The most important thing we build is trust

ADVANCED ELECTRONIC SOLUTIONS | AVIATION SERVICES | COMMUNICATIONS AND CONNECTIVITY | MISSION SYSTEMS

CN-002 Real Data Application

July 2016

Connected – Seamless – Wireless

主要内容

- Real Data Application (RDA)概述
- 创建脚本（Provisioning）
- 运行脚本
- 日志实时查看和分析
- 支持和帮助
- 附录

Real Data Application (RDA)概述

- TM500 & RDA集成测试环境
- RDA产品架构及简介
- RDA环境连线
- RDA客户端

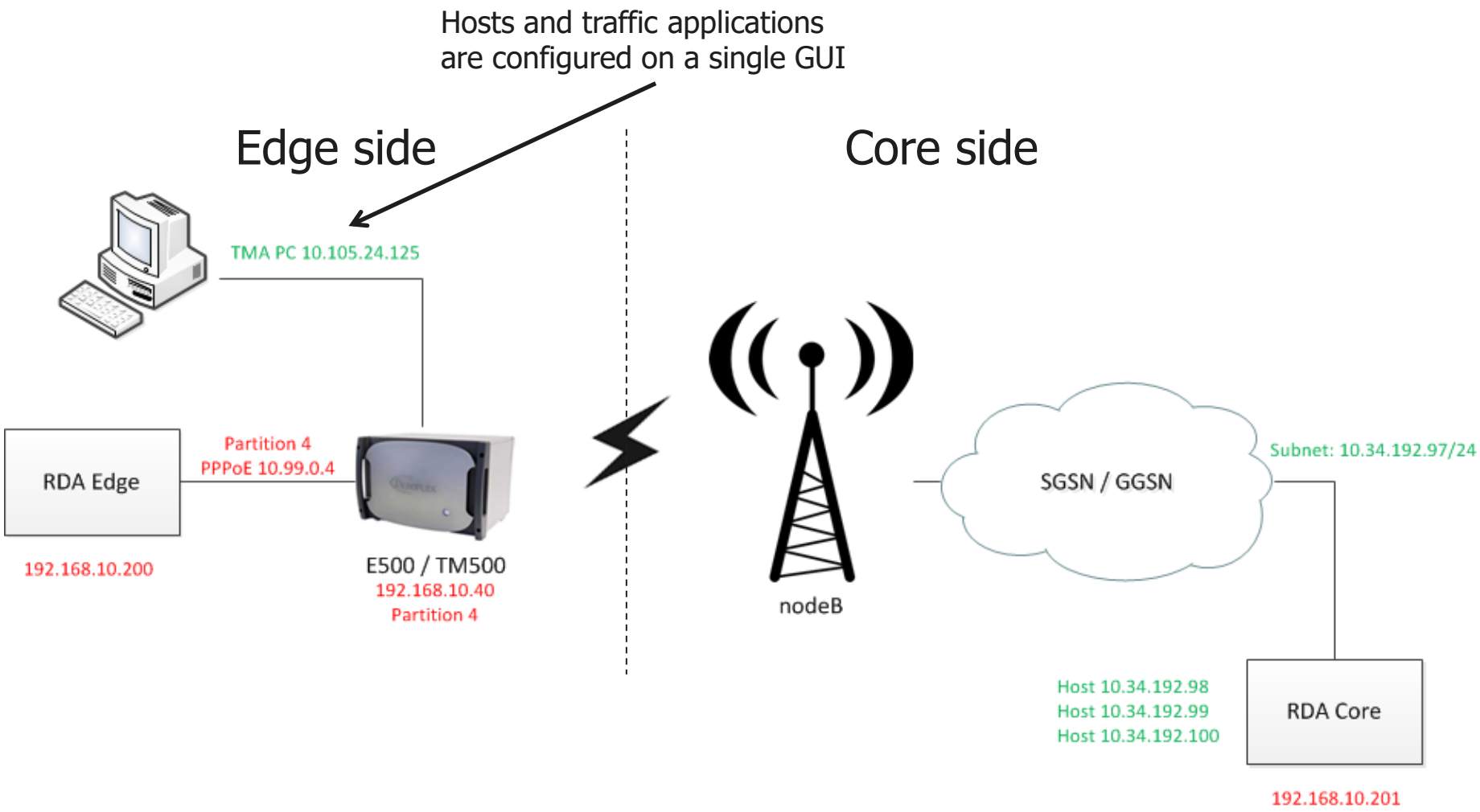
RDA业务服务器

- 常提及的几个名称
  - diversifEye是业务服务器产品的统称，包含D500/D1000/R630。diversifEye集成到TM500测试环境后，在软件层面，又被称为Real Data Application (RDA).
  - diversifEye是业务服务器客户端，最新的客户端已更名为TeraVM.
  - Shenick是业务服务器的提供商，以前是Aeroflex的合作伙伴。
  - Shenick后来被Aeroflex收购；Cobham后续又收购了Aeroflex.
- 功能
  - 多小区测试环境下，为成千上万终端并行提供各种数据业务。
  - 模拟的应用程序包括FTP/HTTP/TeraFlow/RTSP/VoLTE/PING等等。
  - 同时模拟应用程序客户端（Edge）和服务器（Core）。
  - 支持端到端的测试，实时QoS以及应用程序级别的关键性能指标评估。
  - D500/D1000最多并行支持6个TM500测试环境。

TM500 & RDA集成测试环境

- #待补充真实测试环境图示

TM500 & RDA集成测试环境



RDA产品架构

COBHAM

Application Options

- Thresholding
- Passive Analysis
- SMS over IMS
- Voice services
- Video services
- TeraFlow
- TWAMP

Traffic Generation Options

- 3.6Gbps DL Traffic – R630
- 2.7Gbps DL Traffic – R630
- 1.8Gbps DL Traffic – R630 or D1000 Edge+Core
- 900Mbps DL Traffic – D500 Edge+Core
- 450Mbps DL Traffic – D500 Edge

HTTP, FTP, eMail, Ping

Hardware Platforms

D500 | D1000 | R630

RDA平台简介

D500 – D1000 – R630

D500

- I/O – 1x 1Gbps
- Fixed VLANs per User
  - SGi Servers I/O use VLAN tags
- Number of UEs
  - 6 000
- Number of Applications
  - 24 000 provisioned application clients
  - 12 000 concurrent application clients
- Number of PDN connections
  - 12 000
- Number of fine statistics
  - 500 entities

D1000

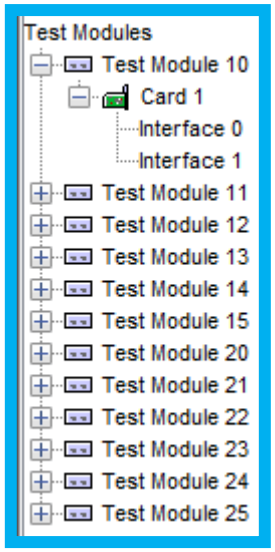
- I/O – 2x 1Gbps
- Fixed VLANs per User
  - SGi Servers I/O use VLAN tags
- Number of UEs
  - 12 000
- Number of Applications
  - 48 000 provisioned application clients
  - 24 000 concurrent application clients
- Number of PDN connections
  - 24 000
- Number of fine statistics
  - 500 entities

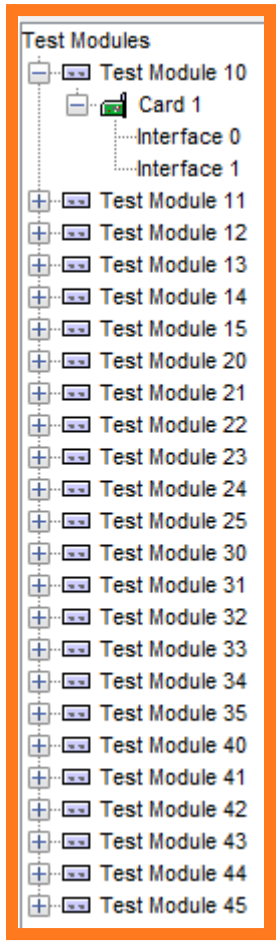
R630

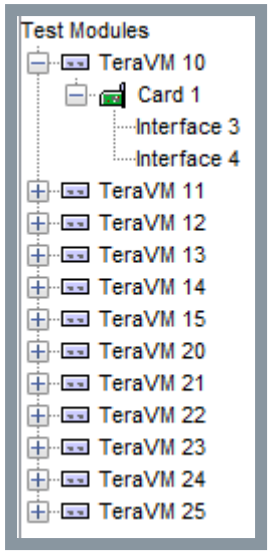
- I/O – 2x 10Gbps
- Configurable VLANs per User
  - SGi Servers can be used without VLAN tags
- Number of UEs
  - 36 000
- Number of Applications
  - 288 000 provisioned and concurrent application clients
- Number of PDN connections
  - 72 000
- Number of fine statistics
  - 24 000 entities
- Near-real time Streaming of statistics

RDA平台简介

D500 – D1000 – R630

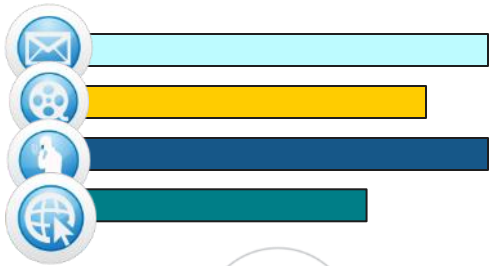




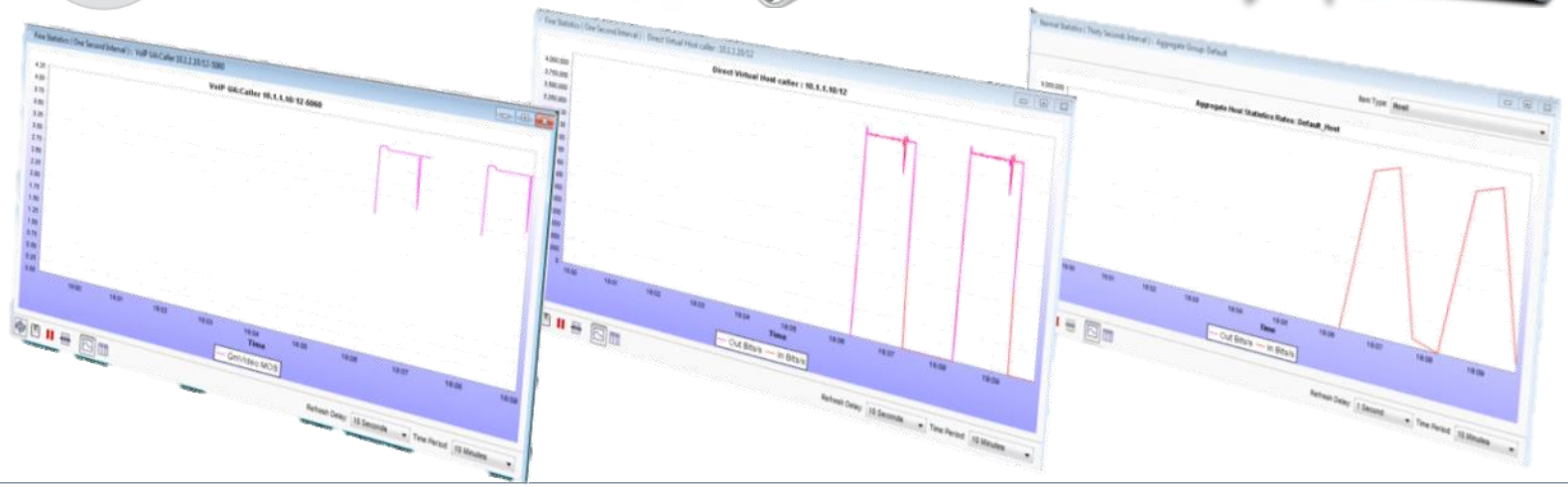


RDA业务关键性能分析

- **per Application**
- per flow performance measurements



- **per UE**
- Aggregate performance



RDA环境连线

Standalone D500 Edge/Core

- #待补充环境连线图

RDA环境连线

D500 Edge and Core Pair

- #待补充环境连线图

RDA环境连线

Standalone Edge/Core D1000

- #待补充环境连线图

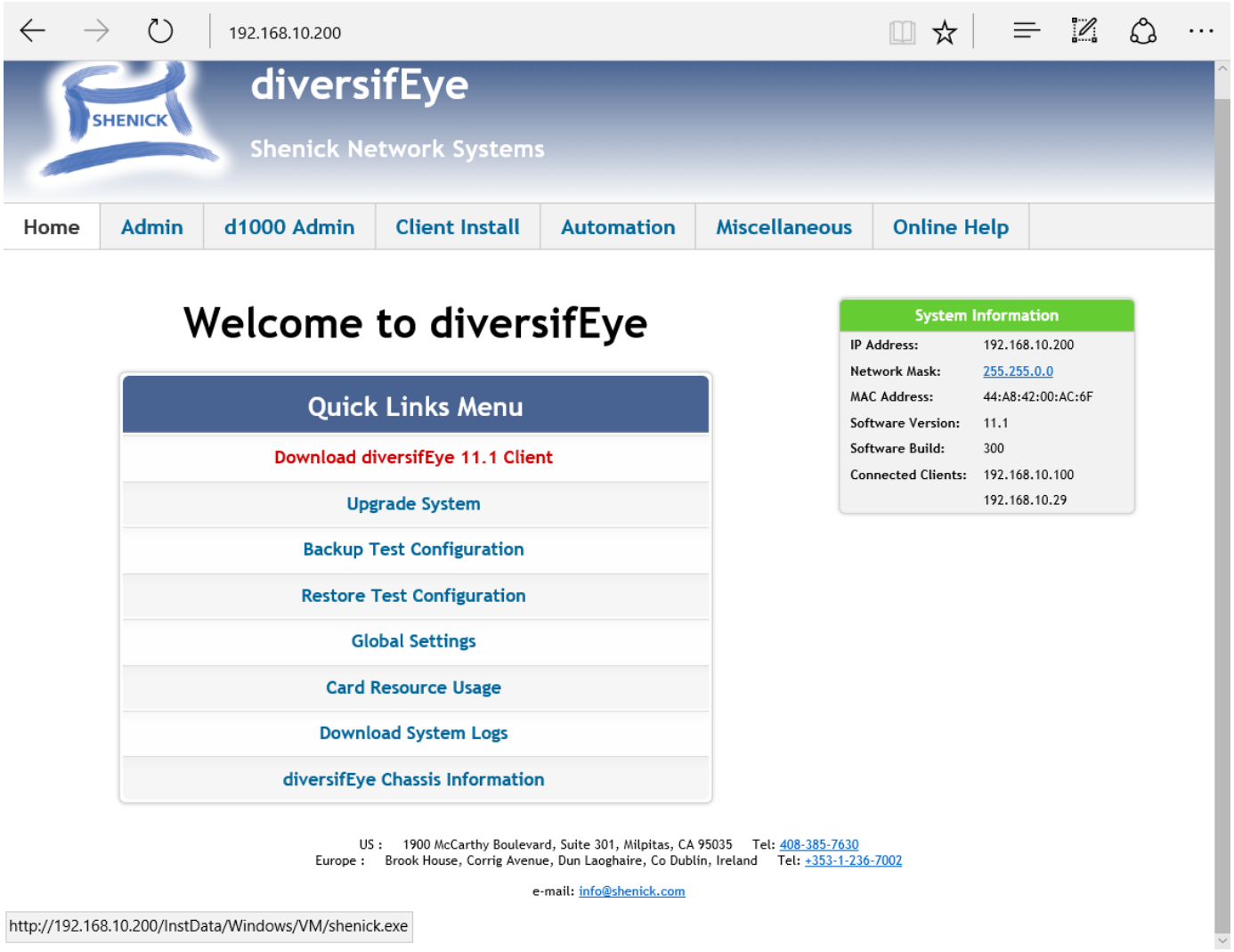
RDA客户端

下载及安装

- 早期的RDA客户端**diversifEye**，最新的客户端**TeraVM**
- 默认的管理IP地址：192.168.10.200.
- 请通过网页浏览器登录管理页面，下载安装RDA客户端。
  - 默认安装即可
- 访问某些RDA管理页面需要用户名和密码。
  - 用户名：diverAdmin
  - 密码：diversifEye

RDA客户端

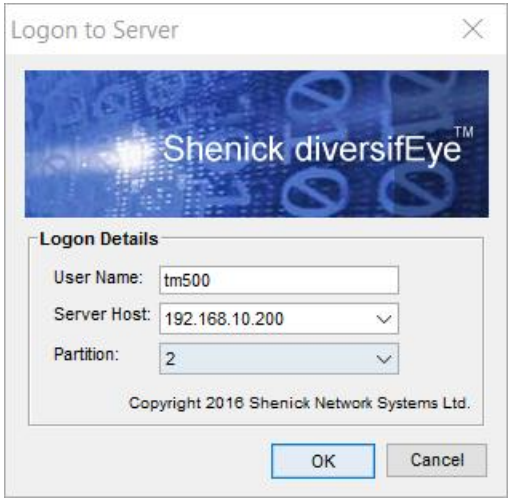
下载及安装



RDA客户端

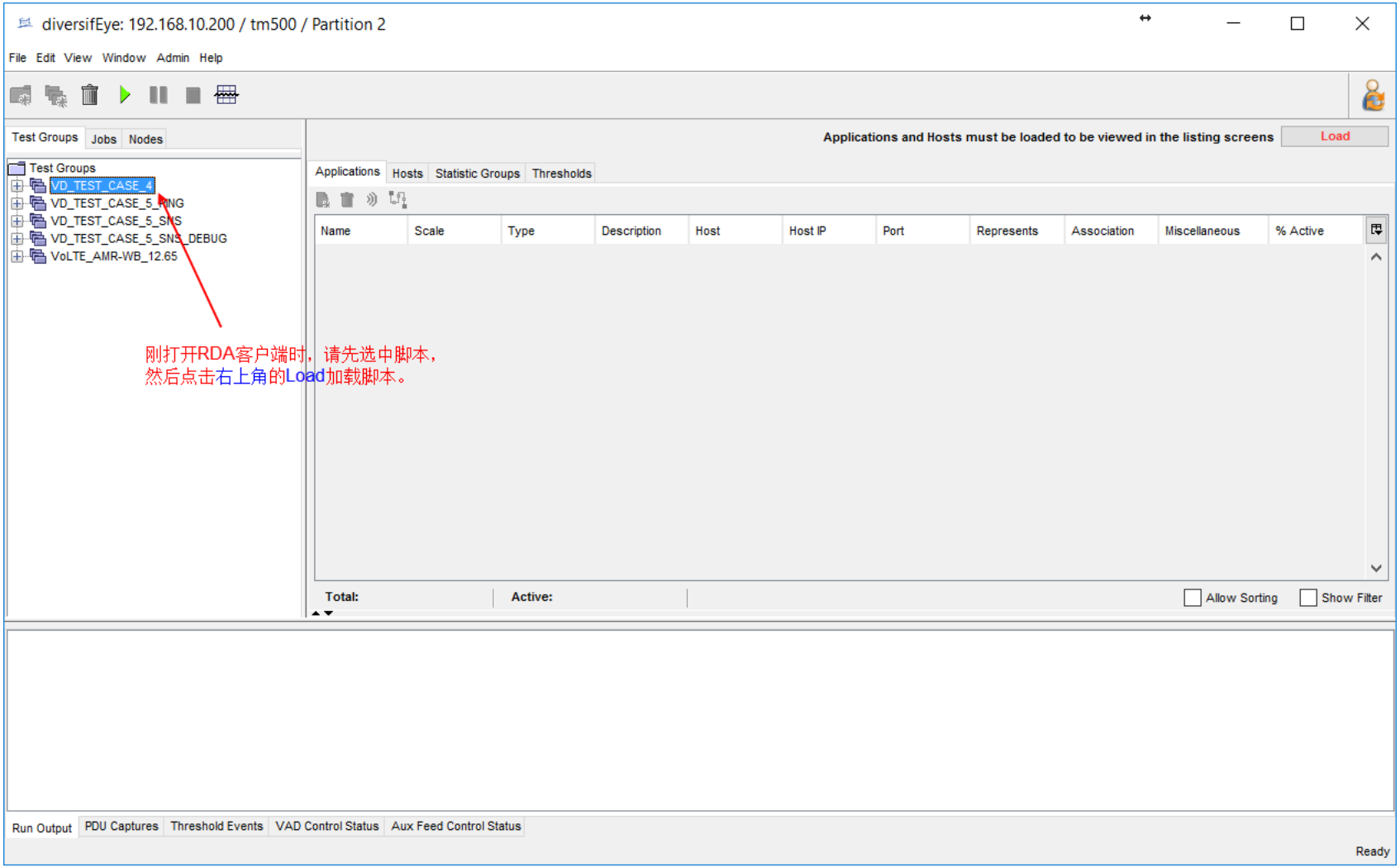
登录

- 通过客户端diversifEye/TeraVM登录RDA
  - **User Name**：tm500（不建议用其它用户名，因为可能导致TM500无法调用RDA脚本）。
  - **Server Host**: 192.168.10.200 （默认）。
  - **Partition**: 根据RDA测试环境连线，选择对应的Partition.



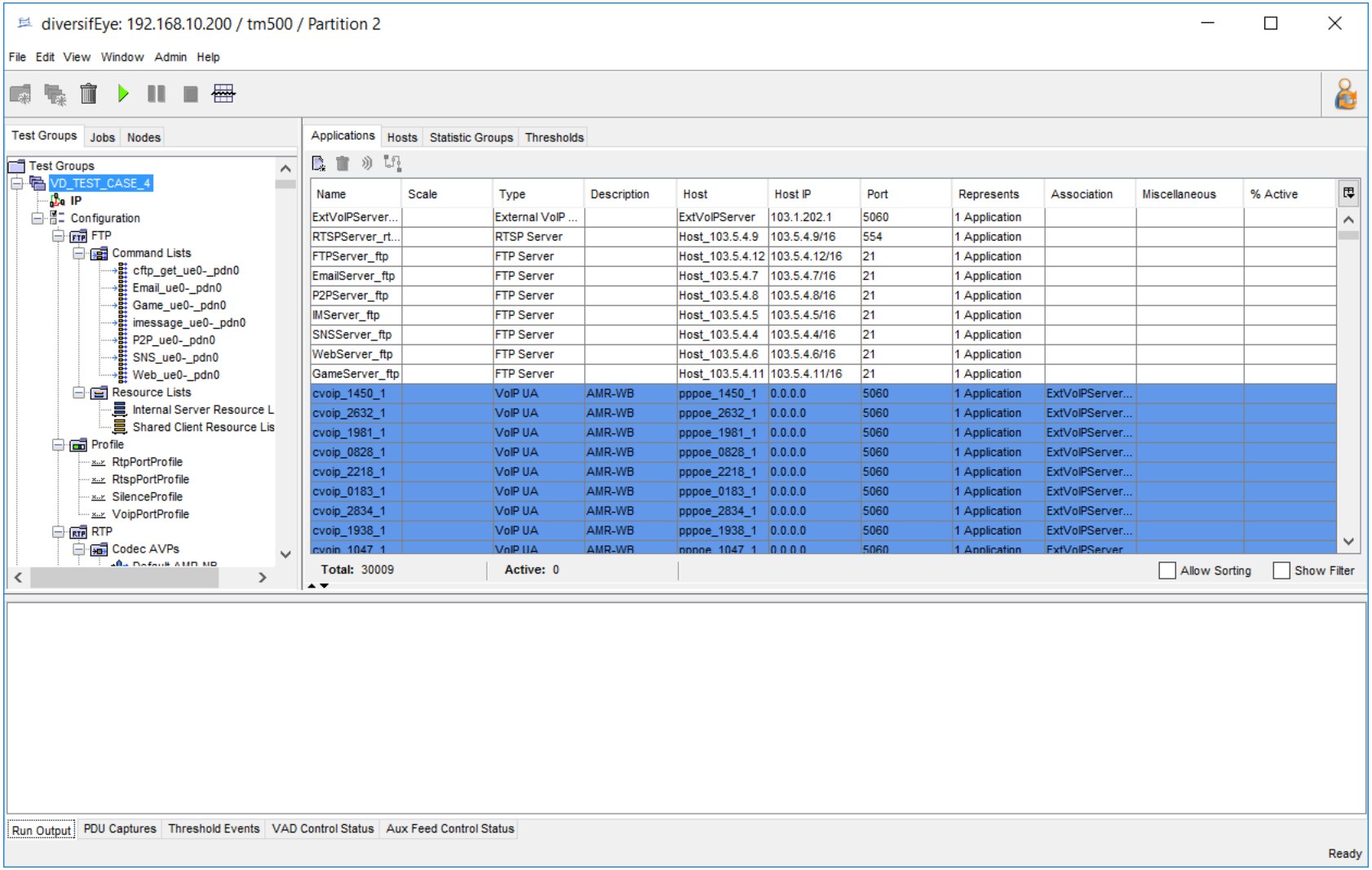
RDA客户端

基于Java的GUI



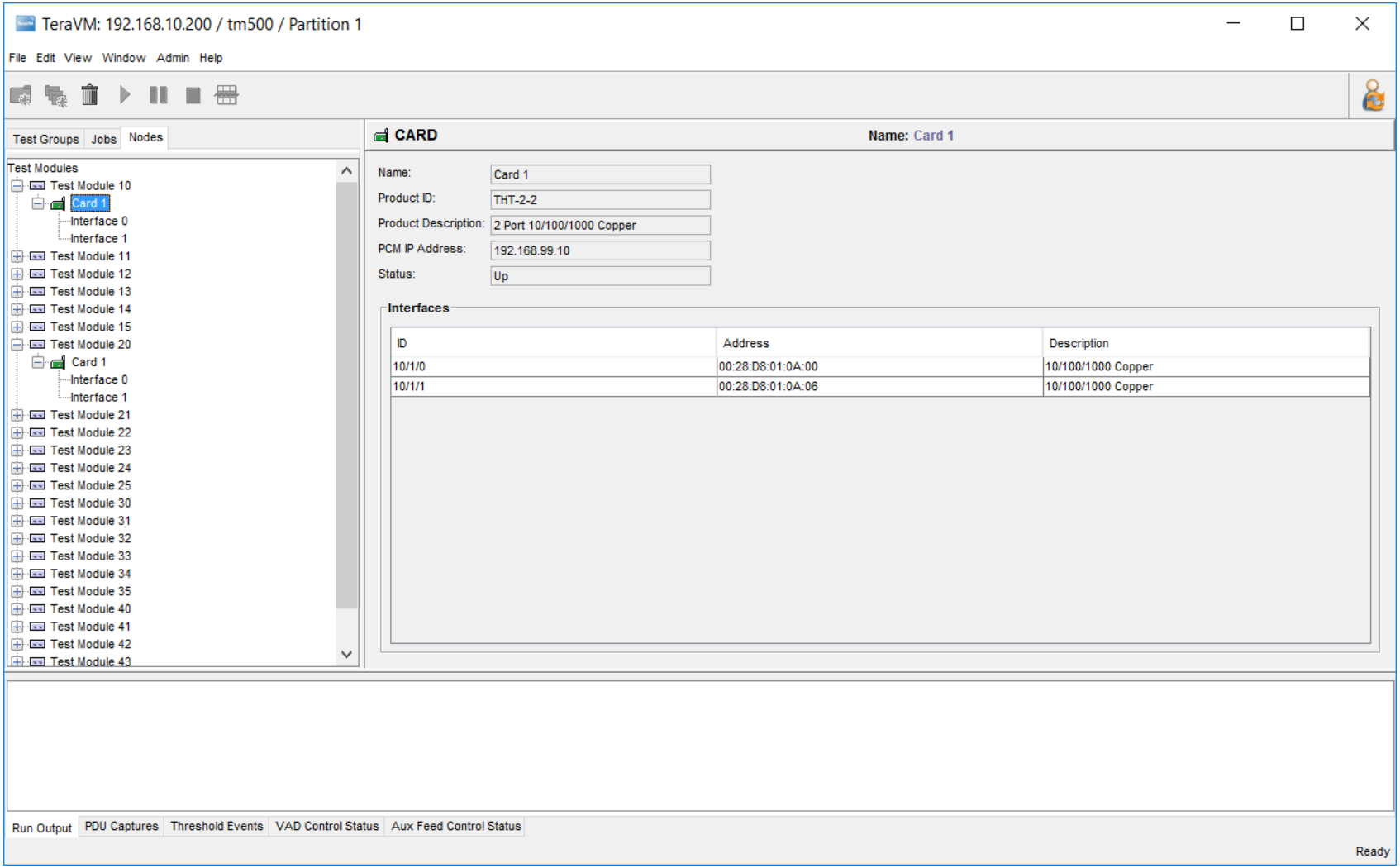
RDA客户端

Test Groups/Applications



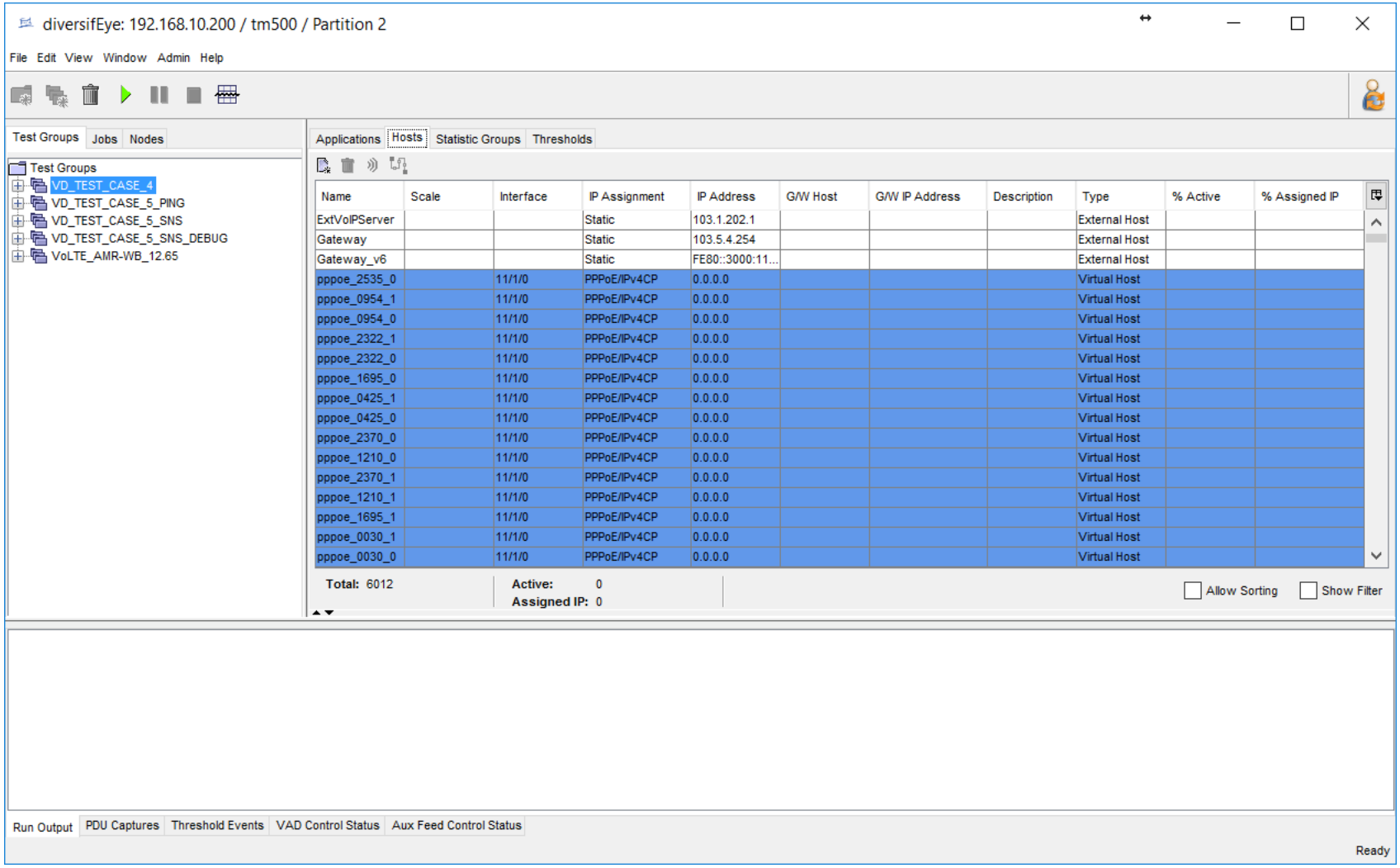
RDA客户端

Nodes



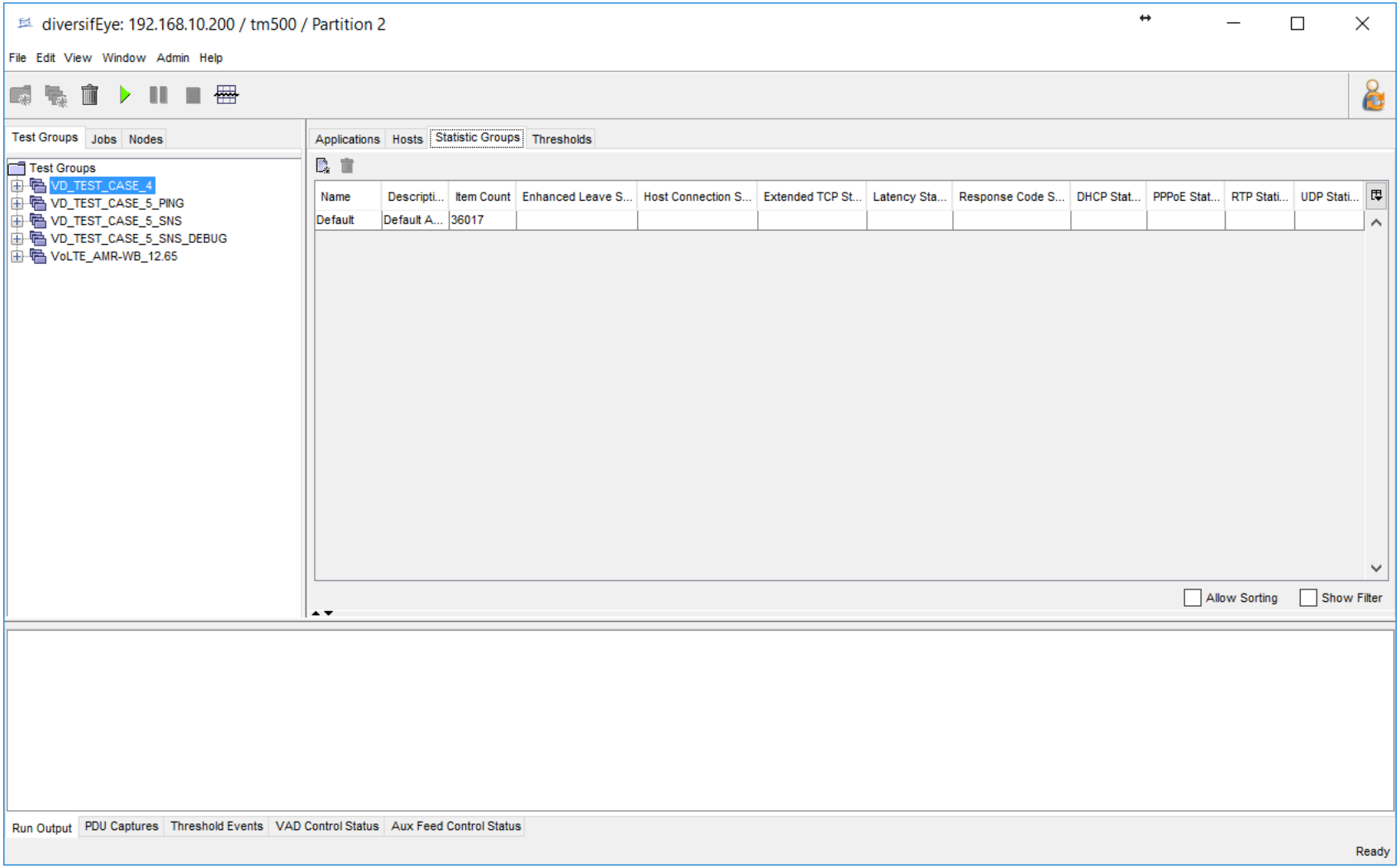
RDA客户端

Hosts



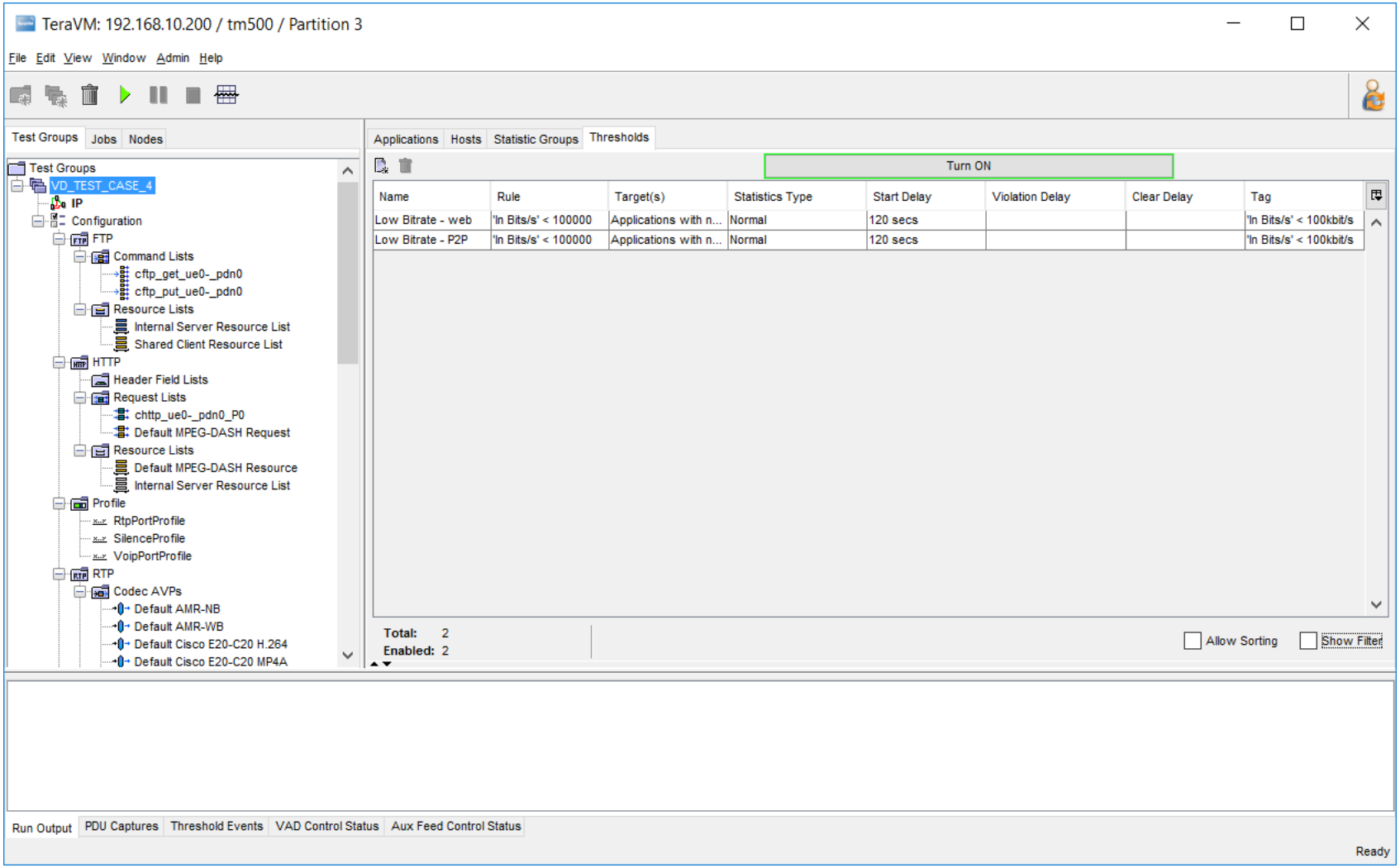
RDA客户端

Statistic Groups



RDA客户端

Thresholds



创建脚本（Provisioning）

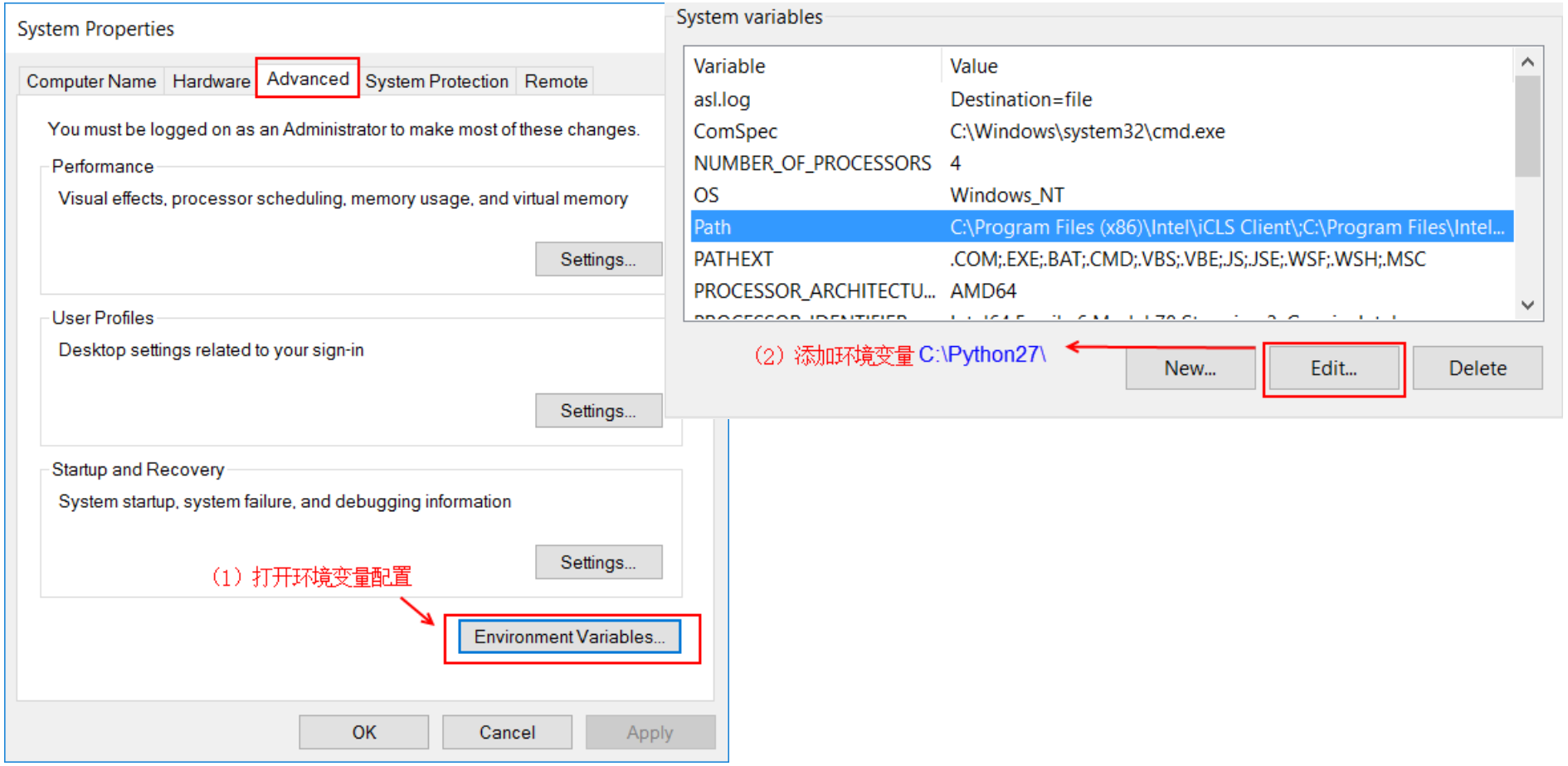
- Python安装和设置
- RDA Provisioning
- 导入和导出脚本

Python安装和设置

- **Provisioning**：通过配置文件（tm500.xml），用Python批量生成RDA脚本，这个过程称为Provisioning.
- 电脑运行环境配置
  - 依次下载安装Python相关软件
    - python-2.7.5.msi
    - pywin32-214.win32-py2.7.exe
    - wxPython2.8-win32-unicode-2.8.12.1-py27.exe
    - xlrd-0.7.9.win32.exe
  - 添加Python安装路径（ C:\Python27\）至系统的环境变量。
    - 右键点击"我的电脑"，选择"属性"；
    - 选择"高级" -> "环境变量"

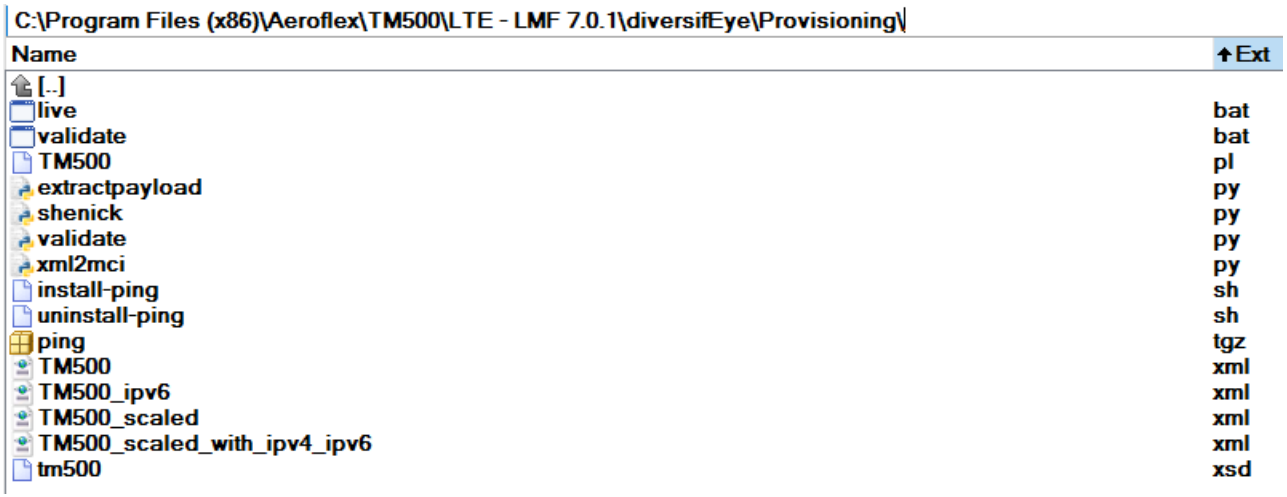
注意：Win7和Win10对应的环境变量配置界面略有区别。

Python安装和设置



RDA Provisioning

- 每个CUE TM500软件的安装目录下都有Provisioning模板，例如：



- Win7和Win10的C:\Program Files\和C:\Program Files (x86)\目录下的操作需要管理员权限，所以请把Provisioning拷贝到其它路径再进行修改及其它操作。
- 根据测试需求，有两个文件需要更新
  - live.bat
  - TM500.xml

RDA Provisioning

live.bat

- live.bat: 批处理文件，配置基本环境变量，调用shenick.py生成RDA脚本。需要更新以下信息：
  - aflx_ip_addr：RDA IP地址
  - aflx_group_name：RDA脚本名字
  - aflx_part：Partition

live - Notepad

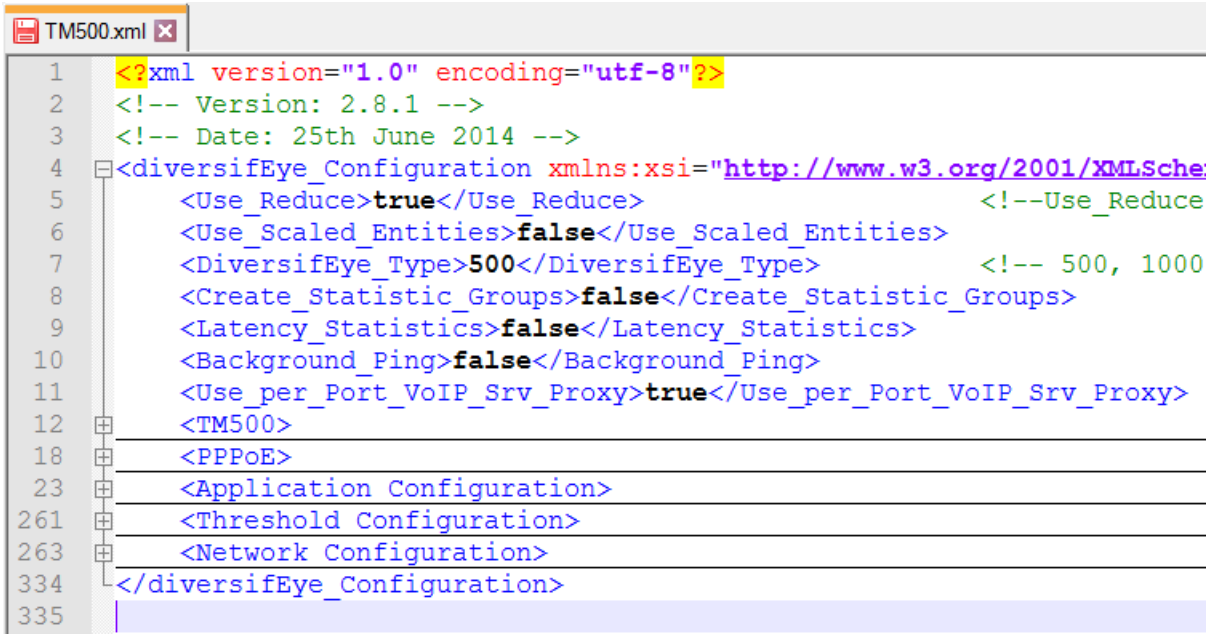
File Edit Format View Help

```
@echo off
set tma_path=%~f1
set aflx_python_script_name=shenick.py
set aflx_ip_addr=192.168.10.200
set aflx_group_name=Training_HTTP_TWAMP
set aflx_rat=LTE
set aflx_ftp_user=cli
set aflx_ftp_password=diversifEye
set aflx_ftp_script=ftp_script.txt
set aflx_part=2

if ["%tma_path%"] EQU [""] goto skipPathChange

:changePath
echo.
echo adding tma_path %tma_path%
echo.
set aflx_python_script_name=%tma_path%\%aflx_python_script_name%


:skipPathChange


echo.
echo Removing remotely generated XML file before we start...
echo.

echo %aflx_ftp_user%> %aflx_ftp_script%
```

