

NR300

Industrial Cellular VPN Router

Application Note 071

ZeroTier

Version: V1.0.0
Date: Oct 2023
Status: Confidential



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1. Introduction

1.1 Overview

This document contains information regarding the configuration and use of ZeroTier.

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product, and of the requirements for their specific application.

1.2 Compatibility

This application note applies to:

Models Shown: NR300 router.

Firmware Version: V1.1.4 or newer

Other Compatible Models: None

1.3 Version

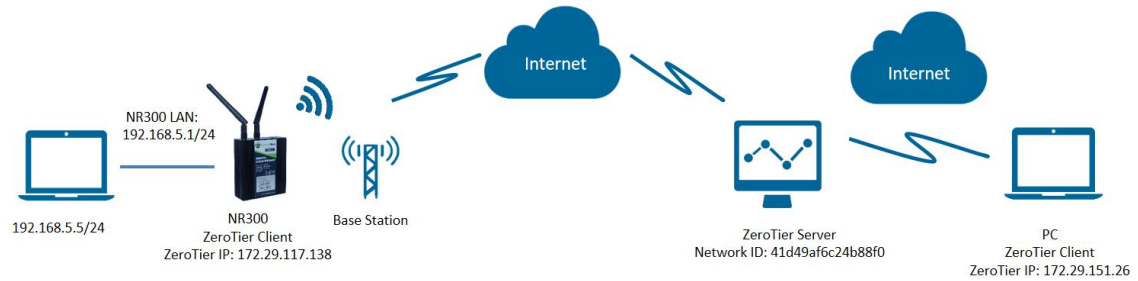
Updates between document versions are cumulative. Therefore, the latest document will include all the content of previous versions.

Release Date	Doc. Version	Firmware Version	Change Description
2023/10/13	V1.0.0	V1.1.4	First released

1.4 Corrections

Appreciate for corrections or rectifications to this application note, and if any request for new application notes please email to: support@navigateworx.com

2. Topology



1. NR300 router run as ZeroTier Client with any kind of IP and connect the ZeroTier Server.
2. PC run as ZeroTier Client with any kind of IP and connect the same ZeroTier Server.
3. After ZeroTier tunnels are established, PC and NR300 router be able to PING each other successfully.

