7. In `/boot/loader.conf`, remove (if present):

```
if_ixlv_load="YES"
```

and add

```
if_iavf_load="YES"
```

FreeBSD Questions

What if I want to keep i40evf and only update the PF driver to the latest version?

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What if I want to keep the old PF and only transition the VM to iavf?

There should be not issues with this scenario. If you run into problems, updating your PF driver may resolve them.

Known Issues

Older VF drivers on Intel Ethernet Controller 800 Series based adapters

Some Windows VF drivers from Release 22.9 or older may encounter errors when loaded on a PF based on the Intel Ethernet Controller 800 Series on Linux KVM or Windows Hyper-V*. You may see errors and the VF may not load. This issue does not occur starting with the following Windows VF drivers:

- v40e64, v40e65: Version 1.5.65.0 and newer

To resolve this issue, download and install the latest iavf driver.

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