RDA Provisioning

TM500.xml

- TM500.xml: RDA配置文件，live.bat将根据此配置文件生成相应的RDA脚本并自动上传至RDA。
- 配置文件主要包含以下模块



RDA Provisioning

基本配置信息

- 模板默认配置

```
<Use_Reduce>true</Use_Reduce>                    <!--Use_Reduce - true or false, specifies provisioning xml for
<Use_Scaled_Entities>true</Use_Scaled_Entities>
<DiversifEye_Type>500</DiversifEye_Type>         <!-- 500, 1000 or 8400, 500 default -->
<Create_Statistic_Groups>false</Create_Statistic_Groups>
<Latency_Statistics>false</Latency_Statistics>
<Background_Ping Ping_IP_Address="4.2.2.2" Delay_Between_Pings="5000" Payload_Size="100">true</Background_Ping>
<Use_per_Port_VoIP_Srv_Proxy>true</Use_per_Port_VoIP_Srv_Proxy>
```

- 建议更新如下配置
  - Use_Scaled_Entities
  - Background_Ping

```
<Use_Reduce>true</Use_Reduce>                    <!--Use_Reduce
<Use_Scaled_Entities>false</Use_Scaled_Entities>
<DiversifEye_Type>500</DiversifEye_Type>         <!-- 500, 1000
<Create_Statistic_Groups>false</Create_Statistic_Groups>
<Latency_Statistics>false</Latency_Statistics>
<Background_Ping>false</Background_Ping>
<Use_per_Port_VoIP_Srv_Proxy>true</Use_per_Port_VoIP_Srv_Proxy>
```

RDA Provisioning

TM500 Block

- 模板默认配置

```
<TM500>
    <Total_UEs>100</Total_UEs>
    <Minimum_UE_ID_Digits>4</Minimum_UE_ID_Digits>
    <PDNs_per_UE>3</PDNs_per_UE>                    <!--
    <LAN_IP>192.168.10.71</LAN_IP>                 <!--
</TM500>
```

- 请根据测试需求及环境更新如下配置
  - Total_UEs
  - PDNs_per_UE
  - LAN_IP：TM500业务口IP地址，用于PPPoE拨号
- 如果是VoLTE相关测试的话，一般建立两个APN，配置更新如下

```
<TM500>
    <Total_UEs>100</Total_UEs>
    <Minimum_UE_ID_Digits>4</Minimum_UE_ID_Digits>
    <PDNs_per_UE>2</PDNs_per_UE>
    <LAN_IP>192.168.10.71</LAN_IP>                 <
</TM500>
```

RDA Provisioning

PPPoE Block

- 模板默认配置（IPv4），建议采用默认配置。

```
<PPPoE>
    <MAC_Start>00:1E:6B:03:00:01</MAC_Start>
    <diversifEye_Port>0</diversifEye_Port>
    <MTU>1492</MTU>
</PPPoE>
```

- 模板默认配置（IPv6）

```
<PPPoE>
    <MAC_Start>00:1E:6B:03:00:01</MAC_Start>
    <diversifEye_Port>0</diversifEye_Port>
    <MTU>1492</MTU>
    <IPv6_PPPoE_Client PDN="0,2"/>  <!-- in t
</PPPoE>
```

- 如果是IPv6 VoLTE UE的话，第二个APN用于承载VoLTE，对应的APN为1，配置更新如下所示
  - IPv6_PPPoE_Client

```
<PPPoE>
    <MAC_Start>00:1E:6B:03:00:01</MAC_Start>
    <diversifEye_Port>0</diversifEye_Port>
    <MTU>1492</MTU>
    <IPv6_PPPoE_Client PDN="1"/>  <!-- in thi
</PPPoE>
```

RDA Provisioning

Application Block

- Application模块配置包含两部分
  - 服务器相关配置
  - 客户端相关配置
    - 默认配置（<Default>）：默认客户端
    - Profile_N配置（<Profile_N>）：除了默认客户端，同一个服务器还可以配置多个客户端。

```
<Application_Configuration>
    <Server>
    <Server>
    <Server>
    <Server>
    <Server>
    <Server>
    <Client_Profiles>
        <Default>
        <Profile_0>
        <Profile_1/>
        <Profile_2/>
        <Profile_3/>
        <Profile_4/>
        <Profile_5/>
        <Profile_6/>
        <Profile_7/>
        <Profile_8/>
        <Profile_9/>
    </Client_Profiles>
</Application_Configuration>
```

RDA Provisioning

FTP Server Configuration

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>FTP</Application>
    <Host_Name>ExtFTPServer</Host_Name>
    <IP_Address>99.99.99.1</IP_Address>
</Server>
```

- 主要待更新配置
  - Type/Host_Name/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>FTP</Application>
    <Host_Name>FTPServer</Host_Name>
    <IP_Address>99.99.99.1</IP_Address>
</Server>
```

RDA Provisioning

FTP Client Configuration (Get)

- 模板默认配置

```
<FTP_Get UE="0..10,31..49" PDN="1">
    <Server_Host_Name>ExtFTPServer</Server_Host_Name>
    <Path>1GB.bin</Path>
    <Delay_Between_Commands>200</Delay_Between_Commands>
    <Delay_Between_Sessions>500</Delay_Between_Sessions>
    <File_Size>1073741824</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Get>
<FTP_Get UE="11..30" PDN="1">
    <Server_Host_Name>ExtFTPServer</Server_Host_Name>
    <Path>500MB.bin</Path>
    <Delay_Between_Commands>120</Delay_Between_Commands>
    <Delay_Between_Sessions>500</Delay_Between_Sessions>
    <File_Size>536870912</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Get>
```

- 主要待更新配置
  - UE/PDN/Server_Host_Name

```
<FTP_Get UE="0.." PDN="0">                                    <!
    <Server_Host_Name>FTPServer</Server_Host_Name>
    <Path>1GB.bin</Path>
    <Delay_Between_Commands>200</Delay_Between_Commands>
    <Delay_Between_Sessions>500</Delay_Between_Sessions>
    <File_Size>1073741824</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Get>
```

RDA Provisioning

FTP Client Configuration (Put)

- 默认模板配置

```
<FTP_Put UE="0..24" PDN="1">                                    <!-
    <Server_Host_Name>ExtFTPServer</Server_Host_Name>            <!-
    <Path/>                                                     <!-
    <Delay_Between_Commands>200</Delay_Between_Commands>        <!-
    <Delay_Between_Sessions>200</Delay_Between_Sessions>        <!-
    <Ftp_Put_Path_Shared>ftpupload/1GB.bin</Ftp_Put_Path_Shared>
    <File_Size>1073741824</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Put>
<FTP_Put UE="25..49" PDN="1">                                   <!-
    <Server_Host_Name>ExtFTPServer</Server_Host_Name>            <!-
    <Path/>                                                     <!-
    <Delay_Between_Commands>120</Delay_Between_Commands>        <!-
    <Delay_Between_Sessions>500</Delay_Between_Sessions>        <!-
    <Ftp_Put_Path_Shared>ftpupload/500MB.bin</Ftp_Put_Path_Shared>
    <File_Size>536870912</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Put>
```

- 主要待更新配置
  - UE/PDN/ Server_Host_Name

```
<FTP_Put UE="0.." PDN="0">                                      <!-
    <Server_Host_Name>FTPServer</Server_Host_Name>              <!--
    <Path/>                                                     -
    <Delay_Between_Commands>200</Delay_Between_Commands>        -
    <Delay_Between_Sessions>200</Delay_Between_Sessions>        -
    <Ftp_Put_Path_Shared>ftpupload/1GB.bin</Ftp_Put_Path_Shared>
    <File_Size>1073741824</File_Size>
    <FTP_Mode>Passive</FTP_Mode>
</FTP_Put>
```

RDA Provisioning

HTTP Server Configuration

- 默认模板配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>HTTP</Application>
    <Host_Name>ExtHTTPServer</Host_Name>
    <IP_Address>99.99.99.2</IP_Address>
</Server>
```

- 主要待更新配置
  - Type/Host_Name/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>HTTP</Application>
    <Host_Name>HTTPServer</Host_Name>
    <IP_Address>99.99.99.2</IP_Address>
</Server>
```

RDA Provisioning

HTTP Client Configuration (GET)

- 模板默认配置

```
<HTTP UE="50..70" PDN="1">
    <Server_Host_Name>ExtHTTPServer</Server_Host_Name>
    <Http_Operation>GET</Http_Operation>
    <Path>1Mb.bin</Path>
    <File_Size>1048576</File_Size>
    <Delay_Between_Requests>120</Delay_Between_Requests>
    <Delay_Between_Connections>500</Delay_Between_Connections>
</HTTP>
```

- 主要待更新配置
  - UE/PDN/Server_Host_Name

```
<HTTP UE="0.." PDN="0">                                    <
    <Server_Host_Name>HTTPServer</Server_Host_Name>         <
    <Http_Operation>GET</Http_Operation>
    <Path>1Mb.bin</Path>
    <File_Size>1048576</File_Size>
    <Delay_Between_Requests>120</Delay_Between_Requests>
    <Delay_Between_Connections>500</Delay_Between_Connections>
</HTTP>
```

RDA Provisioning

HTTP Client Configuration (POST)

- 模板默认配置

```
<HTTP UE="71..90" PDN="1">
    <Server_Host_Name>ExtHTTPServer</Server_Host_Name>
    <Http_Operation>POST</Http_Operation>
    <Path>post-test.php</Path>
    <File_Size>1024</File_Size>
    <POST_Content>HMRW658vQGP2kQR45VZ2vrbLAkh08A48JP9JDlSIwsUBf
    <Delay_Between_Requests>500</Delay_Between_Requests>
    <Delay_Between_Connections>100</Delay_Between_Connections>
</HTTP>
```

- 主要待更新配置
  - UE/PDN/Server_Host_Name/File_Size/POST_Content

```
<HTTP UE="0.." PDN="0">                                    <!
    <Server_Host_Name>HTTPServer</Server_Host_Name>         <!
    <Http_Operation>POST</Http_Operation>
    <Path>post-test.php</Path>
    <File_Size>1024</File_Size>
    <POST_Content>HMRW658vQGP2kQR45VZ2vrbLAkh08A48JP9JDlSIwsUBf
    <Delay_Between_Requests>500</Delay_Between_Requests>
    <Delay_Between_Connections>100</Delay_Between_Connections>
</HTTP>
```

RDA Provisioning

HTTP Client Configuration (HEAD)

- 模板默认配置

```
<HTTP UE="91.." PDN="1">
    <Server_Host_Name>ExtHTTPServer</Server_Host_Name>
    <Http_Operation>HEAD</Http_Operation>
    <Path>head-test.html</Path>
    <Delay_Between_Requests>1000</Delay_Between_Requests>
    <Delay_Between_Connections>100</Delay_Between_Connections>
</HTTP>
```

- *#待进一步拓展。*

RDA Provisioning

HTTP Client Configuration (IM)

- 模板默认配置

```
<HTTP UE="50..70" PDN="0" UE_Pattern="Even">
    <Alias>im</Alias>
    <Description>Simulated Instant Messaging Client talking to HTTP server on
    <Server_Host_Name>im_%UE_ID+1%_%PDN%</Server_Host_Name>  <!-- HTTP server
    <Http_Operation>POST</Http_Operation>                      <!-- Choice o
    <Path>im-post-test.php</Path>                               <!-- Full H
    <POST_Content>fdd6NP0mlXNry0VgN7FtqmrwlbnKvOXGIR0D3wIr1NYgN3SfB6ICzNrh5x61
    <Delay_Between_Connections>500</Delay_Between_Connections>  <!-- in ms -->
</HTTP>
<SHTTP UE="50..70" PDN="0" UE_Pattern="Odd">
  <Alias>im</Alias>
  <Description>Simulated Instant Messaging Server on PPPoE Host</Description>
</SHTTP>
```

- 主要待更新配置
  - UE/PDN/Alias/File_Size

```
<HTTP UE="0.." PDN="0" UE_Pattern="Even">                          <!-- either use .. or -
    <Alias>imessage</Alias>
    <Description>Simulated Instant Messaging Client talking to HTTP server on PPPoE Host</Description>
    <Server_Host_Name>imessage_%UE_ID+1%_%PDN%</Server_Host_Name>  <!-- HTTP server name for all HTTP
    <Http_Operation>POST</Http_Operation>                       <!-- Choice of GET, POST or HEAD -->
    <File_Size>50</File_Size>
    <Path>im-post-test.php</Path>                                <!-- Full HTTP get/post/head URI (e
    <POST_Content>fdd6NP0mlXNry0VgN7FtqmrwlbnKvOXGIR0D3wIr1NYgN3SfB6</POST_Content>
    <Delay_Between_Requests>10000</Delay_Between_Requests>       <!-- in ms -->
    <Delay_Between_Connections>10000</Delay_Between_Connections>  <!-- in ms -->
</HTTP>
<SHTTP UE="0.." PDN="0" UE_Pattern="Odd">
  <Alias>imessage</Alias>
  <Description>Simulated Instant Messaging Server on PPPoE Host</Description>
</SHTTP>
```

RDA Provisioning

VoLTE Server Configuration

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>VoIP</Application>
    <Host_Name>ExtVoIPServer</Host_Name>
    <IP_Address>99.99.99.2</IP_Address>
</Server>
```

- 主要待更新配置
  - Ip_Version/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>VoIP</Application>
    <Host_Name>ExtVoIPServer</Host_Name>
    <IP_Address>103.1.202.1</IP_Address>
</Server>
```

RDA Provisioning

VoLTE Client Configuration (Digest)

- 模板默认配置

```
<VoIP UE="0..49" PDN="0">
    <SIP_Server>
        <Server_Host_Name>ExtVoIPServer</Server_Host_Name>
        <Username>44123456789012+%UE_ID%</Username>
        <Password>password</Password>
        <Domain>testdomain.com</Domain>
    </SIP_Server>
    <Call_Duration>33000</Call_Duration>
    <Initial_Call_Delay>1000</Initial_Call_Delay>
    <VoIP_Media_Profile>
        <Media_Type>Voice</Media_Type>
        <RTP_Data>Full Duplex</RTP_Data>
        <RTCP>true</RTCP>
        <Silence_Suppression>true</Silence_Suppression>
        <Silence_Ratio>40</Silence_Ratio>
        <Silence_Length>50000</Silence_Length>
        <Codec>
            <Codec_Name>Our GSM Codec</Codec_Name>
            <Codec_Used_For>Voice</Codec_Used_For>
            <Codec_Encoding_Name>GSM</Codec_Encoding_Name>
            <Codec_Media_Type>audio</Codec_Media_Type>
            <Codec_Payload_Type>0</Codec_Payload_Type>
            <Codec_Payload_Size>320</Codec_Payload_Size>
            <Codec_ms_Packet>20.0</Codec_ms_Packet>
            <Codec_Stream_Rate>1024</Codec_Stream_Rate>
            <Codec_Frequency>8000</Codec_Frequency>
            <Codec_Channels>1</Codec_Channels>
            <Codec_Data_File/>
            <SDP_Attributes/>
        </Codec>
    </VoIP_Media_Profile>
    <Allow_Delay_Between_Calls>true</Allow_Delay_Between_Calls>
    <BHCA>38</BHCA>
    <Mobile_Originated_Pattern>Even</Mobile_Originated_Pattern>
    <Destination_Call_URI_Is_SIP>true</Destination_Call_URI_Is_SIP>
    <VoIP_Passive_Analysis Pattern="Odd">
        <Playout_Jitter>40</Playout_Jitter>
        <Max_Jitter>80</Max_Jitter>
        <Media_Type>Voice</Media_Type>
    </VoIP_Passive_Analysis>
    <Latency_Statistics>true</Latency_Statistics>
</VoIP>
```

RDA Provisioning

VoLTE Client Configuration (Digest)

- 主要待更新配置
  - Username/Password
  - Domain
  - SIP_Auth_Username
  - Call_Duration
  - Media_Type
  - Silence_Ratio
  - Silence_Length
  - Codec
  - BHCA
  - Pattern

```
<VoIP UE="0.." PDN="1">                                                    <!--
    <Description>AMR-WB</Description>
    <SIP_Server>
        <Server_Host_Name>ExtVoIPServer</Server_Host_Name>
        <Username>+8210201501000+%UE_ID%</Username>

        <Password>111111</Password>
        <Domain>ims.mnc006.mcc450.3gppnetwork.org</Domain>
        <SIP_Auth_Username/>
    </SIP_Server>
    <Call_Duration>604800000</Call_Duration>
    <Initial_Call_Delay>1000</Initial_Call_Delay>
    <VoIP_Media_Profile>
        <Media_Type>Multimedia</Media_Type>
        <RTP_Data>Full Duplex</RTP_Data>                                   <!--
        <RTCP>true</RTCP>                                                  <!--
        <Silence_Suppression>true</Silence_Suppression>                    <!--
        <Silence_Ratio>50</Silence_Ratio>                                  <!--
        <Silence_Length>5000</Silence_Length>                             <!--
        <Codec>
            <Codec_Name>Default AMR-WB</Codec_Name>                         <!-
        </Codec>
    </VoIP_Media_Profile>
    <Allow_Delay_Between_Calls>true</Allow_Delay_Between_Calls>
    <BHCA>40</BHCA>
    <Mobile_Originated_Pattern>Even</Mobile_Originated_Pattern>
    <Destination_Call_URI_Is_SIP>true</Destination_Call_URI_Is_SIP>
    <Call_Answering_Delay>0</Call_Answering_Delay>
    <VoIP_Passive_Analysis Pattern="All">
        <Playout_Jitter>40</Playout_Jitter>
        <Max_Jitter>80</Max_Jitter>
        <Media_Type>Voice</Media_Type>
    </VoIP_Passive_Analysis>
    <Latency_Statistics>true</Latency_Statistics>
</VoIP>
```

RDA Provisioning

VoLTE Client Configuration (AKA)

- 主要待更新配置
  - Username/Password
  - Domain
  - SIP_Auth_Username
  - Call_Duration
  - Media_Type
  - Silence_Ratio
  - Silence_Length
  - Codec
  - BHCA
  - Pattern
  - VoLTE Section
    - AKA_Key
    - AKA_Operator_Id
    - ESP_Encryption_Algorithm
    - ESP_Auth_Algorithm

RDA Provisioning

VoLTE Client Configuration (AKA)

```
<VoIP UE="0.." PDN="1">                                    <!-- either use .. or - to show a range --
    <Description>AMR-WB</Description>
    <SIP_Server>
        <Server_Host_Name>ExtVoIPServer</Server_Host_Name>
        <Username>+8616801005000+%UE_ID%</Username>              <!-- i.e. voip-user%UE_ID% => voip-us
                                                                <!-- i.e. 44123456789012+%UE_ID% => 4
        <Password>123456</Password>
        <Domain>ims.mnc000.mcc460.3gppnetwork.org</Domain>
        <SIP_Auth_Username>460001004205000+%UE_ID%@ims.mnc000.mcc460.3gppnetwork.org</SIP_Auth_Username>
    </SIP_Server>
    <VoLTE>
        <AKA_Key>12345678123456781234567812345678+%UE_ID%</AKA_Key>
        <AKA_Operator_Id>4DC34FD479D23E5D173871C6C997B5E3</AKA_Operator_Id>
        <Protected_SIP_Port>2468</Protected_SIP_Port>
        <ESP_Encryption_Algorithm>aes-cbc</ESP_Encryption_Algorithm>
        <ESP_Auth_Algorithm>hmac-md5-96</ESP_Auth_Algorithm>
    </VoLTE>
    <Call_Duration>60000</Call_Duration>                    <!-- in ms, aka Average Hold Time, betwee
    <Initial_Call_Delay>1000</Initial_Call_Delay>
    <VoIP_Media_Profile>
        <Media_Type>Multimedia</Media_Type>                      <!-- The type of media associated wi
        <RTP_Data>Full Duplex</RTP_Data>                    <!-- 'Full Duplex', 'Half Duplex Send', '
        <RTCP>true</RTCP>                                   <!-- Only valid if Media Type is voice, I
        <Silence_Suppression>true</Silence_Suppression>     <!-- true or false, only if Media Type is
        <Silence_Ratio>50</Silence_Ratio>                   <!-- Only used if Silence_Suppression is
        <Silence_Length>5000</Silence_Length>              <!-- Only used if Silence_Suppression is t
        <Codec>
            <Codec_Name>Default AMR-WB</Codec_Name>          <!-- custom name (between 3 and 32 chara
        </Codec>
    </VoIP_Media_Profile>
    <Allow_Delay_Between_Calls>true</Allow_Delay_Between_Calls>
    <BHCA>40</BHCA>
    <Mobile_Originated_Pattern>Even</Mobile_Originated_Pattern>       <!-- Odd, Even, List -->
    <Destination_Call_URI_Is_SIP>true</Destination_Call_URI_Is_SIP>   <!-- Only used if "Odd" or "Even" i
    <Call_Answering_Delay>0</Call_Answering_Delay>                    <!-- Delay in milliseconds before s
    <VoIP_Passive_Analysis Pattern="All">
        <Playout_Jitter>40</Playout_Jitter>
        <Max_Jitter>80</Max_Jitter>
    </VoIP_Passive_Analysis>
    <Latency_Statistics/>
</VoIP>
```

RDA Provisioning

RTSP Server Configuration

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>RTSP</Application>
    <Host_Name>ExtRTSPServer</Host_Name>
    <IP_Address>99.99.99.4</IP_Address>
</Server>
```

- 主要待更新配置
  - Type/Host_Name/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>RTSP</Application>
    <Host_Name>RTSPServer</Host_Name>
    <IP_Address>103.5.4.9</IP_Address>
</Server>
```

RDA Provisioning

RTSP Client Configuration

- 模板默认配置

```
<RTSP UE="0..10" PDN="0..2">
    <Alias>crtsp</Alias>
    <Description>Test media stream</Description>
    <Server_Host_Name>ExtRTSPServer</Server_Host_Name>
    <Path>/media/low-bitrate.3gp</Path>
</RTSP>
```

- 主要待更新配置
  - UE/PDN/Server_Host_Name/RTSP_Media_Profile/Media_Stream_Duration

```
<RTSP UE="0.." PDN="0">                                    <!-- e
    <Alias>crtsp</Alias>                                       <
    <Description>Video On Demand</Description>
    <Server_Host_Name>RTSPServer</Server_Host_Name>         <!-
    <Path>/media/low-bitrate.3gp</Path>
    <RTSP_Media_Profile>
        <Codec>
            <Codec_Name>MPEG2</Codec_Name>
            <Codec_Used_For>Streaming</Codec_Used_For>
            <Codec_Encoding_Name>MPEG2-TS</Codec_Encoding_Name>
            <Codec_Media_Type>video</Codec_Media_Type>
            <Codec_Payload_Type>32</Codec_Payload_Type>
            <Codec_Payload_Size>1316</Codec_Payload_Size>
            <Codec_Stream_Rate>200</Codec_Stream_Rate>
            <Codec_Frequency>90000</Codec_Frequency>
            <Codec_Data_File/>
            <SDP_Attributes/>
        </Codec>
    </RTSP_Media_Profile>
    <Media_Stream_Duration>Indefinite</Media_Stream_Duration>
</RTSP>
```

RDA Provisioning

cPing Client Configuration

- cPing不需要配置对应的Server.
- 模板默认配置

```
<cPing>
    <Ping_IP_Address>0.0.0.0</Ping_IP_Address>
    <Start_After>1000</Start_After>
    <Stop_After>6000</Stop_After>
    <Delay_Between_Pings>2</Delay_Between_Pings>
    <Packet_Size>100</Packet_Size>
</cPing>
```

- 主要待更新配置
  - UE/PDN/Ping_IP_Address/Start_After/Stop_After/Delay_Between_Pings/Packet_Size

```
<cPing UE="0.." PDN="0">
    <Ping_IP_Address>103.5.4.8</Ping_IP_Address>
    <Start_After>0</Start_After>
    <Stop_After/>
    <Delay_Between_Pings>2</Delay_Between_Pings>
    <Packet_Size>100</Packet_Size>
</cPing>
```

RDA Provisioning

sPing Server & Client Configuration

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>    <
    <Type>Internal</Type>                     <
    <Ip_Version>4</Ip_Version>                <
    <Application>PING</Application>           <
    <Host_Name>s0</Host_Name>      <!-- Used in
    <IP_Address>99.99.99.99</IP_Address>
                                              <
    <Physical_Location>Core</Physical_Location>
</Server>

<sPing>
    <Server_Host_Name>s0</Server_Host_Name>
    <Ping_IP_Address>0.0.0.0</Ping_IP_Address>
    <Start_After>1000</Start_After>
    <Stop_After>6000</Stop_After>
    <Delay_Between_Pings>2</Delay_Between_Pings>
    <Packet_Size>100</Packet_Size>
</sPing>
```

- *#待进一步拓展。*

RDA Provisioning

TeraFlow Server Configuration (UL UDP)

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>TeraFlow</Application>
    <Host_Name>ExtTFServer</Host_Name>
    <IP_Address>99.99.99.101</IP_Address>
</Server>
```

- 主要待更新配置
  - Type/Host_Name/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>TeraFlow</Application>
    <Host_Name>TFServerUL</Host_Name>
    <IP_Address>132.248.1.202</IP_Address>
</Server>
```

RDA Provisioning

TeraFlow Client Configuration (UL UDP)

- 模板默认配置

```
<TeraFlow>
    <Server_Host_Name>ExtTFServer</Server_Host_Name>
    <Start_After>10</Start_After>
    <Stop_After>6000</Stop_After>
    <Throughput>1</Throughput>
    <Throughput_Metric>mbps</Throughput_Metric>
    <TeraFlow_Payload_Size>8192</TeraFlow_Payload_Size>
    <Number_of_Sessions>1</Number_of_Sessions>
</TeraFlow>
```

- 主要待更新配置
  - UE/PDN/Alias/Server_Host_Name/Start_After/Stop_After/Throughput/Throughput_Metric

```
<TeraFlow UE="0.." PDN="0">
    <Alias>ULUDP</Alias>
    <Server_Host_Name>TFServerUL</Server_Host_Name>
    <Start_After>0</Start_After>
    <Stop_After>0</Stop_After>
    <Throughput>200</Throughput>
    <Throughput_Metric>kbps</Throughput_Metric>
    <TeraFlow_Payload_Size>1024</TeraFlow_Payload_Size>
    <Number_of_Sessions>1</Number_of_Sessions>
</TeraFlow>
```

RDA Provisioning

TeraFlow Server Configuration (DL UDP)

- 模板默认配置

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>External</Type>
    <Ip_Version>4</Ip_Version>
    <Application>TeraFlow</Application>
    <Host_Name>ExtTFServer</Host_Name>
    <IP_Address>99.99.99.101</IP_Address>
</Server>
```

- 主要待更新配置
  - Type/Host_Name/IP_Address

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>TeraFlow</Application>
    <Host_Name>TFServerDL</Host_Name>
    <IP_Address>132.248.1.201</IP_Address>
</Server>
```

RDA Provisioning

TeraFlow Client Configuration (DL UDP)

- 模板默认配置

```
<TeraFlow>
    <Server_Host_Name>ExtTFServer</Server_Host_Name>
    <Start_After>10</Start_After>
    <Stop_After>6000</Stop_After>
    <Throughput>1</Throughput>
    <Throughput_Metric>mbps</Throughput_Metric>
    <TeraFlow_Payload_Size>8192</TeraFlow_Payload_Size>
    <Number_of_Sessions>1</Number_of_Sessions>
</TeraFlow>
```

- 主要待更新配置
  - UE/PDN/Alias/Server_Host_Name/Server_on_PPPoE/Start_After/Stop_After/Throughput/Throughput_Metric

```
<TeraFlow UE="0.." PDN="0">
    <Alias>DLUDP</Alias>
    <Server_Host_Name>TFServerDL</Server_Host_Name>
    <Server_on_PPPoE>true</Server_on_PPPoE>
    <Start_After>0</Start_After>
    <Stop_After>0</Stop_After>
    <Throughput>1</Throughput>
    <Throughput_Metric>mbps</Throughput_Metric>
    <TeraFlow_Payload_Size>1024</TeraFlow_Payload_Size>
    <Number_of_Sessions>1</Number_of_Sessions>
</TeraFlow>
```

RDA Provisioning

TWAMP Server & Client Configuration

- 默认模板不含TWAMP相关配置，如有测试需求，请依据如下信息分别配置TWAMP Server/Client.
- 主要待更新配置
  - IP_Address/Delay_Between_Packets/Payload_Size

```
<Server>
    <diversifEye_Port>1</diversifEye_Port>
    <Type>Internal</Type>
    <Ip_Version>4</Ip_Version>
    <Application>TWAMP</Application>
    <Host_Name>TWAMPServer</Host_Name>
    <IP_Address>99.99.99.3</IP_Address>
</Server>

<TWAMP UE="0.." PDN="0">                                <!-- either use .. or -
    <Server_Host_Name>TWAMPServer</Server_Host_Name>
    <Delay_Between_Packets>100</Delay_Between_Packets>        <!-- in ms -->
    <Payload_Size>100</Payload_Size>
    <Indefinite_Session_Duration>true</Indefinite_Session_Duration>
</TWAMP>
```

RDA Provisioning

Profile_0 Configuration

- 模板默认配置

```
</Default>
<Profile_0>
    <FTP_Get UE="0..10,31..49" PDN="1">
        <Server_Host_Name>ExtFTPServer</Server_Host_Name>
        <Path>500MB.bin</Path>
        <Delay_Between_Commands>50</Delay_Between_Commands>
        <Delay_Between_Sessions>50</Delay_Between_Sessions>
        <File_Size>536870912</File_Size>
        <FTP_Mode>Passive</FTP_Mode>
    </FTP_Get>
    ...
    <RTSP UE="0..10" PDN="0..2">
        <Alias>crtsp</Alias>
        <Description>Test media stream</Description>
        <Server_Host_Name>ExtRTSPServer</Server_Host_Name>
        <Path>/media/high-bitrate.3gp</Path>
        <RTSP_Media_Profile>
            <Media_Type>Multimedia</Media_Type>
            <RTP_Data>Full Duplex</RTP_Data>
            <RTCP>true</RTCP>
            <Silence_Suppression>true</Silence_Suppression>
            <Silence_Ratio>40</Silence_Ratio>
            <Silence_Length>50000</Silence_Length>
            <Codec>
               <Codec_Name>MPEG2</Codec_Name>
            </Codec>
        </RTSP_Media_Profile>
    </RTSP>
</Profile_0>
<Profile_1/>
```

RDA Provisioning

Profile_0 Configuration

- 如果不想定义Profile_0，请更新上述配置为</Profile_0>.

```
            </Default>
            <Profile_0/>
            <Profile_1/>
            <Profile_2/>
            <Profile_3/>
            <Profile_4/>
            <Profile_5/>
            <Profile_6/>
            <Profile_7/>
            <Profile_8/>
            <Profile_9/>
        </Client_Profiles>
    </Application_Configuration>
```

RDA Provisioning

Network Configuration

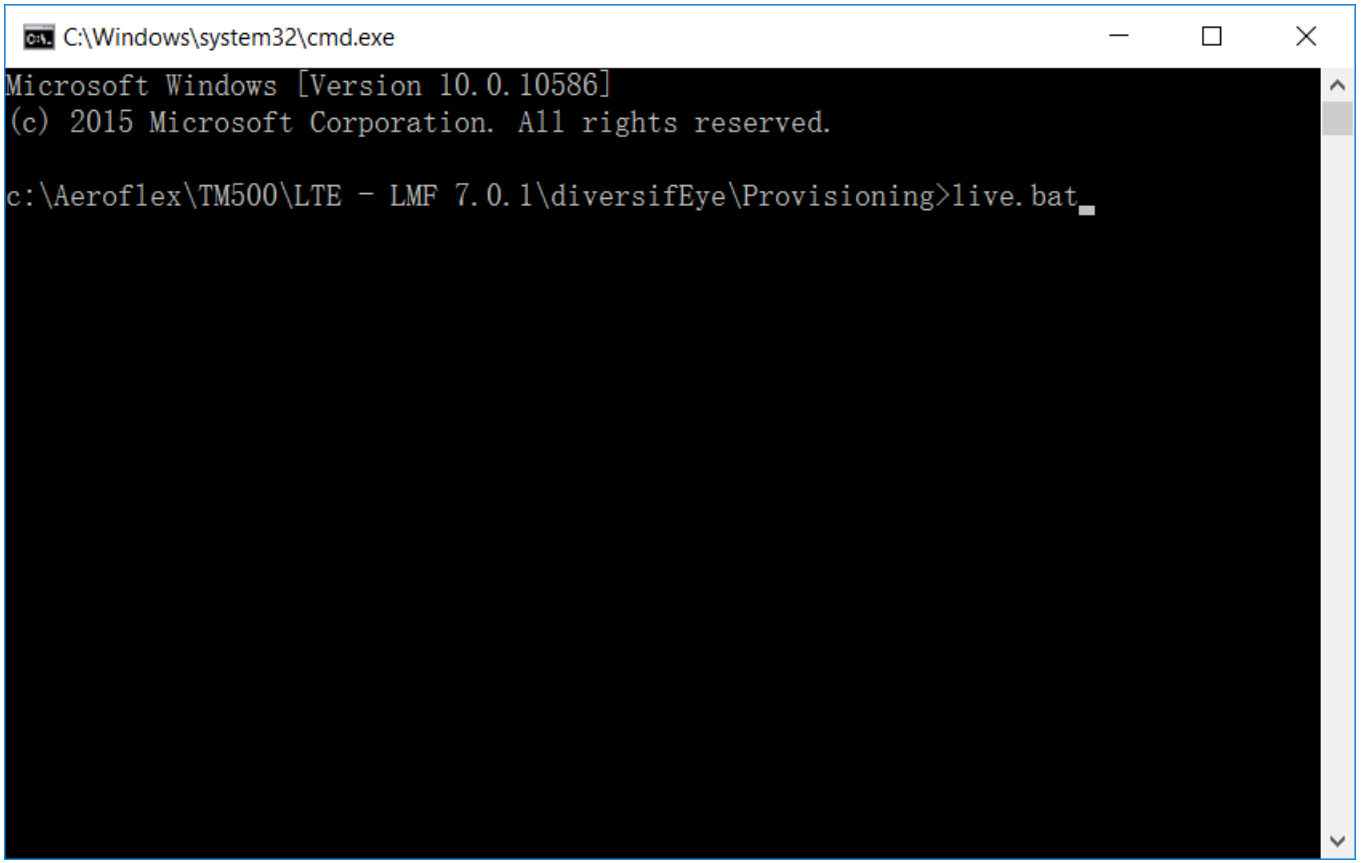
- 模板默认配置

