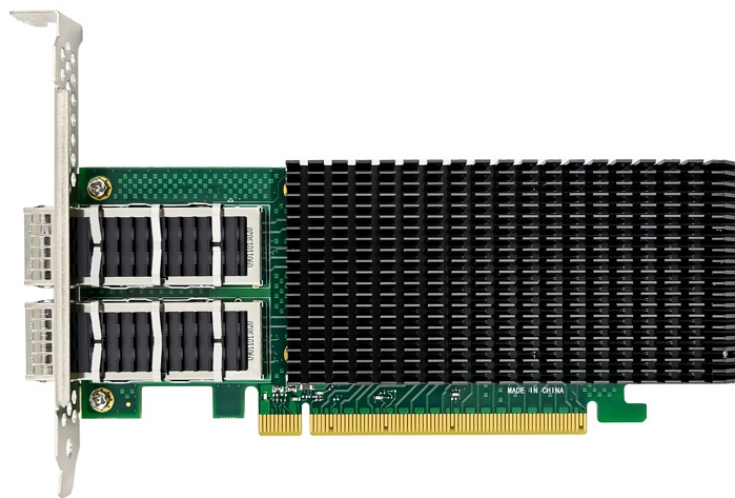




R9512A User Guide



V1.00 - October 19, 2026

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1. Overview

Designed as a dual-port 100GbE Ethernet network card in PCIe x16 form factor, the R9512A delivers 100-Gigabit throughput over its two physical ports. 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

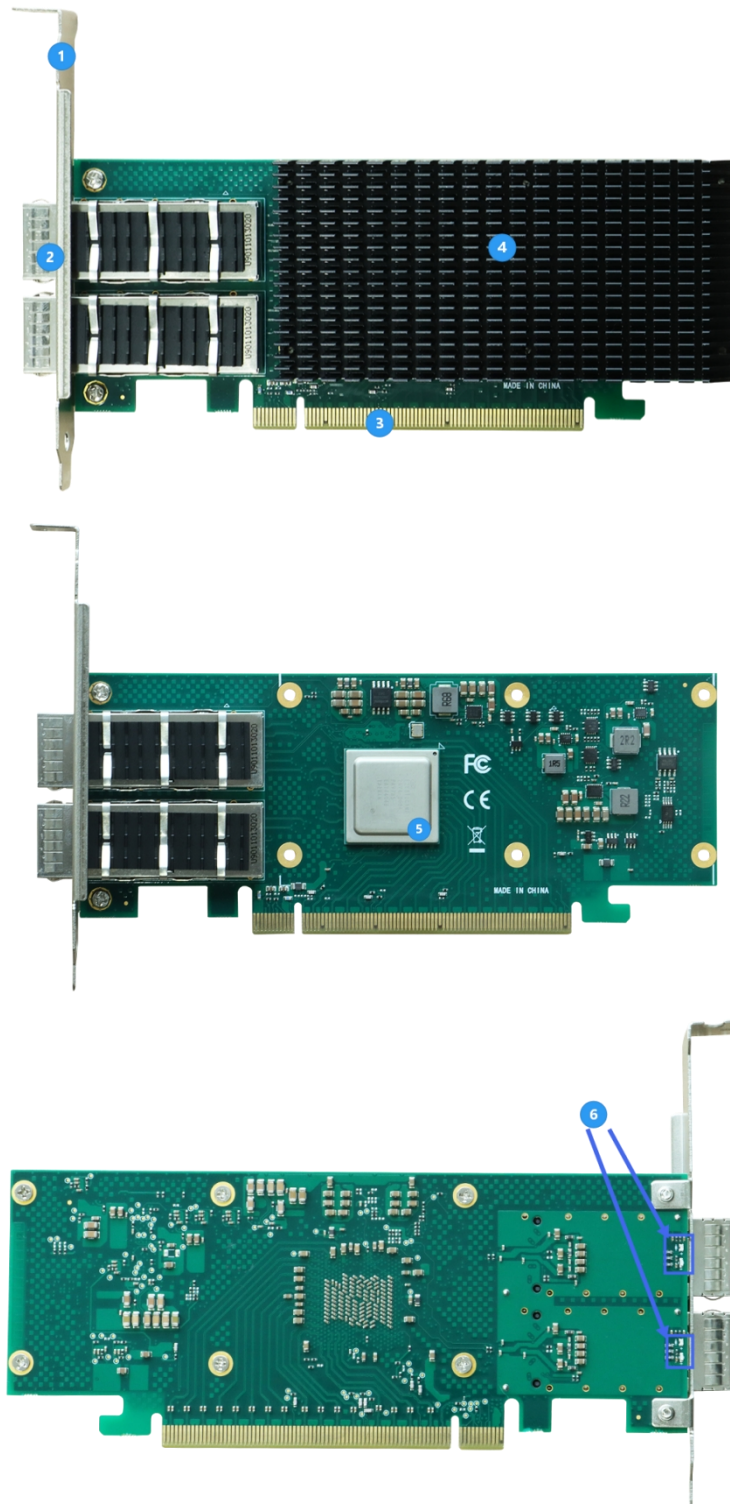
- Support 100/50/25/10/1GbE speeds
- Support SR-IOV
- Support IEEE1588 Precision Time Protocol
- Compliance with the following IEEE 802.3 standards:
 - 100GbE / 50GbE / 25GbE / 10GbE / 1GbE
 - IEEE 802.3bj, 802.3bm 100 Gigabit Ethernet
 - IEEE 802.3by, Ethernet Consortium25, 50 Gigabit Ethernet
 - IEEE 802.3by 25 Gigabit Ethernet
 - IEEE 802.3ae 10 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)
 - 100GBASE-CR4, 100GBASE-KR4, 100GBASE-CR2, 100GBASE-KR2, 100GAUI-2, 100GAUI-4
 - 50GBASE-CR2, 50GBASE-KR2, 50GBASE-CR, 50GBASE-KR, 50GAUI-1, 50GAUI-2, 50GAUI-2
 - 25GBASE-CR, 25GBASE-KR, 25G-AUIC2C, 25G-AUIC2M, 25GBASE-CR1, 25GBASE-KR1
 - 10GBASE-KR, 10GSFI, 10G-SFP+
- 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. R9512A Hardware Description

