

ZeroTier on Advantech Routers

In category [Routers](#) .

What is ZeroTier?

- ZeroTier combines the capabilities of VPN and SD-WAN, simplifying network management.
- Set up ZeroTier in minutes with remote, automated deployment.
- Emulates Layer 2 Ethernet with multipath, multicast, and bridging capabilities.
- ZeroTier's zero-trust networking solution provides scalable security with 256-bit end-to-end encryption.

What Advantech Routers support ZeroTier?

- All the v4 family Routers (ICR-44xx) support the ZeroTier and the ZeroTier capability is tested on those routers.

What is needed for running the ZeroTier on Advantech ICR-44xx Router?

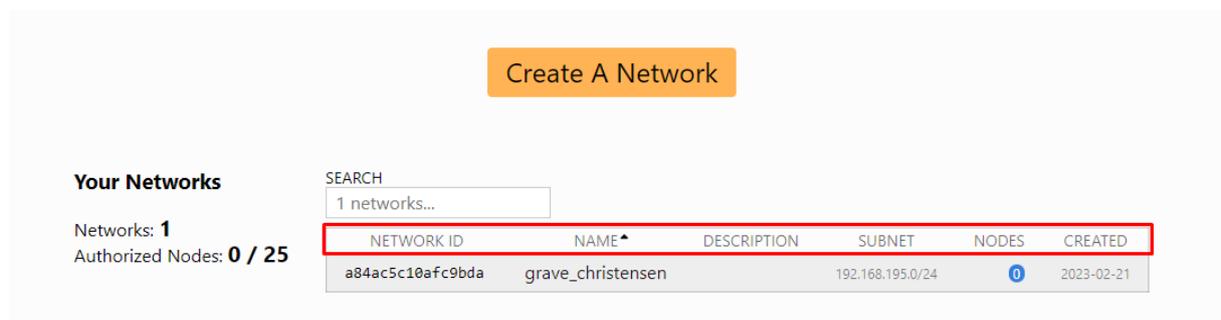
- For running ZeroTier on Advantech ICR-44xx Router is needed Docker Router App ([Docker Router App](#))

How to run ZeroTier on Advantech ICR-44xx Router?

- First, you would need to create a free ZeroTier account and login into the ZeroTier Account ([ZeroTier](#))
- After that, you would need to create a new network



- Here you can see basic description of the created network



Your Networks

Networks: **1**
Authorized Nodes: **0 / 25**

SEARCH
1 networks...

NETWORK ID	NAME ▲	DESCRIPTION	SUBNET	NODES	CREATED
a84ac5c10afc9bda	grave_christensen		192.168.195.0/24	0	2023-02-21

- When you click on the Network ID you can modify the Network (Name, Subnet, Routes, Policies..)

Testing Network

a84ac5c10afc9bda

This is a ZeroTier testing network

▼ Settings

Basics

Network ID
a84ac5c10afc9bda

Name

Description

Access Control

Private

Nodes must be authorized to become *members*

Public

Any node that knows the Network ID can become a *member*. Members cannot be de-authorized or deleted. Members that haven't been online in 30 days will be removed, but can rejoin.

- Please note the **NetworkID** since it will be used later when launching the **Docker** container.
- Now we need to move to the ICR-44xx Router and install the Docker Router App
- Once the Docker is installed please enable it in the Docker Router App configuration

Docker

Status	
Overview	
Statistics	
Log	
Events	
Configuration	
Global	
Administration	

Module docker is running			
Total	:	749.6 MB	(100.0 %)
Reserved	:	57.2 MB	(7.6 %)
Used	:	620.1 MB	(82.7 %)
Available	:	72.3 MB	(9.7 %)

- Now we need to run the ZeroTier Docker container. This can be done with the following command pasted either in WebTerminal Router App or SSH connection
- `docker run --privileged --name myzerotier --rm --cap-add NET_ADMIN --device /dev/net/tun --net host zerotier/zerotier:latest <ZeroTier NetworkID>`
- After launching the Docker container you should see in the ZeroTier member table that one device is connected
- You would need to authorize this device to be connected to your network. You can authorize the device as shown on the image

Members

One device has joined this network.

A ZeroTier network should have at least 2 member devices.

Use the ZeroTierOne app on your devices to **join a84ac5c10afc9bda**.

Visit [the downloads page](#) to get the app.

Search (Address / Name)

Display Filter: Authorized Offline (0) Not Authorized Online (1) Bridges Hidden (0)

Sort By: Address Name

< 1-1 / 1 >

Auth?	Address	Name/Description	Managed IPs	Last Seen	Version	Physical IP
<input checked="" type="checkbox"/>	a9a8b10e37 da:32:25:41:bb:1c:f1:f2	(short-name) (description)	192.168.195.155 + 192.168.195.x	ONLINE	1.10.3	77.240.178.144

Authorize member on network

- If you will connect another device (laptop, phone, tablet) to the network the devices will behave like in one network

< 1-2 / 2 >

Auth?	Address	Name/Description	Managed IPs	Last Seen	Version	Physical IP
<input checked="" type="checkbox"/>	1c90e40de2 da:1b:71:6c:1e:81:cc:127	Laptop (description)	192.168.195.134 + 192.168.195.x	ONLINE	1.10.1	77.240.178.144
<input checked="" type="checkbox"/>	a9a8b10e37 da:32:25:41:bb:1c:f1:f2	ICR-44xx (description)	192.168.195.155 + 192.168.195.x	ONLINE	1.10.3	77.240.178.144

- We can see that in the Router routing table is a record for Docker ZeroTier container

```
# ip route show
default via 192.168.88.1 dev eth1
172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1 linkdown
192.168.1.0/24 dev br0 proto kernel scope link src 192.168.1.1 linkdown
192.168.88.0/24 dev eth1 proto dhcp scope link src 192.168.88.236 metric 204
192.168.88.1 dev eth1 scope link
192.168.195.0/24 dev ztnfadswwq proto kernel scope link src 192.168.195.155
```

- So when we will try to ping from the ICR-44xx to the Laptop tunnel IP we should see that the laptop listens and responds on the Tunnel IP

```
login as: root
Keyboard-interactive authentication prompts from server:
| Password:
End of keyboard-interactive prompts from server
# ping 192.168.195.134
PING 192.168.195.134 (192.168.195.134): 56 data bytes
64 bytes from 192.168.195.134: seq=0 ttl=128 time=35.603 ms
64 bytes from 192.168.195.134: seq=1 ttl=128 time=12.817 ms
64 bytes from 192.168.195.134: seq=2 ttl=128 time=1.455 ms
64 bytes from 192.168.195.134: seq=3 ttl=128 time=1.637 ms
^C
--- 192.168.195.134 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 1.455/12.878/35.603 ms
```

- And also if we will ping from the Laptop to the IP address of the router we should see that the Router responds

```
Microsoft Windows [Version 10.0.19044.2364]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\system32>ping 192.168.195.155

Pinging 192.168.195.155 with 32 bytes of data:
Reply from 192.168.195.155: bytes=32 time=1ms TTL=64
Reply from 192.168.195.155: bytes=32 time=37ms TTL=64
Reply from 192.168.195.155: bytes=32 time=1ms TTL=64
Reply from 192.168.195.155: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.195.155:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 37ms, Average = 10ms
```

This setup was tested on ICR-44xx firmware version 6.3.6, Docker Router App version 20.10.7, ZeroTier Docker version 1.10.3.