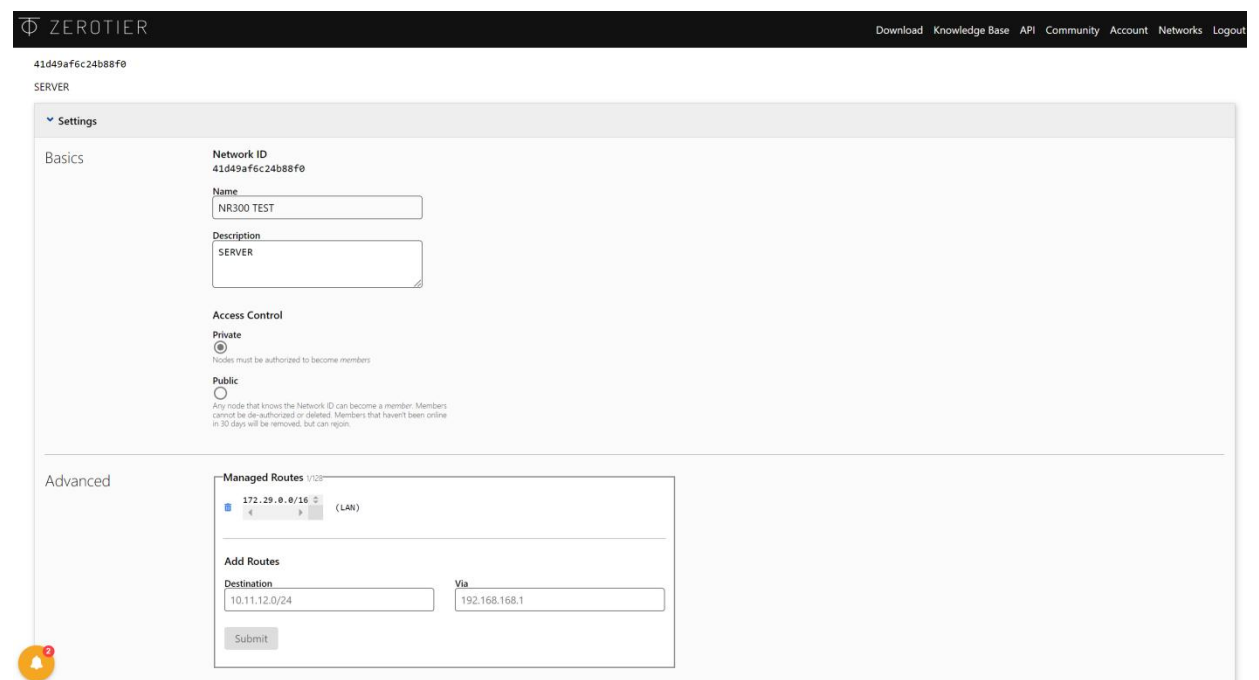
3. Configuration

3.1 ZeroTier Server Configuration

1. Go to ZeroTier Official website(<https://my.zerotier.com>), then navigate to Networks page, then click “Create A Network” Button to create a new ZeroTier Server, the Network ID of our testing is 41d49af6c24b88f0, like below.



2. Then configure the ZeroTier Server like below.



IPv4 Auto-Assign
 Auto-Assign from Range

Easy		Advanced	
10.147.17.*	10.147.18.*	10.147.19.*	10.147.20.*
10.144.*.*	10.241.*.*	10.242.*.*	10.243.*.*
10.244.*.*	172.22.*.*	172.23.*.*	172.24.*.*
172.25.*.*	172.26.*.*	172.27.*.*	172.28.*.*
172.29.*.*	172.30.*.*	192.168.191.*	192.168.192.*
192.168.193.*	192.168.194.*	192.168.195.*	192.168.196.*

IPv6 Auto-Assign

- ZeroTier RFC4193 (/128 for each device)
- ZeroTier 6PLANE (/80 routable for each device)
- Auto-Assign from Range

Multicast
Multicast Recipient Limit

Broadcast
 Enable Broadcast

DNS

Requires ZeroTier version 1.6. See Settings Help below.

Search Domain

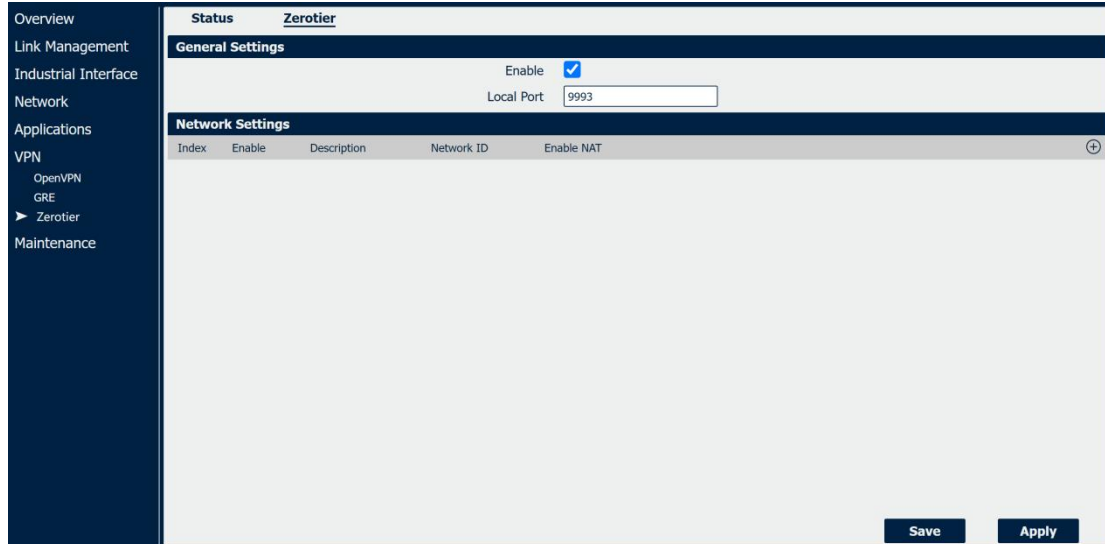
Server Address

Manually Add Member
Node Id

 Adds a node to this network before it joins.
 Can be used to undelete a member.

