



# **Myricom ARC Series 10G Adapter (TX-Only)**

## **INSTALLATION AND CONFIGURATION GUIDE**

February 3, 2020

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## **PRELIMINARY NOTICE**

This document is in the preliminary stage and is subject to change without notice.

### **Publishing Information**

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## Chapter 1

# Overview

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The ARIA™ Cybersecurity Solutions Myricom® ARC Series 10G network adapter (Myri-10G Adapter) improves server and application performance by offloading a variety of server-intensive functions, such as encryption or micro-segmentation. This specialized Ethernet adapter connects to a PCIe slot on a host system and supports one or more 10G network interfaces.

When configured as Tx-only, the adapter acts as a “data diode,” isolating the network. In this mode, traffic flows in one direction only, from low secure areas to high secure areas. This unidirectional security gateway ensures non-secure traffic can only travel in one direction.

This document describes the adapter and provides the instructions for installing the adapter, Tx-only firmware, and verifying the 10G Ethernet driver for Linux-based systems.

## 1.1 Features

The Myri-10G Adapter component supports the following features:

- Half height and ½ length PCIe board
- Two Lanai Z8ES CPUs @ 365 MHz
- 2 MB RAM
- PCIe Gen 2 x8 host interface, with backwards compatibility for PCIe Gen 1
- Four LEDs (two per port)
- 10G network interface ports (single- or dual-port)

See the following figure for an illustration of a dual-port card.



*Figure 1-1: Myri-10G Adapter*

## 1.2 Physical Dimensions

The Myri-10G Adapter is a full-height, 3/4 length PCIe card. See the following table for the dimensions of the board (excluding the faceplate).

Dimension	Inches	Millimeters
Height	2.7	68.6
Length	6.6	168
Width	0.9	22.9

**Table 1-1: Physical Dimensions**

## 1.3 Environmental Specifications

The environmental specifications are listed in the following table.

Specification	Value
Operating Humidity	15% - 80% Relative Humidity, Non-Condensing
Operating Temperature	0 °C - 80 °C

**Table 1-2: Environmental Specifications**

## 1.4 Power Consumption

The power supply and consumption values are listed in the following table.

Specification	Value
Supply Voltage	12 V
Consumption	25 W (Maximum)

**Table 1-3: Power Consumption**

## 1.5 LED Indicators

The Myri-10G Adapter contains two LED indicators to specify the link status and activity for each network interface port. The link LED is green and is labeled *L*, while the status LED is amber and is labeled *S*. See the following table for a description of the different colors/states.

Color	State	Indicates
Green	Solidly Lit	The adapter is powered on and has established a 10G link.
	Off	The adapter has not established a link or Linux has not booted yet.
Amber	Off	The PCIe bus is initializing.
	Blinking	The PCIe link is active.

**Table 1-4: Network Interface Port LEDs**

## Chapter 2

# Installing the Myri-10G Adapter

This chapter describes the following tasks for installing the Myri-10G Adapter hardware.

ARIA products are designed to be compatible with industry standards and typically install quickly without significant effort. If you encounter any issues during the installation process, please contact ARIA customer support for assistance ([ARIA\\_support@ariacybersecurity.com](mailto:ARIA_support@ariacybersecurity.com)).

This chapter focuses on the physical installation and configuring the hardware for transmit (Tx) only.

## 2.1 Verifying the PCIe Expansion Slot

Prior to installing the Myri-10G Adapter, you should verify the expansion slot is compatible with the card. The Myri-10G Adapter requires a PCIe server slot with a minimum of 4 lanes, but a slot with 8 lanes is recommended. For the best performance, you should check the slot to ensure a secure electrical connection.

## 2.2 Installing the Physical Myri-10G Adapter

Installing the physical Myri-10G Adapter requires installing the adapter into a host system. You can then install the firmware once the board is properly functioning in the host system. Installing the firmware requires a tarball file that you can download to the host system at any time.

### 2.2.1 Installing the Adapter

To install the adapter:



The Myri-10G Adapter contains materials and parts that are susceptible to damage caused by Electrostatic Discharge (ESD). Use static-safe procedures when handling the card.

1. Close all active applications and shut down the operating system.
2. Turn off the computer and disconnect the power cord.
3. Open the computer chassis to find an available PCIe slot.

**NOTE:**

Place the adapter in an expansion slot that is connected to the CPU that will run your application.

4. Seat the adapter firmly into the PCIe slot until the card clicks into place.
5. Secure the adapter to the chassis with a screw.
6. Close the computer chassis and connect the power cord.
7. Power on the computer.

You can now install the firmware required for configuring the adapter for Tx only.

## 2.2.2 Installing the Tx-Only Firmware

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**NOTE:** The TX-only firmware is supported on Linux systems only.

