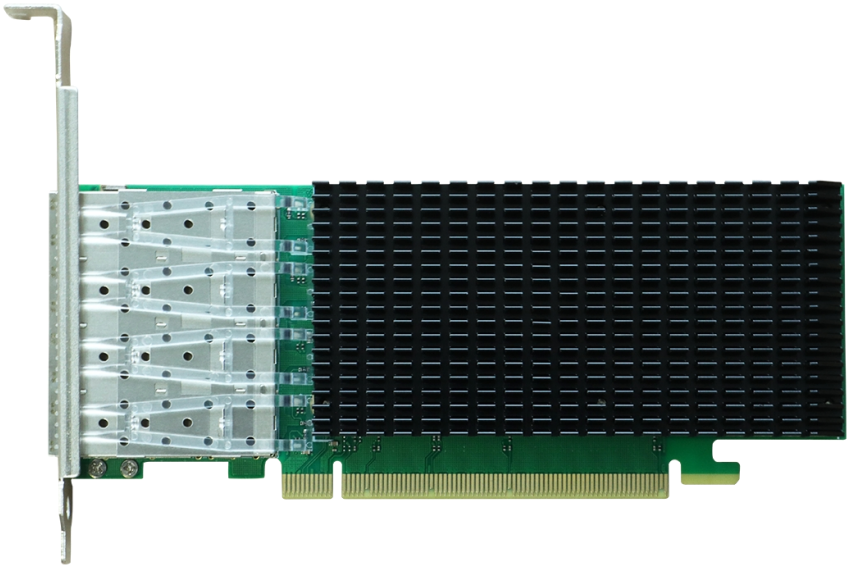
# R9504A User Guide



## V1.00 - October 19, 2026

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# 1. Overview

Designed as a quad-port 25GbE Ethernet network card in a PCIe x16 form factor, the R9504A delivers 25-Gigabit throughput over its physical port. It adopts a flexible programmable packet-processing pipeline and delivers powerful virtualization functions: the improved SR-IOV feature allows creation of a maximum of 256 virtual functions (VFs).

It incorporates telecom-focused enhancements: fine-grained scheduling, transmit head-drop, header-based credit tuning, advanced QoS and improved burst-traffic control, alongside RDMA for iWARP and RoCEv2. Built for scalability, this controller targets enterprise, cloud and communications-service-provider workloads.

## 1.1. Key Features

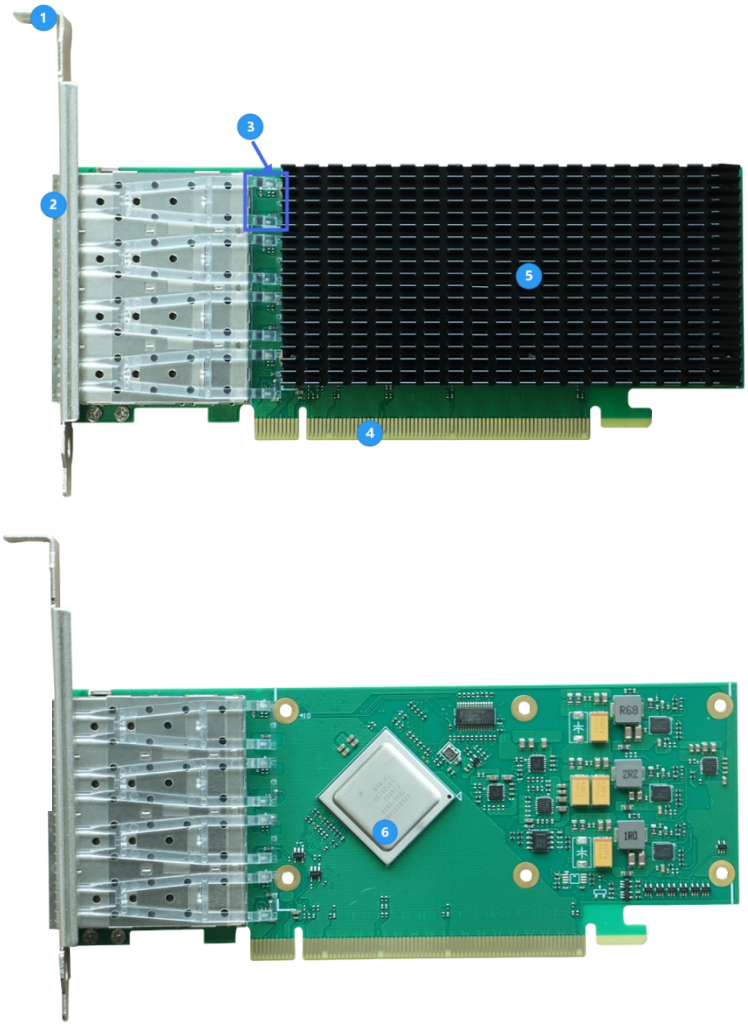
- Support 25/10/1GbE speeds
- Support SR-IOV
- Support IEEE1588 Precision Time Protocol
- Compliance with the following IEEE 802.3 standards:
  - 25GbE / 10GbE / 1GbE
  - IEEE 802.3by, Ethernet Consortium25 Gigabit Ethernet
  - IEEE 802.3by 25 Gigabit Ethernet
  - IEEE 802.3ae 10 Gigabit Ethernet
  - IEEE 802.3ab 1 Gigabit Ethernet
  - IEEE 802.3ap based auto-negotiation and KR startup
  - IEEE 802.3ad, 802.1AX Link Aggregation
  - IEEE 802.1Q, 802.1P VLAN tags and priority
  - IEEE 802.1Qau (QCN)
  - Congestion Notification
  - IEEE 802.1Qaz (ETS)
  - IEEE 802.1Qbb (PFC)
  - IEEE 802.1Qbg
  - IEEE 1588v2
  - Jumbo frame support (9.7KB)
- Cable Type Network Protocol(Ethernet)
  - 25GBASE-GAUI, 25GBASE-KR, 25G-AUIC2C, 25G-AUIC2M, 25GBASE-CR1, 25GBASE-KR1
  - 10GBASE-KR, 10GSFI, 10G-SFP+
  - 1GBASE-KX, SGMII
- RDMA support: iWARP and RoCE v2
- Enhanced DPDK for NFV acceleration and packet forwarding
- Advanced offload features: GENEVE, NVGRE, PXE, VXLAN
- OS support:

- Windows 11/ 10
- Windows Server 2016/ 2019/ 2022/ 2025
- RHEL 9.1/ 8.7
- SLES 15 PS4
- Ubuntu 22.04/ 20.04
- Debian 11
- FreeBSD 13/ 12.3
- ESXi8.0

# 2. R9504A Hardware Description

## 2.1. R9504A Layout

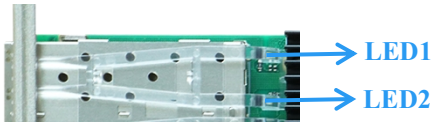
The following figure shows the key components of the R9504A.




The following table describes the key components of the R9504A.

**Table 1: Key component of the R9504A**

| Number | Type | Description |
|---|---|---|
| ① | Bracket | Full-height bracket (low-profile bracket included)<br>The R9504A is secured to the chassis by a bracket. |
| ② | Network Connector | Four SFP28 ports, each supporting 25 Gigabit Ethernet. |
| ③ | LED Indicator | Each of the two ports is equipped with two LEDs, designated as LED1 and LED2, which indicate network link status and data activity. |

| | | |
|---|---|---|
| | |  <br>● **LED1 (Link):**<br>> **OFF:** No link between the adapter and peer device.<br>> **Solid Green:** Link between the adapter and peer device is established at 25GbE.<br>> **Solid Amber:** Link between the adapter and peer device is established at speed less than 25GbE.<br>● **LED2 (Activity):**<br>> **OFF:** No activity.<br>> **Flash Green:** 25GbE link established, data transmitting.<br>> **Flash Amber:** Link speed less than 25GbE, data transmitting. |
| ④ | PCIe Host Interface | PCIe 4.0 x16 host interface: connects host adapter to host system and supplies power to the board. |
| ⑤ | Cooling System | Passive Heatsink.<br>Used to dissipate heat from electronic components prone to heat generation. |
| ⑥ | Chipset | Intel E810-CAM1. |

## 2.2. PCIe Host Interface

The R9504A's PCIe 4.0 host interface provides maximum transmission. Other PCIe host interface features include the following:

- 16-lane PCIe host interface
- Support of x16 link width
- 16-lane aggregate link speed up to 16 GT/s
- Gen3 compatible

## 2.3. Network Connector

The R9504A's network interface provides high-speed Ethernet connectivity. Other network connector features include the following:

- Single SFP28 port
- 25 Gigabit Ethernet rate per port
- Supports multiple port speeds: 25/10/1 GbE

## 2.4. Basic Specifications

The following table describes the basic specifications of the R9504A.