```
<Network_Configuration>
    <IPv4>
        <Server_IP>132.248.1.200</Server_IP>                                    <!-- Sta
        <Gateway_IP>132.248.1.1</Gateway_IP>                                    <!-- Gat
        <Core_Gateway_IP>10.250.250.250</Core_Gateway_IP>                       <!-- Cor
    </IPv4>
    <IPv6>
        <Server_IPv6>2001:4711:AFEE:1001:1:1</Server_IPv6>                  <!-- Start IP
        <Gateway_IPv6>FE80::3000:1100:1</Gateway_IPv6>                      <!-- Gateway
        <Core_Gateway_IPv6>2001:4711:AFAA:1001::1</Core_Gateway_IPv6>       <!-- Gateway
    </IPv6>
    <TCP_Characteristics>
        <Window_Scale>2</Window_Scale>
        <Use_SACK_When_Permitted>true</Use_SACK_When_Permitted>
        <Set_SACK_Permitted>true</Set_SACK_Permitted>
        <Max_Advertised_Received_Window_Size>32768</Max_Advertised_Received_Window_Size>
        <Max_Transmit_Buffer_Size>131072</Max_Transmit_Buffer_Size>
        <Support_Timestamp_when_requested>true</Support_Timestamp_when_requested>
        <Request_Timestamp>true</Request_Timestamp>
    </TCP_Characteristics>
```

- 主要待更新配置
  - Gateway_IP/Gateway_IPv6

RDA Provisioning

- live.bat和TM500.xml配置完成后，请在Provisioning文件夹打开DOS窗口，然后运行live.bat即开始生成脚本。



RDA Provisioning

- 脚本生成成功后，将在Provisioning文件夹保存一份RDA脚本，同时也将自动导入一份脚本至RDA.
  - 可以在RDA客户端进一步更新Application/Host对应的配置。更多配置信息，请参阅本文档附录的Applications & Hosts Properties.
- 如果脚本生成失败的话，请查看DOS窗口打印的信息，以及Provisioning文件夹下的shenick.log，以进一步定位问题。
  - 如果需要寻求TM500 FAE协助定位，请提供以下信息
    - TM500.xml
    - shenick.log

Host Physical Interface

Standalone D500 – Edge/Core

- Standalone D500 VLAN Hub端口示意图

D500 Hybrid (TK791-C)		Port							
			Connect TM500				Connect SGi		
		1	2	3	4	5	6	7	8
VLAN	1	U	E	E	E	E	E	E	U
	10	T	U	E	E	E	E	E	T
	11	T	E	U	E	E	E	E	T
	12	T	E	E	U	E	E	E	T
	16	T	E	E	E	U	E	E	T
	17	T	E	E	E	E	U	E	T
	18	T	E	E	E	E	E	U	T
	13-15, 19-21	T	E	E	E	E	E	E	T
Physical Interface		D500	10/1/0	11/1/0	12/1/0	10/1/1	11/1/1	12/1/1	
Partition		Gb2	1	2	3	1	2	3	

Host Physical Interface

D500 Pair -> Edge

- Edge VLAN Hub端口示意图

D500 Edge (TK780-C)		Port							
		1	2	3	4	5	6	7	8
VLAN	1	U	E	E	E	E	E	E	U
	10	T	U	E	E	E	E	E	T
	11	T	E	U	E	E	E	E	T
	12	T	E	E	U	E	E	E	T
	13	T	E	E	E	U	E	E	T
	14	T	E	E	E	E	U	E	T
	15	T	E	E	E	E	E	U	T
	16-21	T	E	E	E	E	E	E	T
Physical Interface	Edge	10/1/0	11/1/0	12/1/0	13/1/0	14/1/0	15/1/0		
Partition	Gb2	1	2	3	4	5	6		

Host Physical Interface

D500 Pair -> Core

- Core VLAN Hub端口示意图

D500 Core (TK781-C)		Port							
		1	2	3	4	5	6	7	8
VLAN	1	U	E	E	E	E	E	E	U
	16	T	U	E	E	E	E	E	T
	17	T	E	U	E	E	E	E	T
	18	T	E	E	U	E	E	E	T
	19	T	E	E	E	U	E	E	T
	20	T	E	E	E	E	U	E	T
	21	T	E	E	E	E	E	U	T
	10-16	T	E	E	E	E	E	E	T
Physical Interface		Core	20/1/1	21/1/1	22/1/1	23/1/1	24/1/1	25/1/1	
Partition		Gb2	1	2	3	4	5	6	

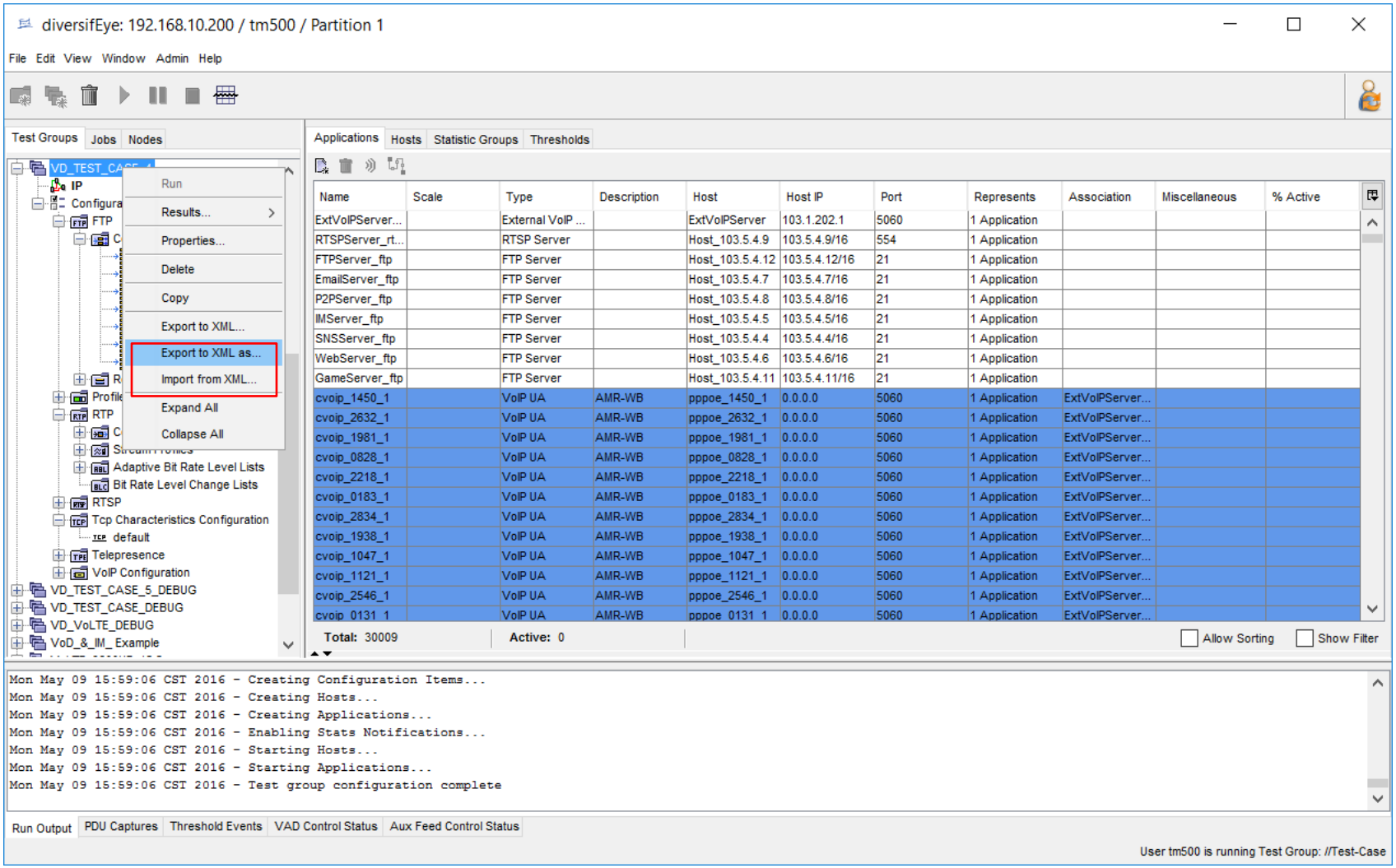
Host Physical Interface