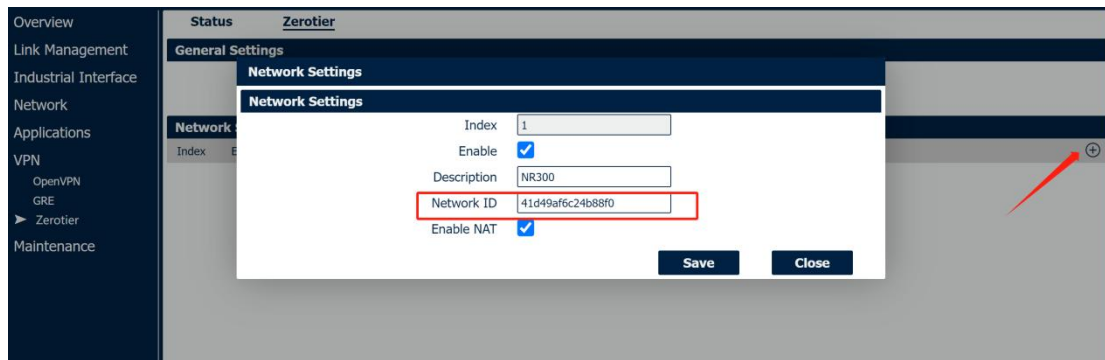
3.2 Configuration on NR300 router(ZeroTier Client)

1. Go to **VPN>ZeroTier>ZeroTier**, click Enable button and specify the port.



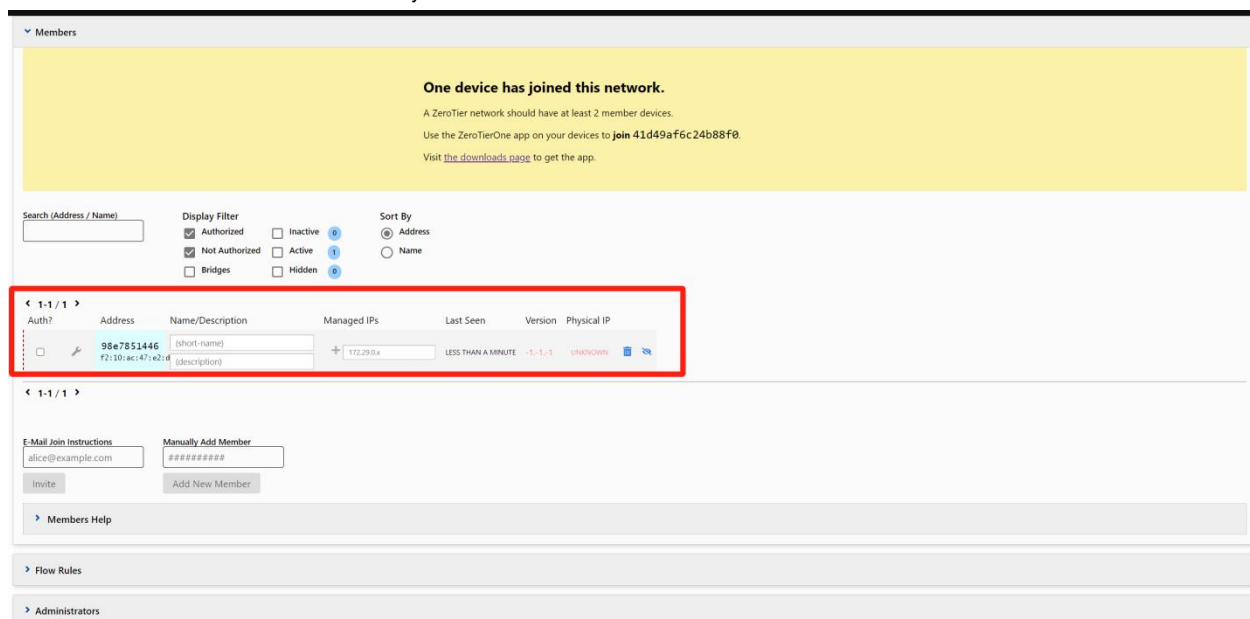
2. Click Save>Apply.