**Table 2: Basic Specifications of R9504A**

| **Model** | **R9504A** |
|---|---|
| **Power Consumption** | Max: 22W |
| **Operating Voltage** | 100V ~ 240V AC In |
| **Work Temperature** | 0°C to +60°C (+32°F to +140°F) |
| **Storage Temperature** | -40°C to +70°C (-40 °F to +158°F) |
| **Storage Humidity Maximum** | 90% non-condensing relative humidity at 35°C |

# 3. Hardware Installation

The following steps show how to install the adapter into your system.

1. Use a wired ESD wrist strap that is properly grounded.
2. Unpack and remove the R9504A and check it for damage. If it appears damaged, please get in touch with HighPoint Technical Support.
3. Shut down the system.
4. Press down gently but firmly to seat the R9504A correctly in the available slot.
5. Power on the system.

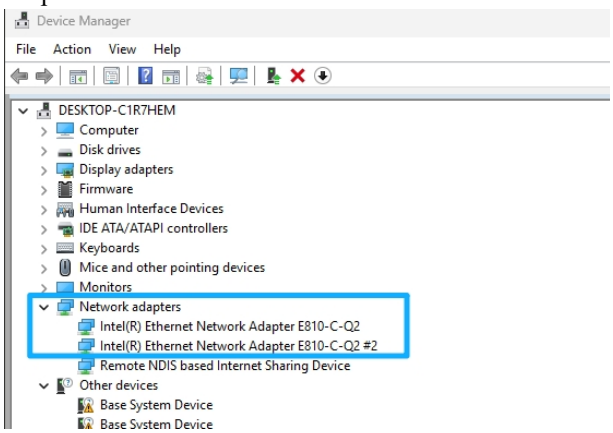
# 4. Software Installation

## 4.1. Install the software on Windows

To install the software on the Windows operating system, perform the following steps.

You must have administrative rights to the operating system to install the drivers.

1. Download the latest driver from support website.(e.g., Intel® Ethernet Adapter Complete Driver Pack v31.2.2)
2. Copy the downloaded file (e.g., `Release-31.2.2.zip`) to the system and extract it.
3. Navigate to the following path within the extracted folder:
   **Release_31.2.2\PROCGB\Winx64\NDIS68**
4. Locate the **icea68.inf** file, **right-click** it, and select **Install**.
5. After the installation is complete, open **Device Manager** → **Network adapters** to verify that the adapter is detected.




## 4.2. Install the software on Linux

To install the software on the Linux operating system, perform the following steps.

Notes:

You must have administrative rights to the operating system to install the drivers.

Most Linux distributions natively include the ice driver. You can either use the native driver or install the latest official version, as described below. Ubuntu is used as an example here.

### Method 1: Use the Native ICE Driver

1. Enter the following command to display adapter network interfaces: **#ip a**
2. Enter the following command to check the version of the native ice driver: **#ethtool -i <interface_name>**

```
root@t-Super-Server:/home/t# ethtool -i ens4f0np0
driver: ice
version: 7.0.0-31-generic
firmware-version: 3.20 0x8000d83e 1.3146.0
expansion-rom-version:
bus-info: 0000:16:00.0
supports-statistics: yes
supports-test: yes
supports-eeprom-access: yes
supports-register-dump: yes
supports-priv-flags: yes
root@t-Super-Server:/home/t#
```

### Method 2: Install the Latest Official ICE Driver

1. Enter the following commands to install the compilation environment (using Ubuntu as an example).

   **#sudo apt update**

   **#sudo apt install -y build-essential linux-headers-$(uname -r) gcc make dkms pciutils ethtool**
2. Download the latest driver from support website.(e.g., Intel® Ethernet Adapter Complete Driver Pack v31.2.2)
3. Enter the following command to unzip the driver package: **#unzip Release-31.2.2.zip**
4. Enter the following command to enter the Linux driver directory: **#cd Release_31.2.2/PROCGB/Linux**
5. Enter the following command to extract the ICE driver source package: **#tar -xvf ice-2.6.7.tar.gz**
6. Enter the following command to enter the driver source directory: **#cd ice-2.6.7/src**
7. Enter the following command to compile and install the ICE driver.