D1000

d1000 VLAN – port mapping:

Physical Interface	VLAN ID	Test Module / Port	
Edge 10G/1	10 – 15	10/0 – 15/0	
Edge 10G/1	30 – 35	30/0 – 35/0	unused if core present
Edge 10G/2	16 – 21	10/1 – 15/1	unused if core present
Edge 10G/2	36 – 41	30/1 – 35/1	
Core 10G/1	10 – 15	20/0 – 25/0	unused
Core 10G/1	30 – 35	40/0 – 45/0	
Core 10G/2	16 – 21	20/1 – 25/1	
Core 10G/2	36 – 41	40/1 – 45/1	unused

导入和导出脚本


diversifEye: 192.168.10.200 / tm500 / Partition 1
File Edit View Window Admin Help
Test Groups Jobs Nodes
Run
Results...
Properties...
Delete
Copy
Export to XML...
Export to XML as...
Import from XML...
Expand All
Collapse All
IP
FTP
RTP
Adaptive Bit Rate Level Lists
Bit Rate Level Change Lists
RTSP
Tcp Characteristics Configuration
default
Telepresence
VoIP Configuration
VD_TEST_CASE_5_DEBUG
VD_TEST_CASE_DEBUG
VD_VoLTE_DEBUG
VoD_&_IM_Example
Applications Hosts Statistic Groups Thresholds
Name Scale Type Description Host Host IP Port Represents Association Miscellaneous % Active
ExtVoIPServer... External VoIP ... ExtVoIPServer 103.1.202.1 5060 1 Application
RTSPServer_rt... RTSP Server Host_103.5.4.9 103.5.4.9/16 554 1 Application
FTPServer_ftp FTP Server Host_103.5.4.12 103.5.4.12/16 21 1 Application
EmailServer_ftp FTP Server Host_103.5.4.7 103.5.4.7/16 21 1 Application
P2PServer_ftp FTP Server Host_103.5.4.8 103.5.4.8/16 21 1 Application
IMServer_ftp FTP Server Host_103.5.4.5 103.5.4.5/16 21 1 Application
SNSServer_ftp FTP Server Host_103.5.4.4 103.5.4.4/16 21 1 Application
WebServer_ftp FTP Server Host_103.5.4.6 103.5.4.6/16 21 1 Application
GameServer_ftp FTP Server Host_103.5.4.11 103.5.4.11/16 21 1 Application
cvoip_1450_1 VoIP UA AMR-WB pppoe_1450_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_2632_1 VoIP UA AMR-WB pppoe_2632_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_1981_1 VoIP UA AMR-WB pppoe_1981_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_0828_1 VoIP UA AMR-WB pppoe_0828_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_2218_1 VoIP UA AMR-WB pppoe_2218_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_0183_1 VoIP UA AMR-WB pppoe_0183_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_2834_1 VoIP UA AMR-WB pppoe_2834_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_1938_1 VoIP UA AMR-WB pppoe_1938_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_1047_1 VoIP UA AMR-WB pppoe_1047_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_1121_1 VoIP UA AMR-WB pppoe_1121_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_2546_1 VoIP UA AMR-WB pppoe_2546_1 0.0.0.0 5060 1 Application ExtVoIPServer...
cvoip_0131_1 VoIP UA AMR-WB pppoe_0131_1 0.0.0.0 5060 1 Application ExtVoIPServer...
Total: 30009
Active: 0
Allow Sorting
Show Filter
Mon May 09 15:59:06 CST 2016 - Creating Configuration Items...
Mon May 09 15:59:06 CST 2016 - Creating Hosts...