3. Enable Network Settings, then specify the Network ID to connect the ZeroTier Server.



4. Click Save>Save>Apply. (Note: This is a secondary list, it needs to double click save)

5. Then please do not operate/click anything, then go to ZeroTier Server Web page, after this page show a new device has joined this Network as below, then check "auth" button to allow NR300 router to join this Network. Or we can manually add a new device to this network before it joins.



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 41d49af6c24b88f0**.

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

Search (Address / Name)

Display Filter: Authorized Inactive Not Authorized Active Bridges Hidden

Sort By: Address Name

Auth?	Address	Name/Description	Managed IPs	Last Seen	Version	Physical IP
<input type="checkbox"/>	98e7851446 f2:10:ac:47:e2:10	(short-name) (description)	+ 172.29.0.x	LESS THAN A MINUTE	-1.1.1	UNKNOWN

E-Mail Join Instructions:

Manually Add Member:

[Members Help](#)

[Flow Rules](#)

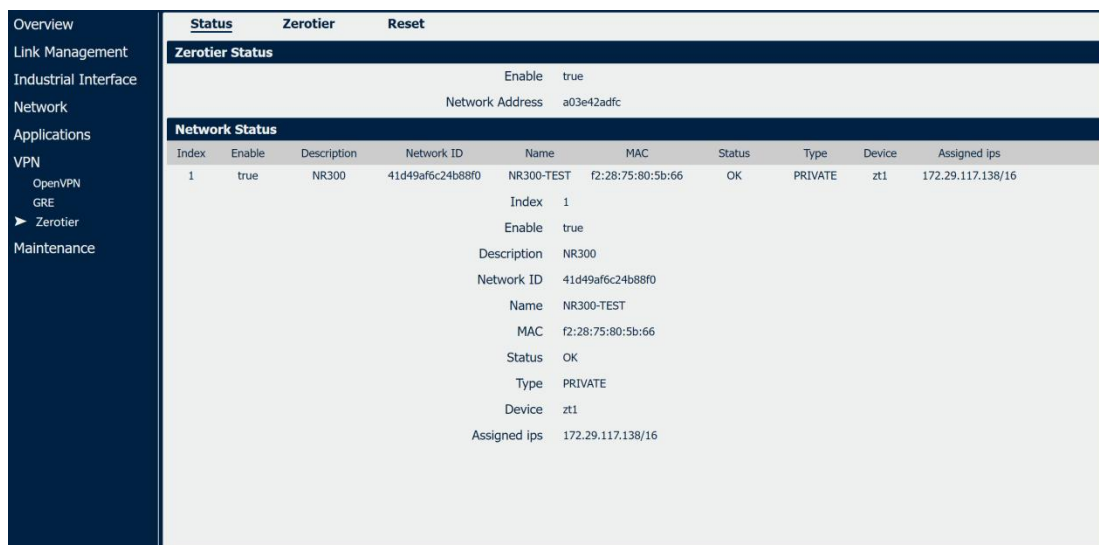
[Administrators](#)

Note: If the page do not show a new device join to the network Or the Status of NR300 router is ACCESS_DENIED, please kindly adds a new device to this network manually in ZeroTier Server Web page.