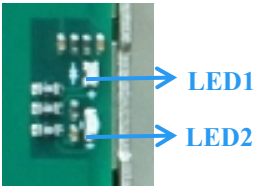
2.1. R9512A Layout

The following figure shows the key components of the R9512A.



The following table describes the key components of the R9512A.

Table 1: Key component of the R9512A

Number	Type	Description
①	Bracket	Full-height bracket (low-profile bracket included) The R9512A is secured to the chassis by a bracket.
②	Network Connector	Two QSFP28 ports, each supporting 100 Gigabit Ethernet.
③	PCIe Host Interface	PCIe 4.0 x16 host interface: connects host adapter to host system and supplies power to the board.
④	Cooling System	Passive Heatsink. Used to dissipate heat from electronic components prone to heat generation.
⑤	Chipset	Intel R9512A-CAM2.
⑥	LED Indicators	Each of the two ports is equipped with two LEDs, designated as LED1 and LED2, which indicate network link status and data activity.  ● LED1 (Link): ● OFF: No link between the adapter and peer device. ● Solid Green: Link between the adapter and peer device is established at 100GbE. ● Solid Amber: Link between the adapter and peer device is established at speed less than 100GbE. ● LED2 (Activity): ● OFF: No activity. ● Flash Green: 100GbE link established, data transmitting. ● Flash Amber: Link speed less than 100GbE, data transmitting.

2.2. PCIe Host Interface

The R9512A'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 R9512A's network interface provides high-speed Ethernet connectivity. Other network connector features include the following:

- Two QSFP28 ports
- 100 Gigabit Ethernet rate per port
- Supports multiple port speeds: 100/50/25/10/1 GbE

2.4. Basic Specifications

The following table describes the basic specifications of the R9512A.

Table 2: Basic Specifications of R9512A

Model	R9512A
Power Consumption	Max: 15.67W
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 R9512A 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 R9512A correctly in the available slot.
5. Power on the system.

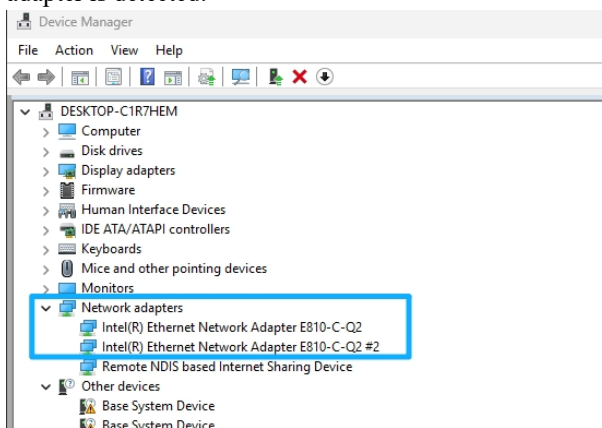
4. Software Installation

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.

<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.