Mon May 09 15:59:06 CST 2016 - Creating Applications...
Mon May 09 15:59:06 CST 2016 - Enabling Stats Notifications...
Mon May 09 15:59:06 CST 2016 - Starting Hosts...
Mon May 09 15:59:06 CST 2016 - Starting Applications...
Mon May 09 15:59:06 CST 2016 - Test group configuration complete
Run Output PDU Captures Threshold Events VAD Control Status Aux Feed Control Status
User tm500 is running Test Group: //Test-Case

导入和导出脚本

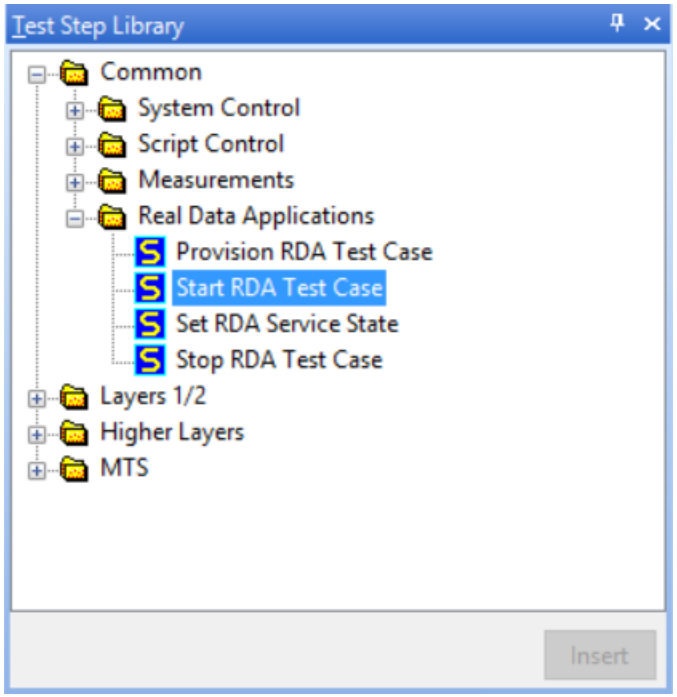
- RDA脚本可以导出保存为*.xml*格式。
- 可以通过文本编辑器（例如UltraEdit或Notepad++）编辑RDA脚本，例如批量替换PPPoE IP (*<service_name>tm500_lte_10.99.0.2_500_0</service_name>*) 或者Physical Interface (*<physical_interface>11/1/0</physical_interface>*)，然后再导入RDA，实现RDA脚本批量快速修改。

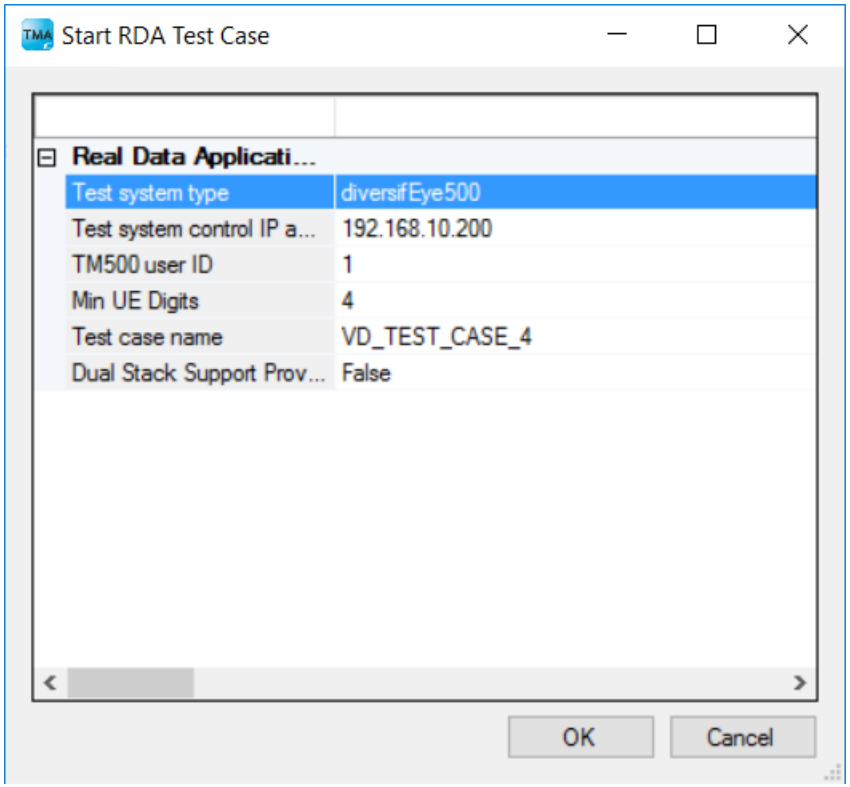
运行脚本

- TM500调用RDA脚本
- 手动运行脚本

TM500调用RDA脚本

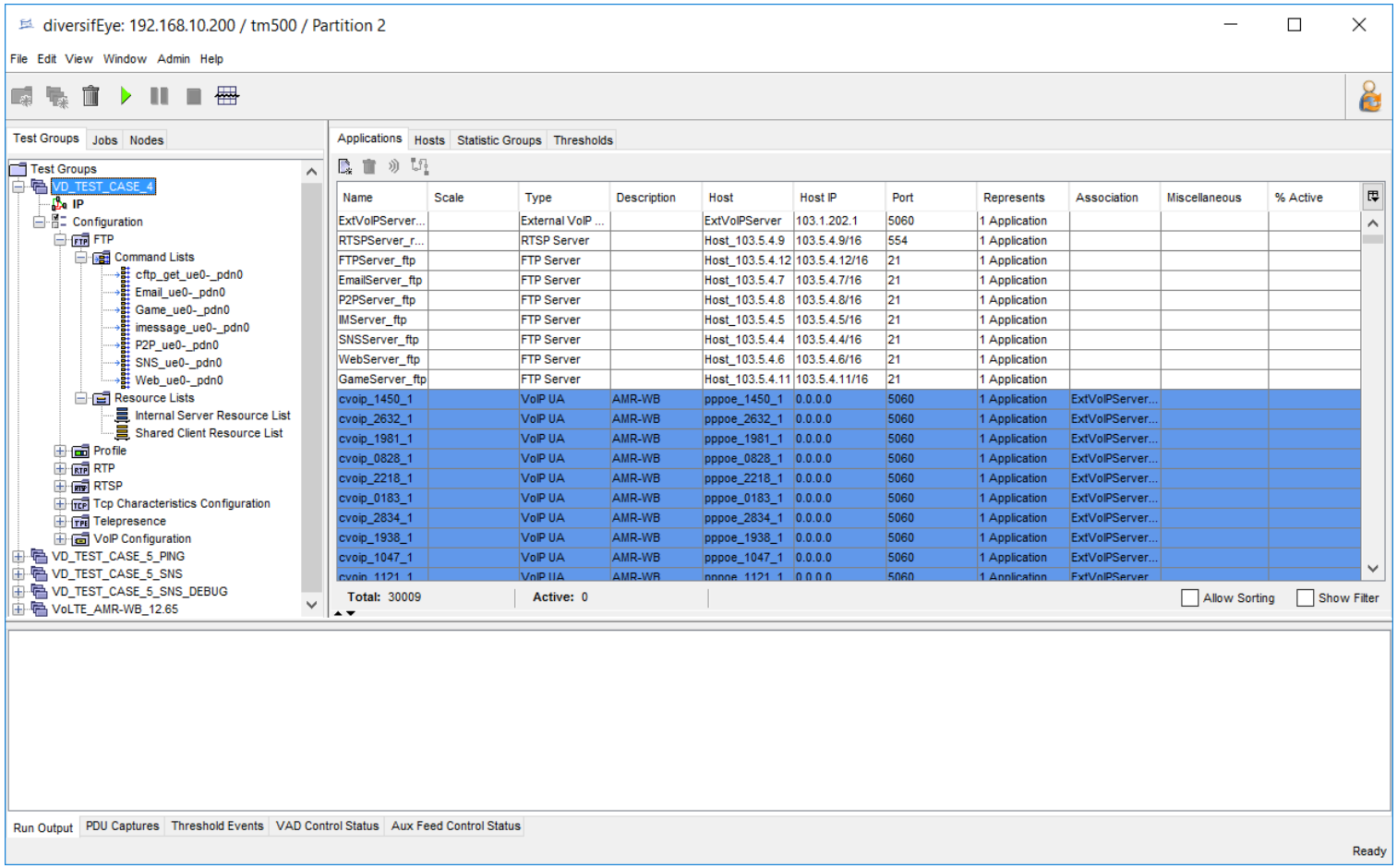
- TM500通过cli命令调用运行RDA脚本.
  - 运行/终止脚本
  - 设置PPPoE为In/Out of Service状态
  - 设置Applications为In/Out of Service状态





手动运行RDA脚本

- 通过RDA客户端运行脚本：选中脚本，然后点击左上角绿色按钮运行脚本。

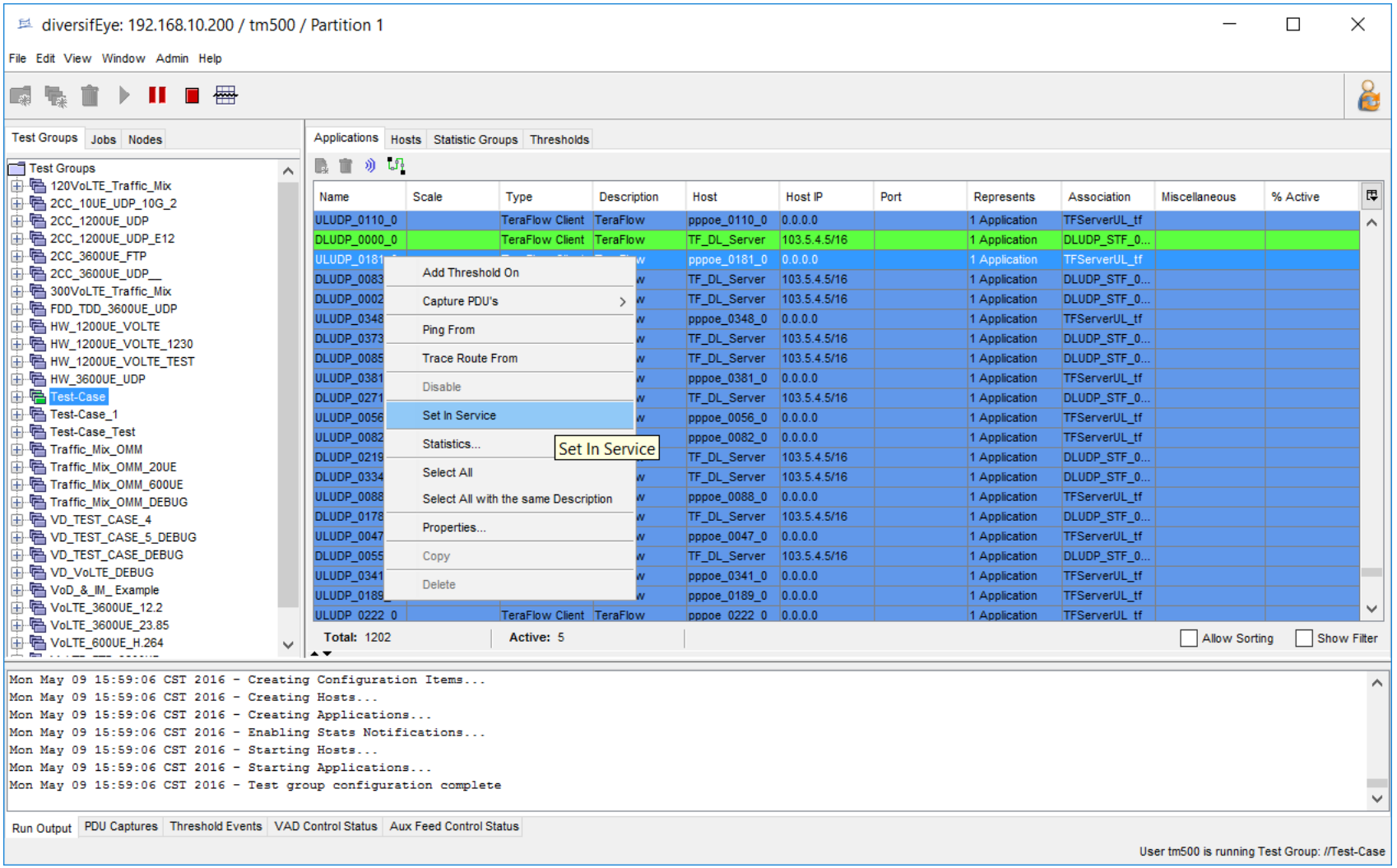


手动运行RDA脚本

- 手动设置对应UE的Application/PPPoE为In/Out of Service状态
- 设置Application为In Service状态之前，首先需要确保PPPoE已经处于In Service状态且PPPoE建立成功（已获取UE IP地址信息）。

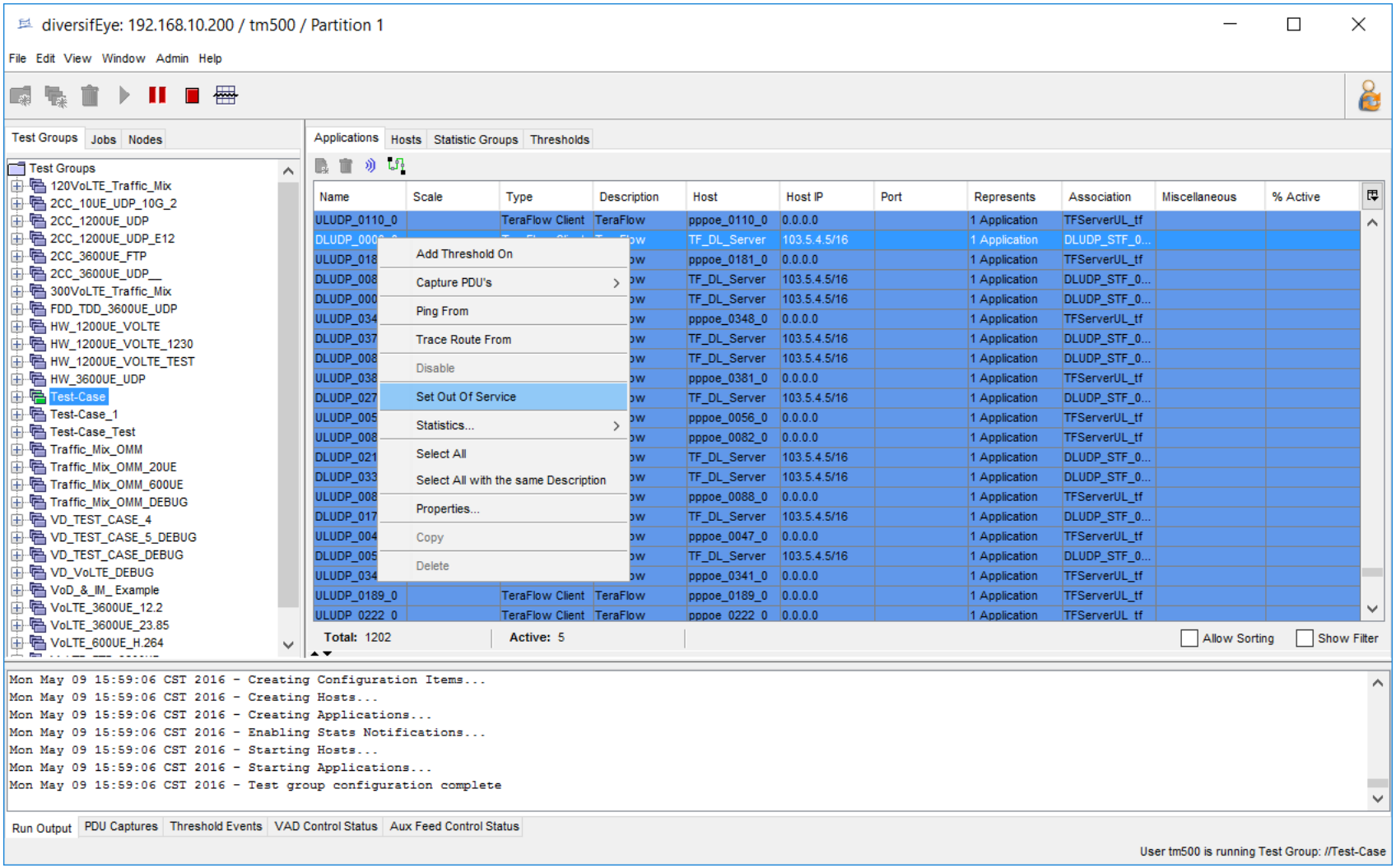
设置Application/Host状态

Set In Service



设置Application/Host状态

Set Out Of Service



统计日志分析和保存

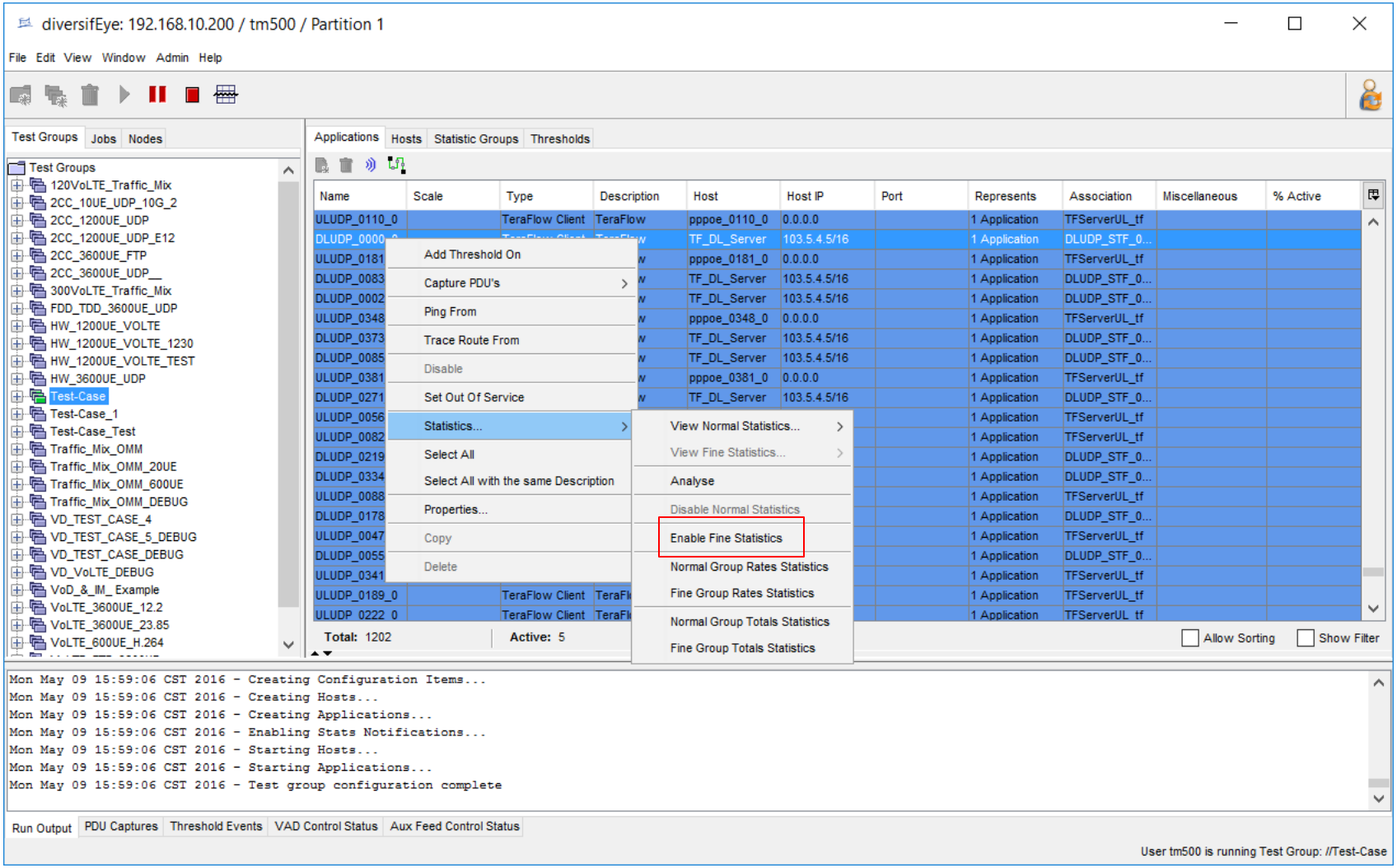
- 实时查看统计日志
- 保存统计日志
- 实时抓取PDU

RDA Statistics

- RDA Statistics分为两大类
  - Normal Statistics：每30秒钟输出一次统计，默认打开；
  - Fine Statistics：每1秒钟输出一次统计，默认关闭；
- 支持实时查看统计信息
  - 基于图形曲线
  - 基于列表
- 测试脚本运行以后，统计相关的日志自动保存在RDA上，可通过如下方式把日志保存到RDA控制电脑上。
  - 测试脚本正在运行，请用Save Current Detailed Results保存日志。
  - 测试脚本已经停止运行且还尚未再次运行脚本，请用Save Historical Detailed Results保存日志。

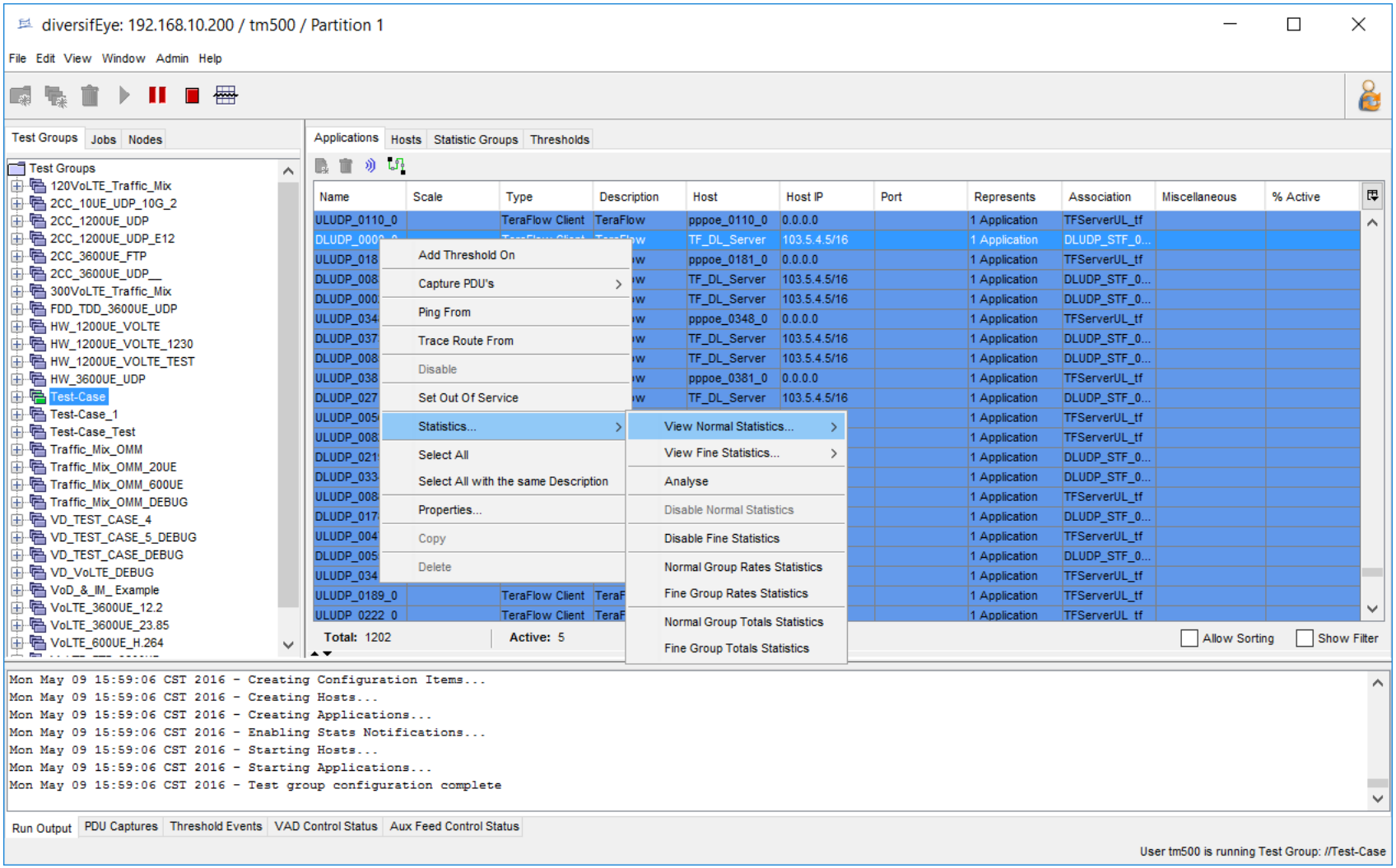
实时查看RDA Statistics

Fine Statistics默认关闭



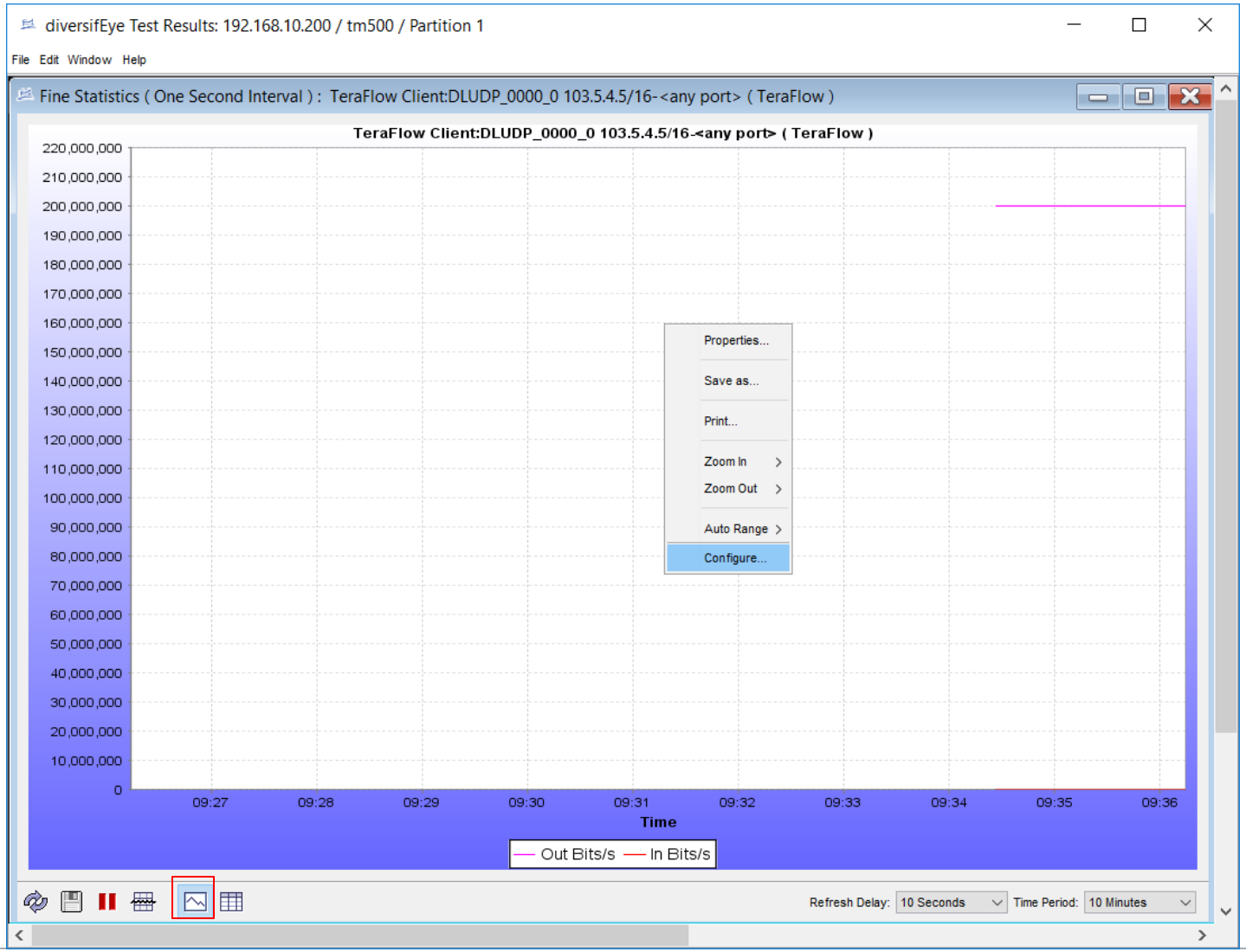
实时查看RDA Statistics

Fine Statistics打开



实时查看RDA Statistics

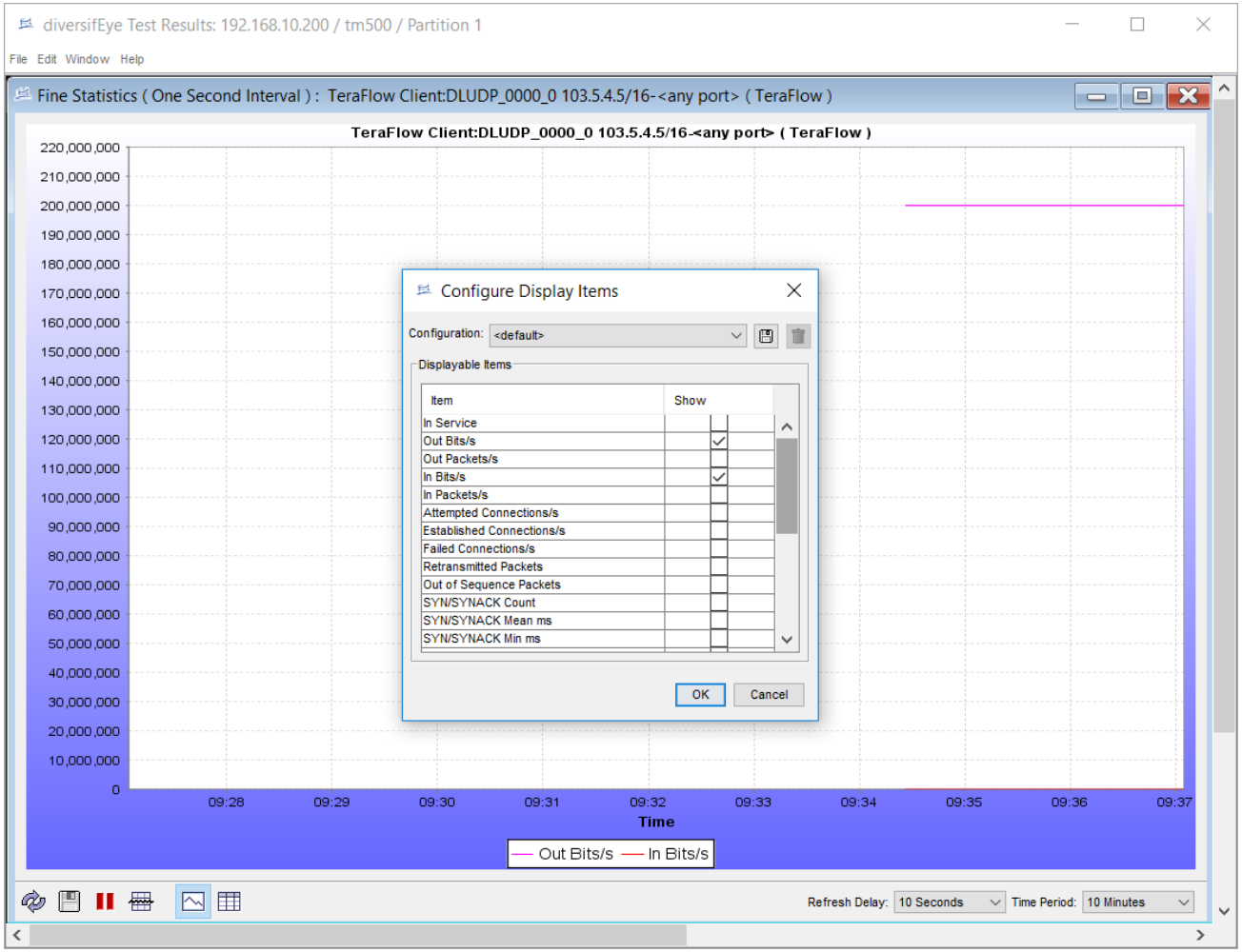
基于图形的统计显示



实时查看RDA Statistics

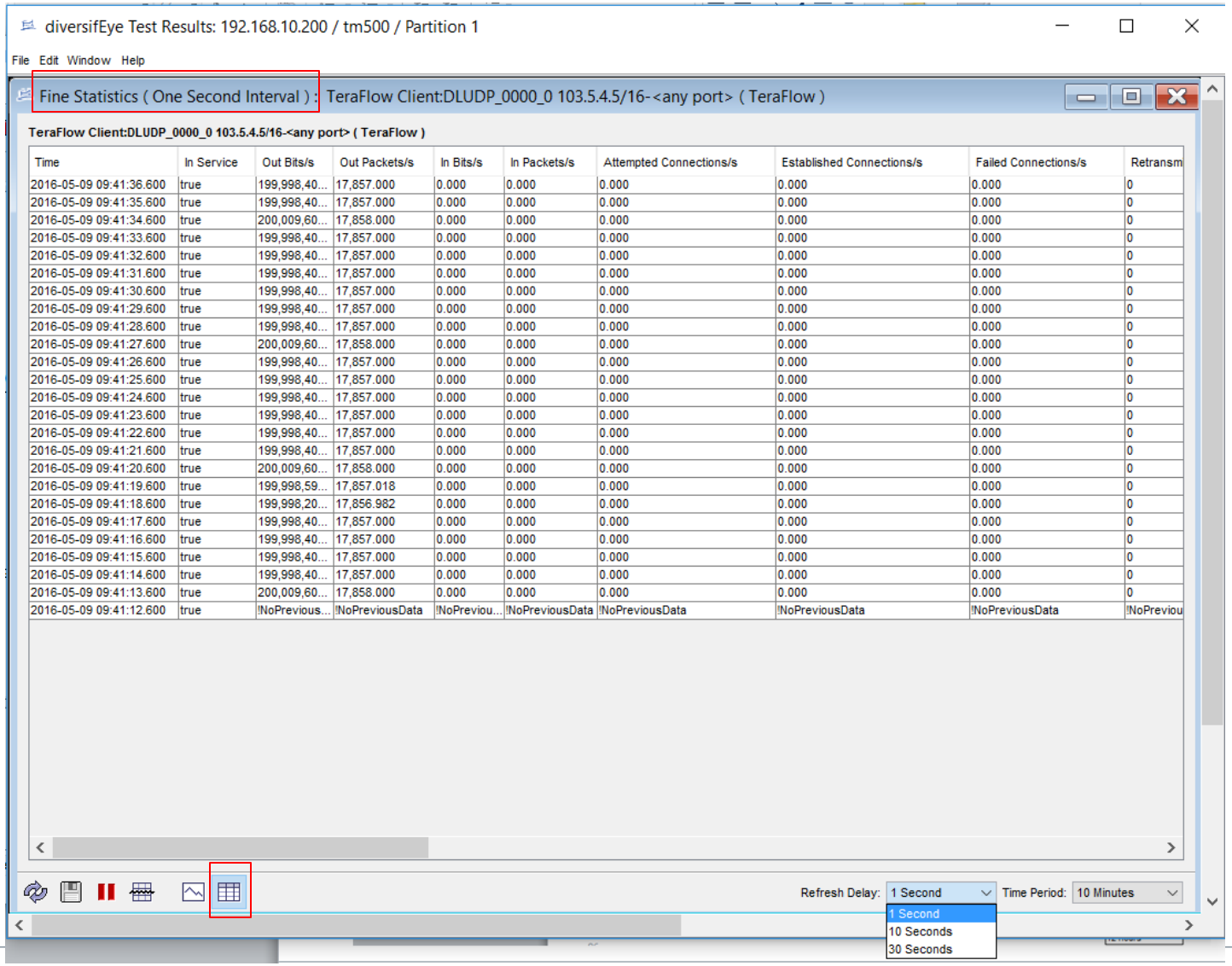
配置统计选项

- 不同Application对应的统计选项，请参阅附录。



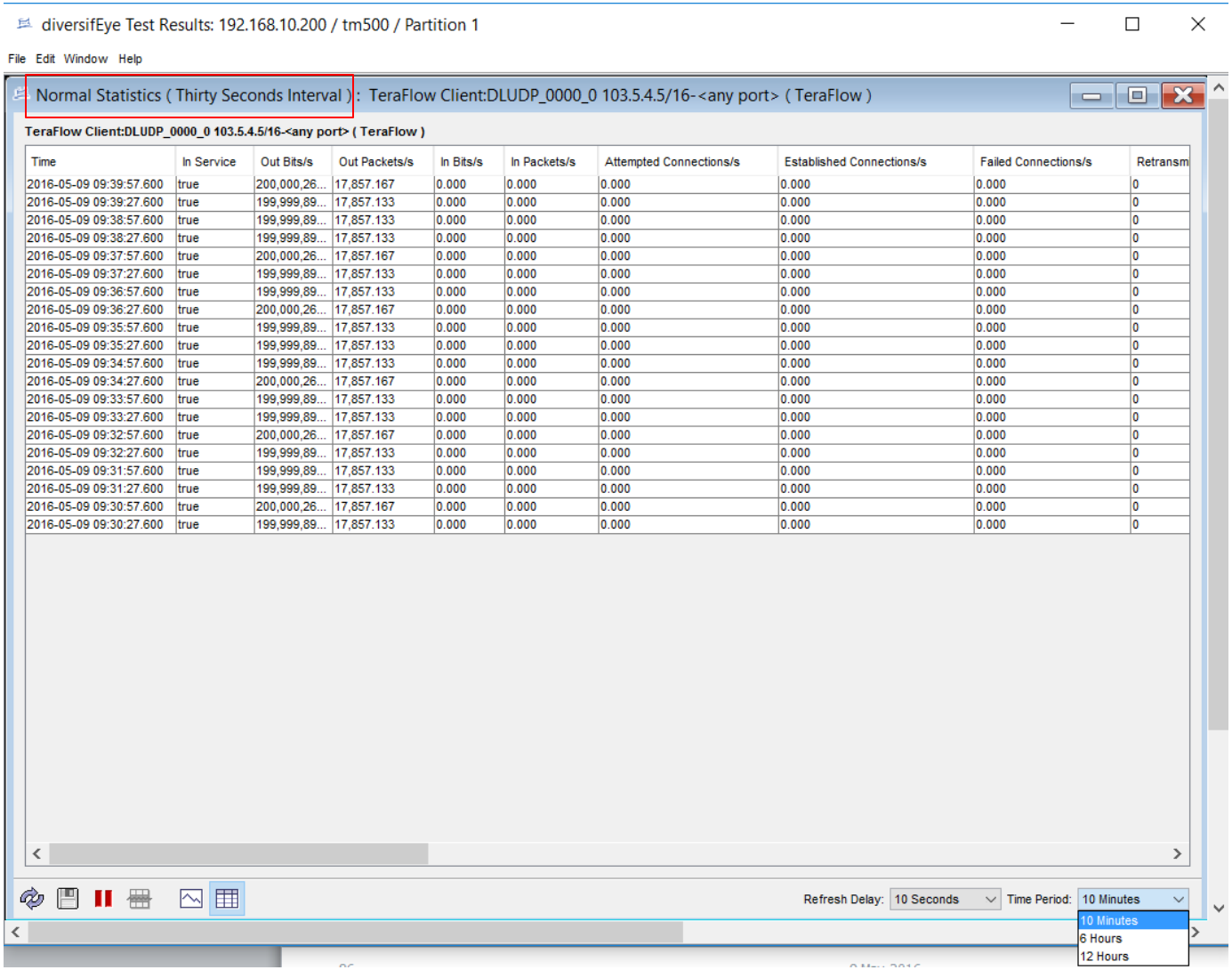
实时查看RDA Statistics

基于列表的Fine Statistics



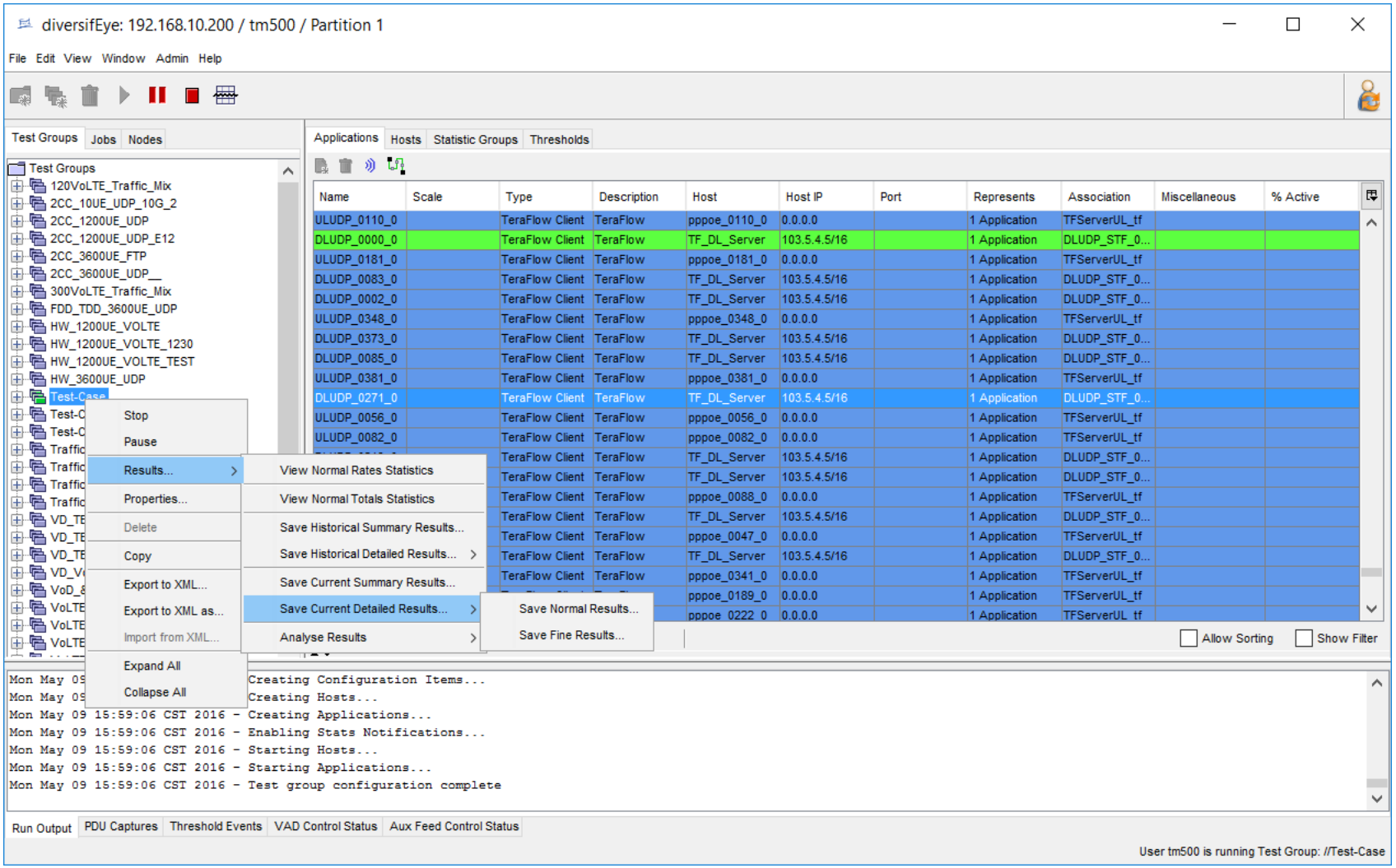
实时查看RDA Statistics

基于列表的Normal Statistics



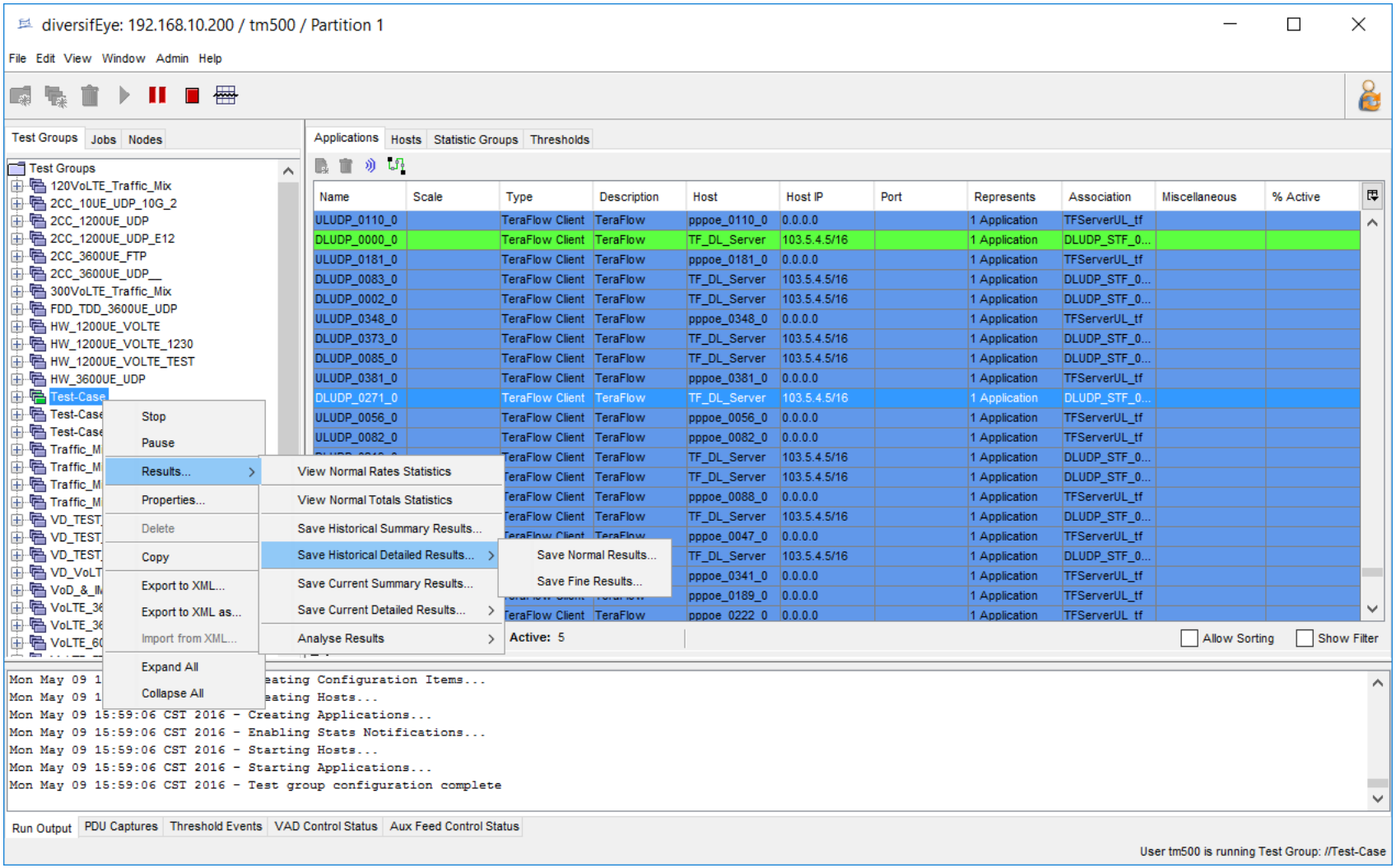
保存统计日志

Save Current Detailed Results



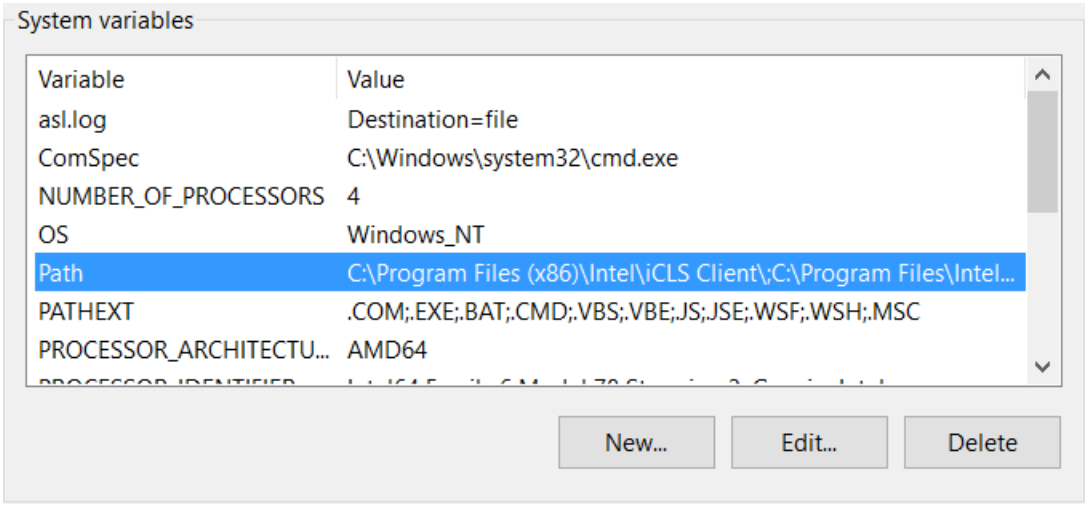
保存统计日志

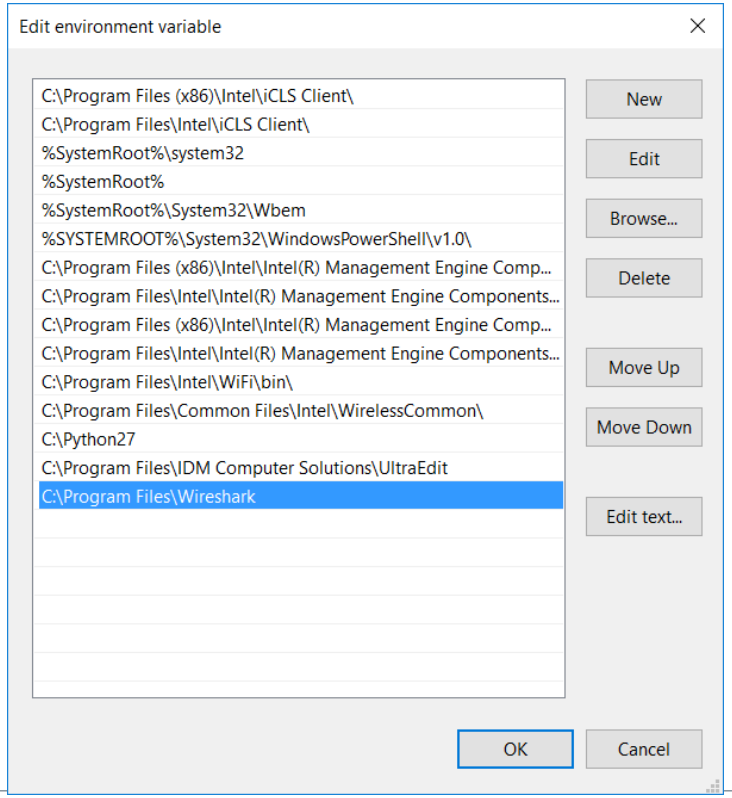
Save Historical Detailed Results



实时抓取PDU

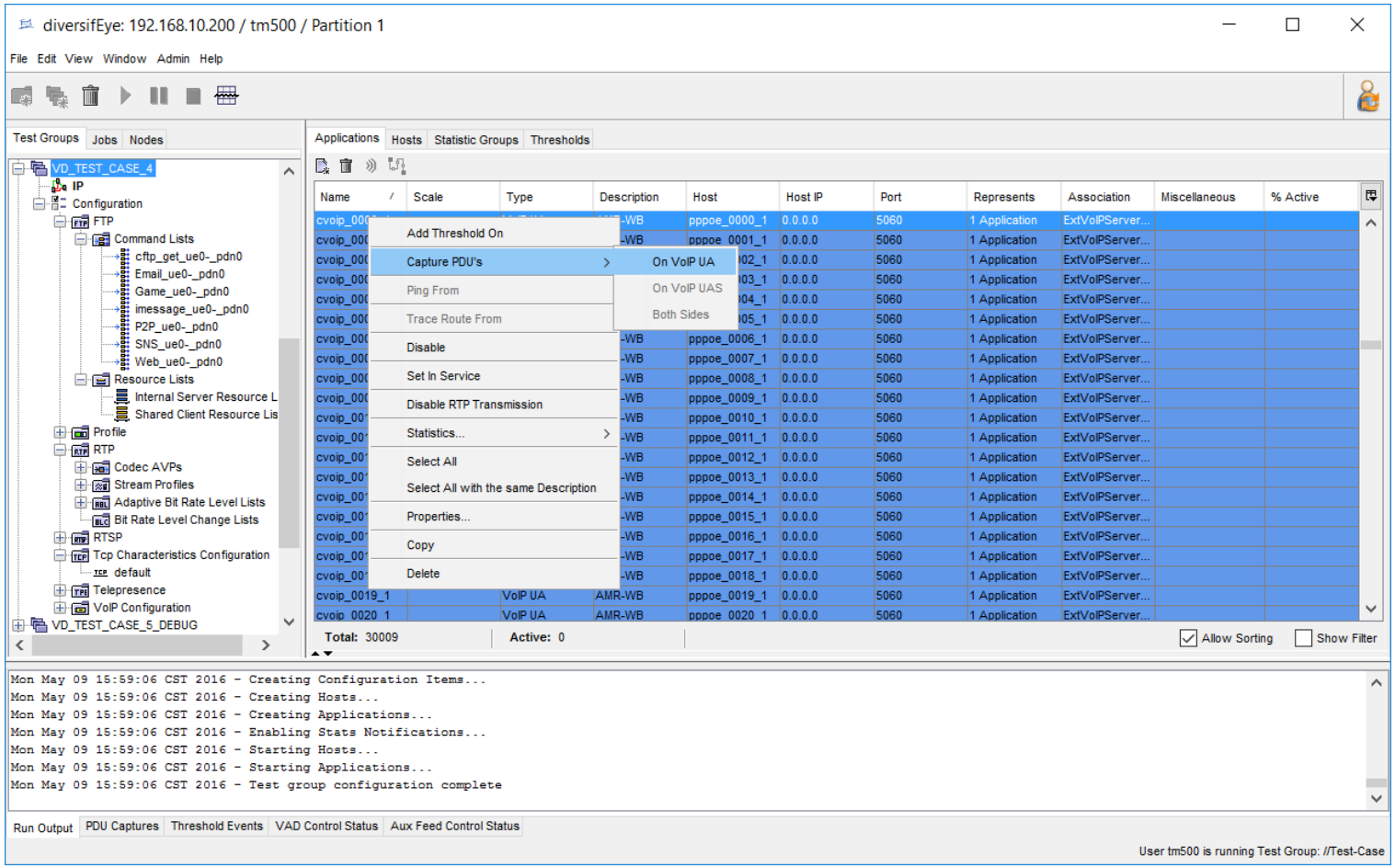
- RDA支持实时抓取任意Node/Application/Host的PDU.
- 为了在RDA客户端直接打开抓取的PDU日志，请先安装Wireshark并把Wireshark安装路径添加至系统环境变量。
  - Wireshark下载路径： https://www.wireshark.org/download.html
  - 添加系统环境变量





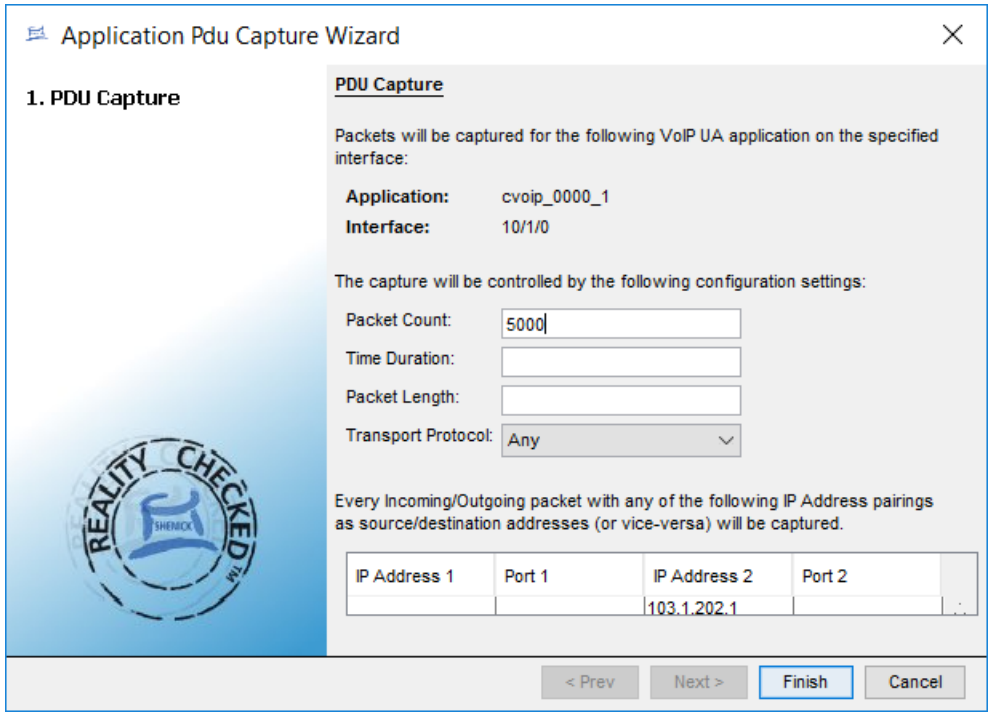
实时抓取PDU

- 右键点击对应的Node/Application/Host，在弹出的菜单里选择Capture PDU's.



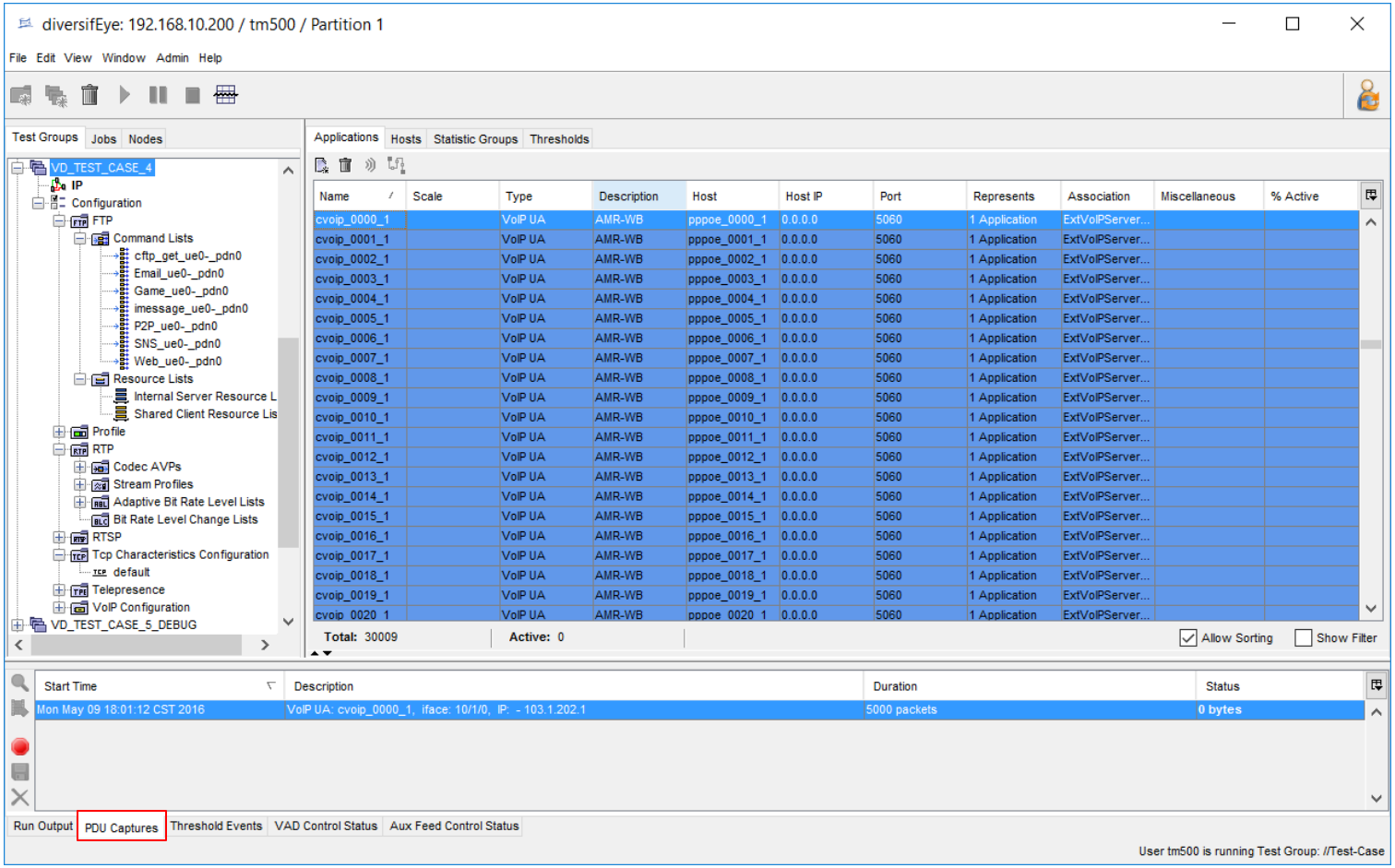