6. Then it will be assigned a IP automatically.

Auth?	Address	Name/Description	Managed IPs	Last Seen	Version	Physical IP
<input checked="" type="checkbox"/>	a03e42adfc f2:28:75:80:5b:66	NR300 NR300	+ 172.29.117.138 172.29.0.x	LESS THAN A MINUTE	1.8.8	UNKNOWN

7. Go to **VPN>ZeroTier>Status**, ZeroTier have been connected successfully.



Status Zerotier Reset

Zerotier Status

Enable: true

Network Address: a03e42adfc

Network Status

Index	Enable	Description	Network ID	Name	MAC	Status	Type	Device	Assigned ips
1	true	NR300	41d49af6c24b88f0	NR300-TEST	f2:28:75:80:5b:66	OK	PRIVATE	zt1	172.29.117.138/16

Index: 1

Enable: true

Description: NR300

Network ID: 41d49af6c24b88f0

Name: NR300-TEST

MAC: f2:28:75:80:5b:66

Status: OK

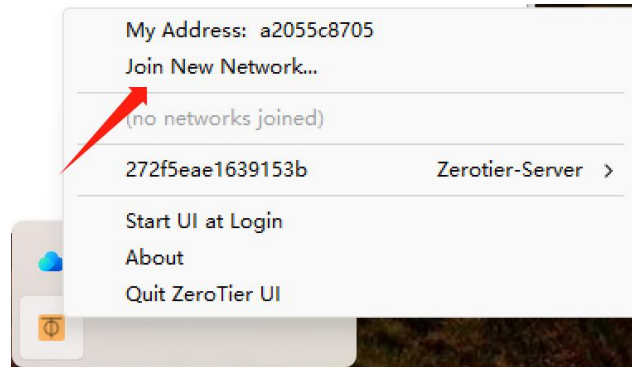
Type: PRIVATE

Device: zt1

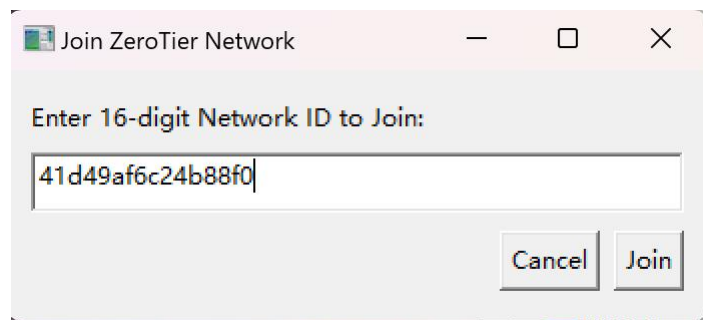
Assigned ips: 172.29.117.138/16

3.3 Configuration on PC(ZeroTier Client)

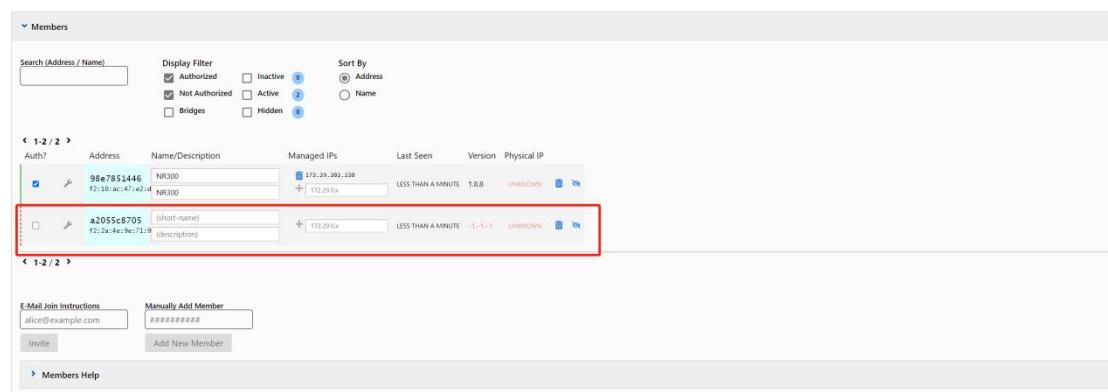
1. Open ZeroTierOne Software on PC, then Right Click ZeroTier software and Join New Network.