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Once you have installed the hardware, you can install the Tx-only firmware. The firmware is contained in a tarball file (.tar.gz) and is available from ARIA Cybersecurity Solutions Support ([ARIA\\_support@ariacybersecurity.com](mailto:ARIA_support@ariacybersecurity.com)).

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**NOTE:** You must be logged in as an administrator or have super user privileges to install the firmware.

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The commands for installing the firmware differs for CentOS and Ubuntu. The procedures for each OS are provided in the following sections.

### Ubuntu (18.04)

#### To install the Tx-only firmware on Ubuntu:

1. Place the tar.gz file in a temporary directory on the machine.
2. Extract the files.  

```
tar xvf myri-tools-<version>-linux-64bit.tar.tz
```
3. Verify the required .mcp2 file is local to the system. This file contains the firmware that will be installed in the EEPROM flash of the adapter.
4. Execute the ze-upgrade script from the <tools>/bin/ directory.  

```
sudo ./ze-upgrade ../myri-eprom-<version>.mcp2
```
5. Change the directory to /lib/firmware on the machine.
6. Delete or move all .dat files the card is currently using.
7. Copy the new .dat files from tarball (.tar.gz) to the /lib/firmware directory.
8. Update the firmware.  

```
sudo update-initramfs -u
```
9. Reboot the system and verify the adapter is using the Tx only firmware.  

```
./myri_info
```

The output reflects Tx-only firmware when successfully completed.



```
pci-dev at 02:00.0 vendor:product (rev)=14c1:0008 (01)
  behind bridge root-port: 00:02.0 8086:2f04 (x8.1/x16.3)
Myri-10G-PCIE-8B -- Link x8

EEPROM String-spec:
MAC#####
SN#####
PWR=100
PC=10G-PCIE-8B-S
PN=09-04228

MEMMAP=-----
PSERDES=0
TAG=ze_tools-1_4_53a
EEPROM MCP, PRESENT, length = 199316, crc=0x11352508
ETH ::1.4.59-txonly -- 2014/10/17 22:54:11 myri10ge firmware
Simple-bundle: exec_len = 199312
Running MCP:
ETH :: 1.4.59-txonly -- 2014/10/17 23:10:09 myri10ge firmware
```

**Figure 2-1: Firmware Successfully Installed**

## CentOS (7.7)

### To install the Tx-only firmware on CentOS:

1. Place the tar.gz file in a temporary directory on the machine.
2. Extract the files.
 

```
tar xvf myri-tools-<version>-linux-64bit.tar.tz
```
3. Verify the required .mcp2 file is local to the system. This file contains the firmware that will be installed in the EEPROM flash of the adapter.
4. Execute the ze-upgrade script from the <tools>/bin/ directory.
 

```
sudo ./ze-upgrade ../myri-eprom-<version>.mcp2
```
5. Change the directory to /lib/firmware on the machine.
6. Delete or move all .dat files the card is currently using.
7. Copy the new .dat files from tarball (.tar.gz) to the /lib/firmware directory.
8. Update the firmware.
 

```
sudo dracut -f
```
9. Reboot the system and verify the adapter is using the Tx only firmware.
 

```
./myri_info
```

The output reflects Tx-only firmware when successfully completed. See [Figure 2-1](#) for example output.



## Chapter 3

## Troubleshooting

This chapter identifies some issues you may encounter while installing the Myri-10G Adapter. For each issue, a probable cause and possible solution are listed. The ARIA product development team recommends exhausting all possibilities in this chapter before contacting support.

Issue	Probable Cause	Possible Solution
The server cannot identify the adapter.	The adapter is not properly seated.	Make sure the adapter is fully connected in the PCIe slot.
	There is an issue with the PCIe slot.	Make sure the PCIe slot is a generation 2, 4- or 8-lane slot. Install the adapter into a known working slot.
	The driver is invalid or corrupted.	Reinstall the driver or contact ARIA Support.
The port LED is not lit.	There is an issue with the cable.	Replace the cable with a known working cable. Make sure the cables are properly seated.
The adapter stopped working.	There is an issue with the cable.	Replace the cable with a known working cable.
	The server has encountered an error.	Reboot the server.
	The card is overheating.	Increase the fan speed of the PCIe slot where the Myri-10G Adapter is installed. See <i>Environmental Specifications on page 2</i> for more information.
	The driver is invalid or corrupted.	Contact ARIA Support.

**Table 3-1: Troubleshooting Chart**



*Appendix 4*

## **ARIA Technical Support**

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ARIA technical support, downloads, and user documentation are available from ARIA support.

### **ARIA Email Support**

[ARIA\\_support@ariacybersecurity.com](mailto:ARIA_support@ariacybersecurity.com)

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