实时抓取PDU

- 可以按照抓取包的数目，抓取的时间和包的长度来定义抓取时长。
- 可以限定抓特定源或目标IP地址的包，默认设置和当前选择的Application相关，如果去掉IP限定的话，将抓取所有的包，和当前Application无关。



实时抓取PDU

- 抓包的控制窗口在屏幕下方，可以随时停止抓包，也可以查看、保存或者删除抓取的文件。



支持和帮助

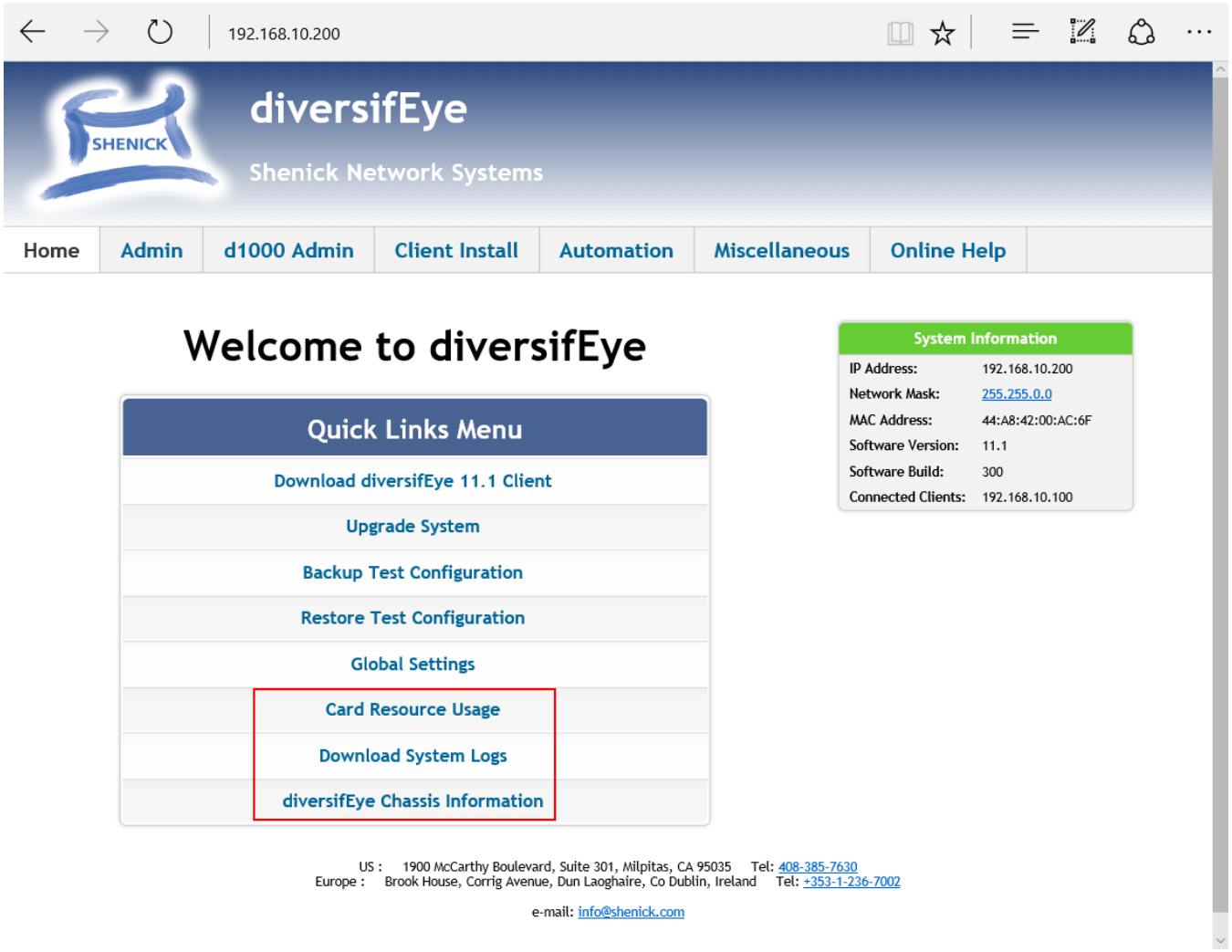
- RDA基本信息

RDA基本信息

- 请尽可能提供以下信息和日志以协助RDA问题定位
  - Current/Historical Detailed Results
  - RDA脚本
  - System logs
  - Chassis Information
  - 脚本正在运行时读取的Card Resource Usage
  - cli.log

RDA基本信息

System Logs/Chassis Info/Card Resource Usage



RDA基本信息

cli.log

- 通过FTP Client登录Edge（默认IP：192.168.10.200）
  - 用户名：cli
  - 密码：diversifEye
- 下载cli.log

Appendix

- Gracefully Reboot and Restart RDA
- RDA Management Web Interface
- Normal/Fine Statistics
- VLAN Configurations
- Upgrade System and License Installation
- Additional Applications Introduction
- Troubleshooting

Gracefully Restart and Shutdown RDA

- via RDA Client GUI
- via SSH

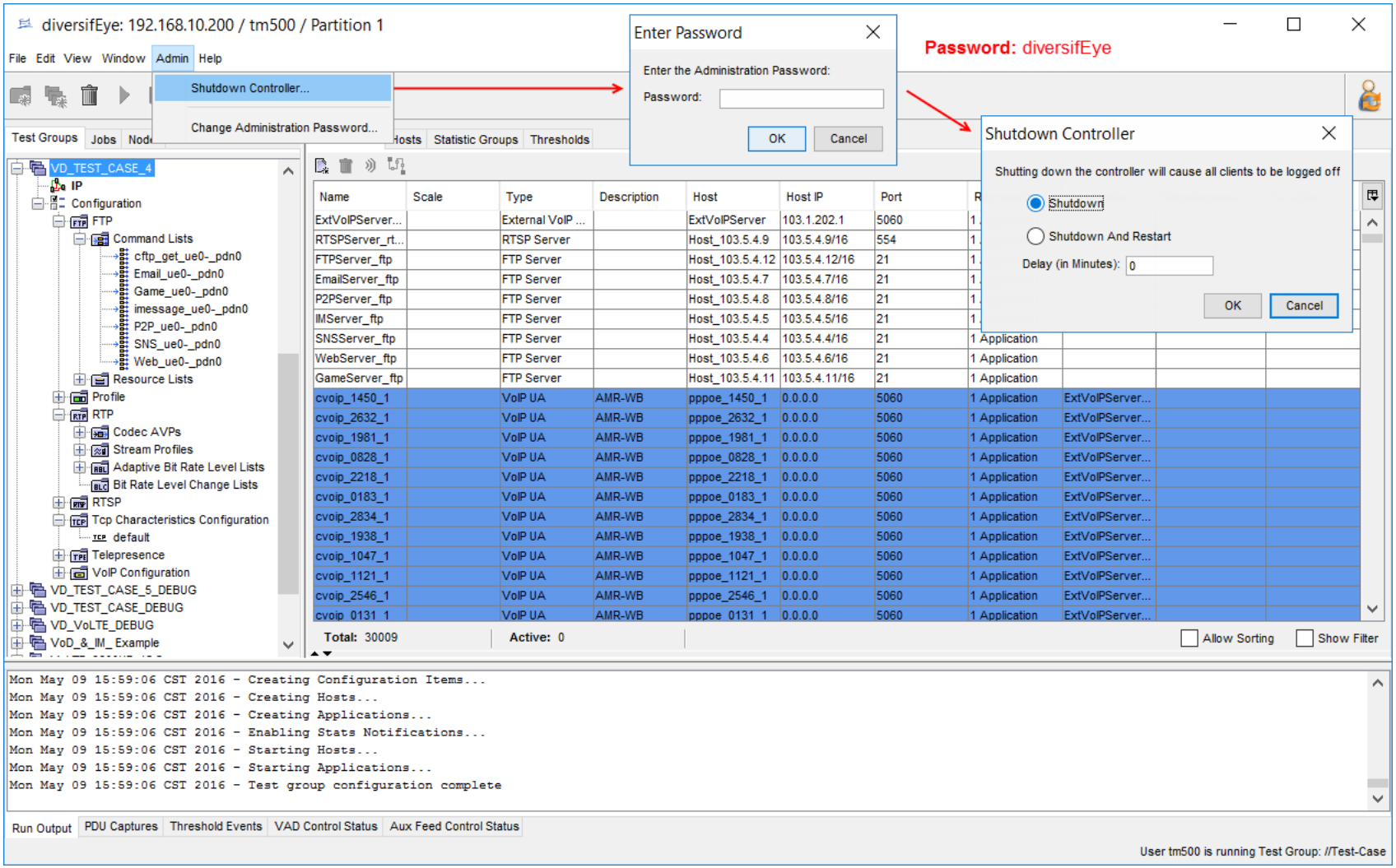
Restart and Shutdown RDA

- 重启和关机RDA的两种方式
  - RDA Client GUI
    - 对于Edge & Core的配置，通过此方式将同时重启或下电两台设备。
  - SSH
    - 对于Edge & Core的配置，需要分别SSH到Edge（默认IP: 192.168.10.200）和Core（默认IP: 192.168.10.201）进行重启或下电的操作。
    - 重启
      - 用户名：reboot　　密码：restartd
    - 关机
      - 用户名：poweroff　　密码：shutdown

注意：异常断电可能导致RDA损坏，需要返厂维修，所以请不要强行下电或拔电源。

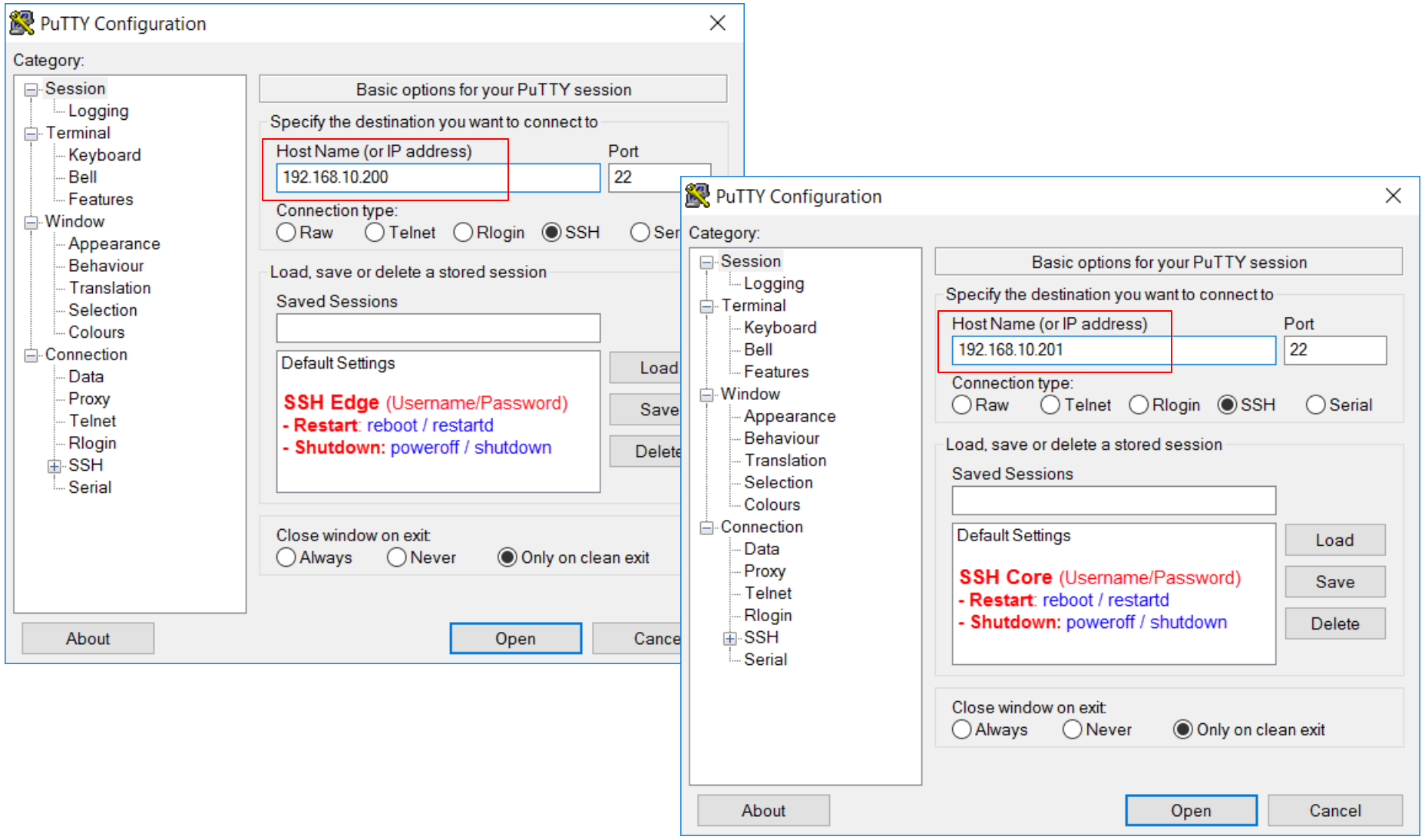
Restart and Shutdown RDA

via RDA Client GUI



Restart and Shutdown RDA

via SSH

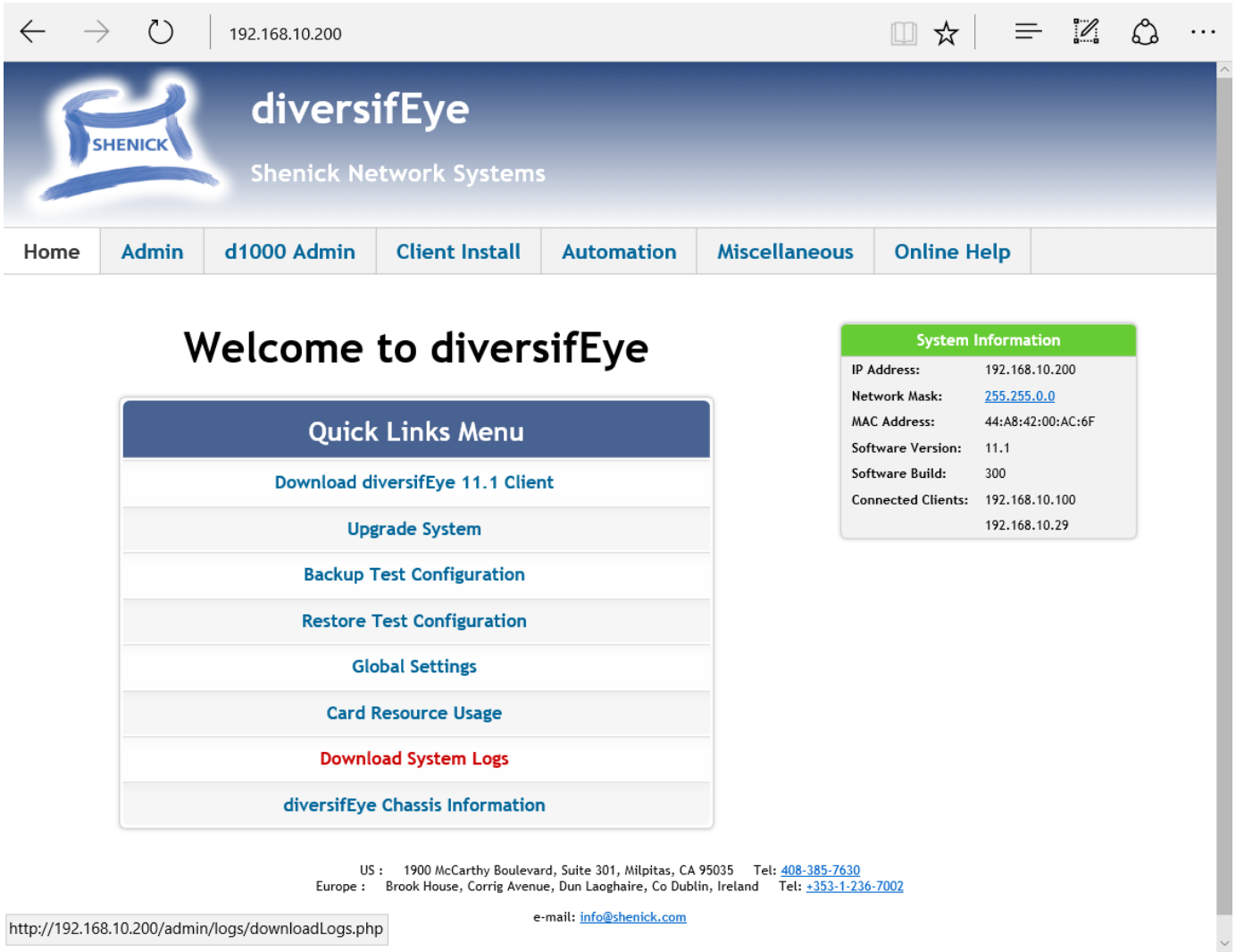


RDA Management Web Interface

- Download System Logs
- diversifEye System Information
- Card Resource Usage
- Client Install
- Online Help
- Global Settings for All Cards
- Admin – Network Properties
- Admin – Global Settings for Each Cards

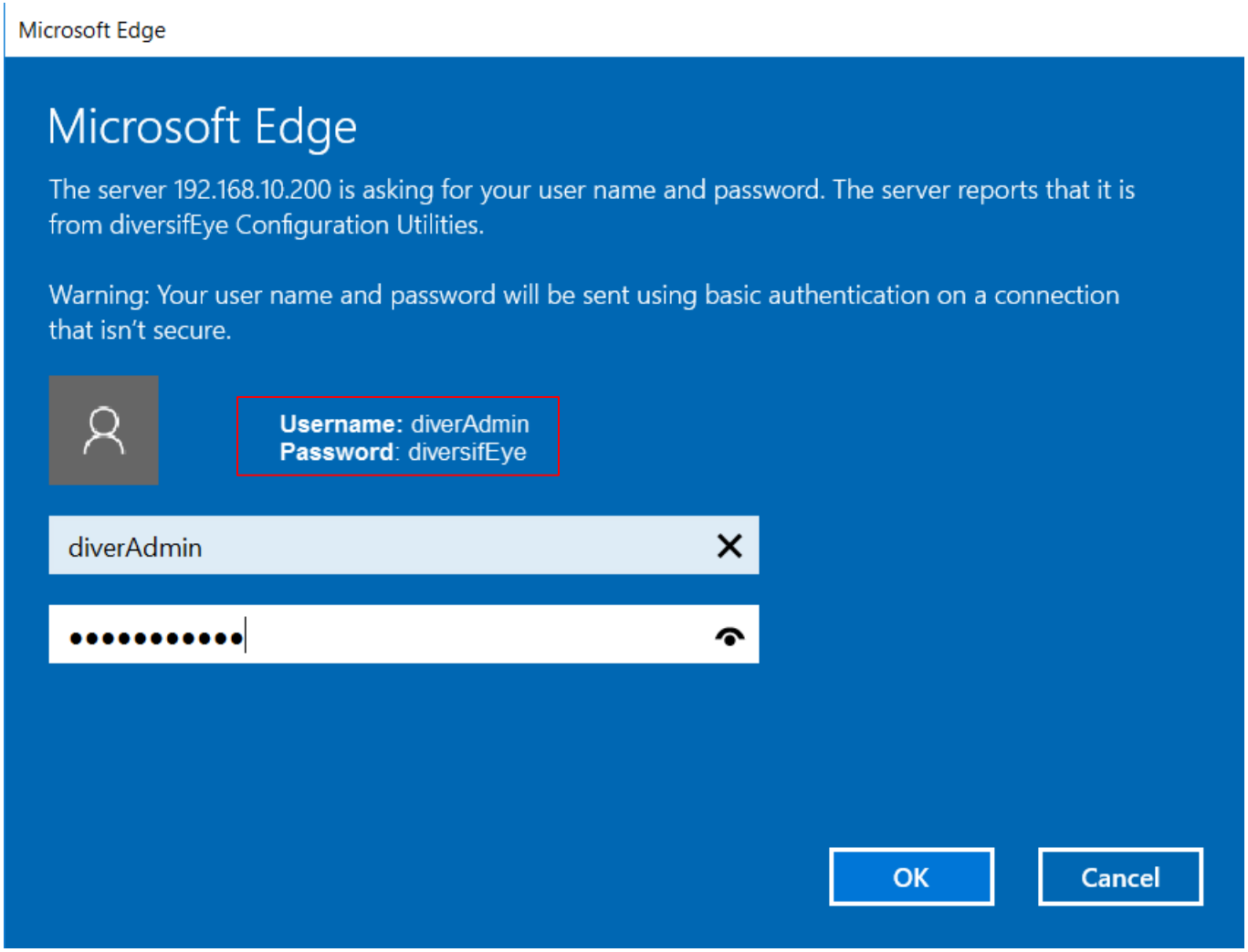
Home – Admin

Download System Logs



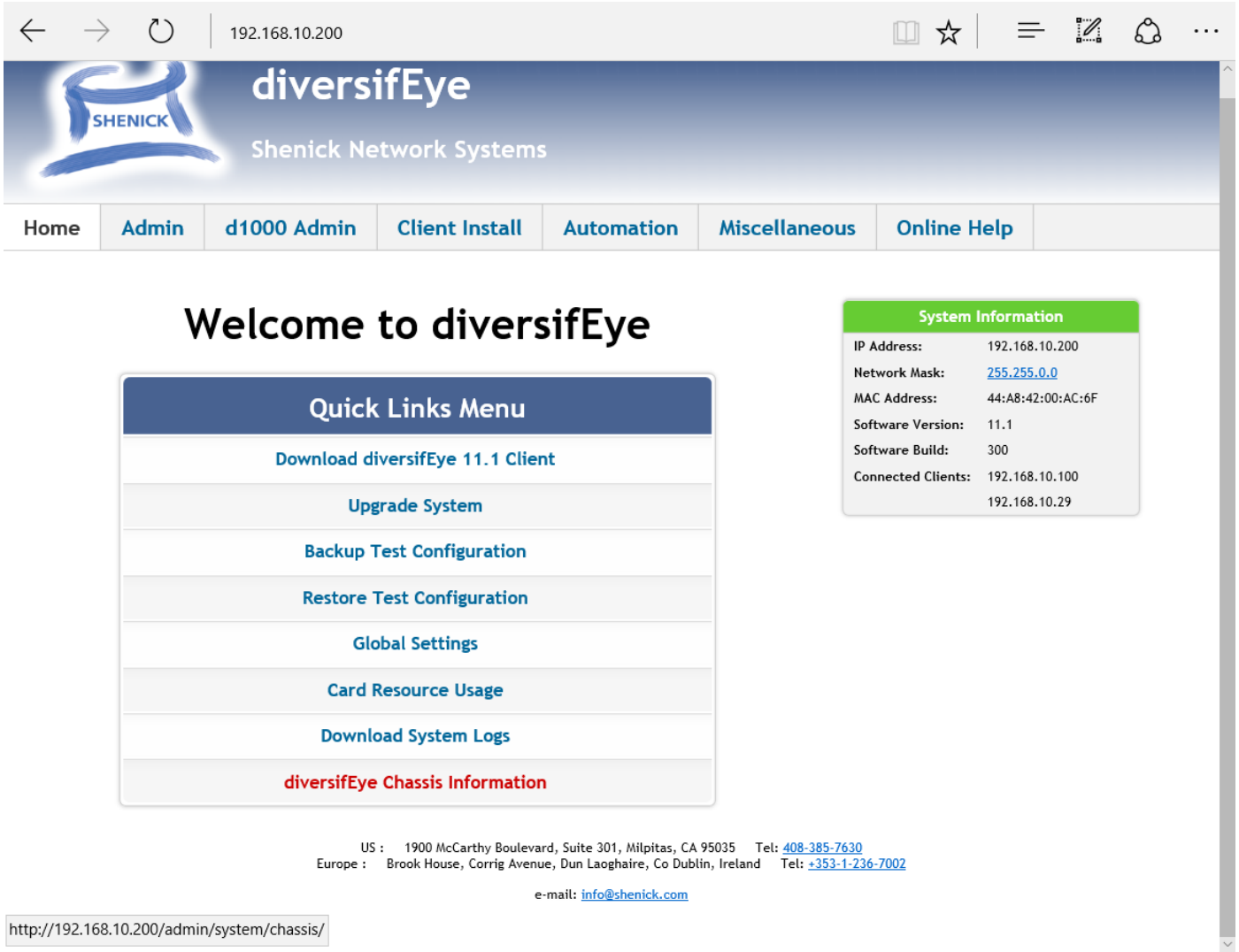
Home – Admin

Username/Password



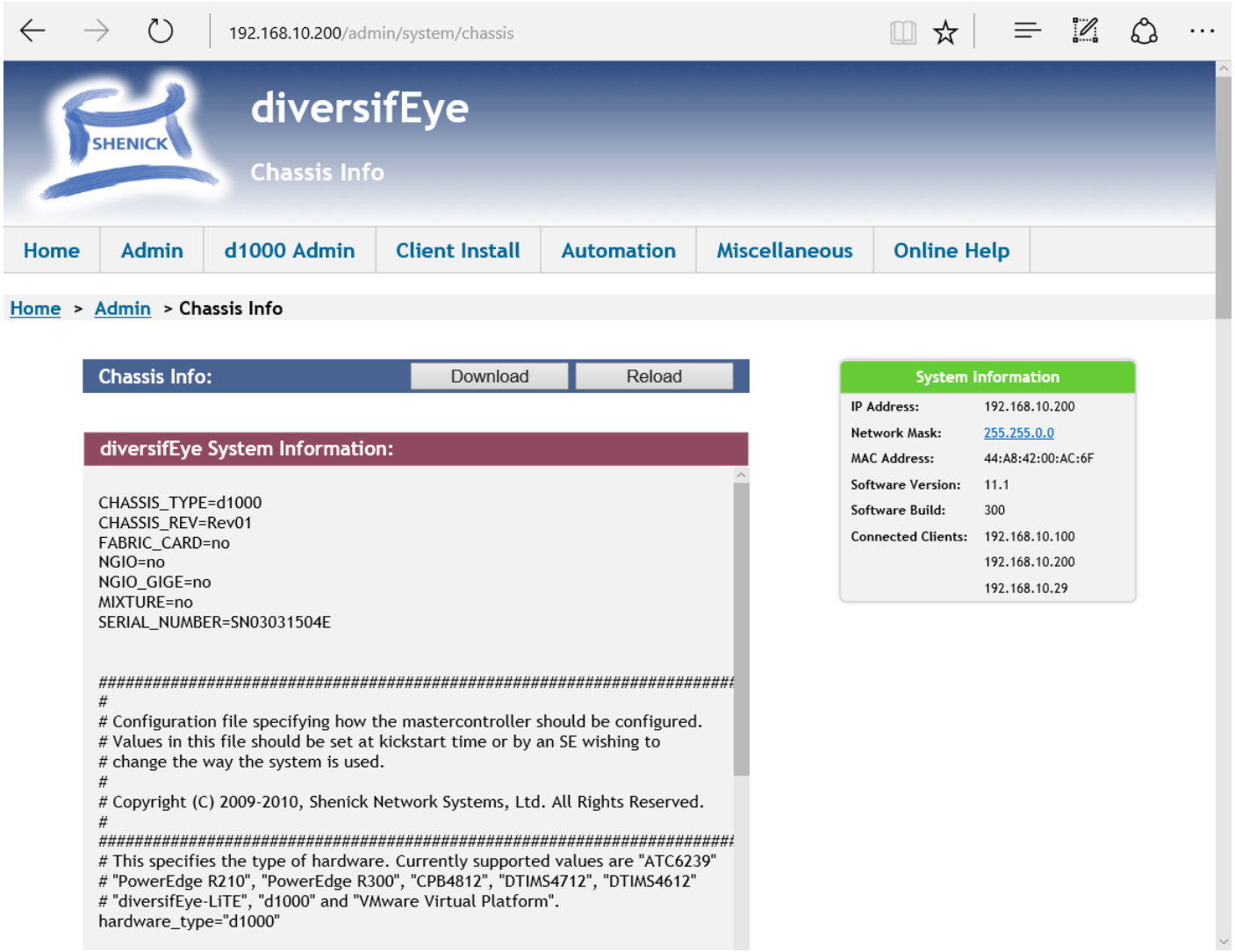
Home – Admin

diversifEye Chassis Information



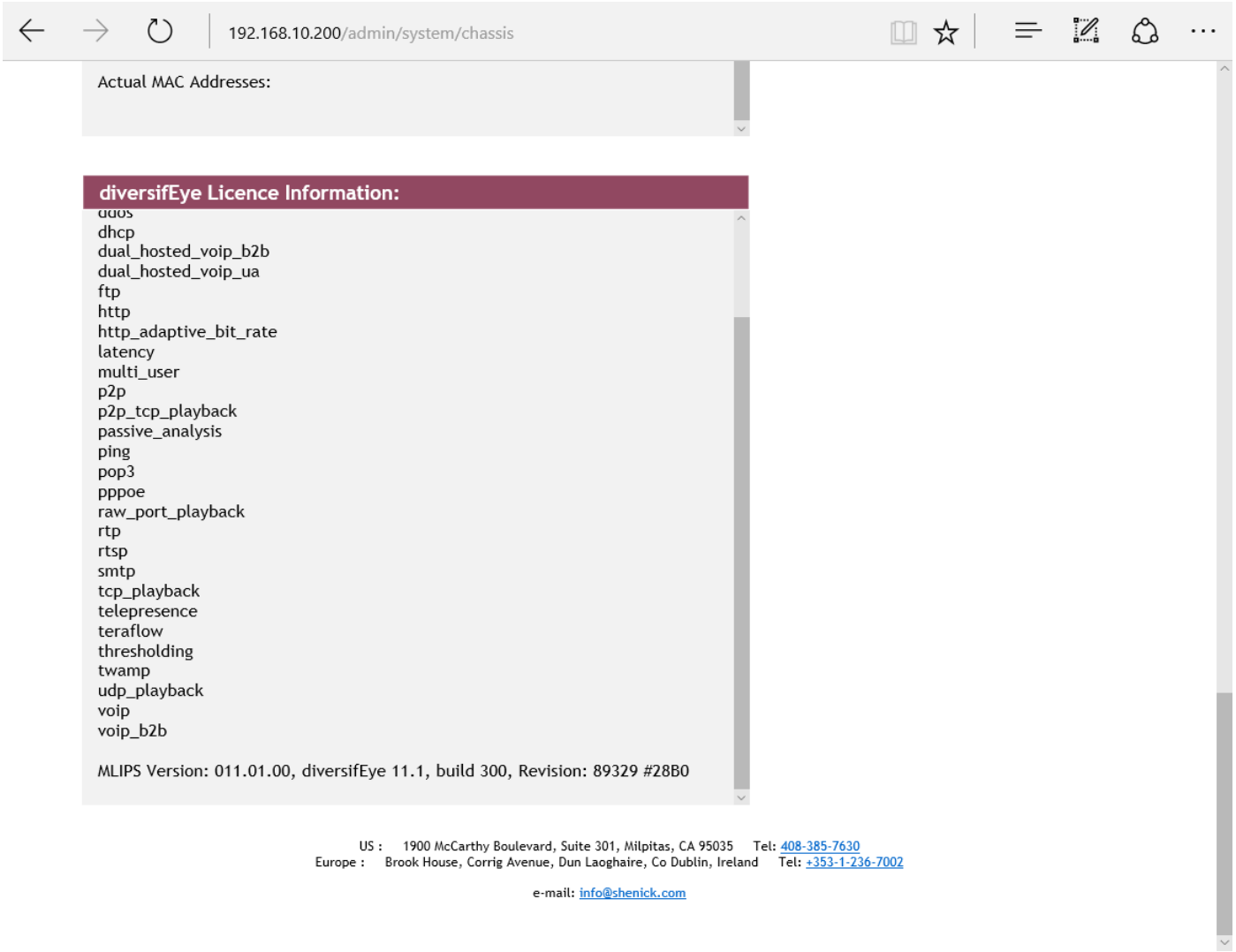
Home – Admin

Chassis Info - diversifEye System Information



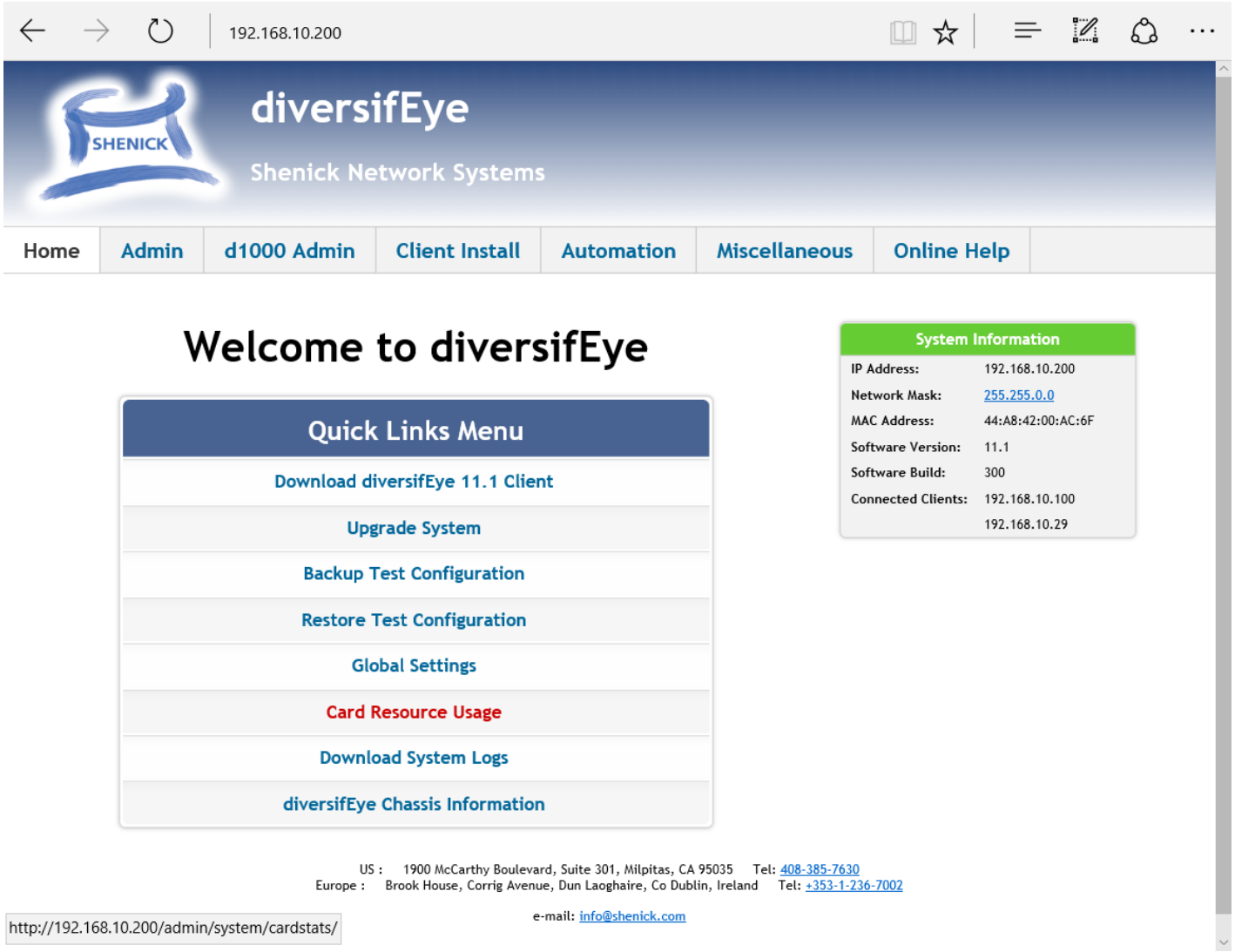
Home – Admin

Chassis Info - diversifEye License Information



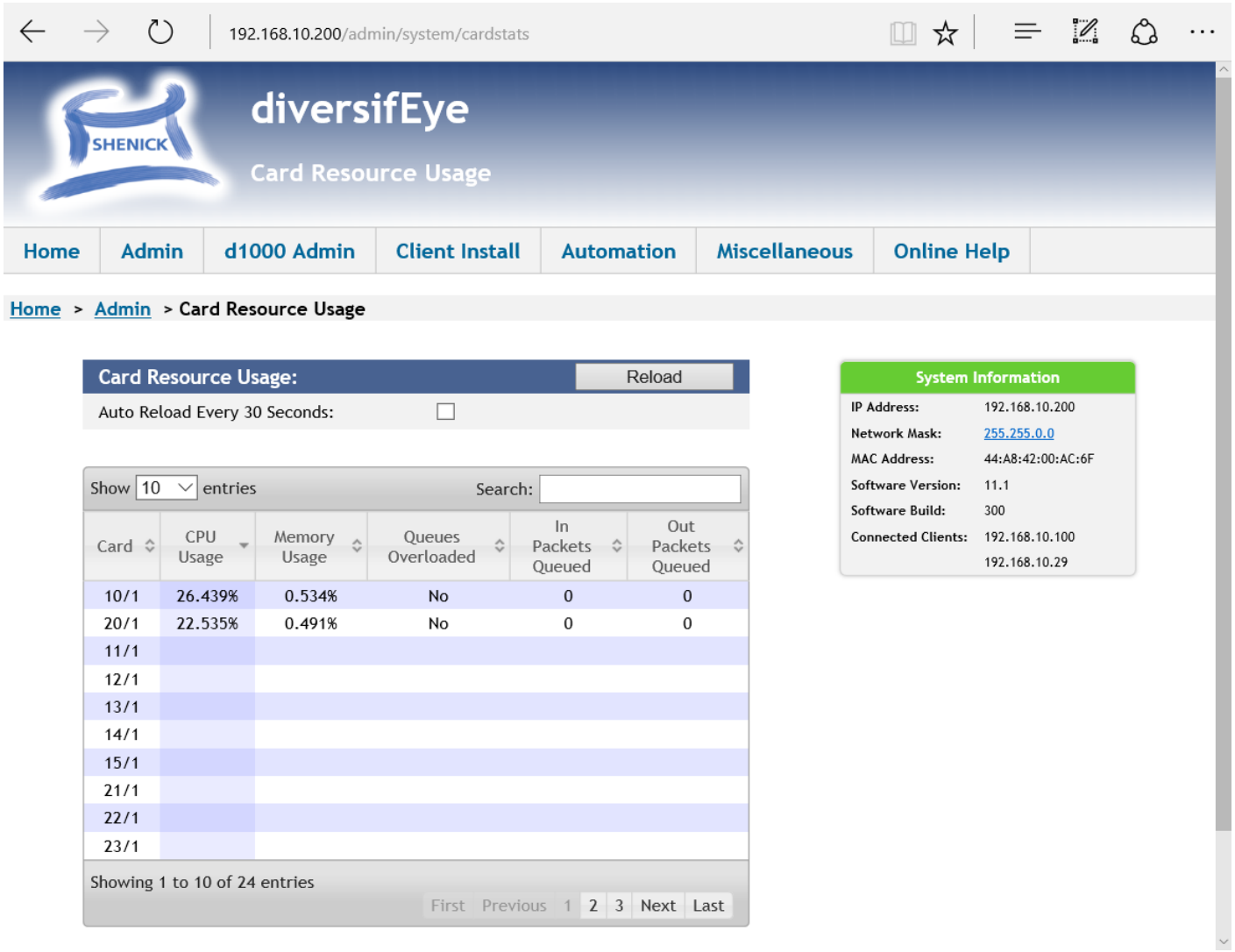
Home – Admin

Card Resource Usage



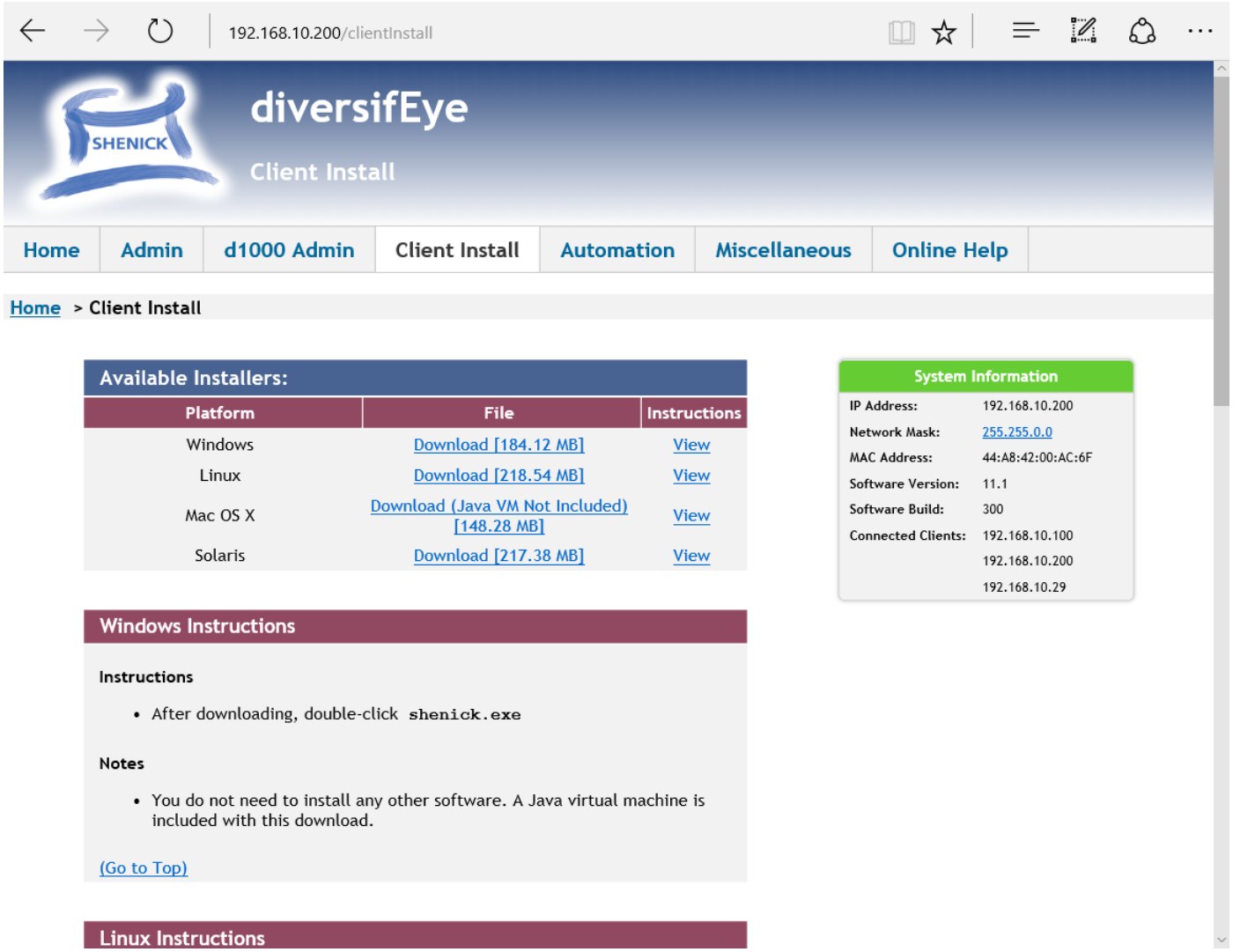
Home – Admin

Card Resource Usage



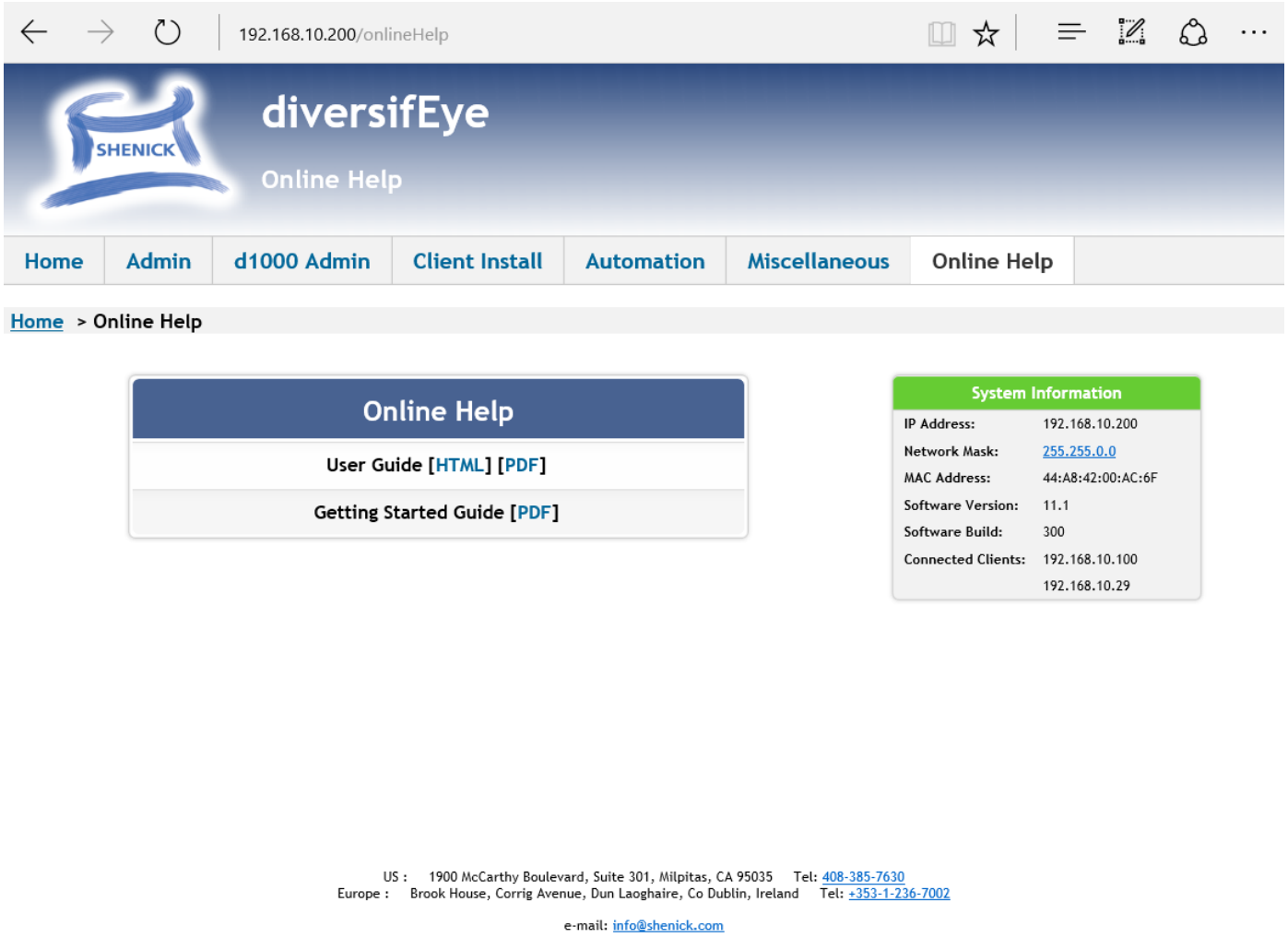
Home

Client Install



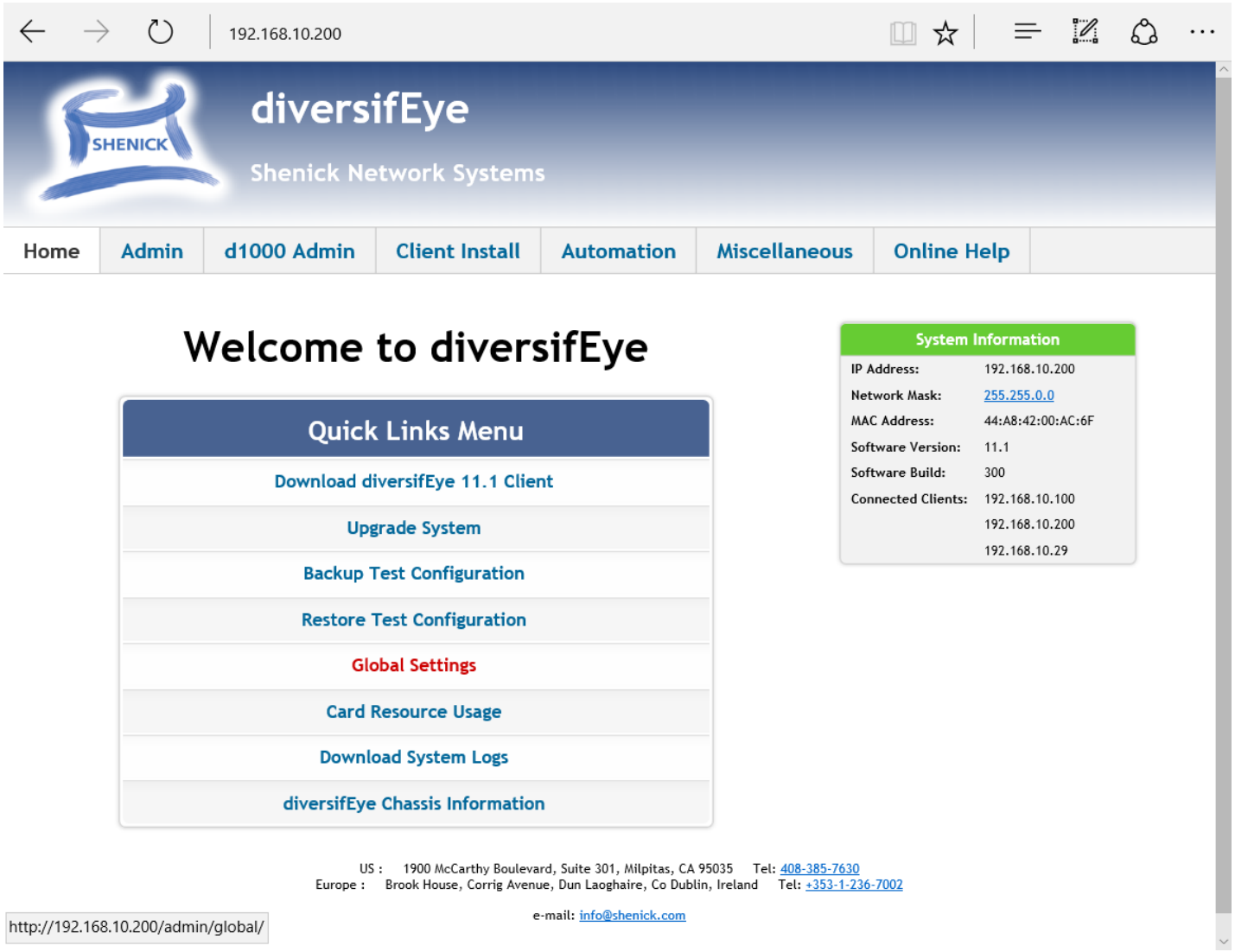
Home

Online Help



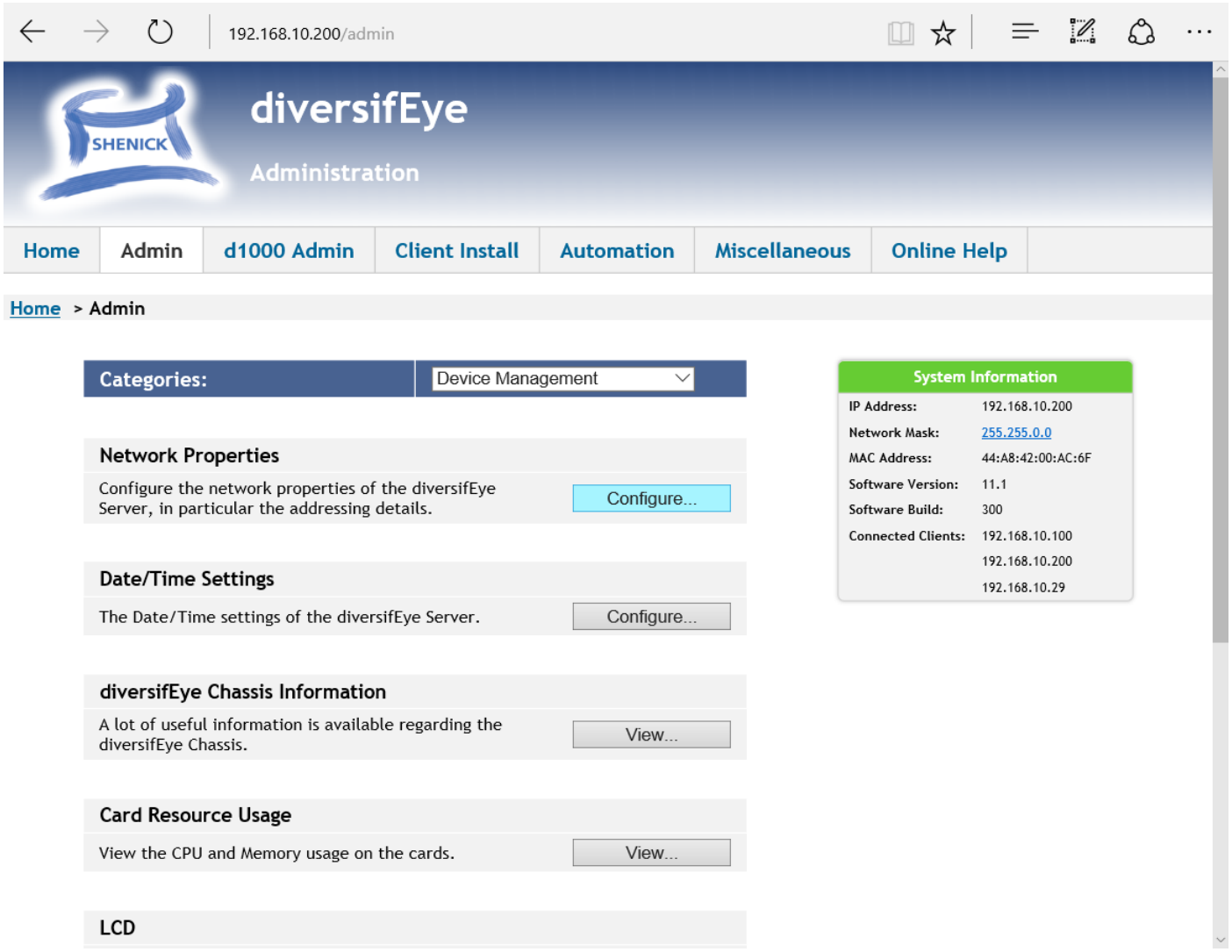
Home – Admin

Global Settings – All Cards



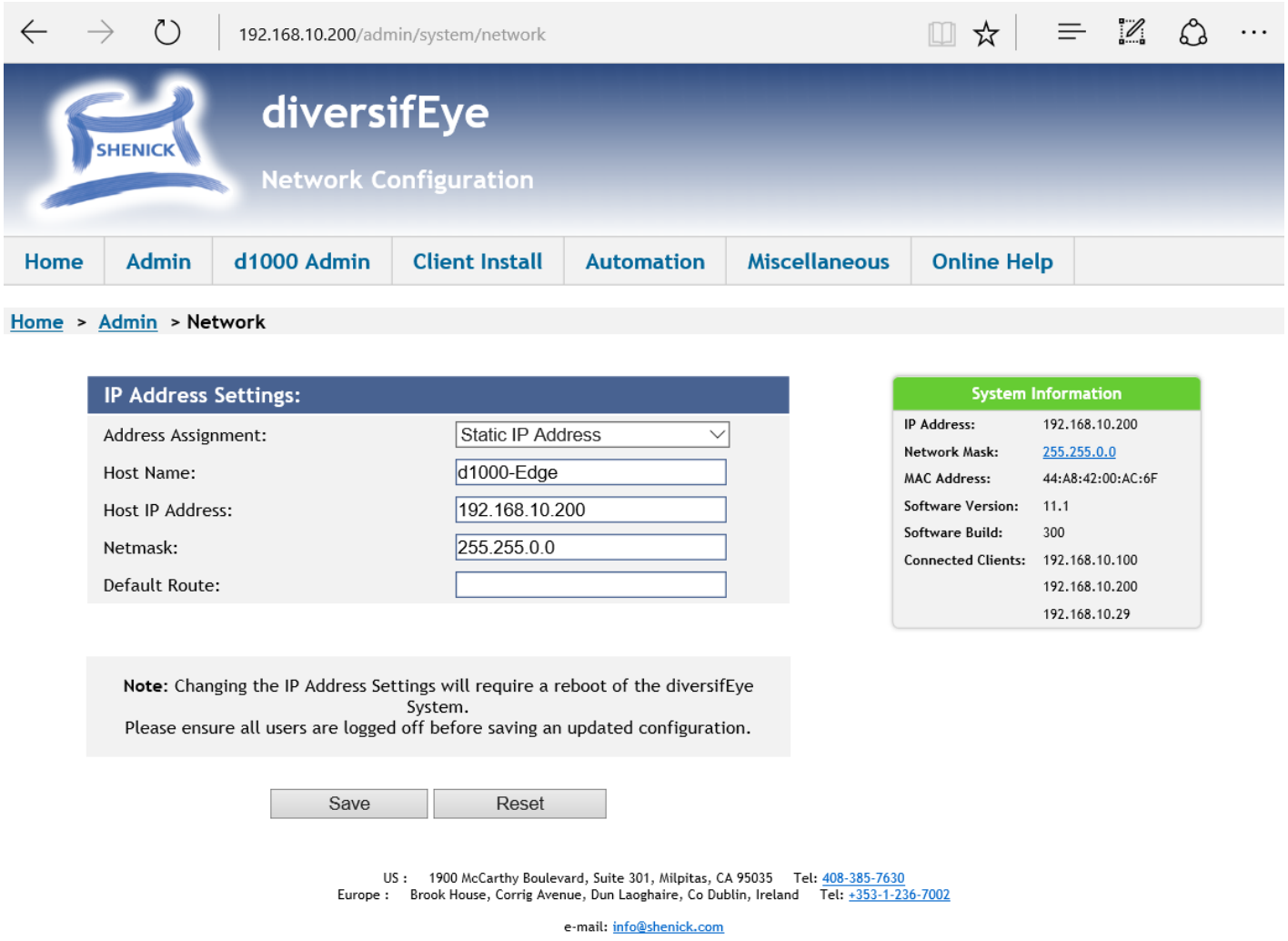
Home

Admin


192.168.10.200/admin
diversifEye
Administration
Home
Admin
d1000 Admin
Client Install
Automation
Miscellaneous
Online Help
Home > Admin
Categories:
Device Management
Network Properties
Configure the network properties of the diversifEye Server, in particular the addressing details.