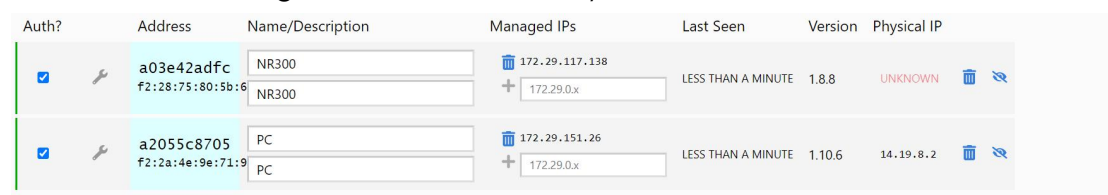
2. Then enter the Network ID of the ZeroTier Server.



3. Then go to ZeroTier Server Web page, after this page show a new device has joined this Network as below, then check "auth" button to allow PC(ZeroTier client) to join this Network.

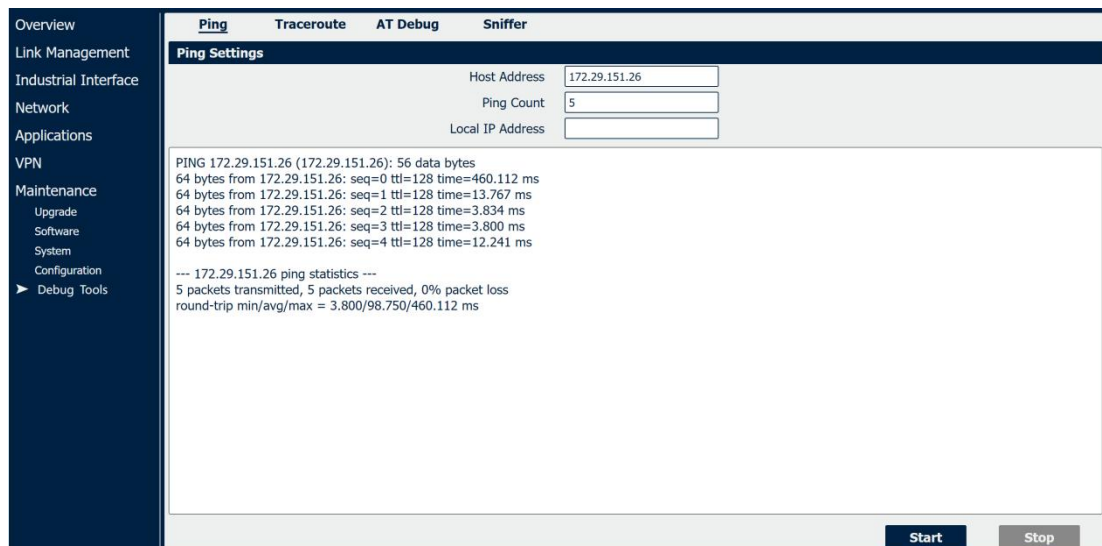


4. Then it will be assigned a IP automatically.



4. Testing

1. Ping from NR300 router to PC(ZeroTier client), it is working correctly.



2. Ping from PC(ZeroTier client) to NR300 router,it is working correctly.

```
C:\Users\Mosen>ping -S 172.29.151.26 172.29.117.138

正在 Ping 172.29.117.138 从 172.29.151.26 具有 32 字节的数据:
来自 172.29.117.138 的回复: 字节=32 时间=481ms TTL=64
来自 172.29.117.138 的回复: 字节=32 时间=3ms TTL=64
来自 172.29.117.138 的回复: 字节=32 时间=4ms TTL=64
来自 172.29.117.138 的回复: 字节=32 时间=11ms TTL=64

172.29.117.138 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 3ms, 最长 = 481ms, 平均 = 124ms
```

3. Test successfully.