   **#make -j$(nproc)**

   **#make install**

```
  The kernel was built by: x86_64-linux-gnu-gcc (Ubuntu 15.2.0-16ubuntu1) 15.2.0
  You are using:           gcc (Ubuntu 15.2.0-16ubuntu1) 15.2.0
warning: pahole version differs from the one used to build the kernel
  The kernel was built with: 131
  You are using:             0
make[2]: Leaving directory '/home/t/Release_31.2.2/PROCGB/Linux/ice-2.6.7/src'
make[1]: Leaving directory '/usr/src/linux-headers-7.0.0-31-generic'
echo "*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but" ; echo "*** the signing key cannot be found. Module signing has been" ; echo "*** disabled for this build." ; make
 ccflags-y=" -std=gnu11 -Wno-nested-externs -std=gnu11 " -C "/lib/modules/7.0.0-31-generic/build" CONFIG_=m CONFIG_MODULE_SIG=m CONFIG_MODULE_SIG_ALL= M="/home/t/Release_31.2.2/PROCGB/
Linux/ice-2.6.7/src"  NEED_AUX_BUS="0" modules_install
*** The target kernel has CONFIG_MODULE_SIG_ALL enabled, but
*** the signing key cannot be found. Module signing has been
*** disabled for this build.
make[1]: Entering directory '/usr/src/linux-headers-7.0.0-31-generic'
make[2]: Entering directory '/home/t/Release_31.2.2/PROCGB/Linux/ice-2.6.7/src'
  INSTALL /lib/modules/7.0.0-31-generic/updates/drivers/net/ethernet/intel/ice/ice.ko
  DEPMOD  /lib/modules/7.0.0-31-generic
Warning: modules_install: missing 'System.map' file. Skipping depmod.
make[2]: Leaving directory '/home/t/Release_31.2.2/PROCGB/Linux/ice-2.6.7/src'
make[1]: Leaving directory '/usr/src/linux-headers-7.0.0-31-generic'
make auxiliary_install
make[1]: Entering directory '/home/t/Release_31.2.2/PROCGB/Linux/ice-2.6.7/src'
make[1]: 'auxiliary_install' is up to date.
make[1]: Leaving directory '/home/t/Release_31.2.2/PROCGB/Linux/ice-2.6.7/src'
install -D -m 644 ../ddp/ice-1.3.59.0.pkg /lib/firmware/updates/intel/ice/ddp/ice-1.3.59.0.pkg
(cd /lib/firmware/updates/intel/ice/ddp && ln -sf ice-1.3.59.0.pkg ice.pkg)
install -D -m 644 ../ddp/LICENSE /lib/firmware/updates/intel/ice/ddp/LICENSE \
        2>/dev/null || true
install -D -m 644 ice.7.gz //usr/share/man/man7/ice.7.gz
/sbin/depmod -e -F /boot/System.map-7.0.0-31-generic  -a 7.0.0-31-generic
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_free_rdma_qvector
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_del_rdma_qset
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_alloc_rdma_qvector
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_add_rdma_qset
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_rdma_update_vsi_filter
depmod: WARNING: /lib/modules/7.0.0-31-generic/kernel/drivers/infiniband/hw/irdma/irdma.ko.zst needs unknown symbol ice_rdma_request_reset
Updating initramfs...
dracut --force --kver 7.0.0-31-generic
```

   Note: Installation is successful when the output matches the blue box shown in the figure.
8. Enter the following command to load the ICE driver.

   **#depmod -a**

   **#modprobe ice**
9. Enter the following command to reboot the system: **#reboot**
10. Enter the following command to display adapter network interfaces: **#ip a**

11. Enter the following command to check the version of the native ice driver: **#ethtool -i <interface_name>**

```
root@t-Super-Server:/home/t# ethtool -i ens4f0np0
driver: ice
version: 2.6.7
firmware-version: 3.20 0x8000d83e 1.3146.0
expansion-rom-version:
bus-info: 0000:16:00.0
supports-statistics: yes
supports-test: yes
supports-eeprom-access: yes
supports-register-dump: yes
supports-priv-flags: yes
root@t-Super-Server:/home/t# ethtool -i ens4f1np1
driver: ice
version: 2.6.7
firmware-version: 3.20 0x8000d83e 1.3146.0
expansion-rom-version:
bus-info: 0000:16:00.1
supports-statistics: yes
supports-test: yes
supports-eeprom-access: yes
supports-register-dump: yes
supports-priv-flags: yes
root@t-Super-Server:/home/t#
```

# 5. Revision History

## 5.1. Version 1.00, October 19, 2026

Initial version.