Configure...
Date/Time Settings
The Date/Time settings of the diversifEye Server.
Configure...
diversifEye Chassis Information
A lot of useful information is available regarding the diversifEye Chassis.
View...
Card Resource Usage
View the CPU and Memory usage on the cards.
View...
LCD
System Information
IP Address: 192.168.10.200
Network Mask: 255.255.0.0
MAC Address: 44:A8:42:00:AC:6F
Software Version: 11.1
Software Build: 300
Connected Clients: 192.168.10.100
192.168.10.200
192.168.10.29

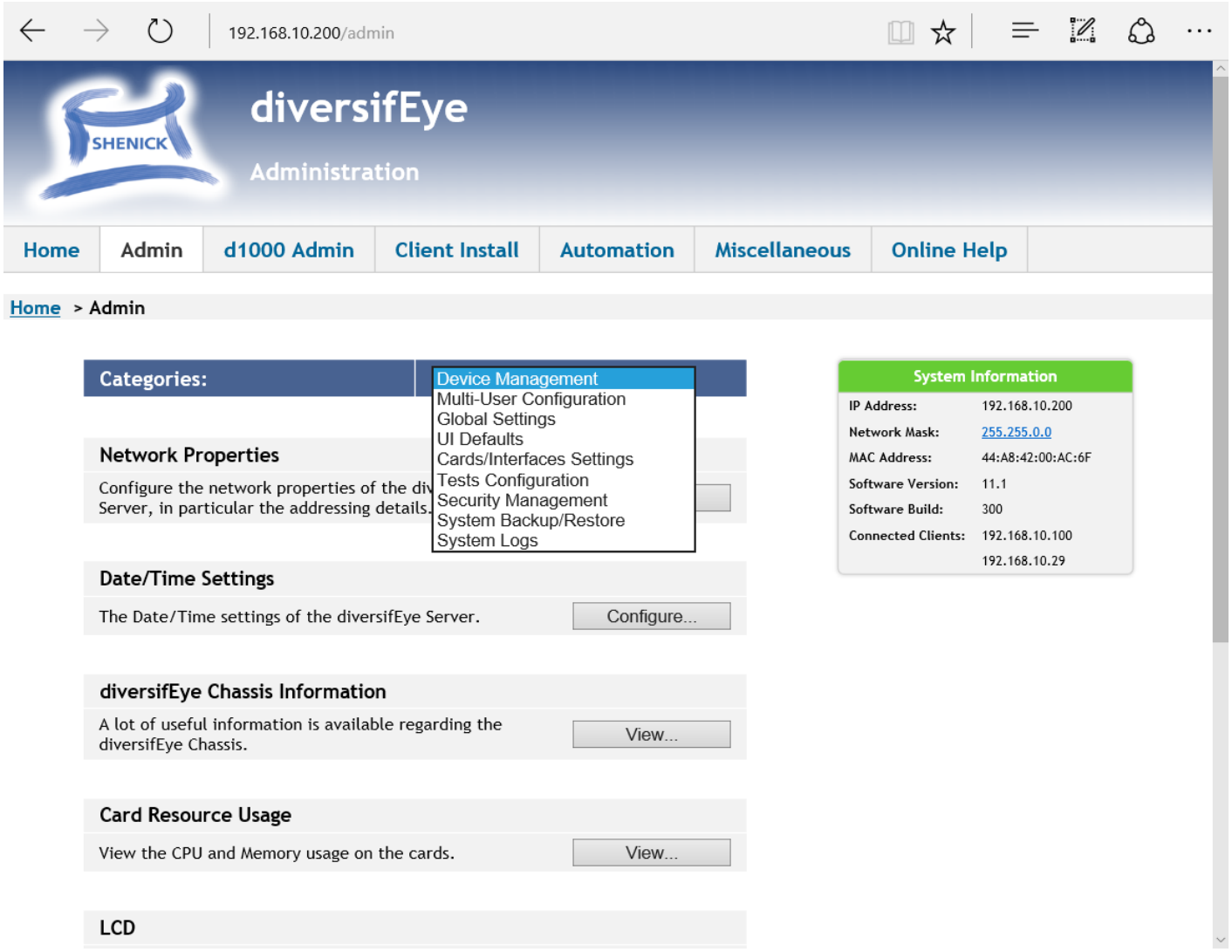
Home – Admin

Network Properties



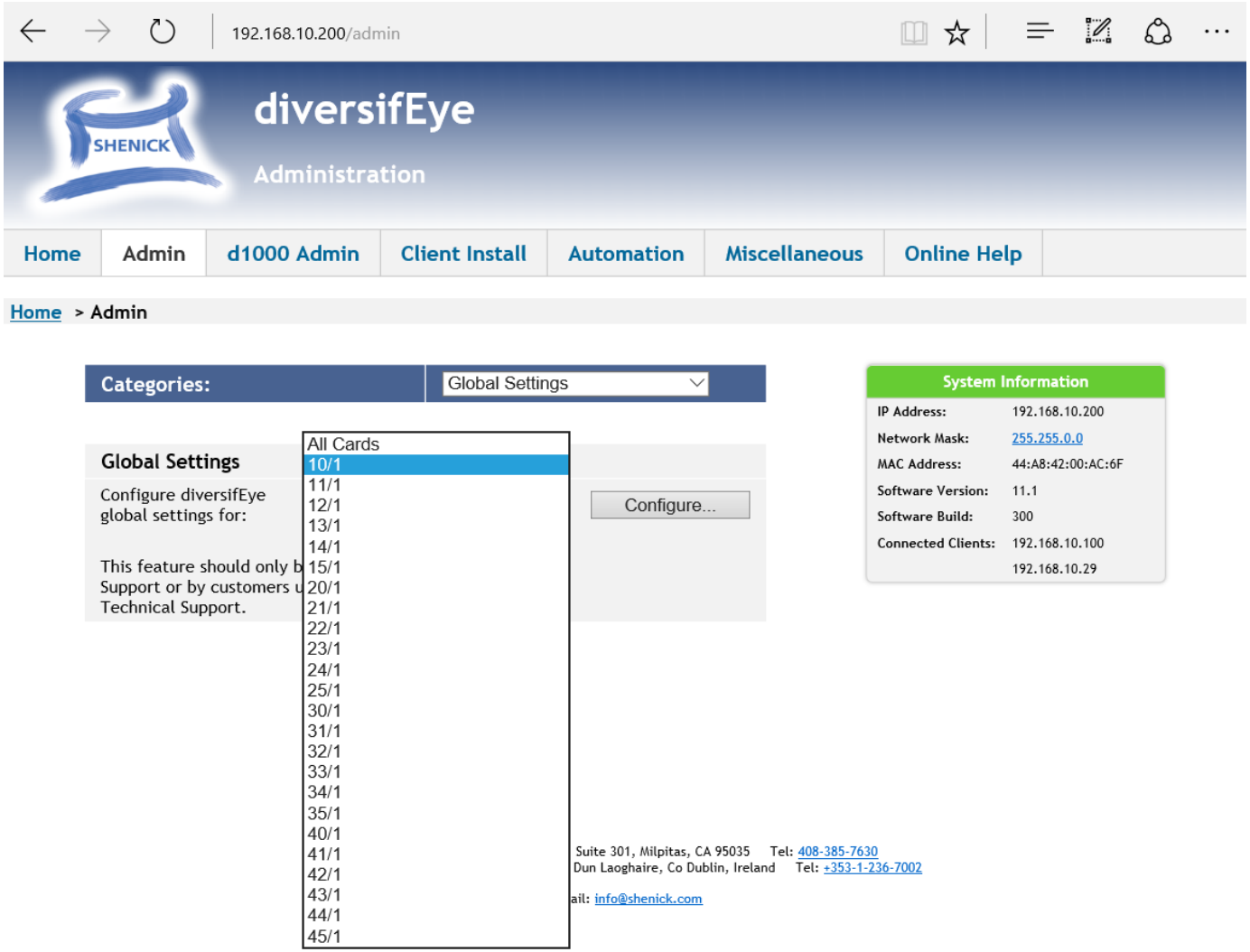
Home – Admin

Global Settings



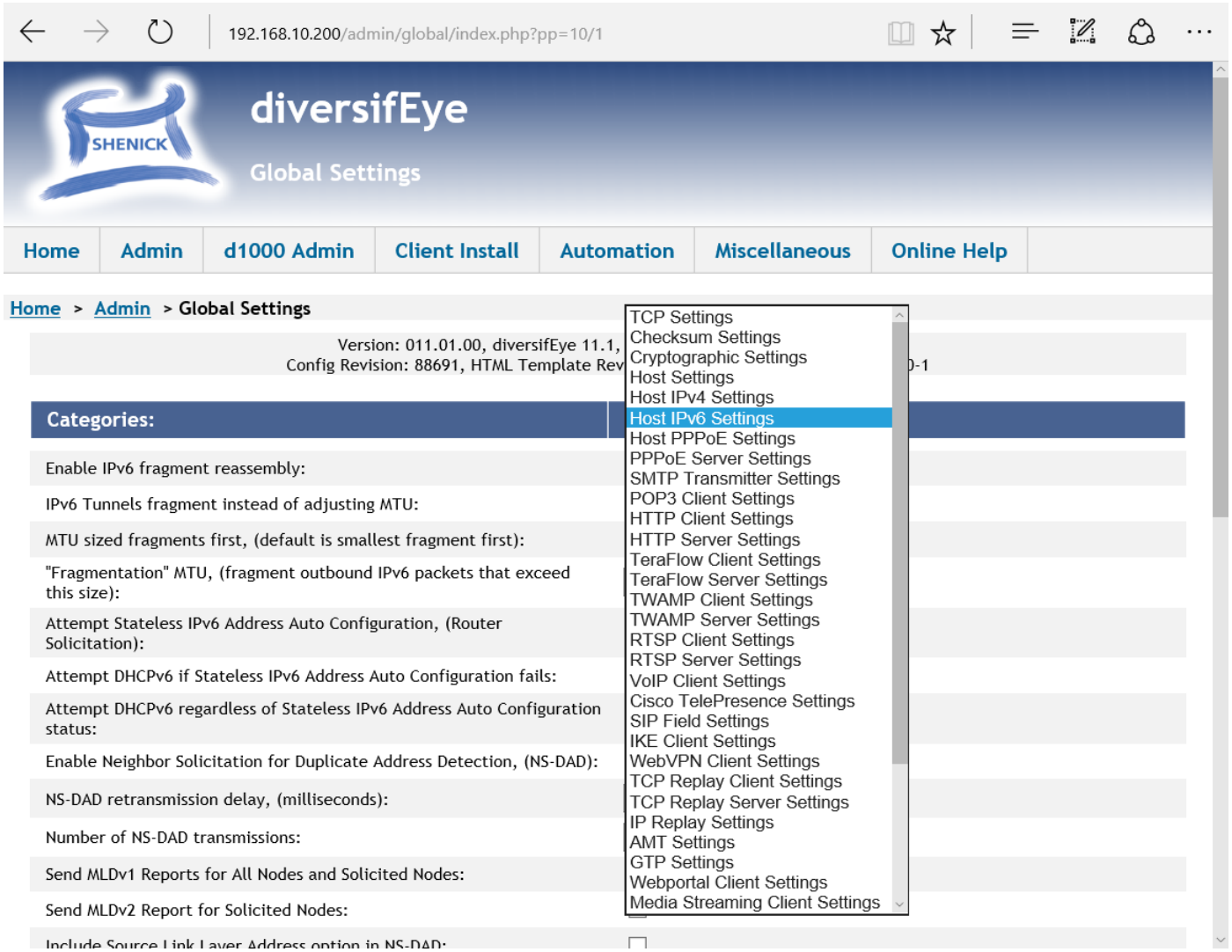
Home – Admin

Global Settings - Select Cards



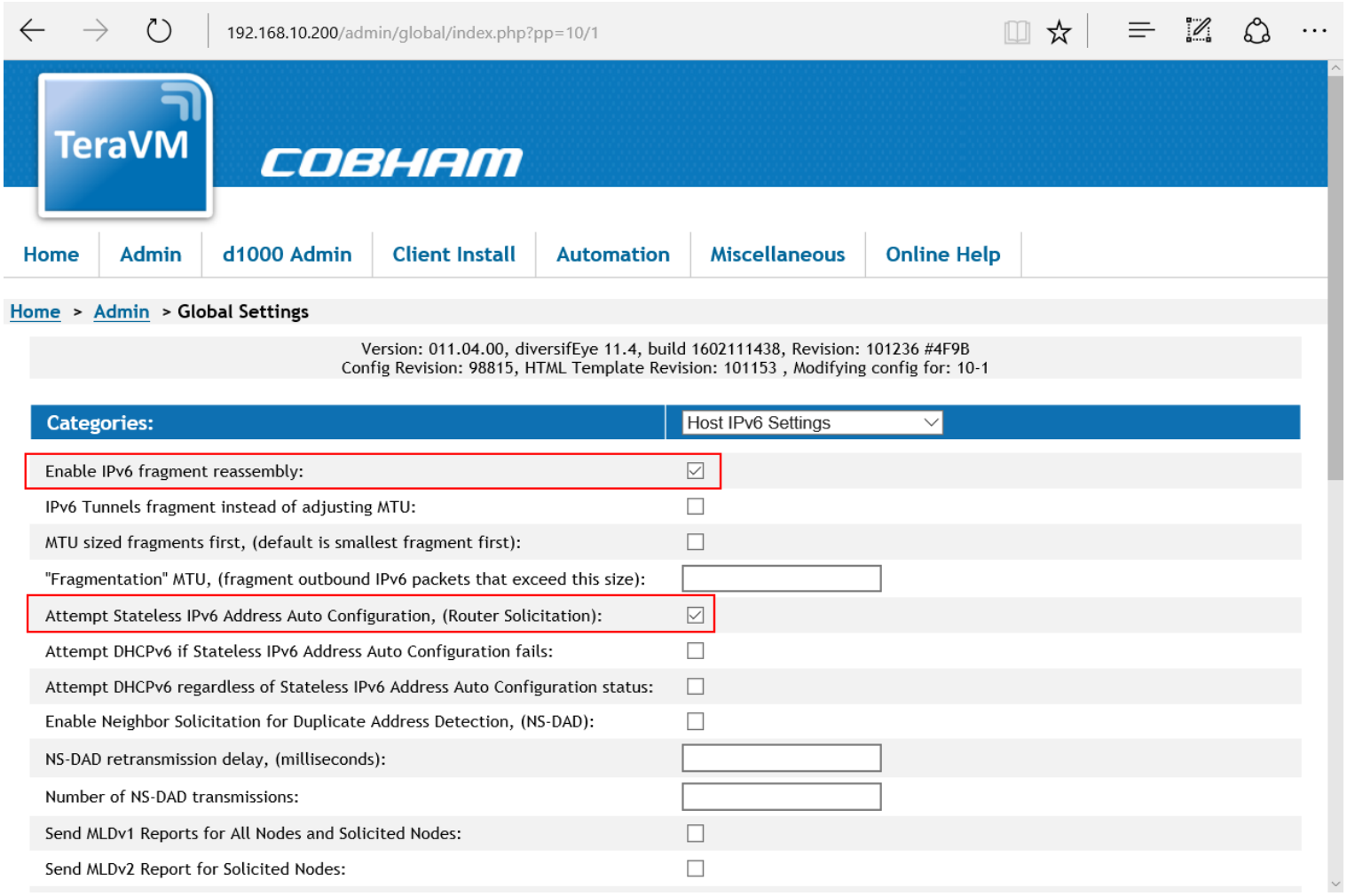
Home – Admin

Global Settings – Host IPv6 Settings



Home – Admin

Global Settings – Mandatory Configurations for IPv6

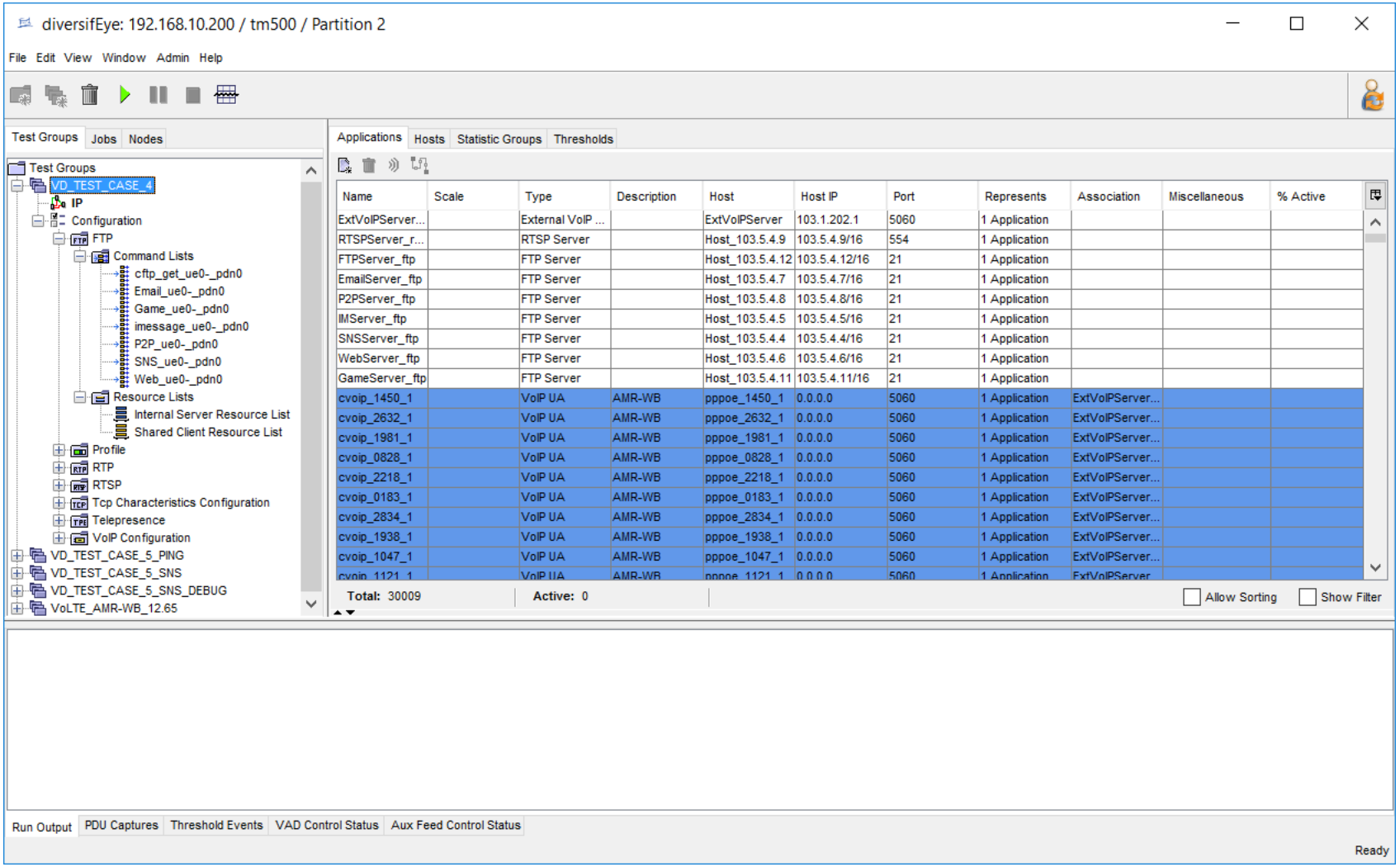


Applications & Hosts Properties

- Applications
  - FTP/VoLTE/TeraFlow/RTSP/PING/HTTP/TWAMP
- Hosts
  - Gateway/Internal Server/External Server/PPPoE

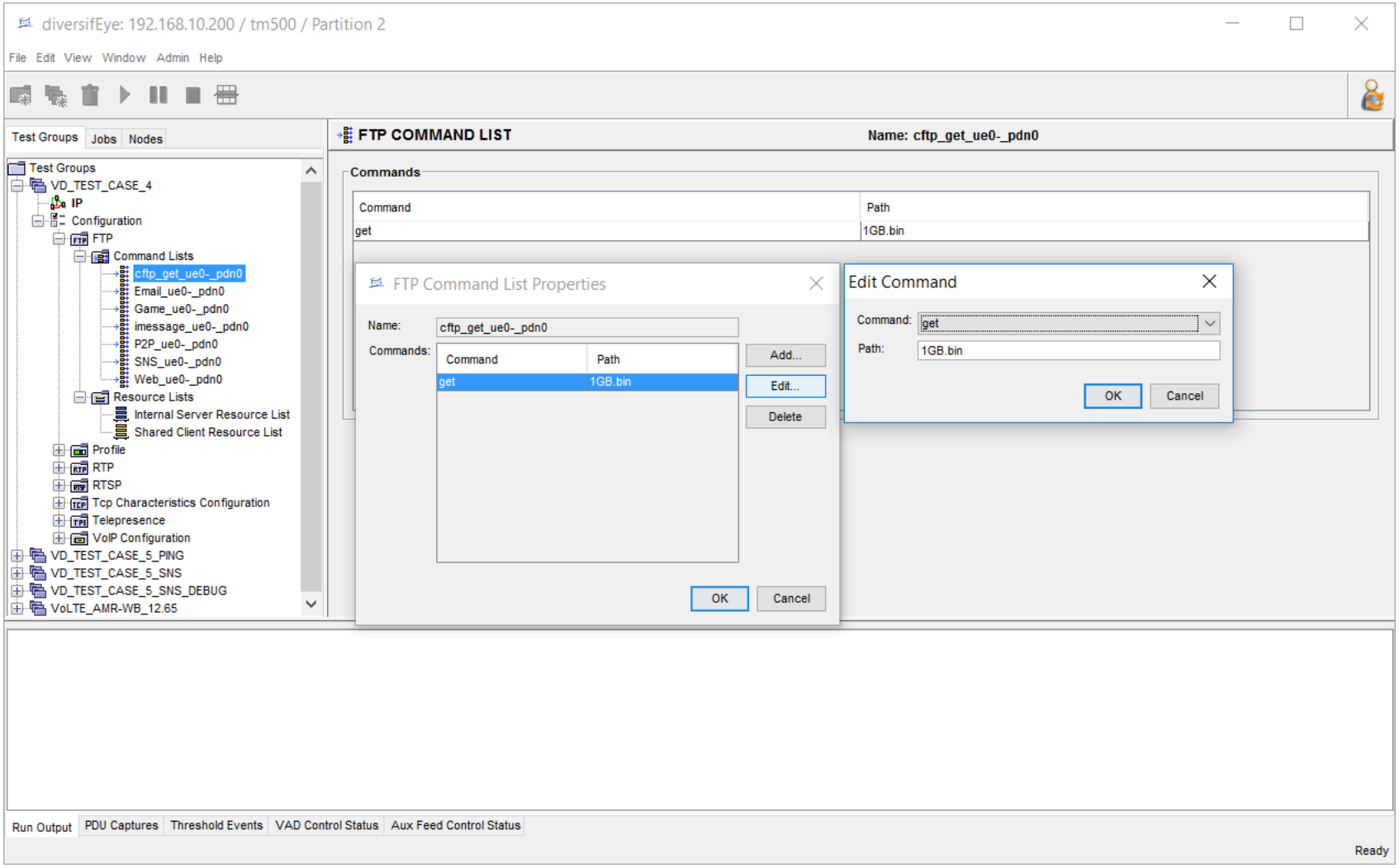
Applications – FTP

Overview



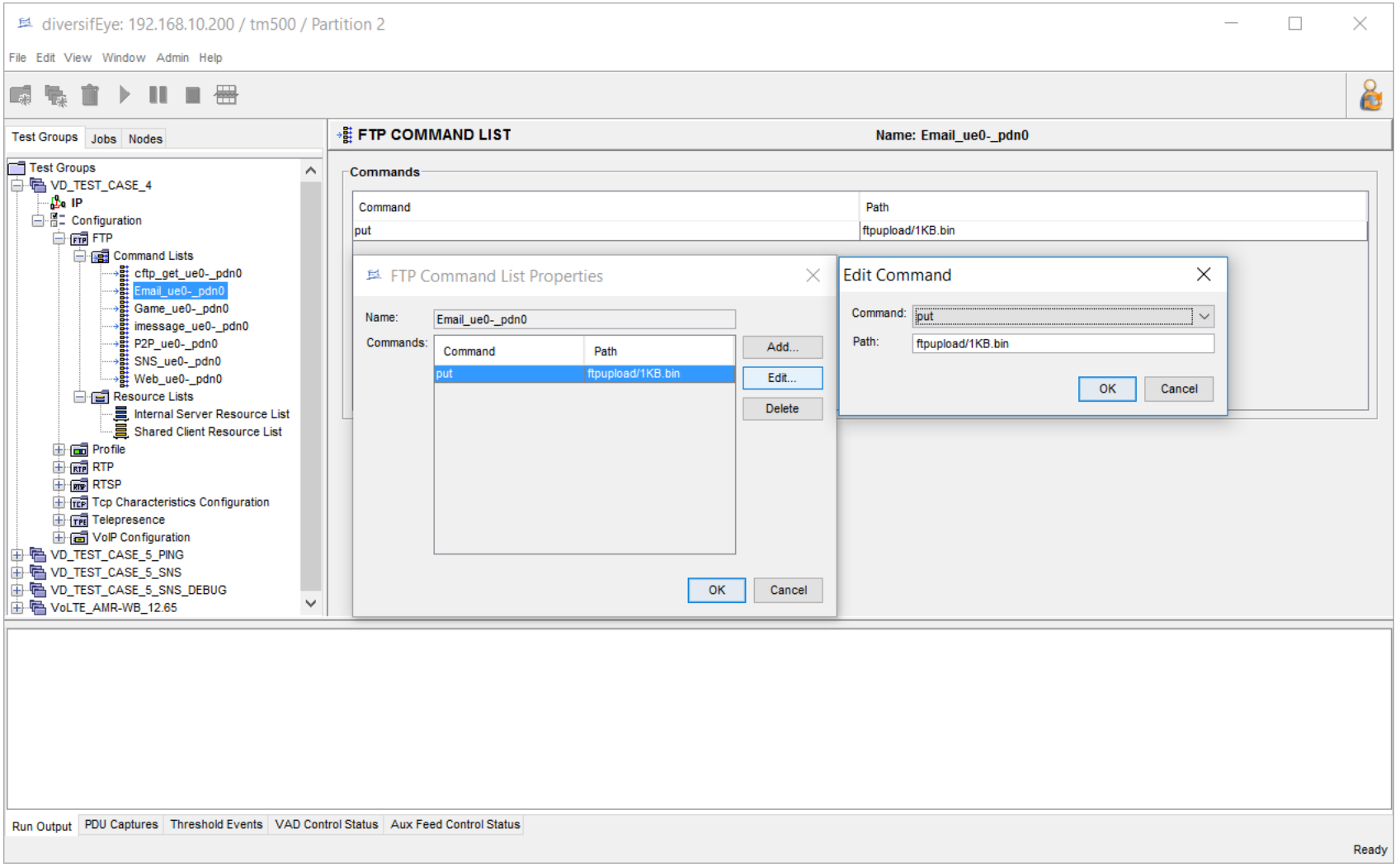
Applications – FTP

Command Lists (get)



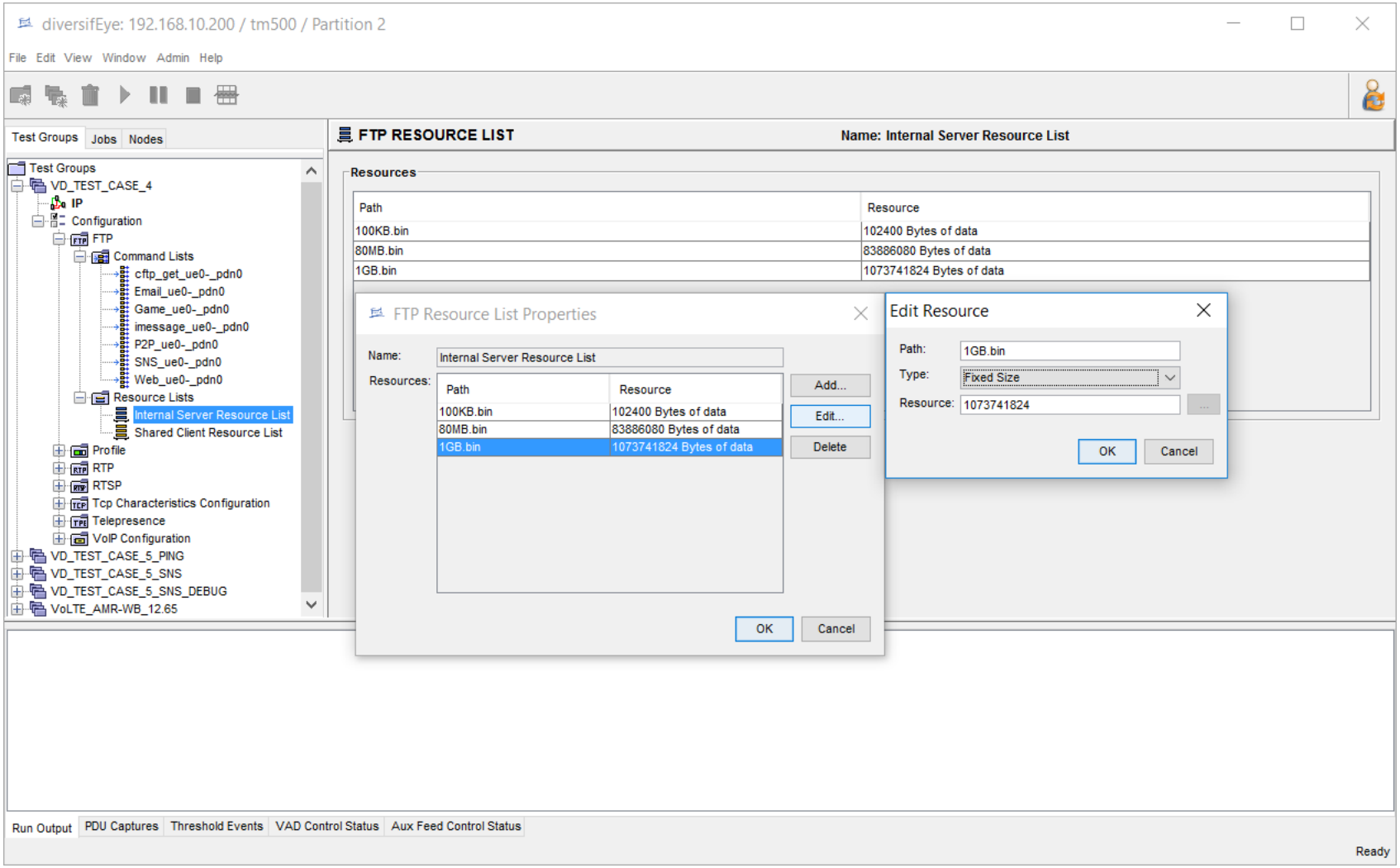
Applications – FTP

Command Lists (put)



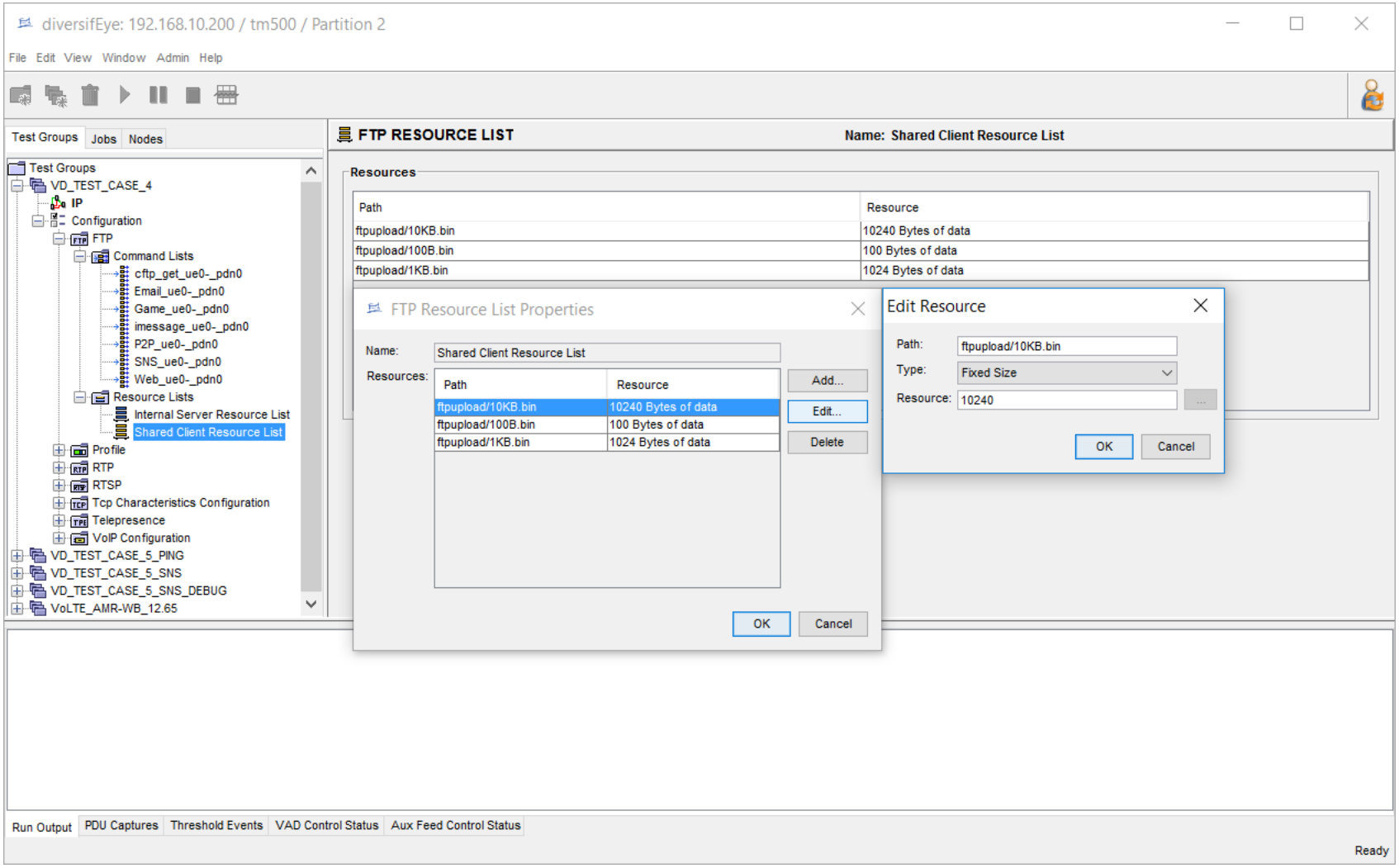
Applications – FTP

Internal Server Resource List



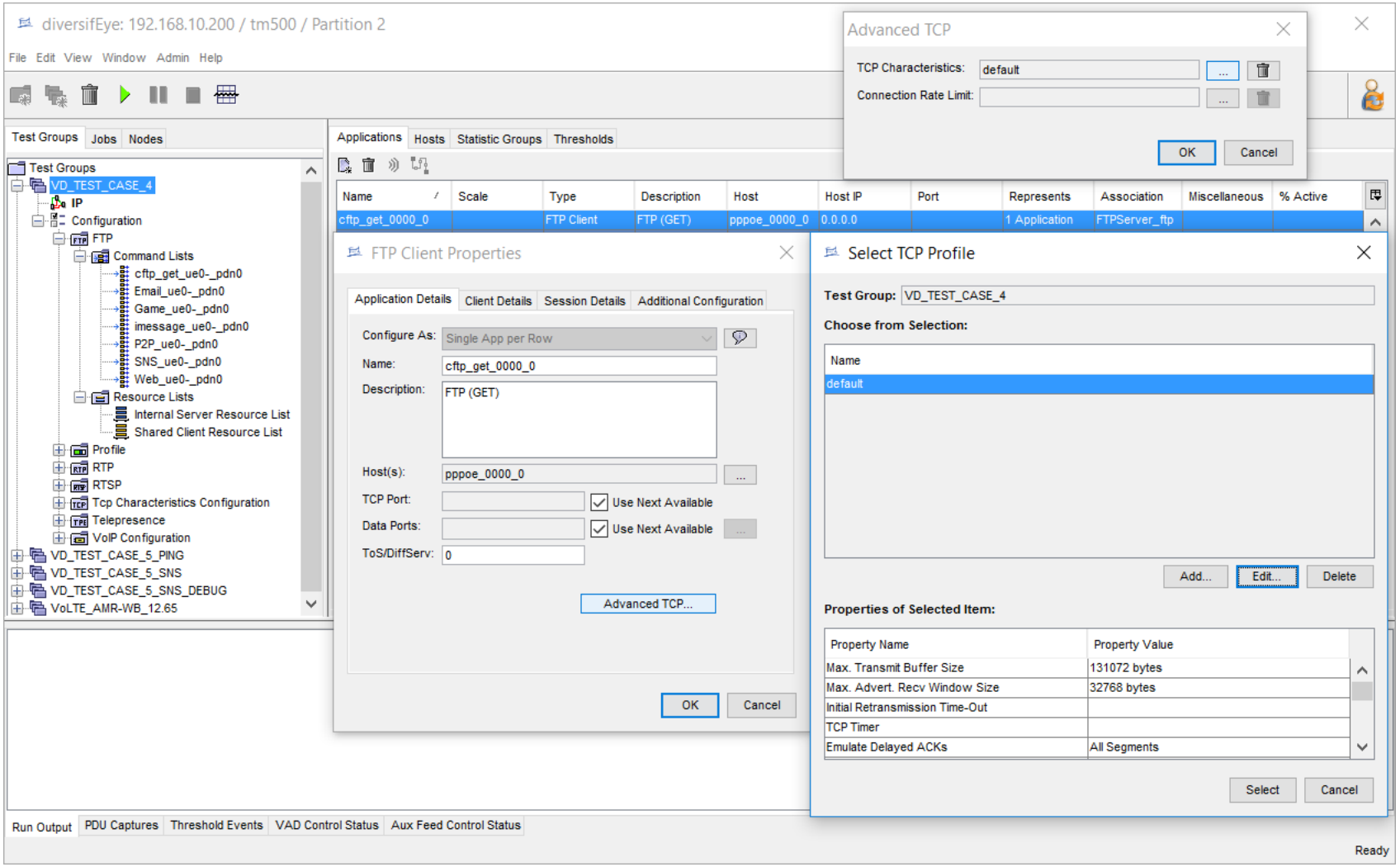
Applications – FTP

Shared Client Resource List



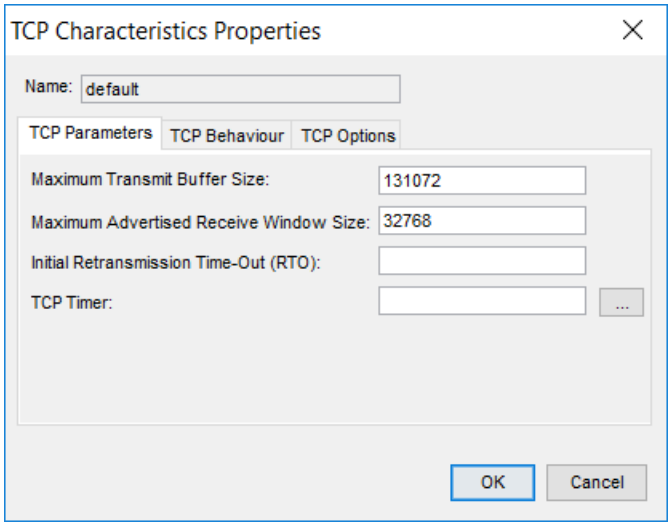
Applications – FTP

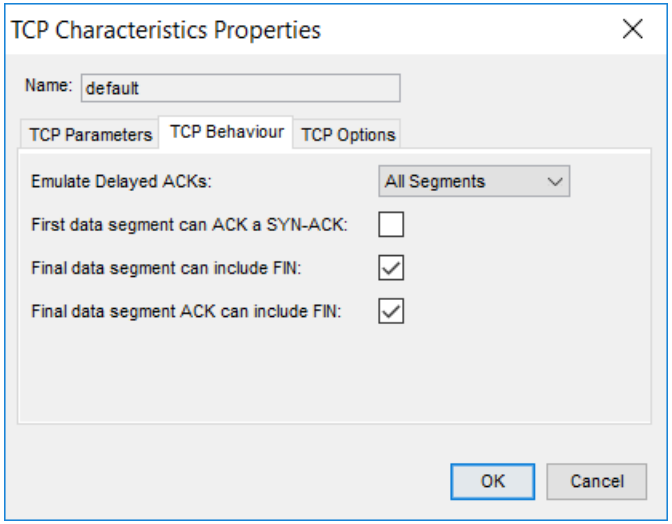
FTP Client Properties

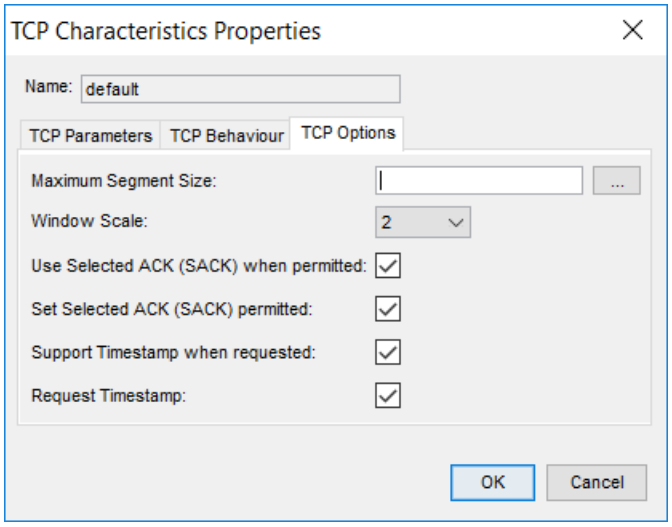


Applications – FTP

TCP Characteristics Properties

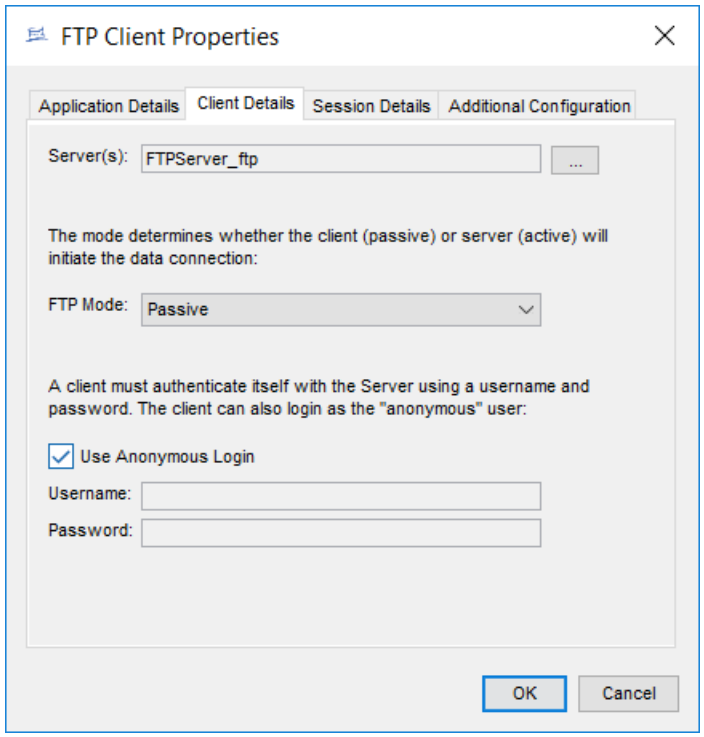


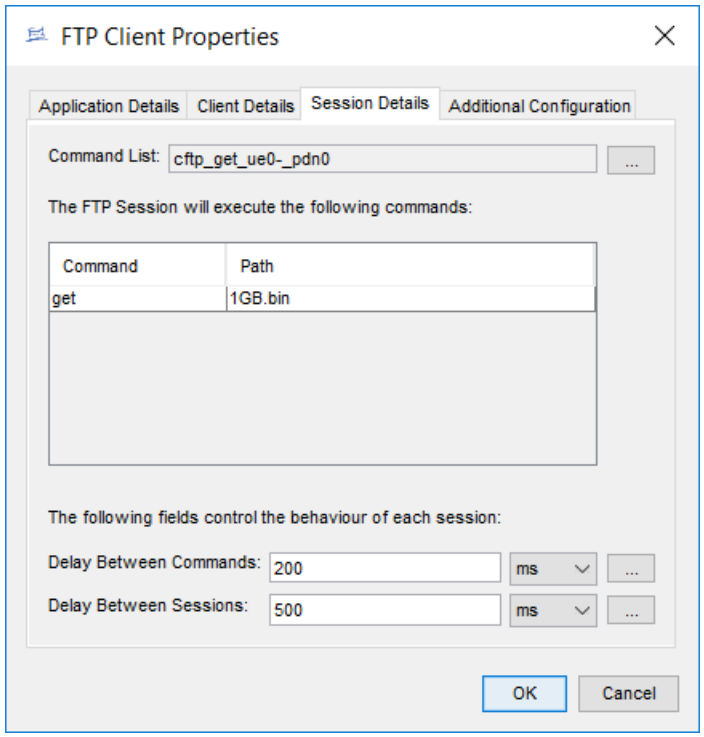




Applications – FTP

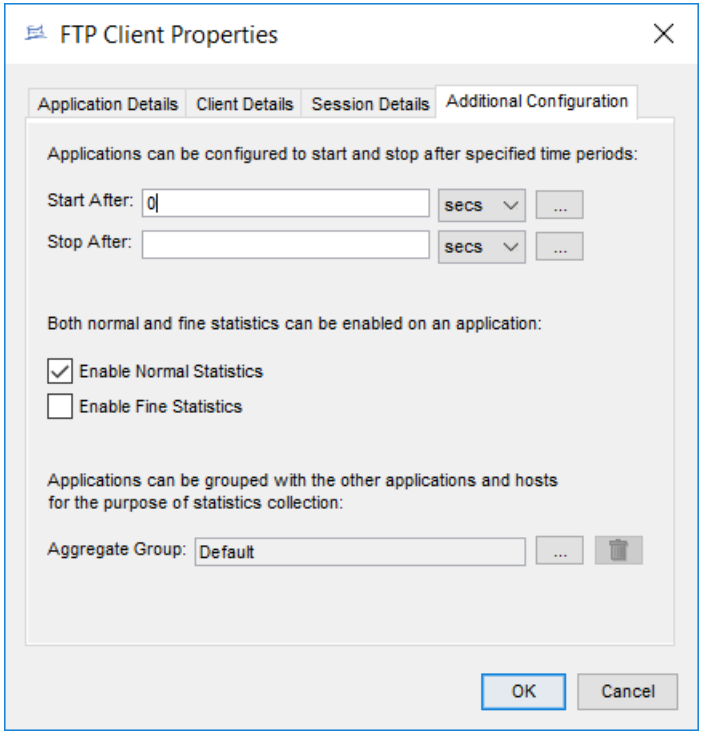
FTP Client Properties

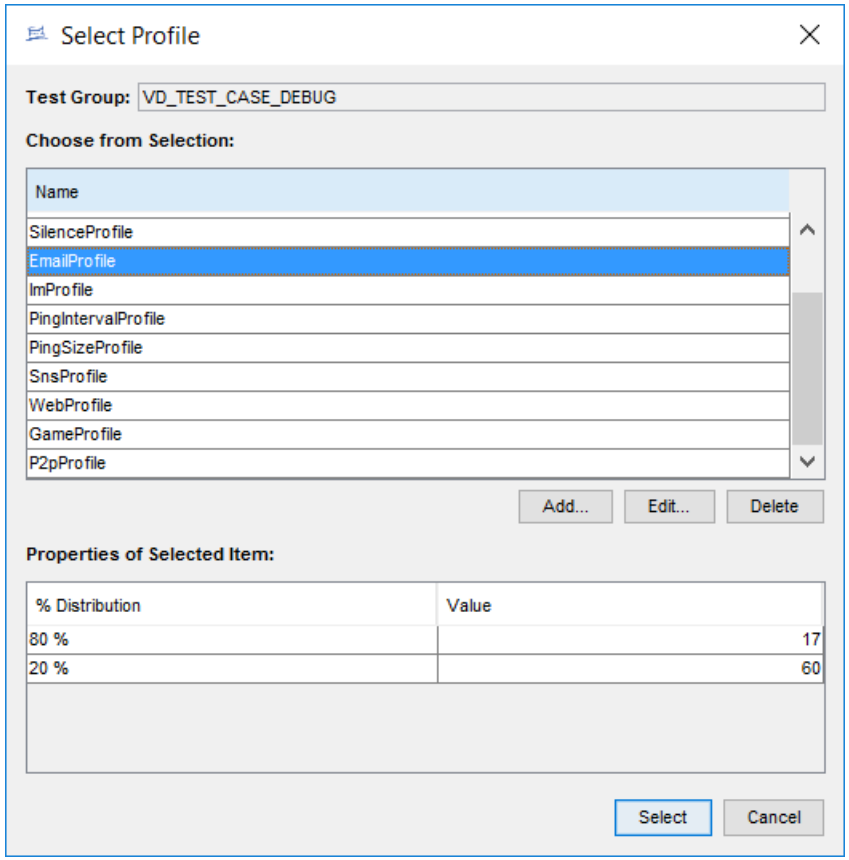




Applications – FTP

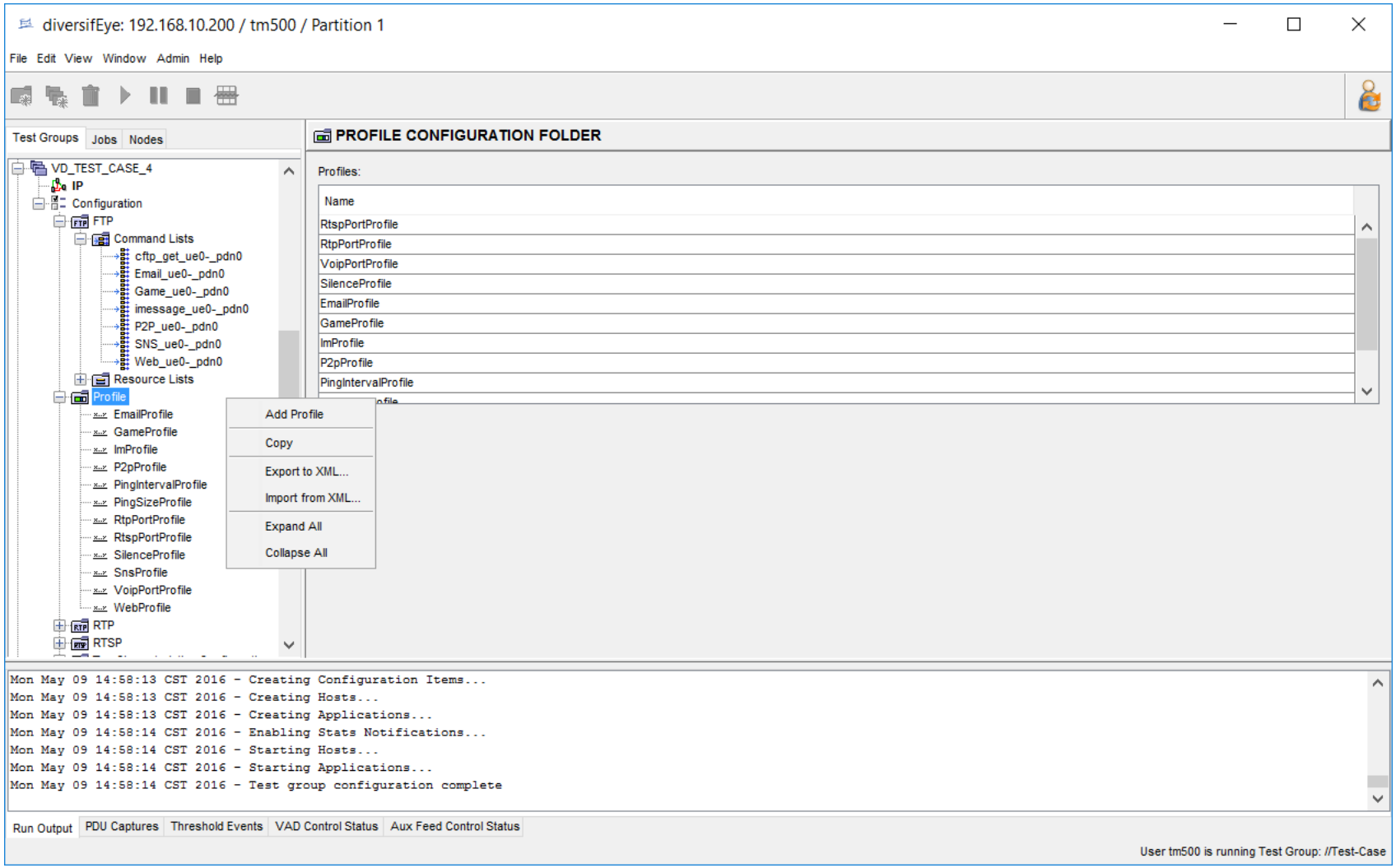
FTP Client Properties & Profile





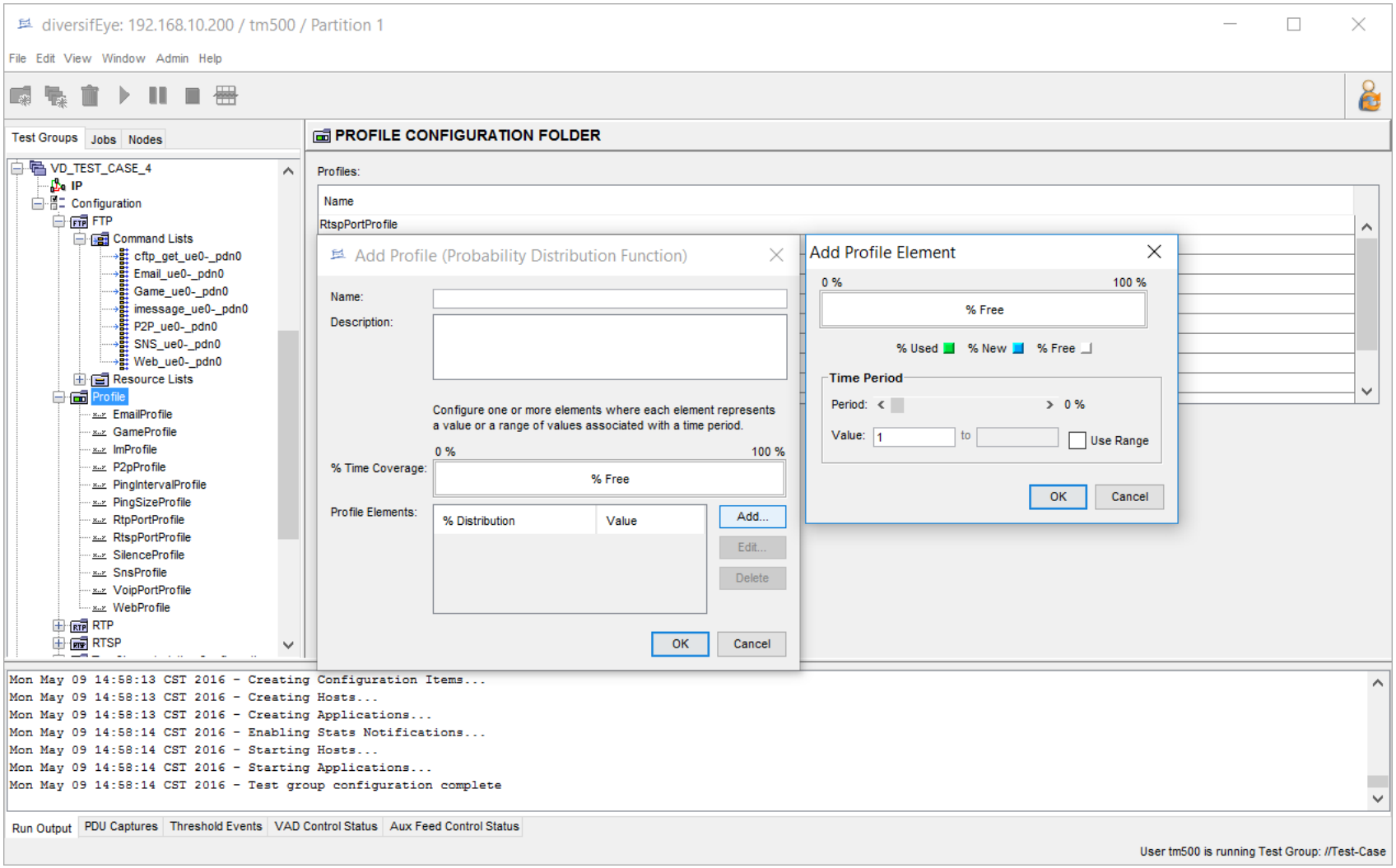
Applications – FTP

Add Profile



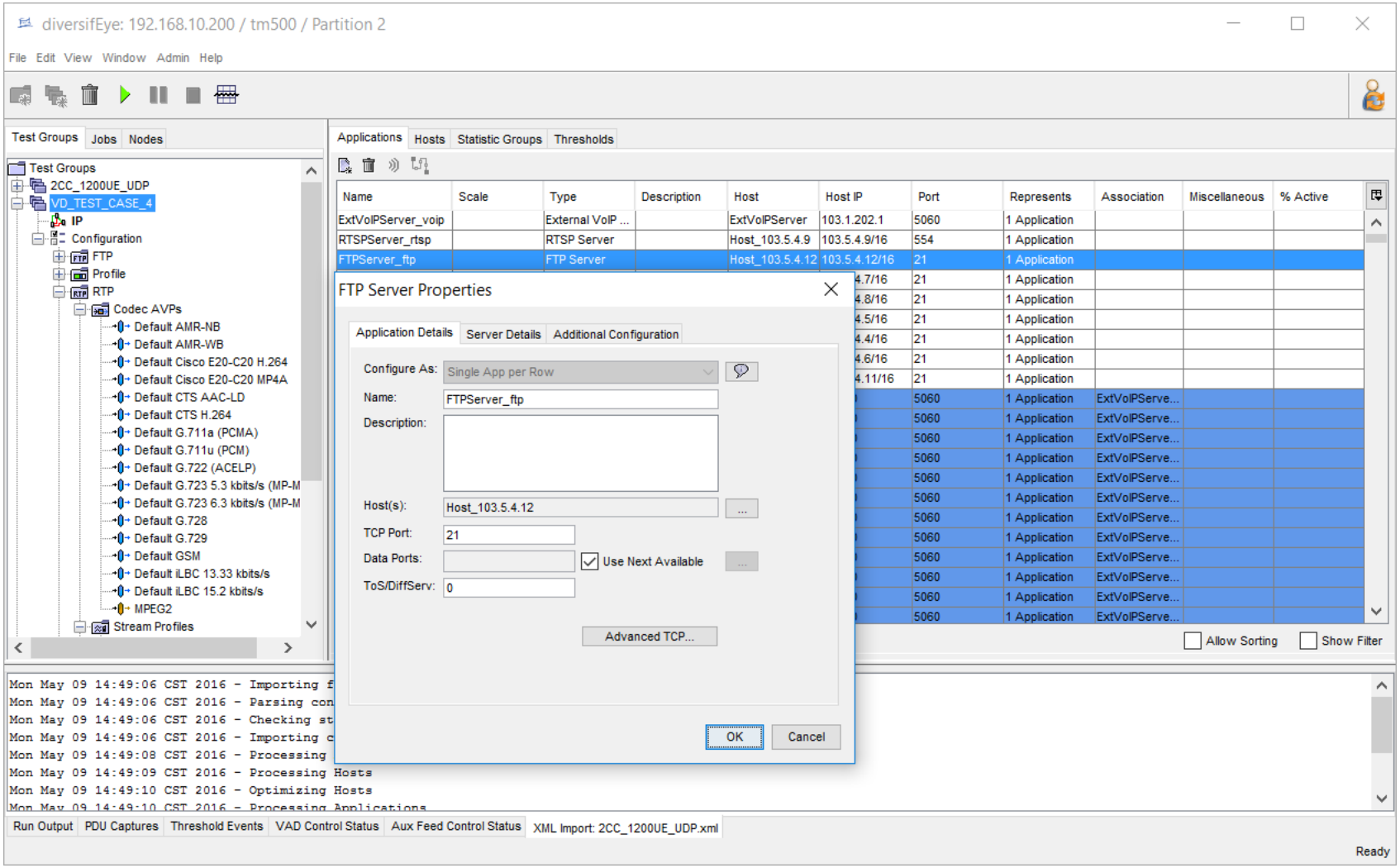
Applications – FTP

Add Profile



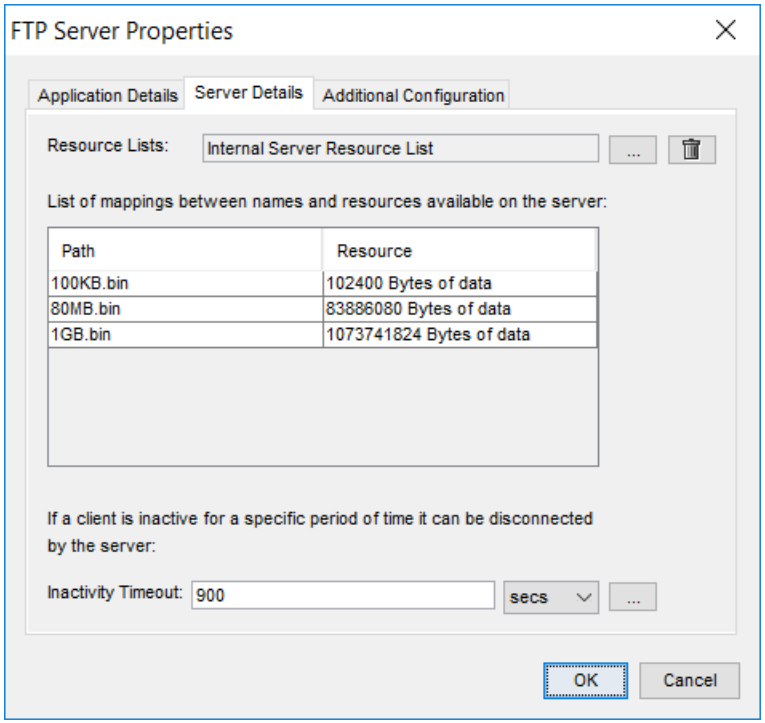
Applications – FTP

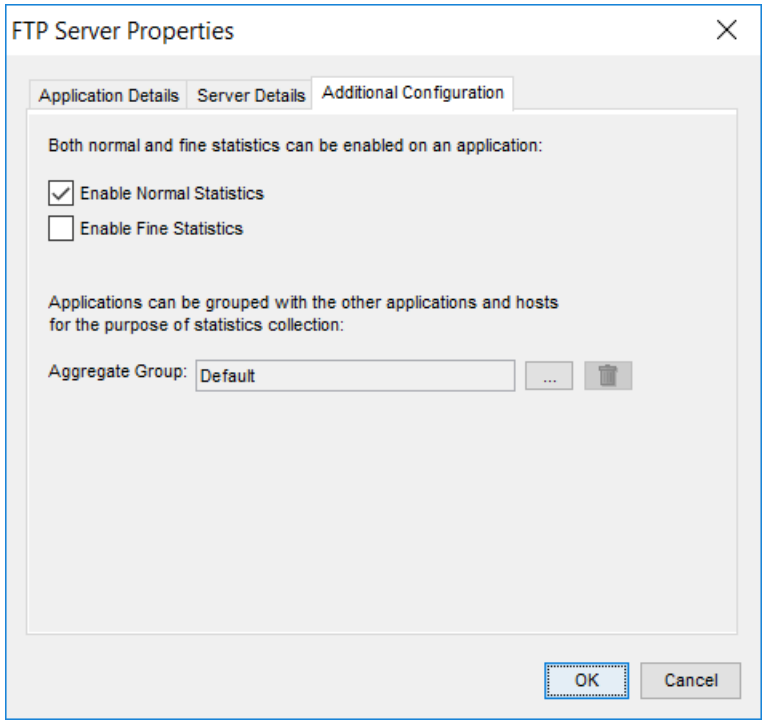
FTP Server Properties



Applications – FTP

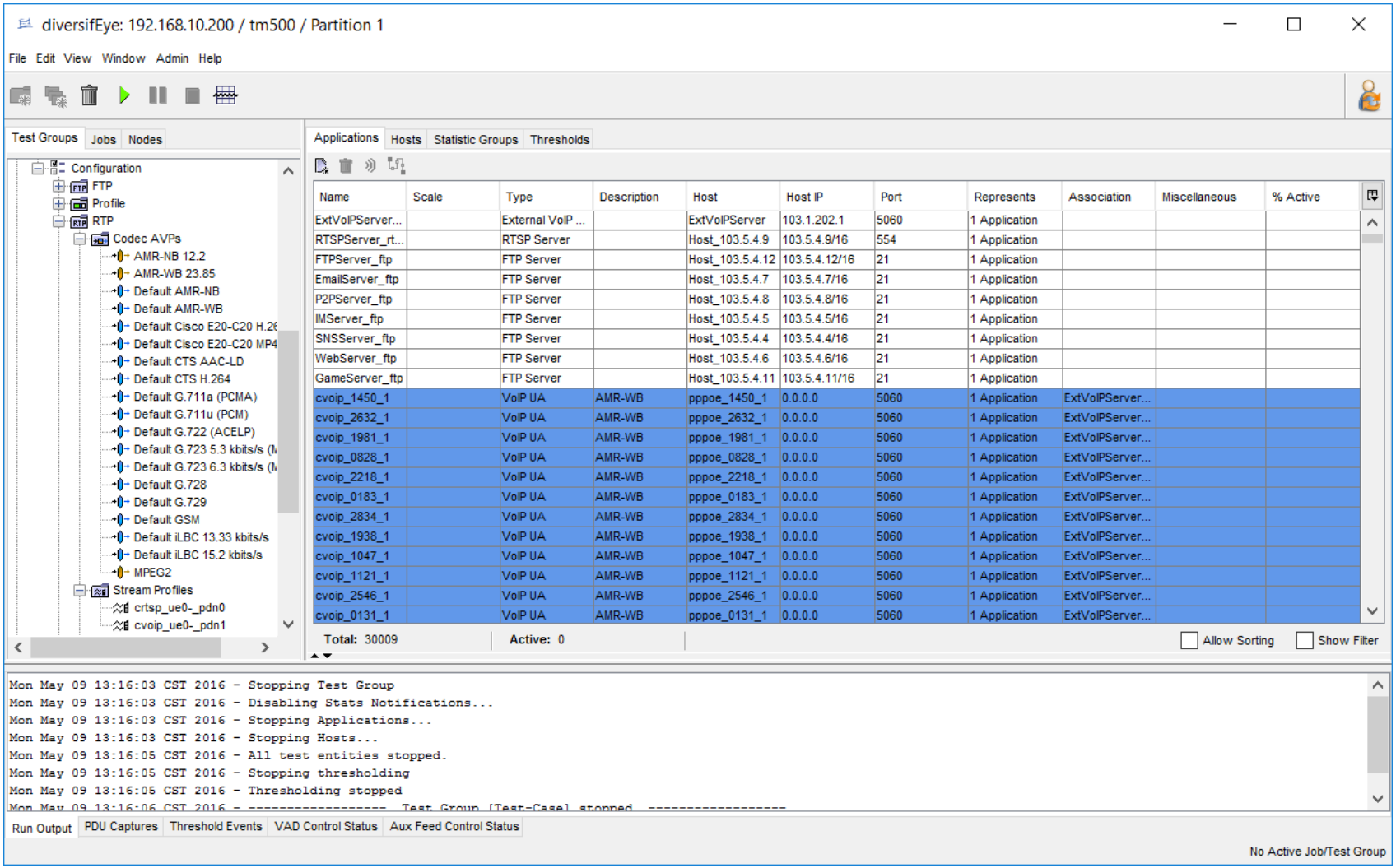
FTP Server Properties





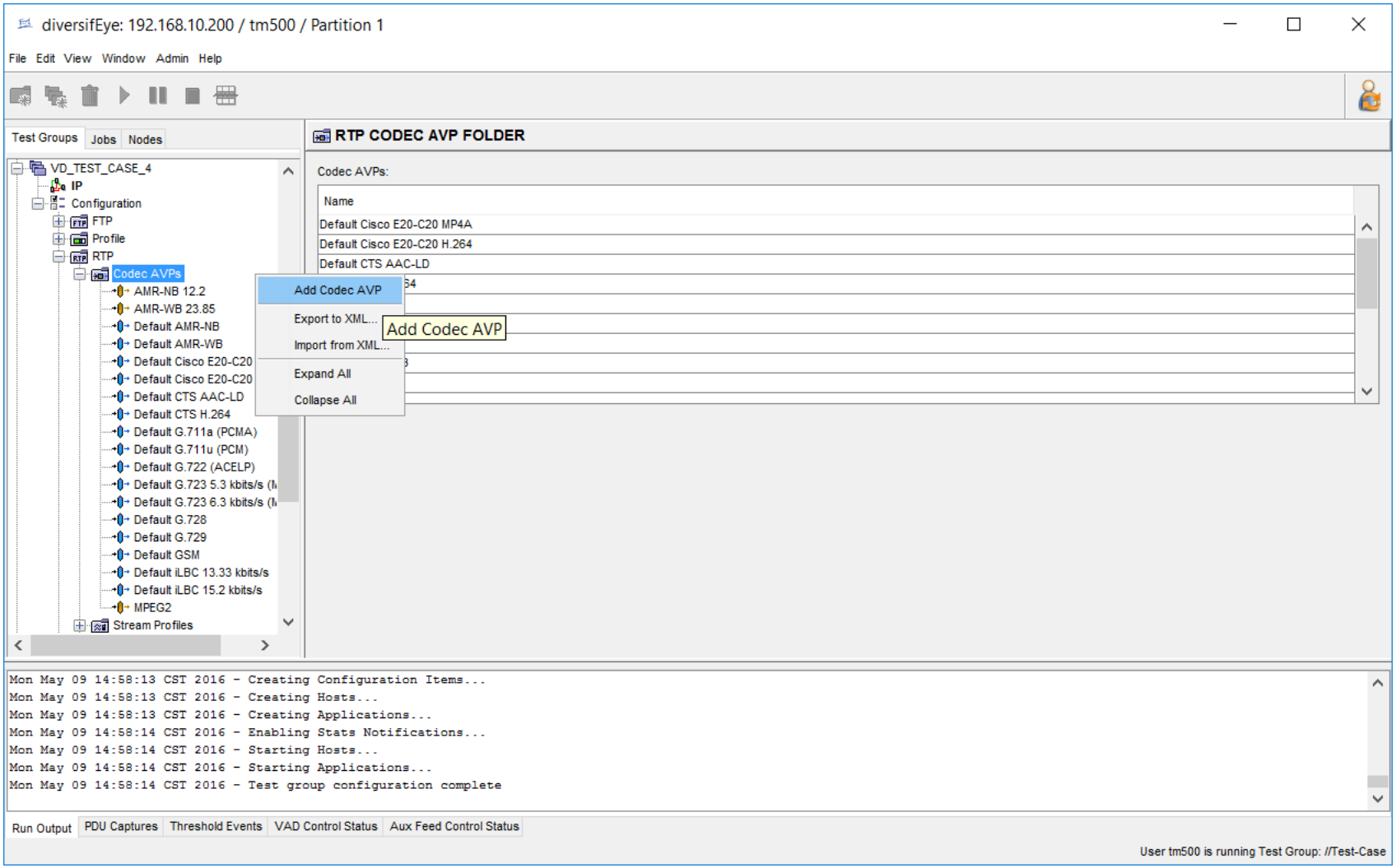
Applications – VoLTE

Overview



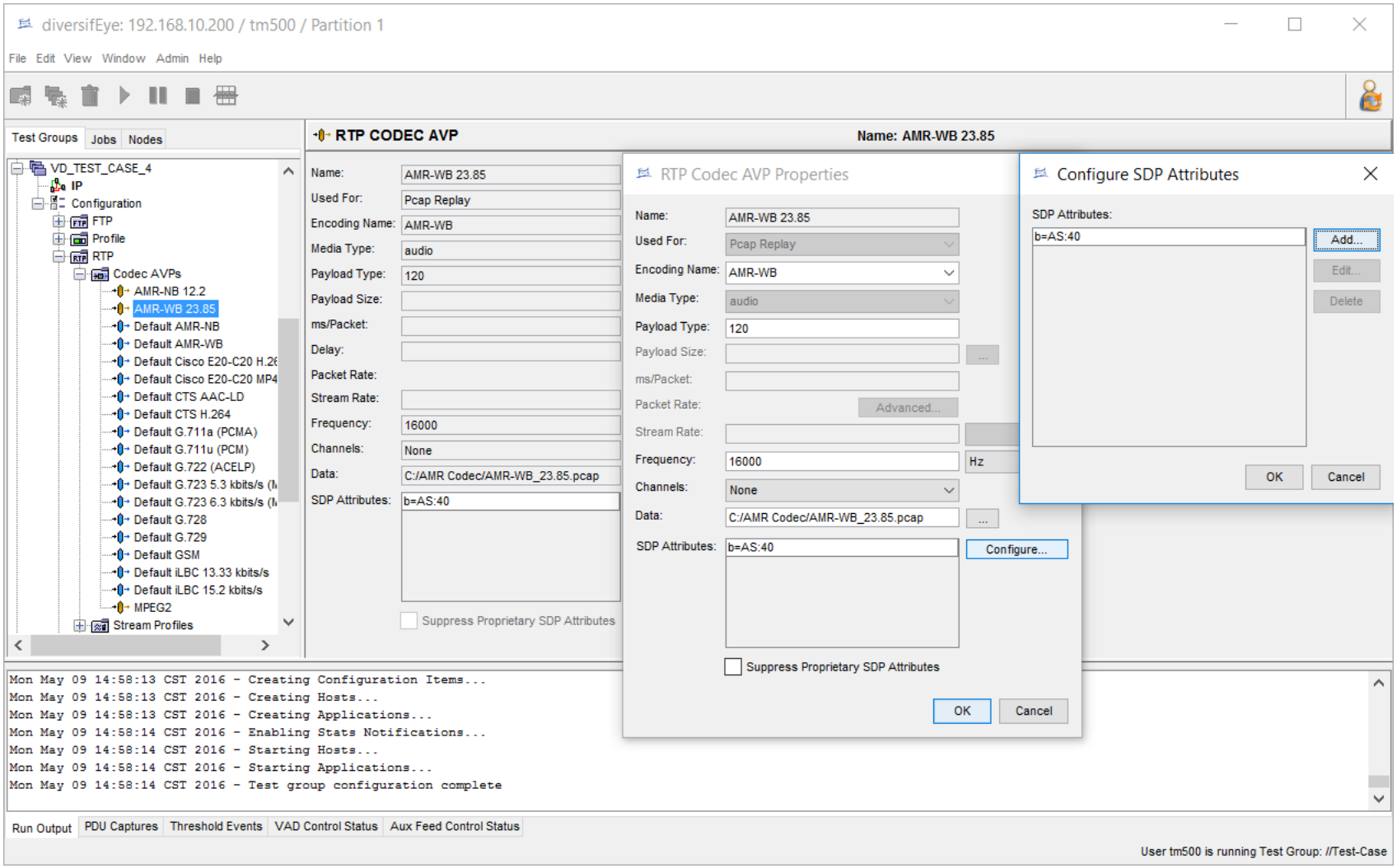
Applications – VoLTE

Add Codec AVP



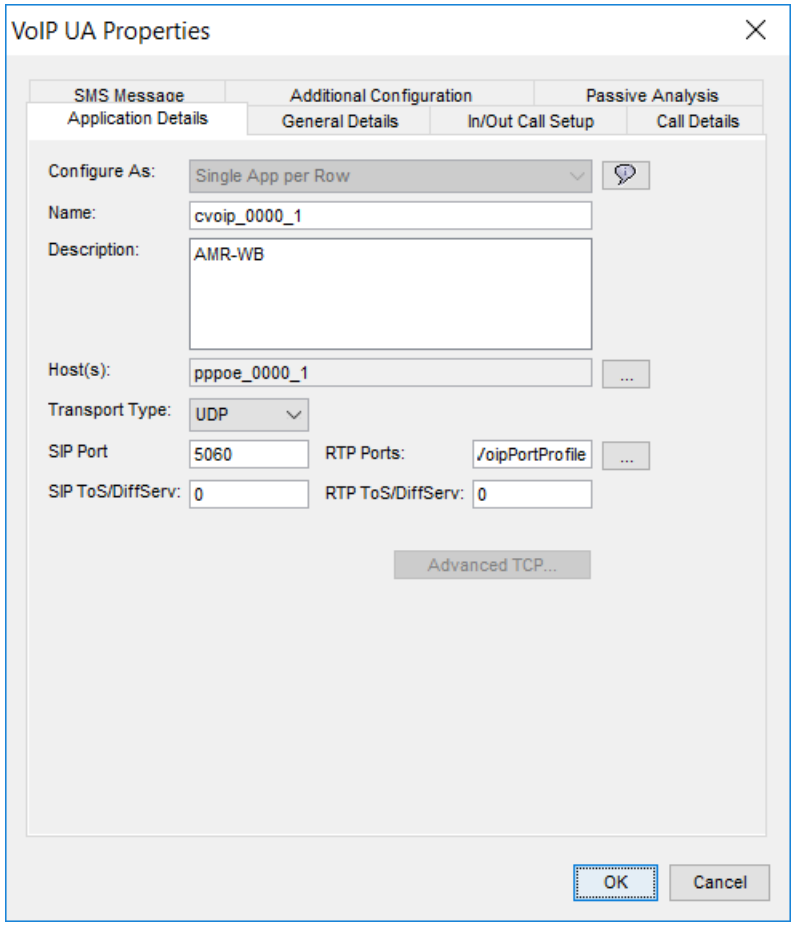
Applications – VoLTE

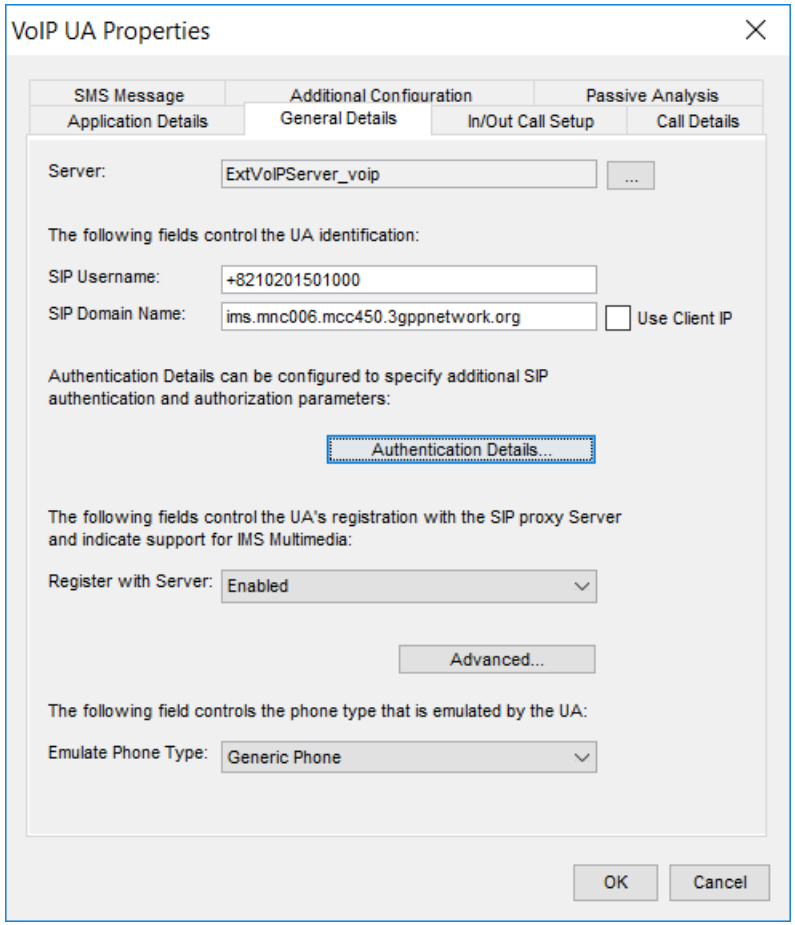
Add Codec AVP



Applications – VoLTE

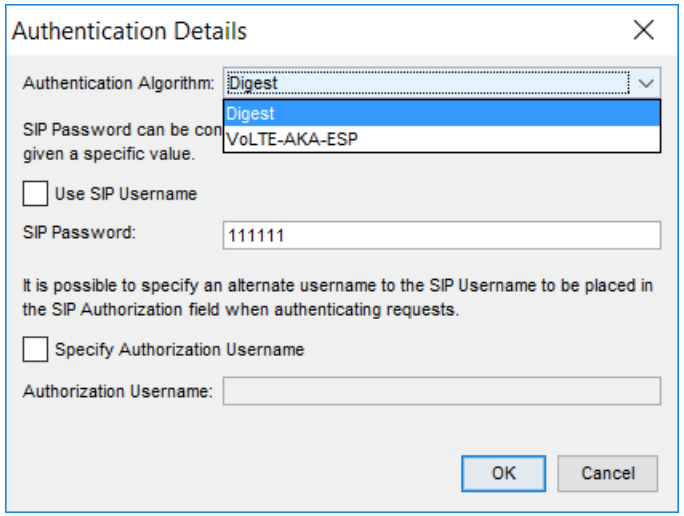
VoIP UA Properties





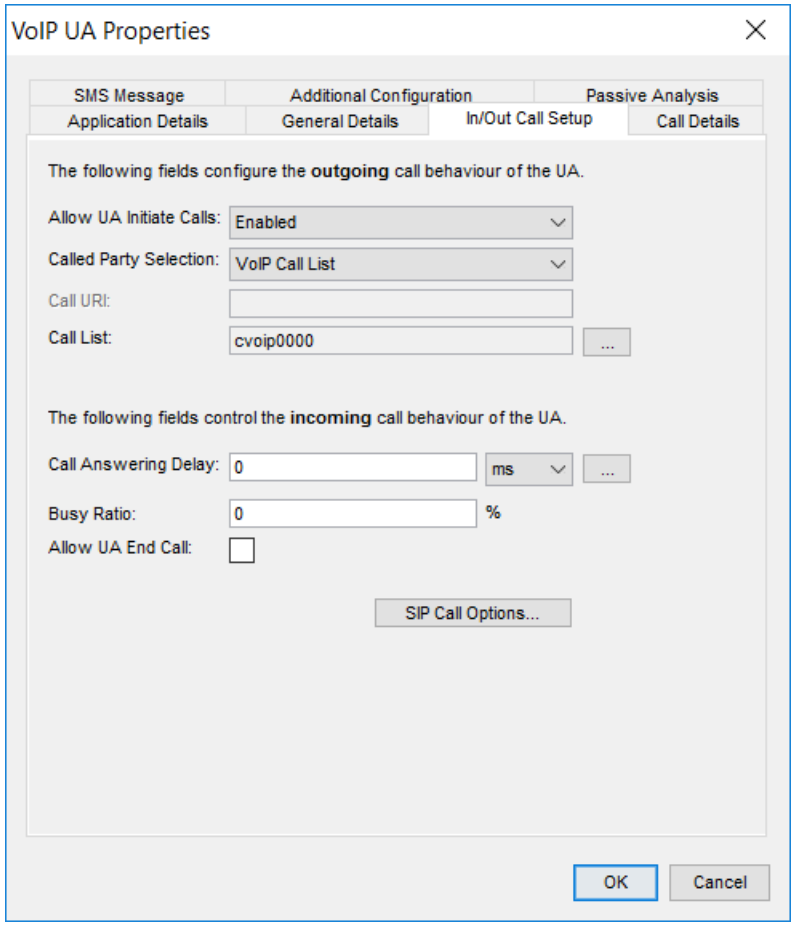
Applications – VoLTE

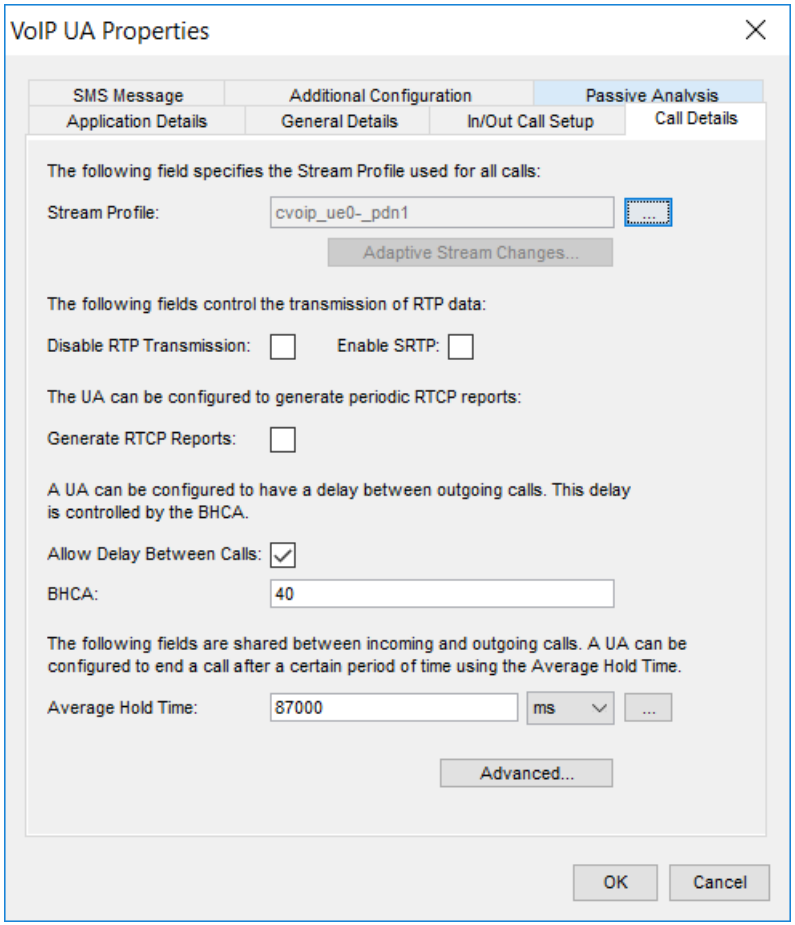
Authentication Details



Applications – VoLTE

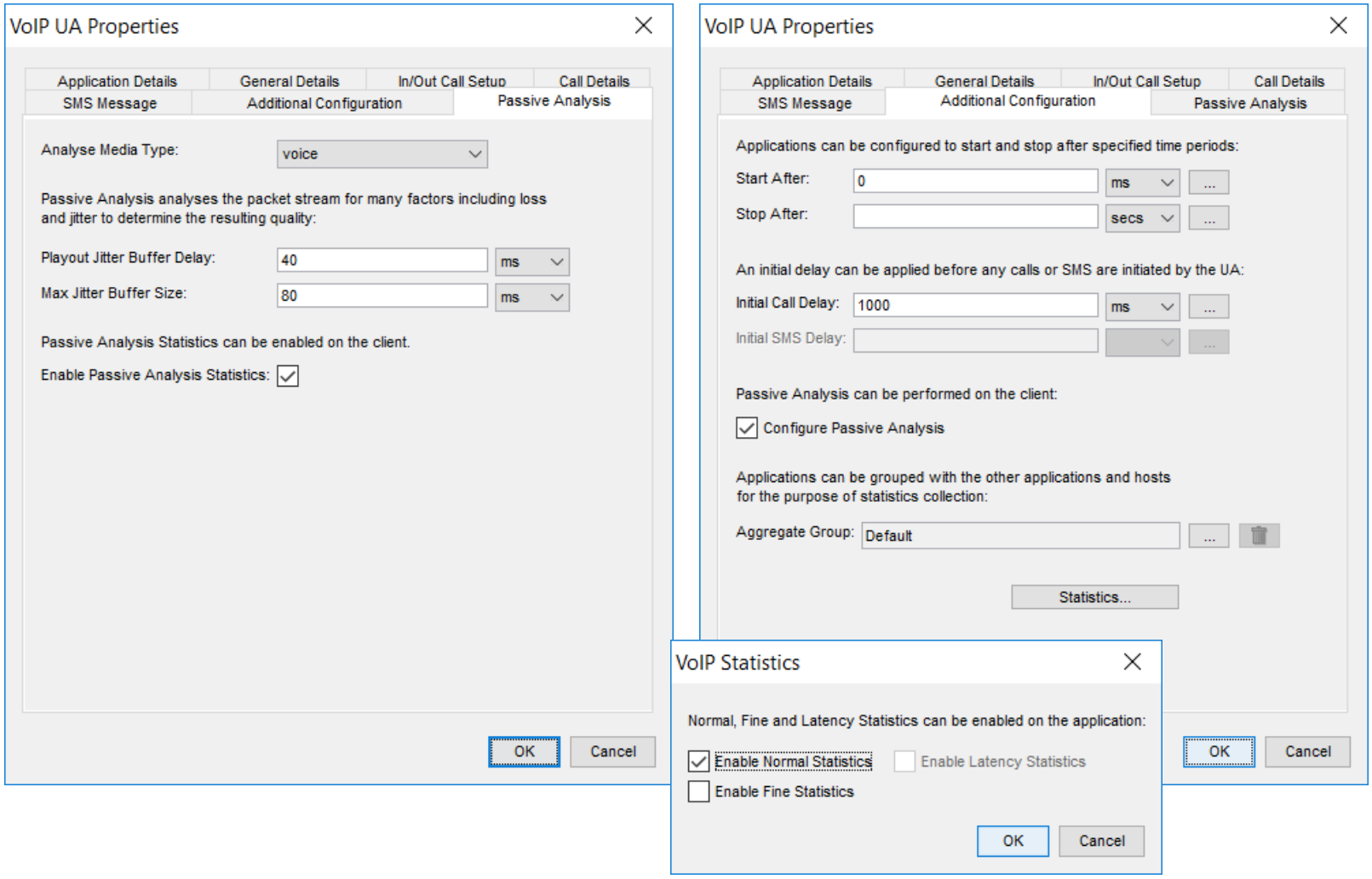
VoIP UA Properties





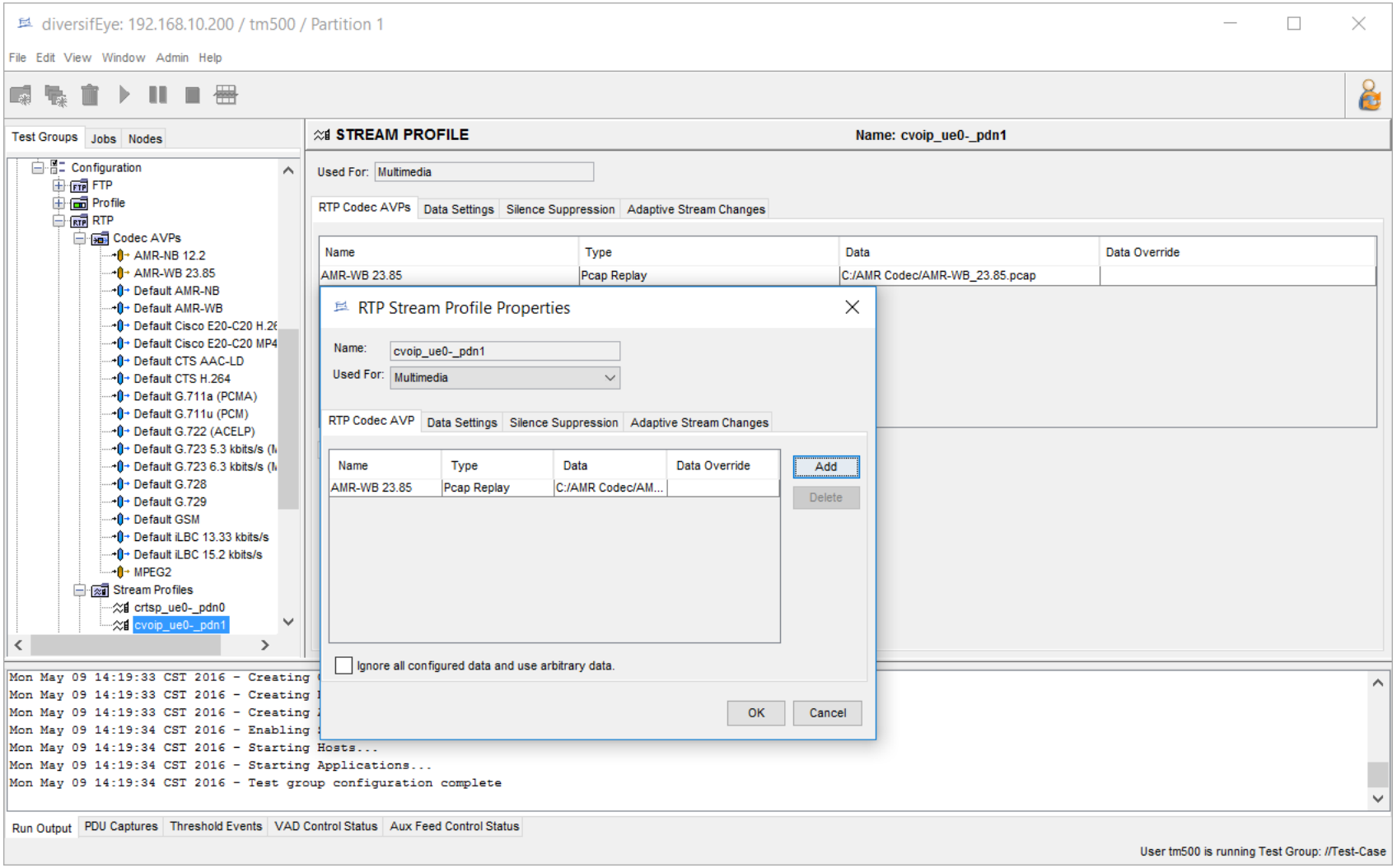
Applications – VoLTE

VoIP UA Properties



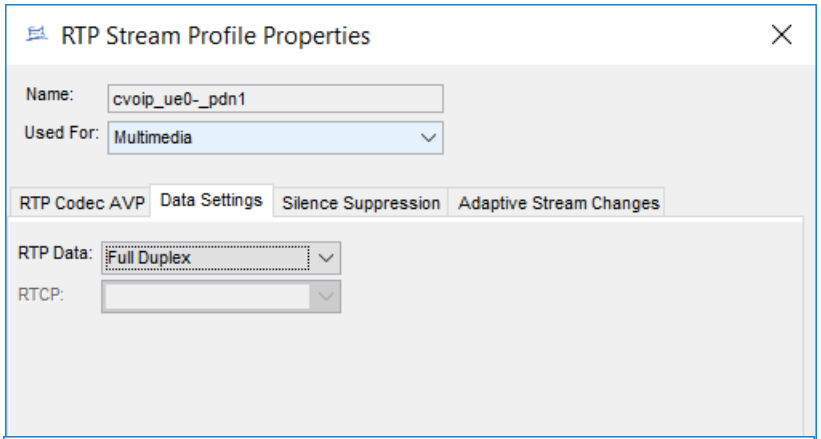
Applications – VoLTE

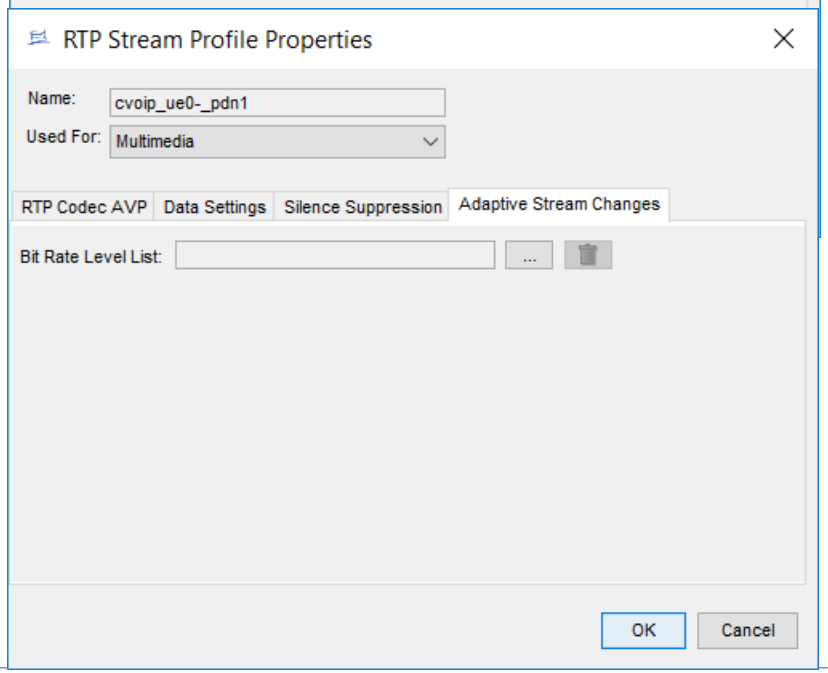
RTP Stream Profiles

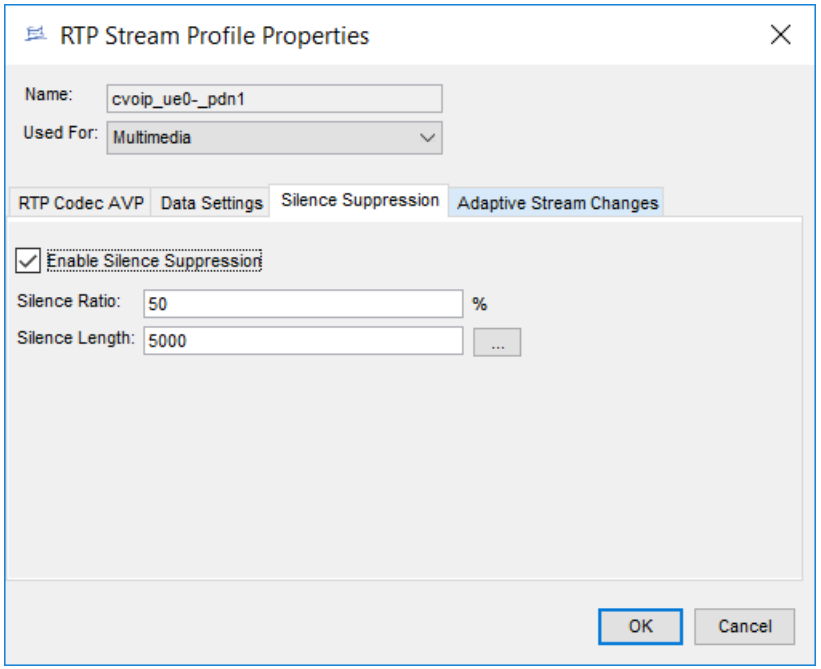


Applications – VoLTE

RTP Stream Profile Properties

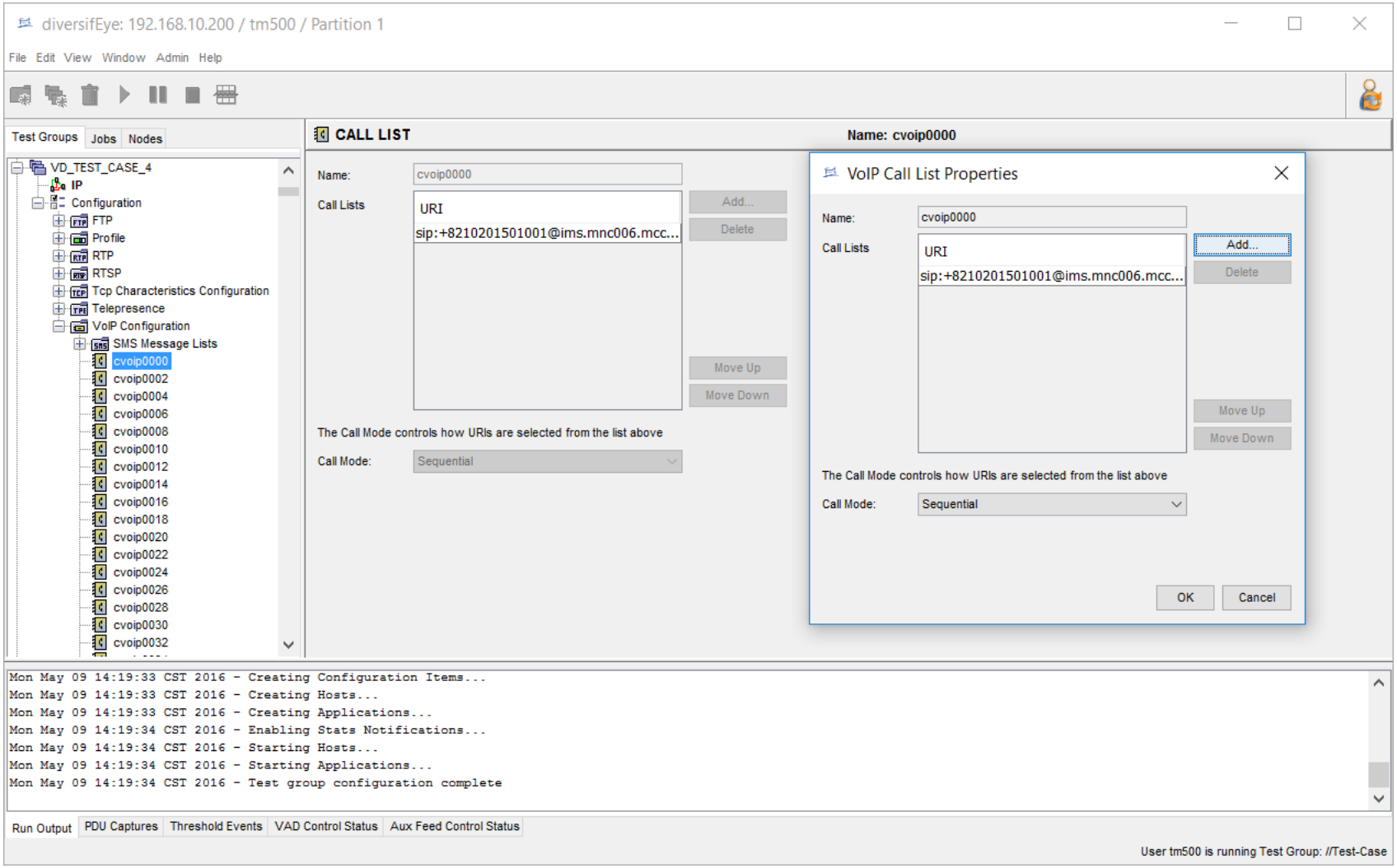






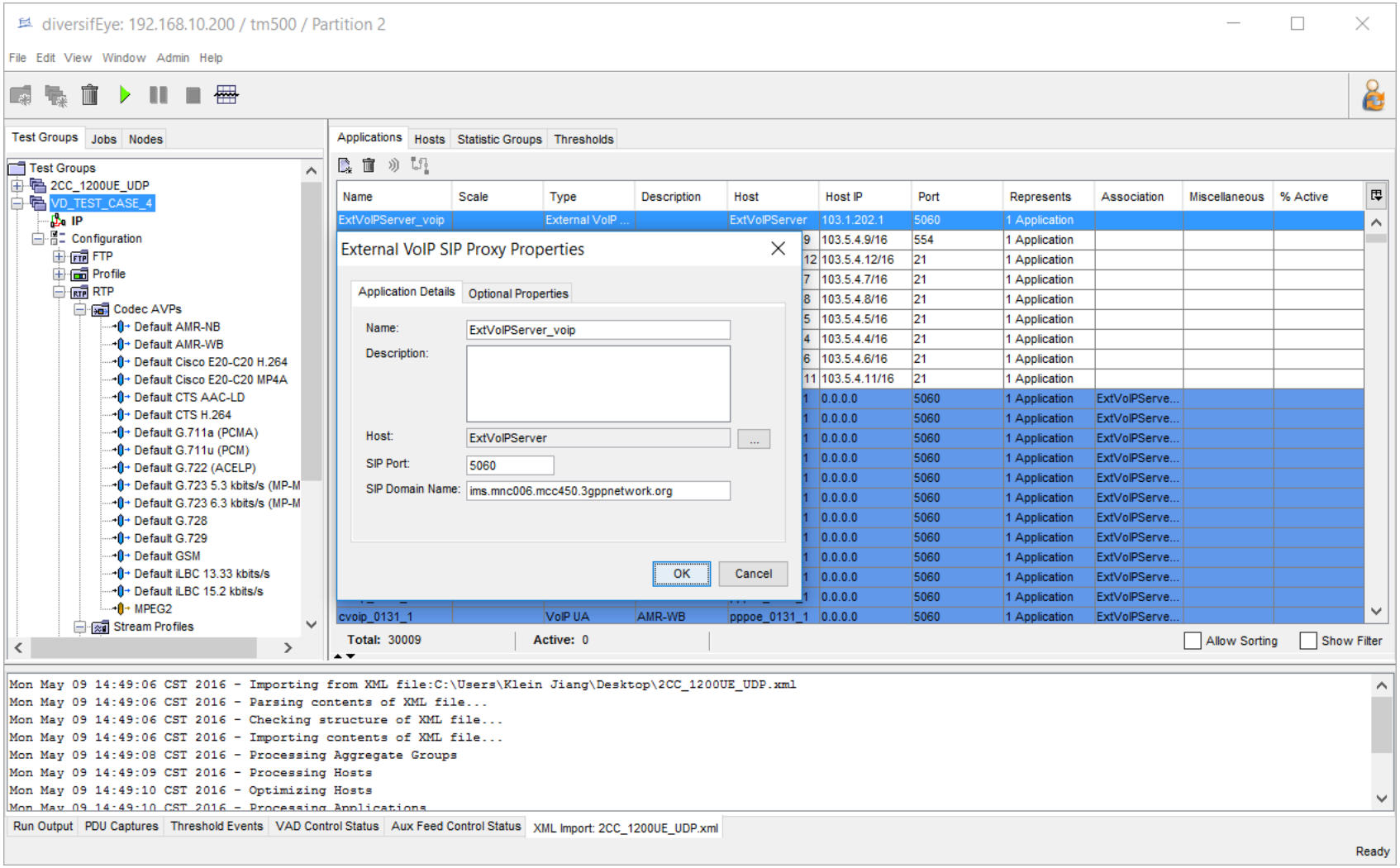
Applications – VoLTE

VoIP Call List Properties



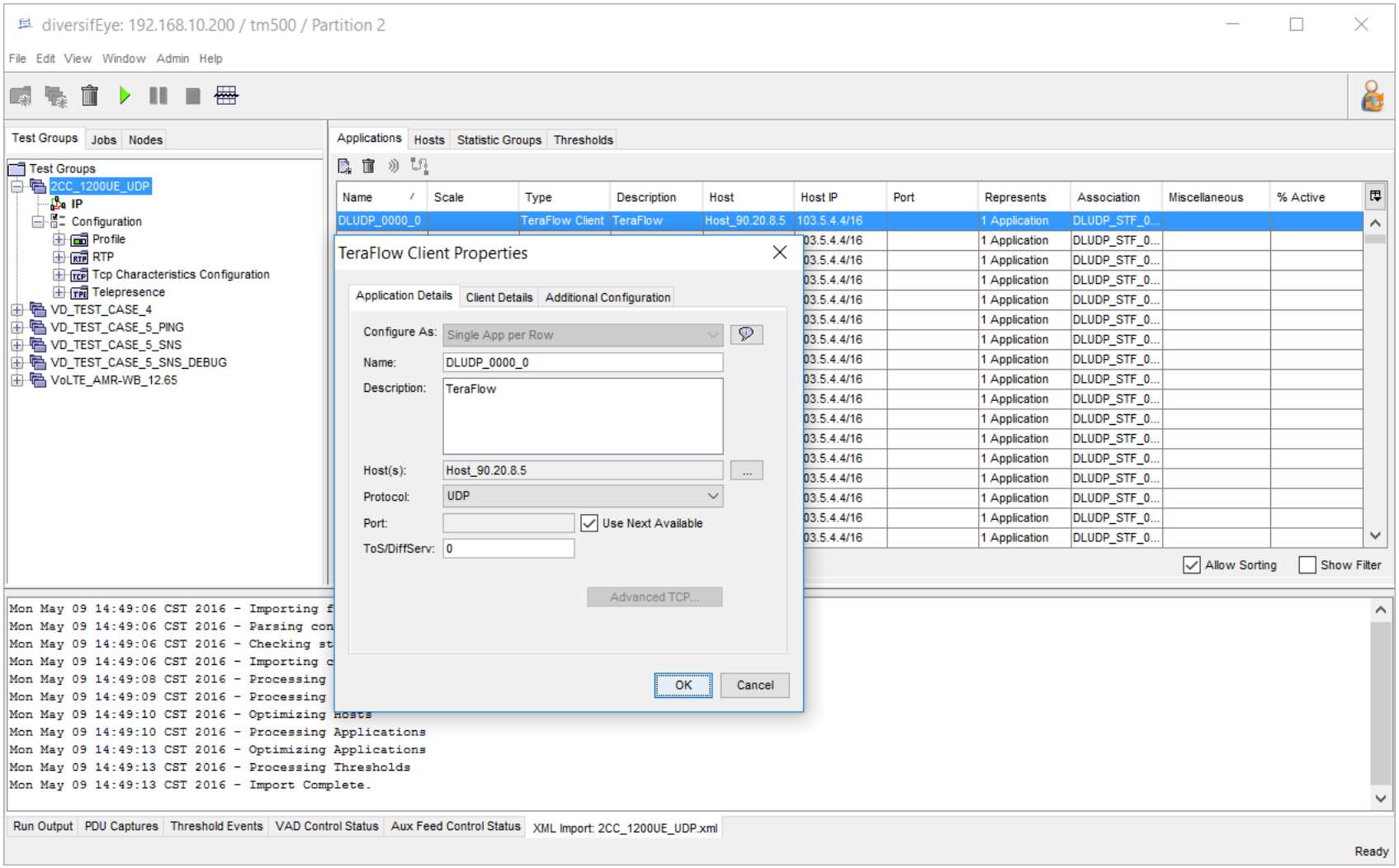
Applications – VoLTE

External VoIP Proxy Properties



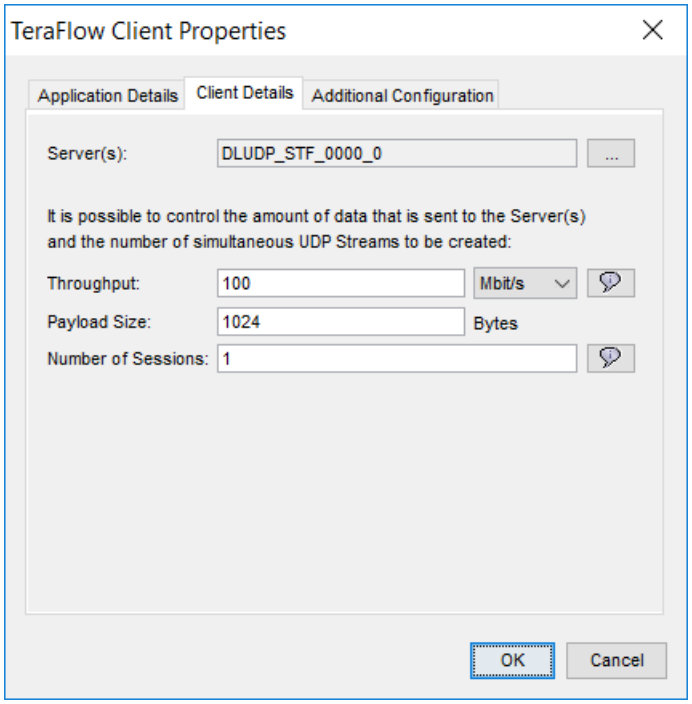
Applications – DL UDP

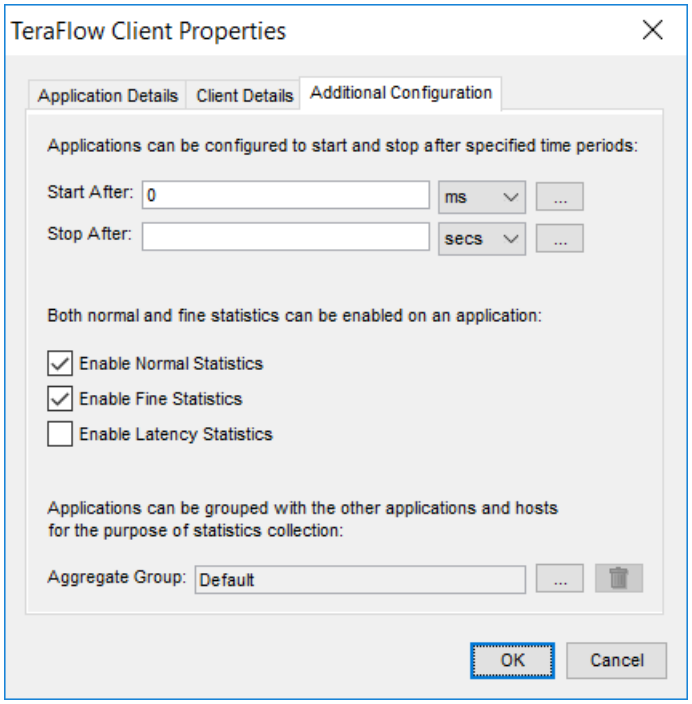
TeraFlow Client Properties



Applications – DL UDP

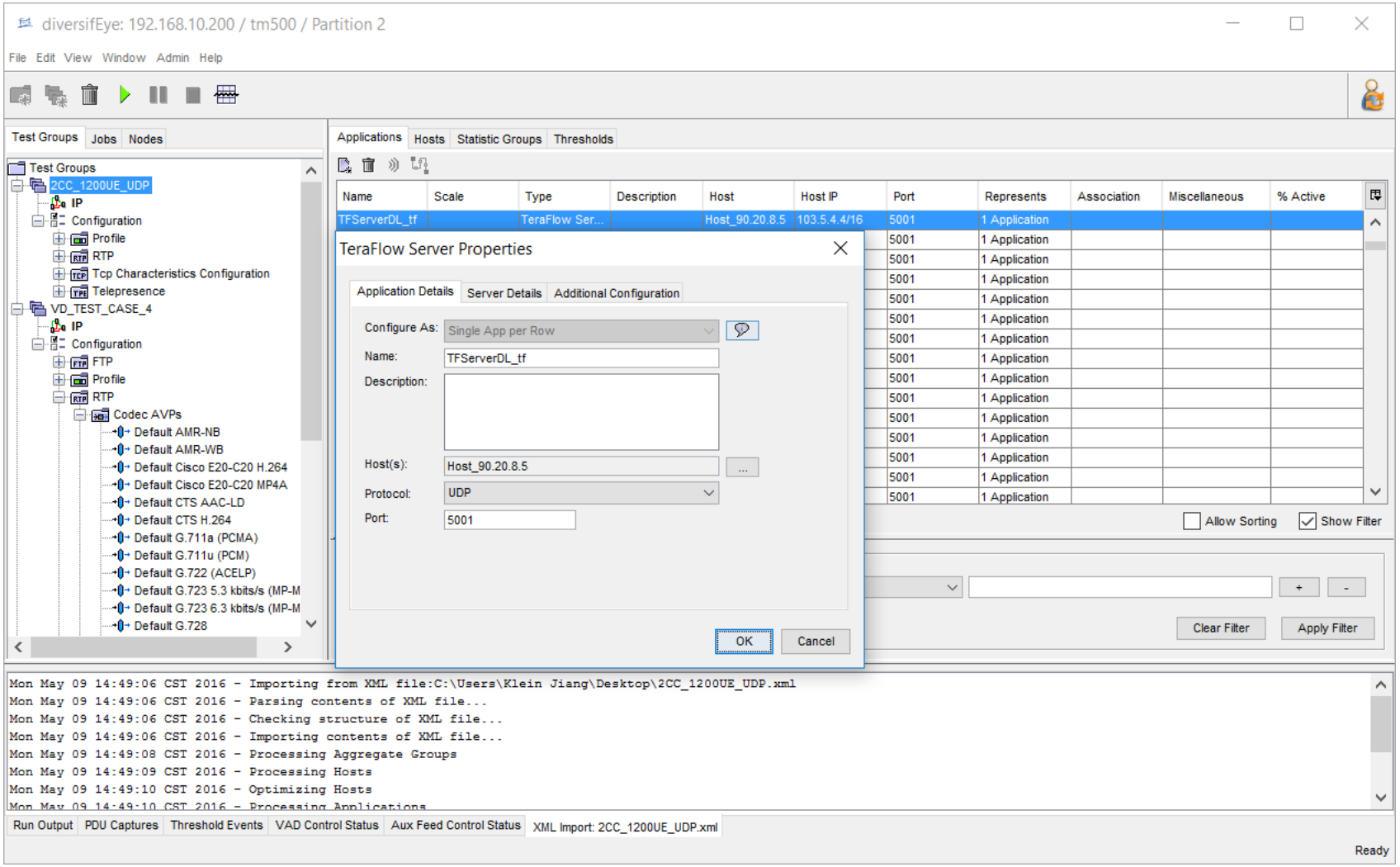
TeraFlow Client Properties





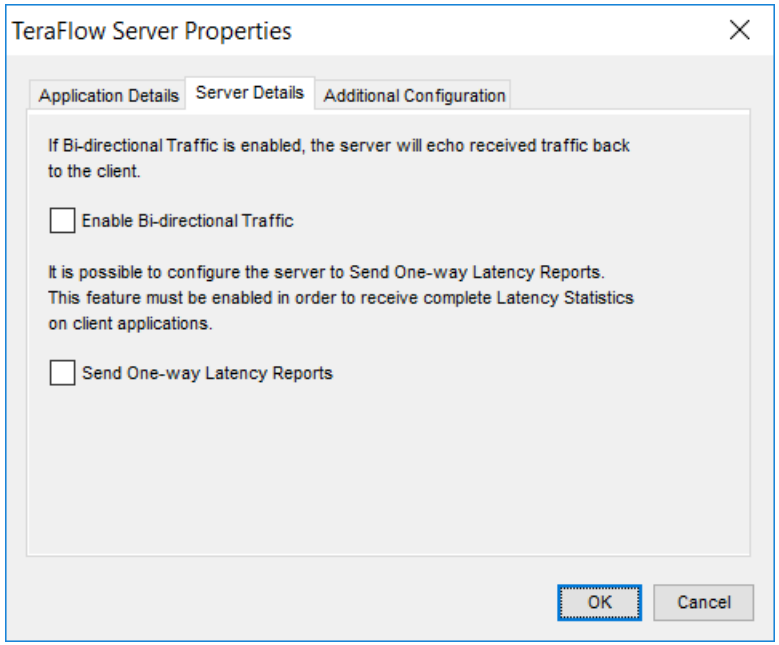
Applications – DL UDP

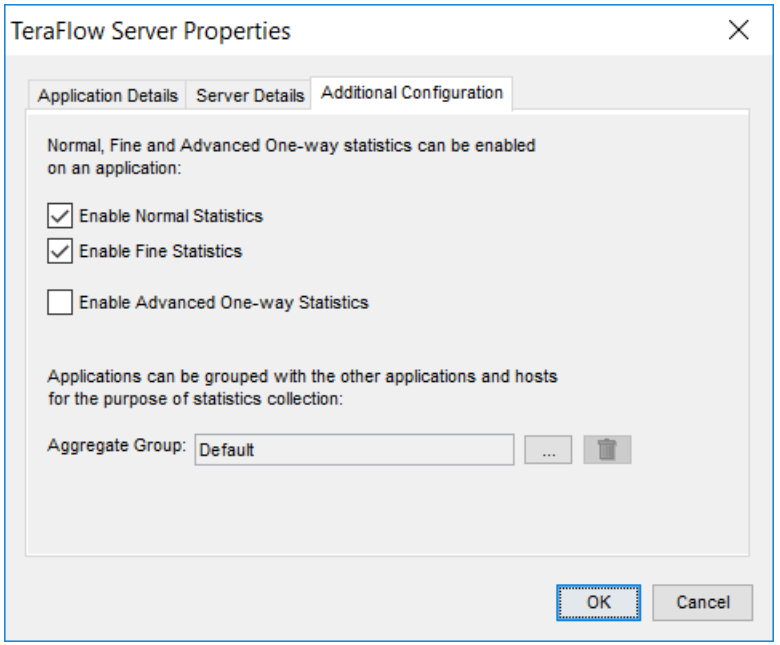
TeraFlow Server Properties



Applications – DL UDP

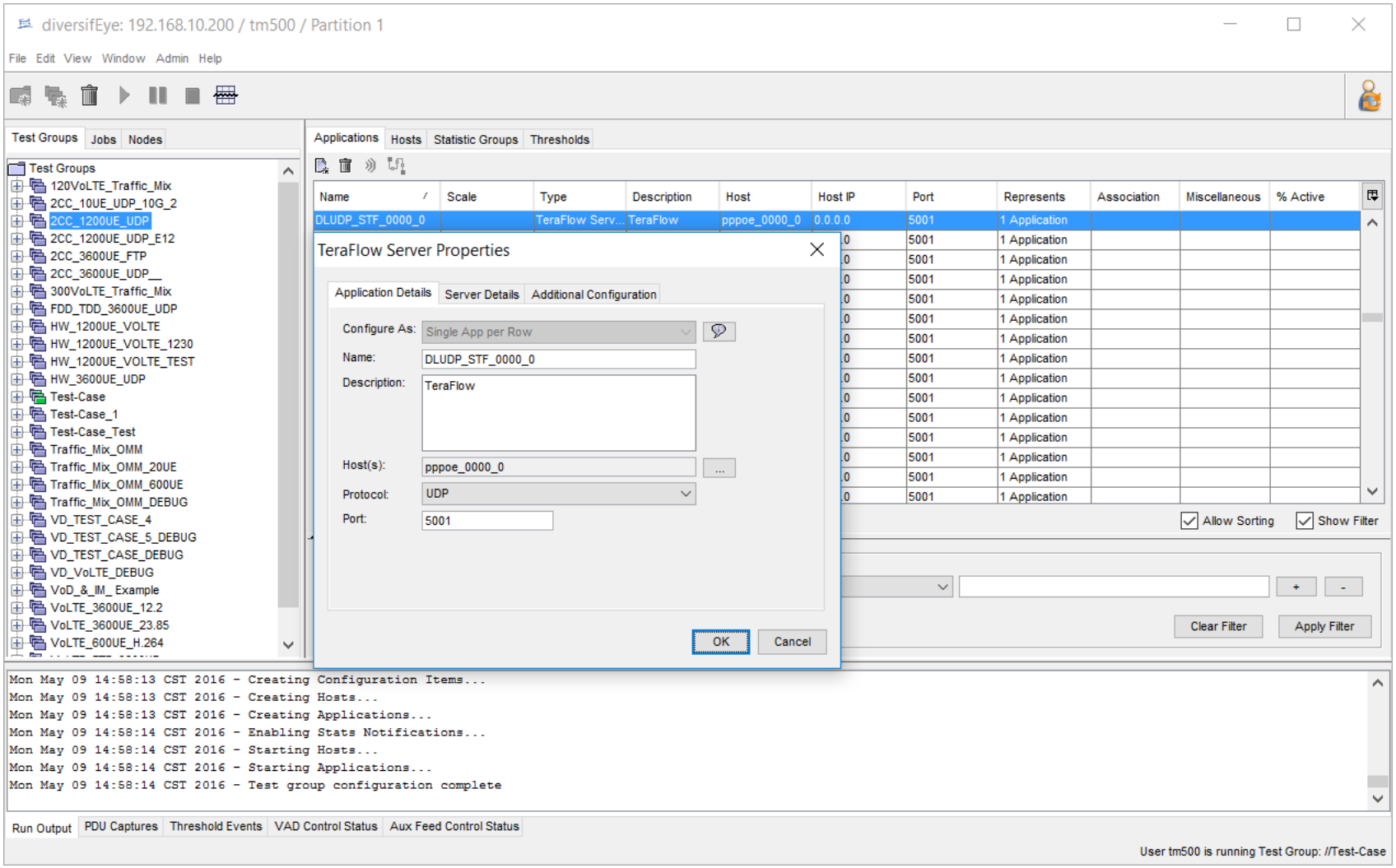
TeraFlow Server Properties





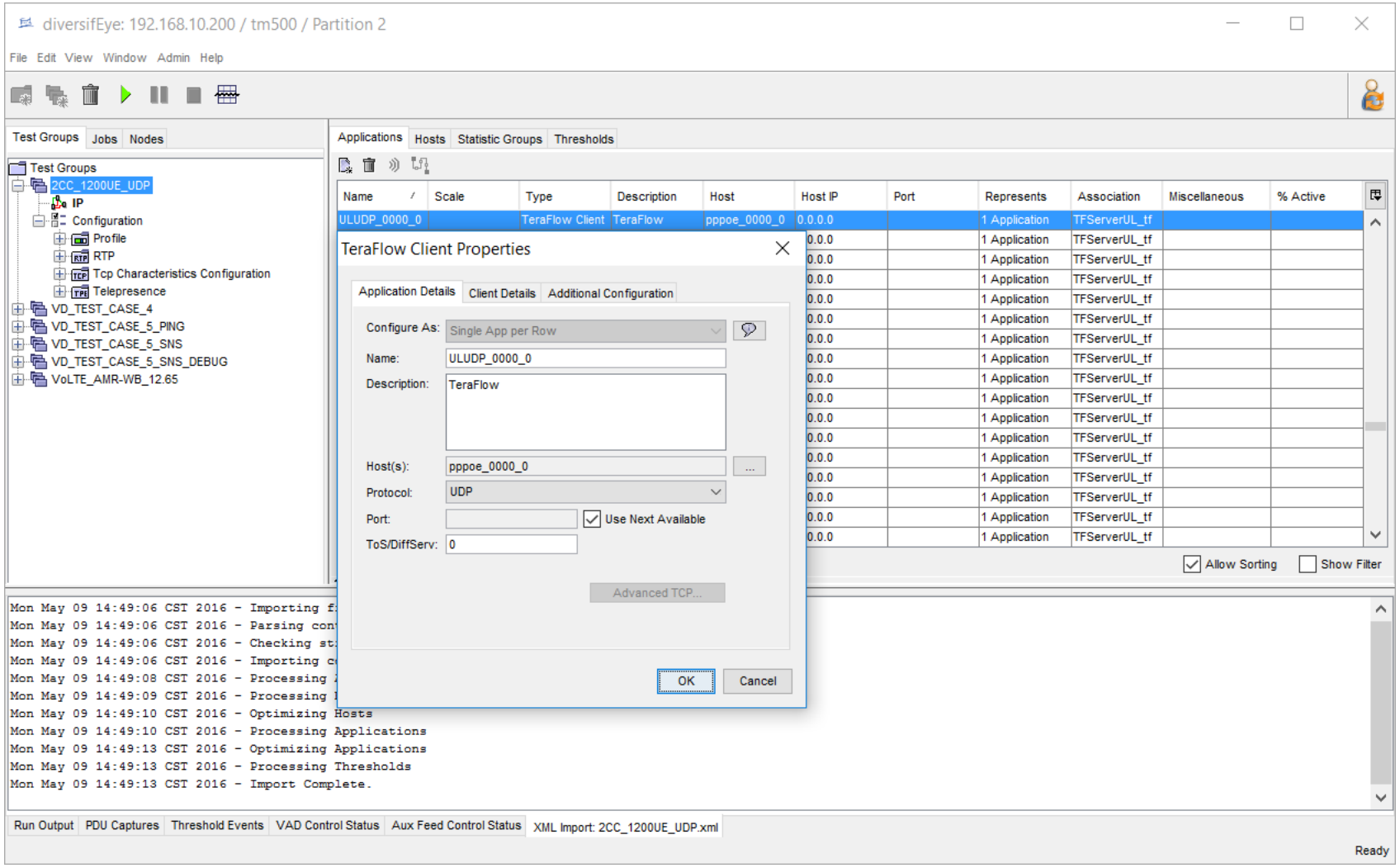
Applications – DL UDP

TeraFlow Server Properties



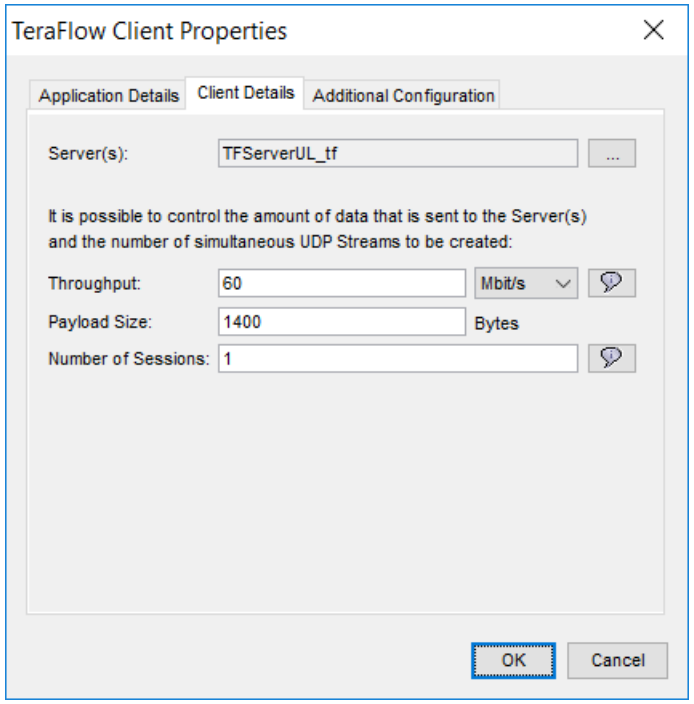
Applications – UL UDP

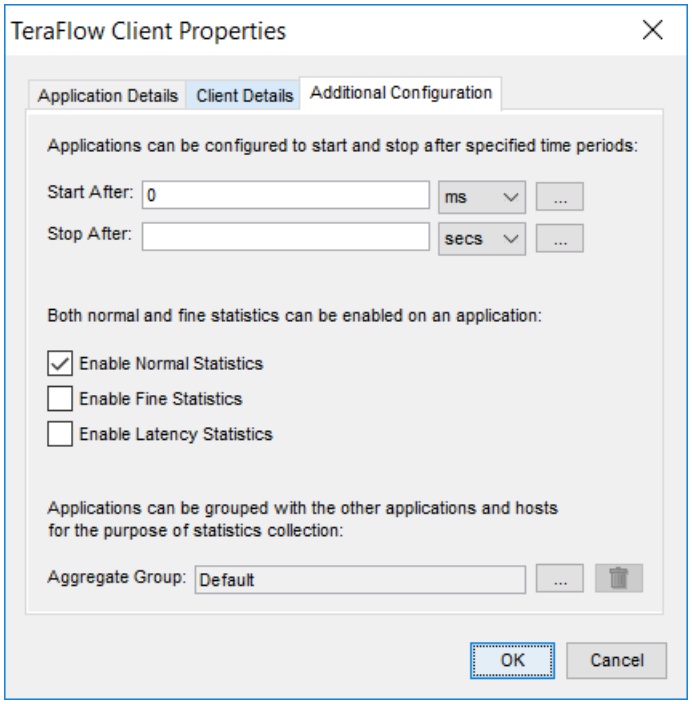
TeraFlow Client Properties



Applications – UL UDP

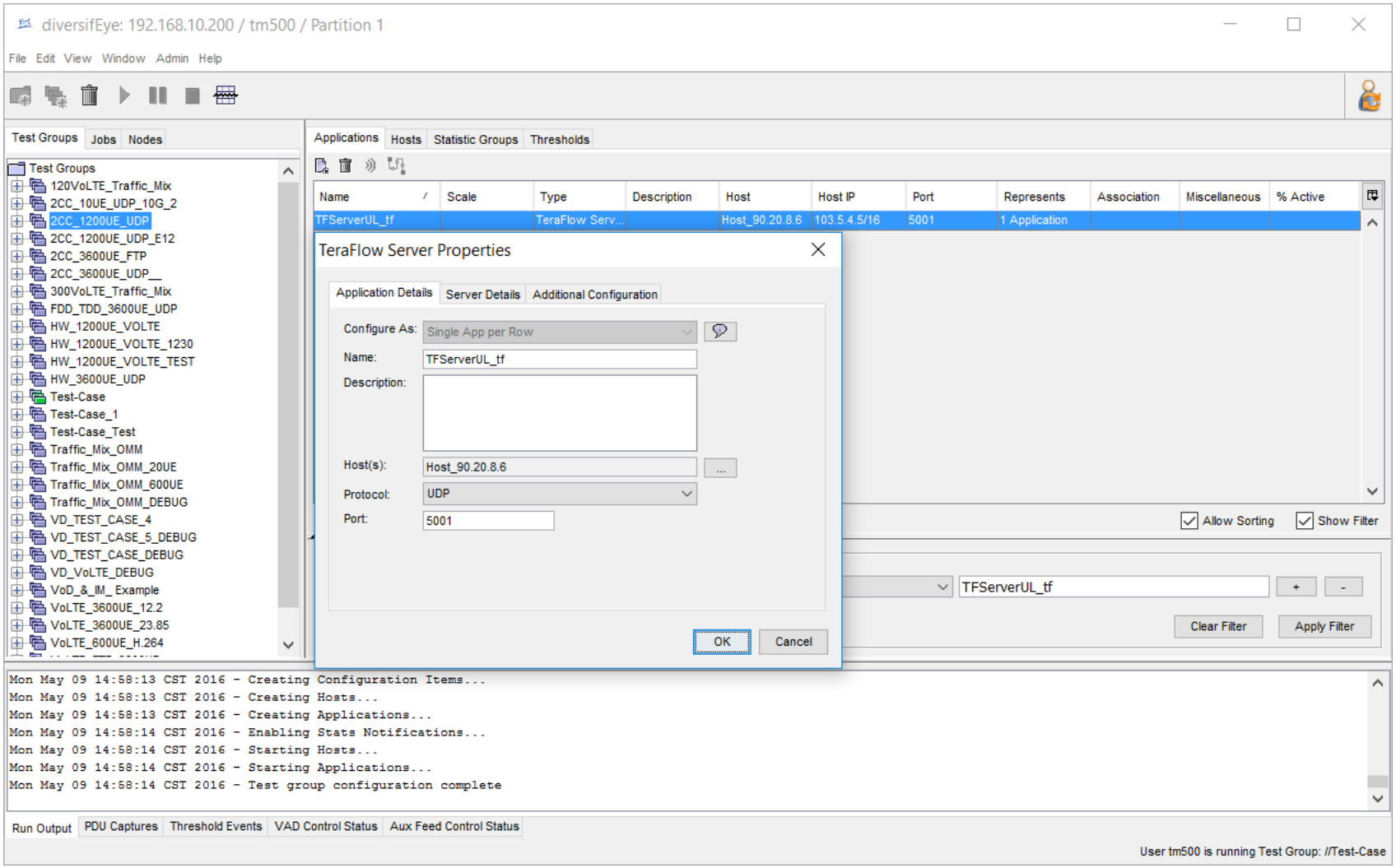
TeraFlow Client Properties





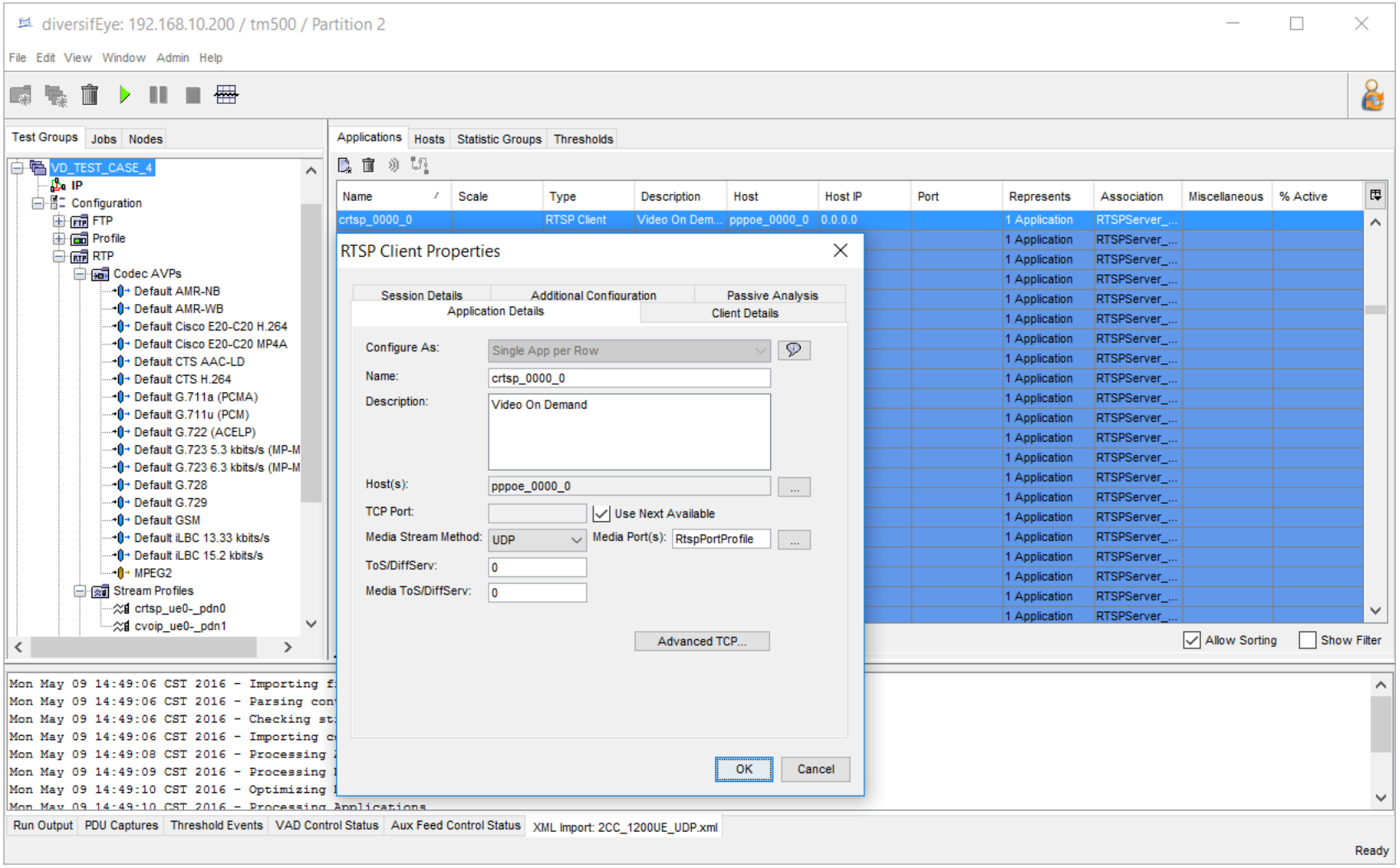
Applications – UL UDP

TeraFlow Server Properties



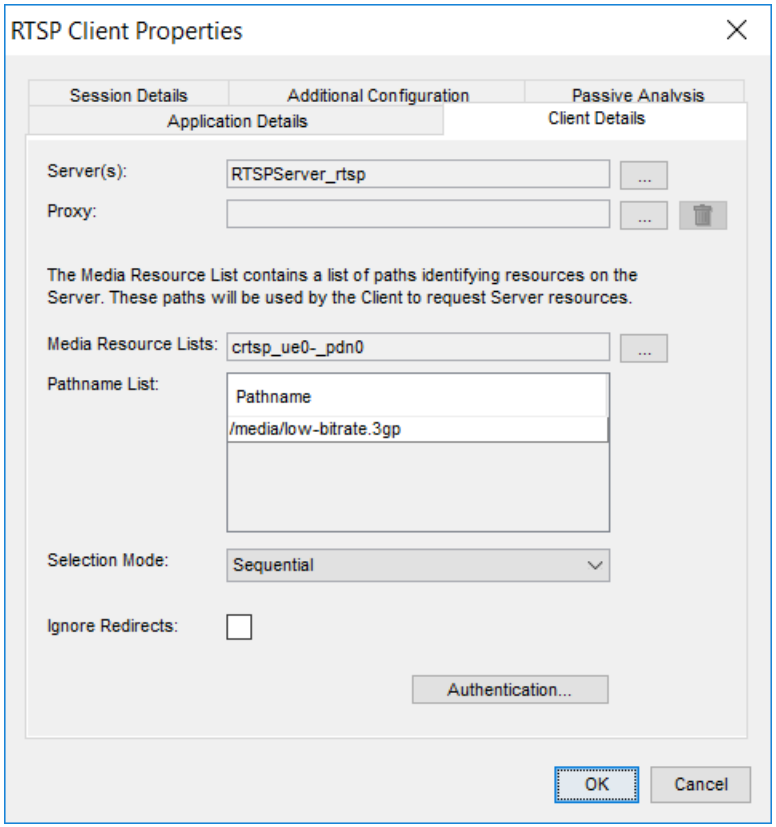
Applications – RTSP

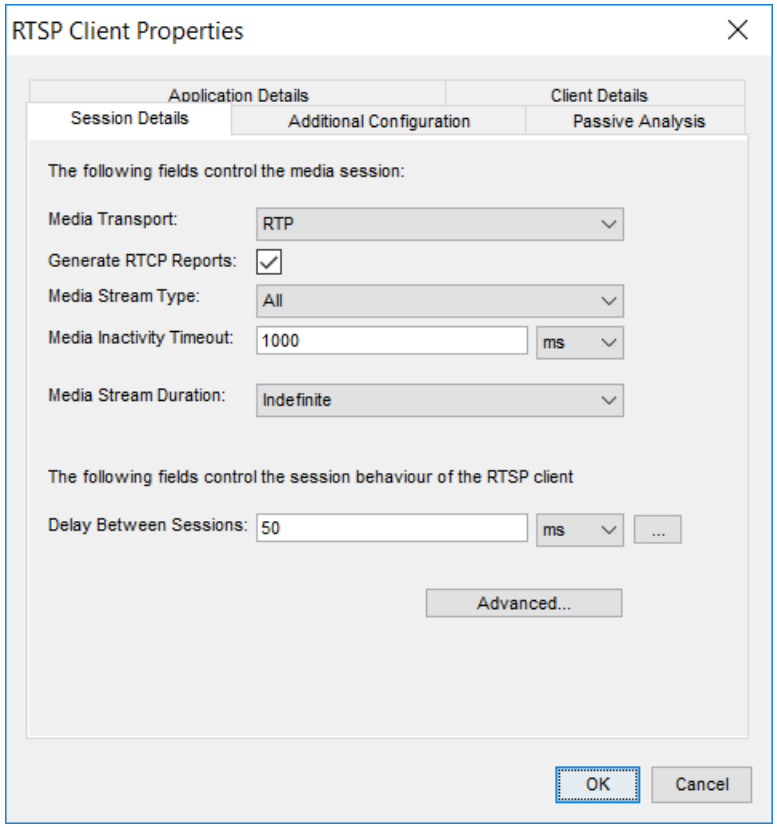
RTSP Client Properties



Applications – RTSP

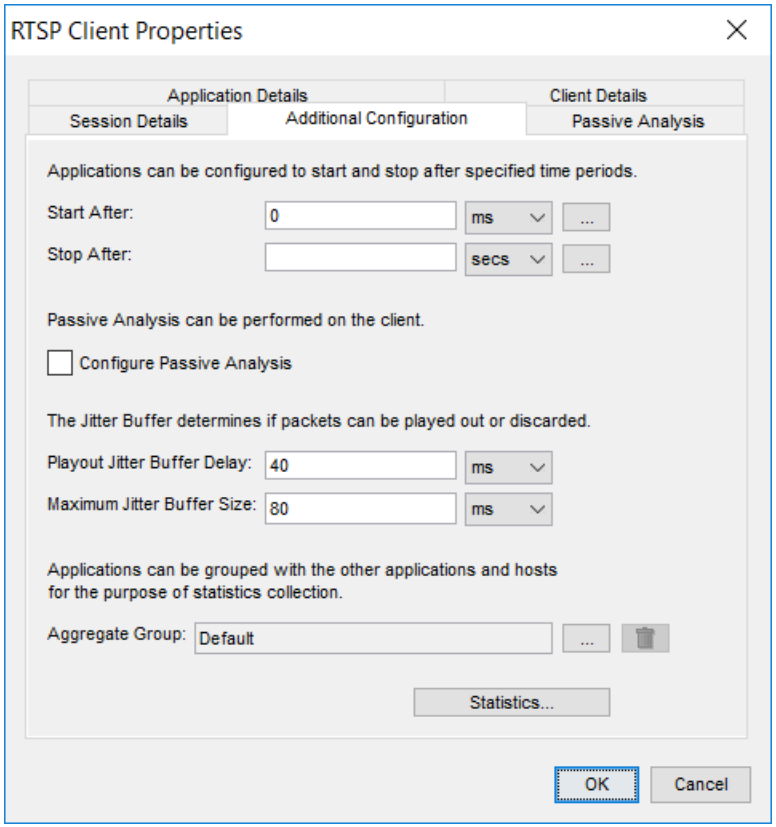
RTSP Client Properties

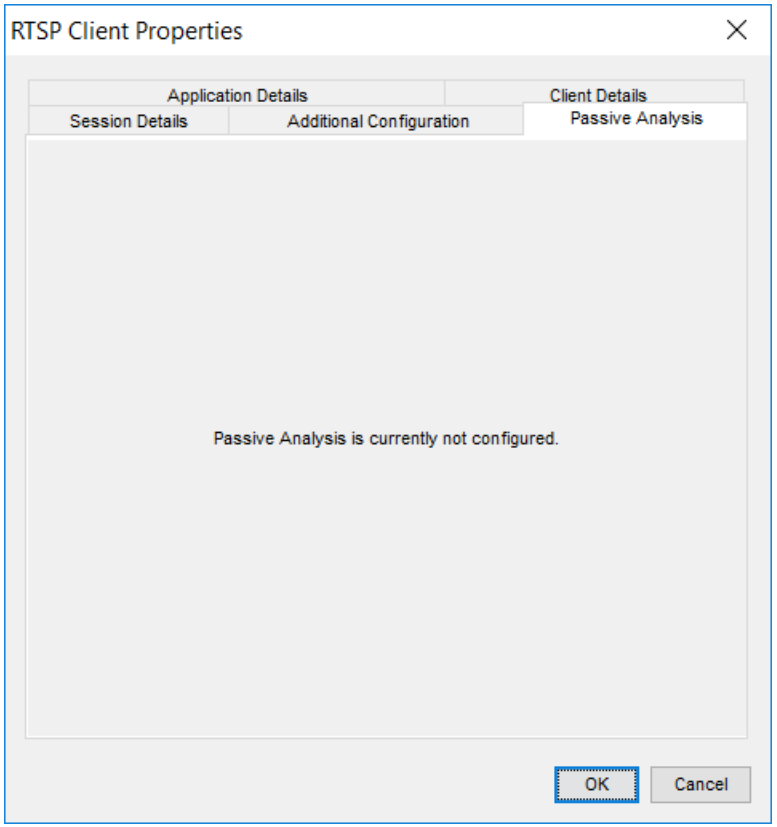




Applications – RTSP

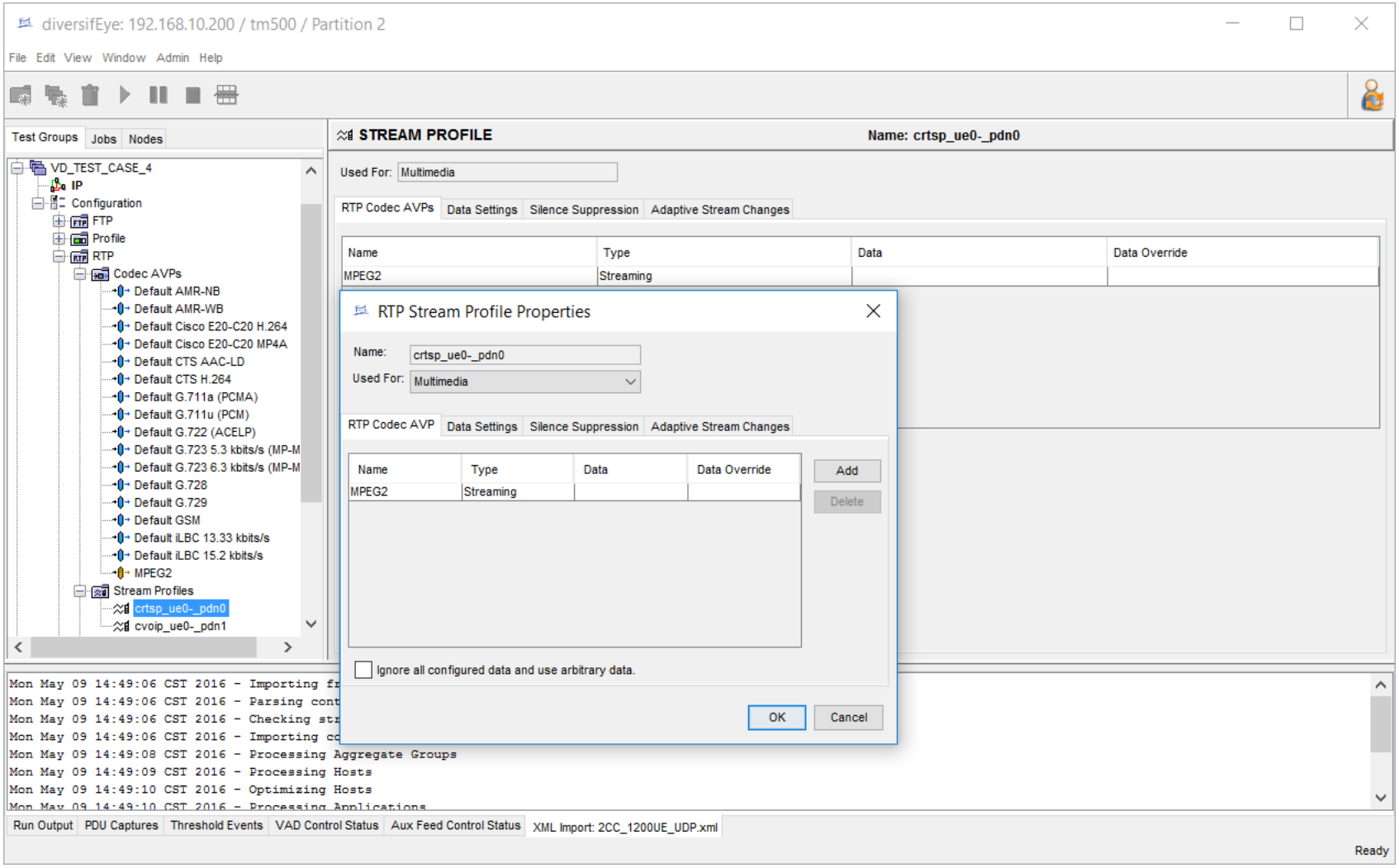
RTSP Client Properties





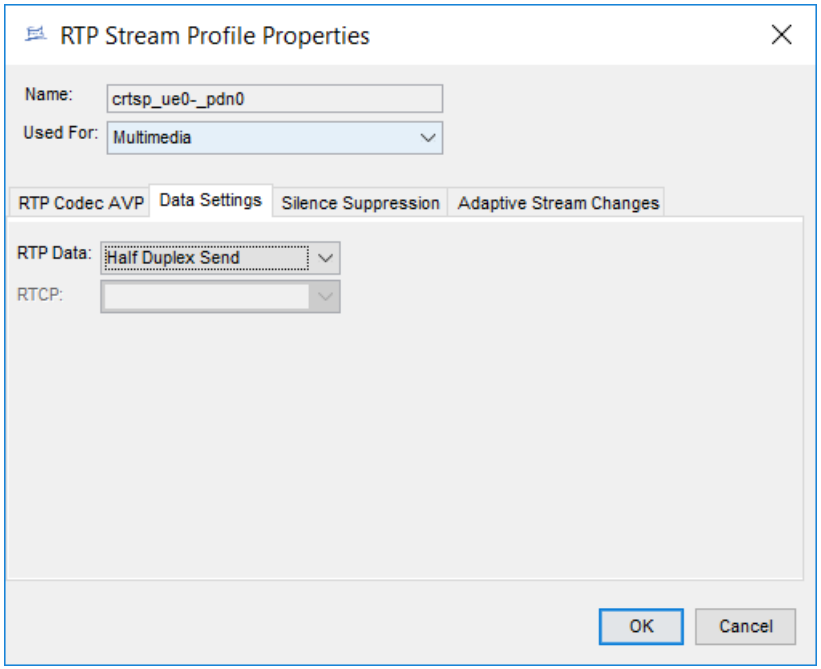
Applications – RTSP

RTSP Stream Profile Properties



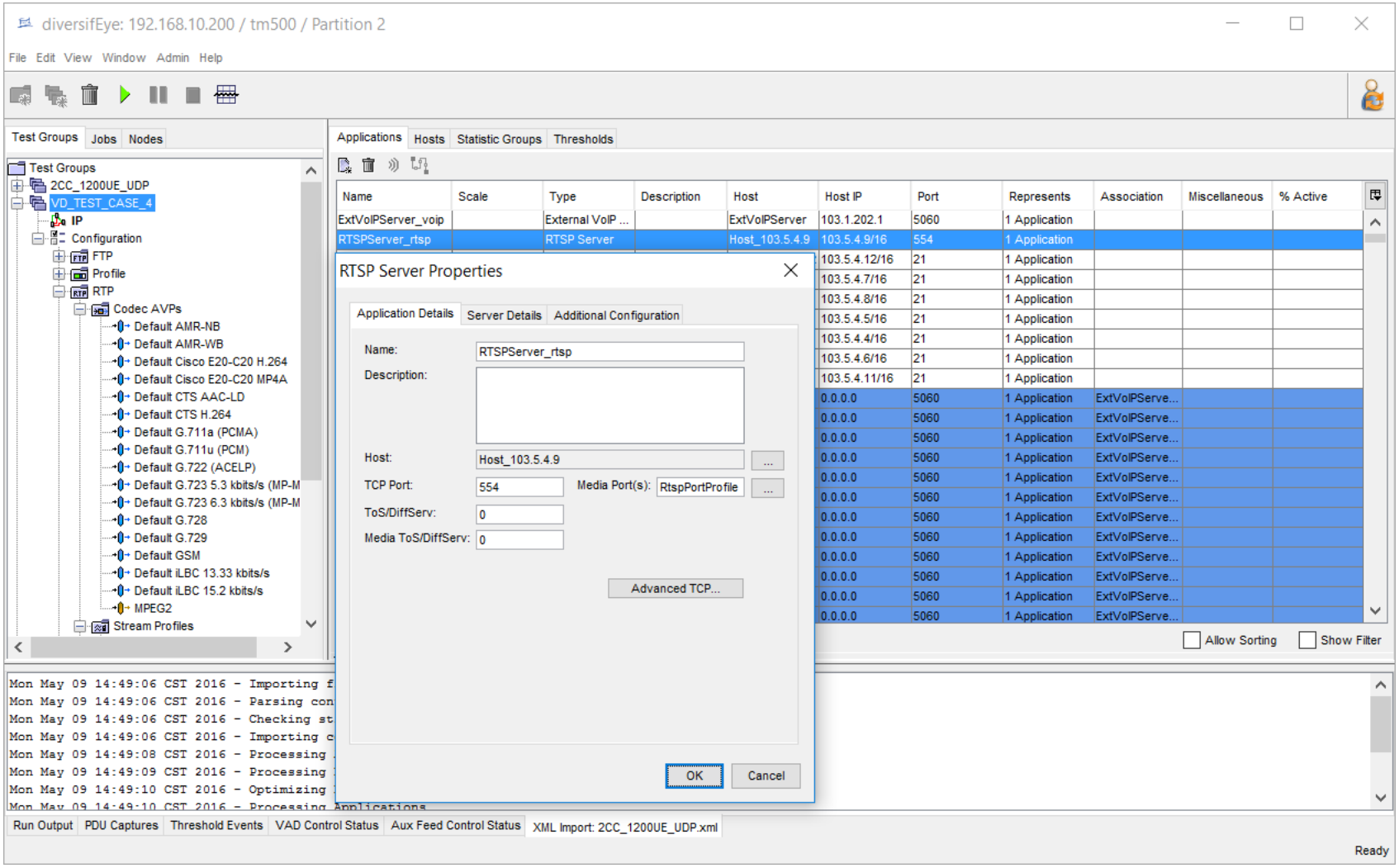
Applications – RTSP

RTSP Stream Profile Properties



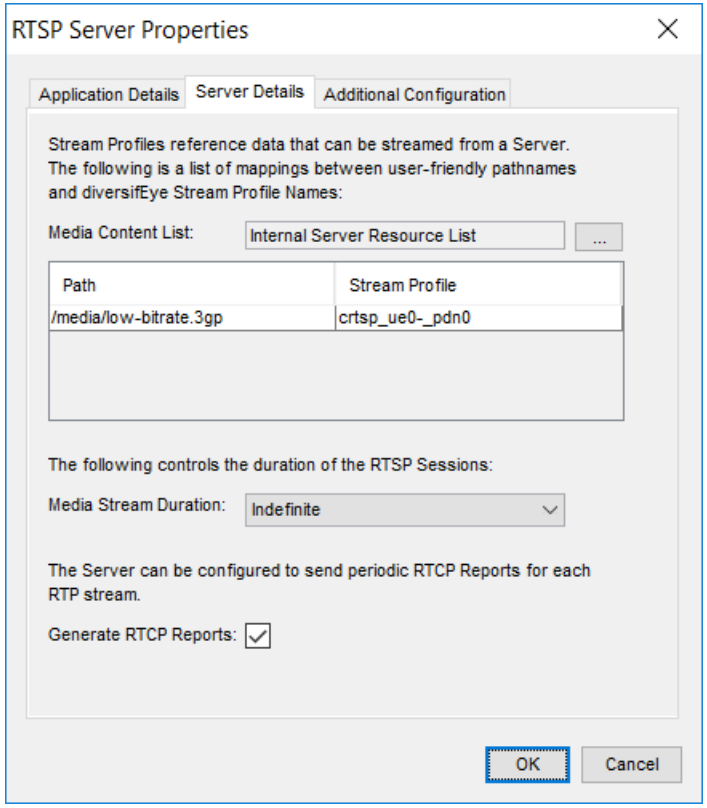
Applications – RTSP

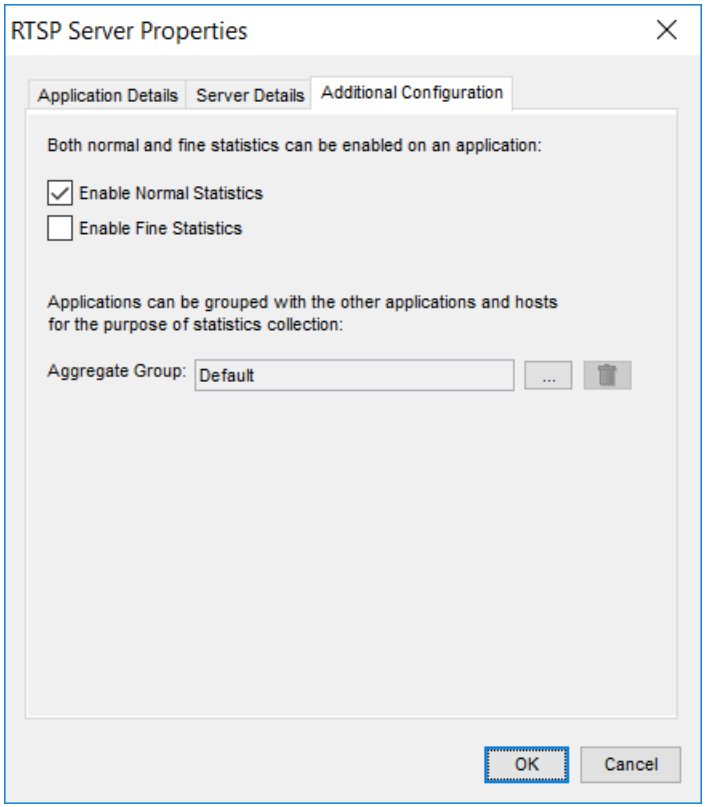
RTSP Server Properties



Applications – RTSP

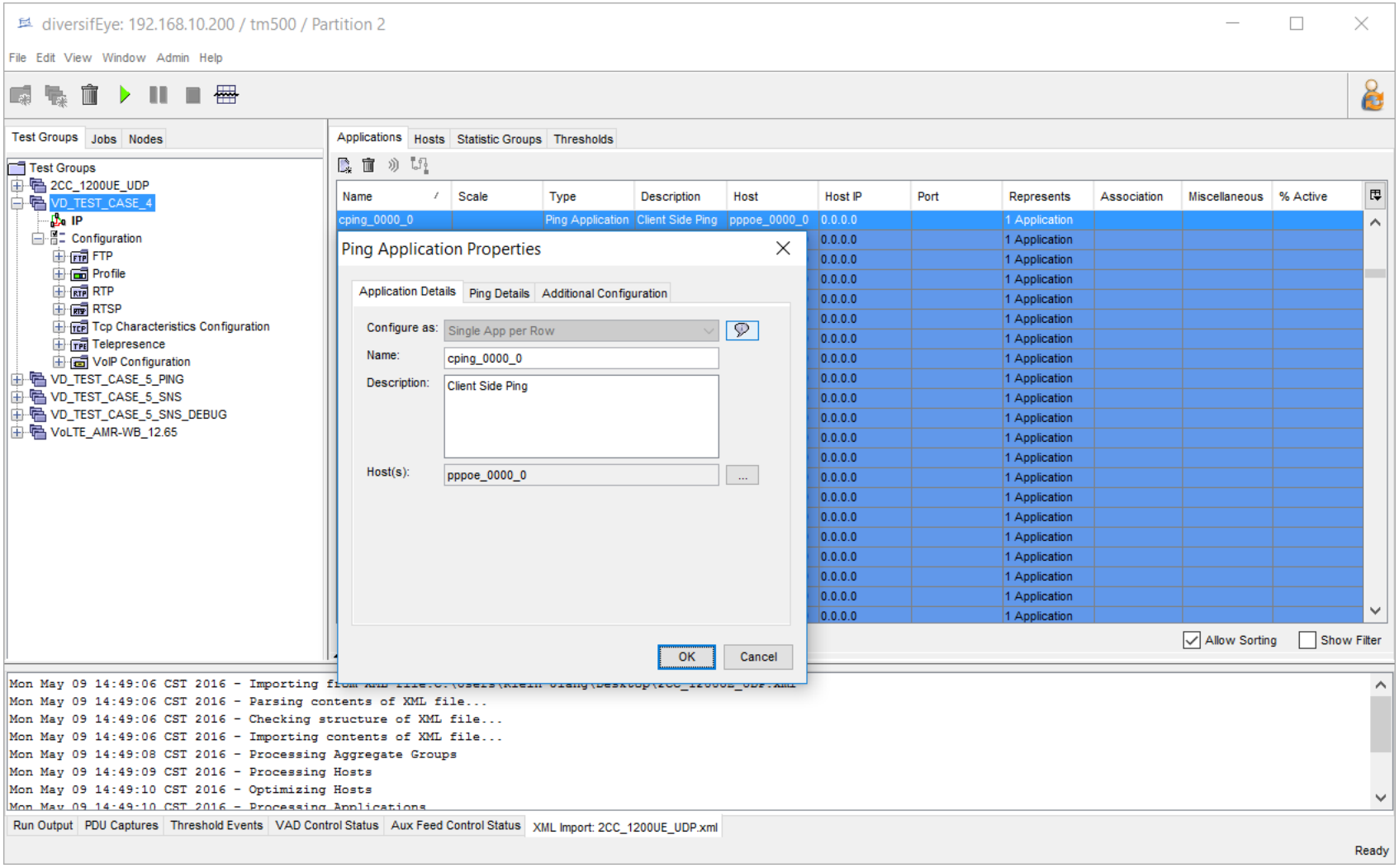
RSTP Server Properties





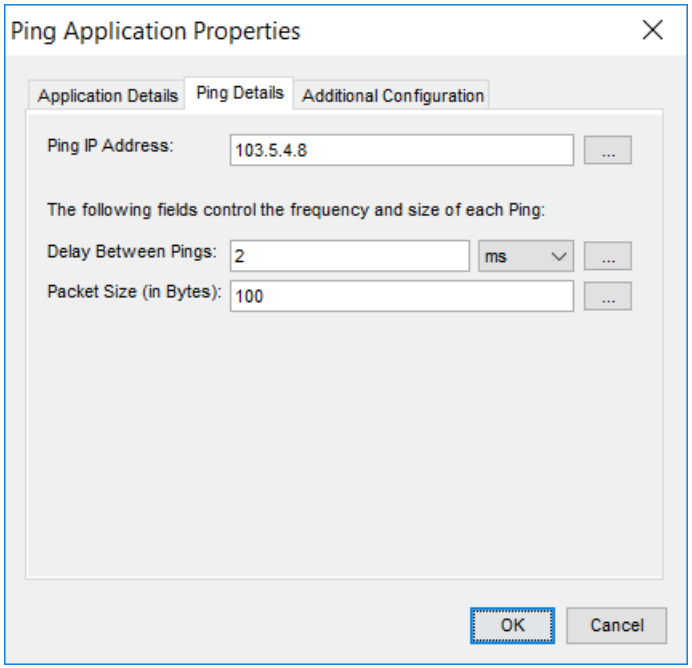
Applications – PING

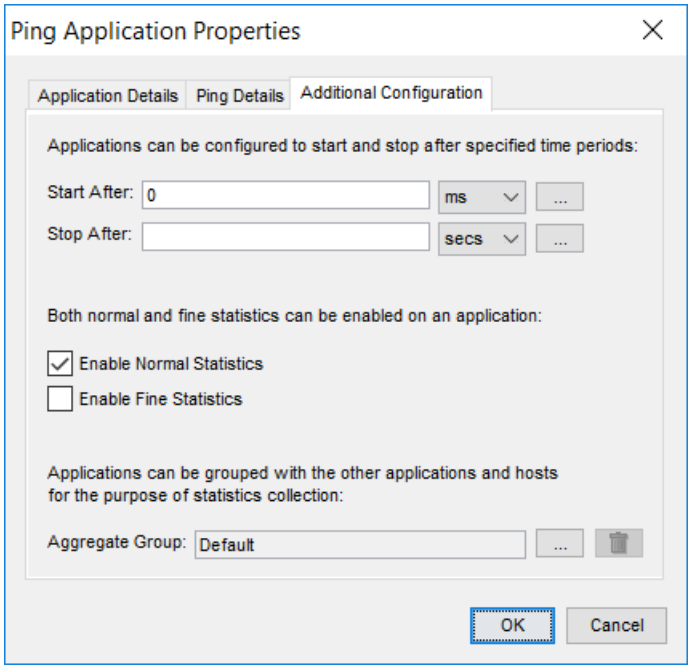
Ping Application Properties



Applications – PING

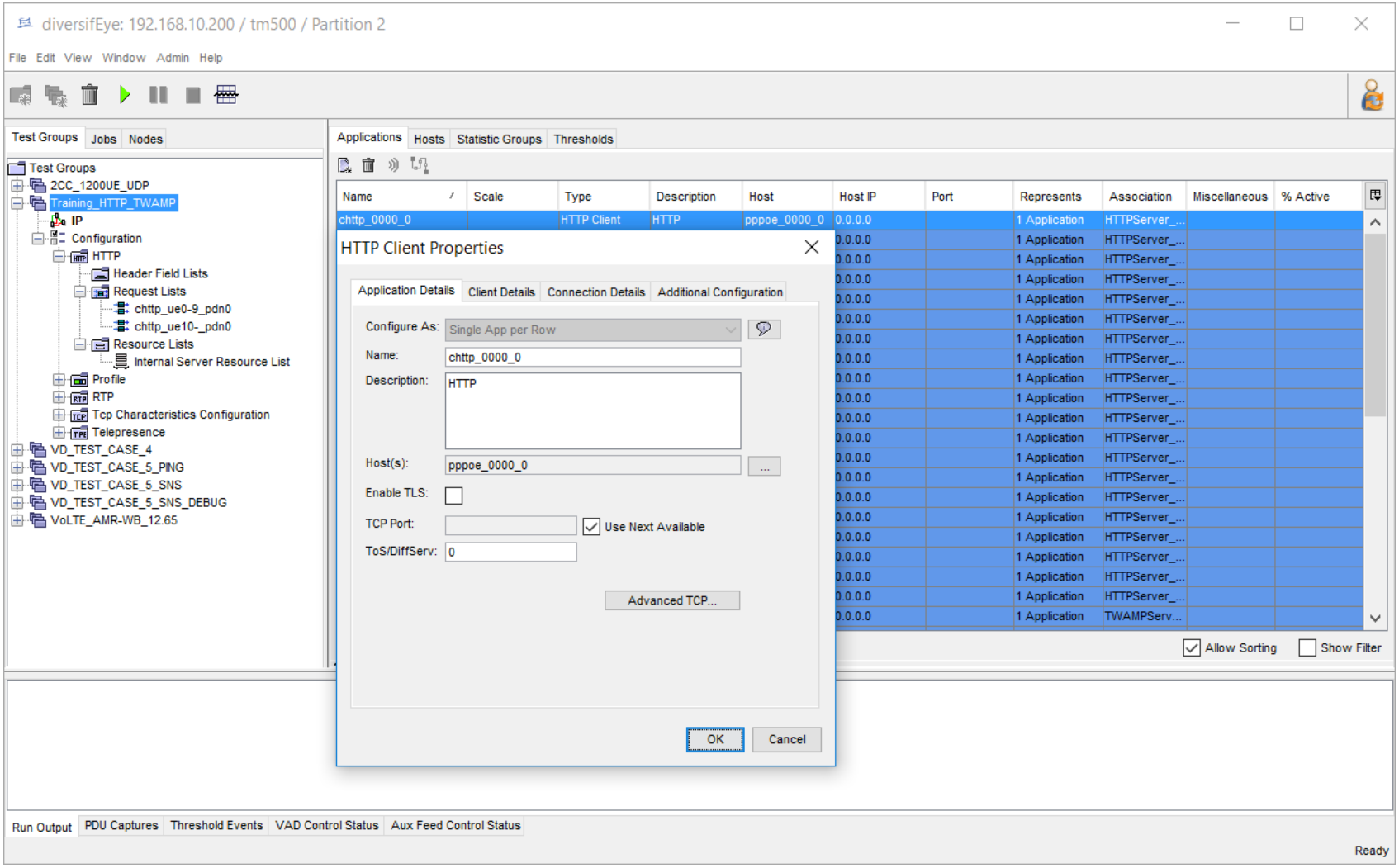
Ping Application Properties





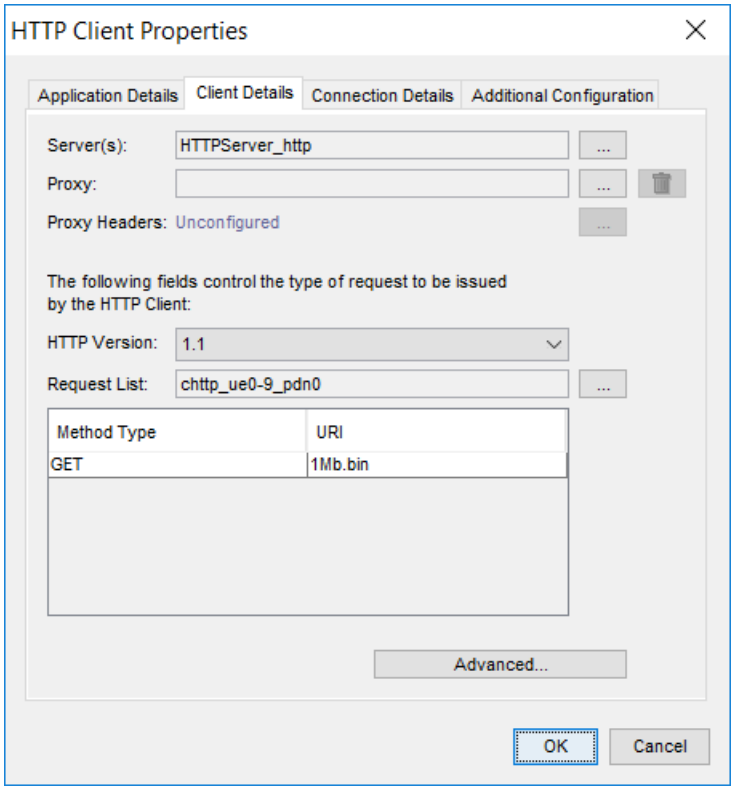
Applications – HTTP

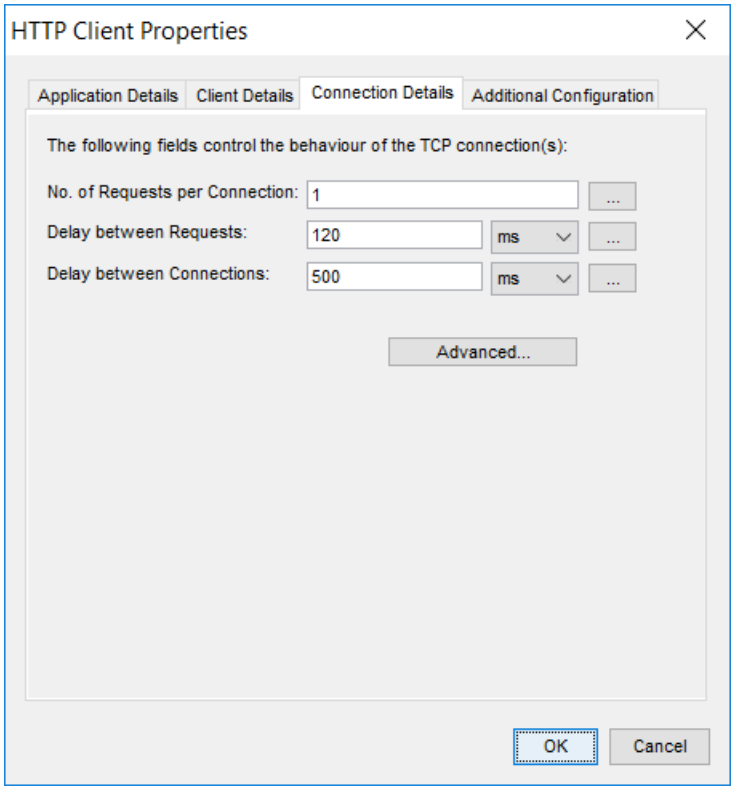
HTTP Client Properties



Applications – HTTP

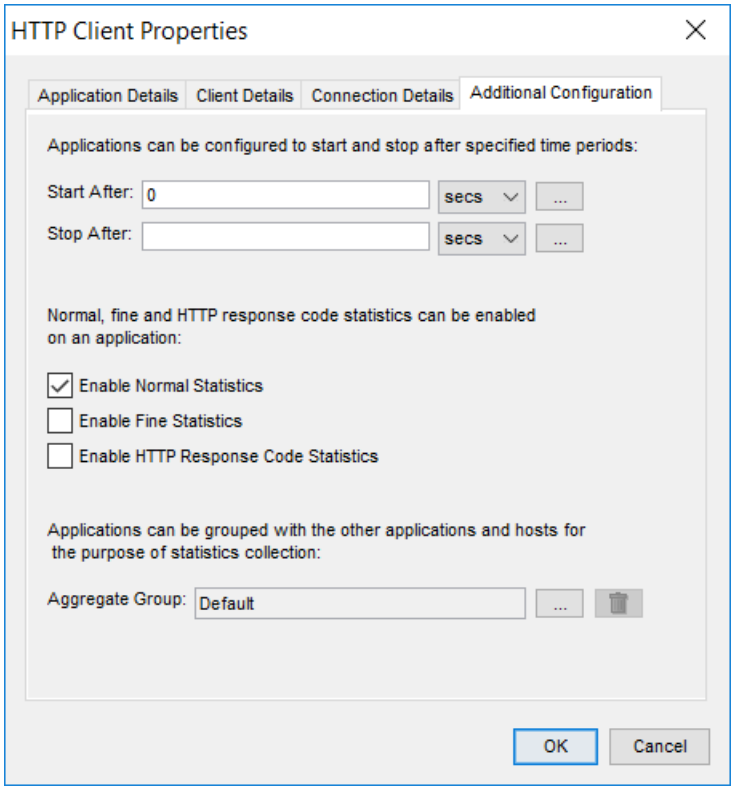
HTTP Client Properties

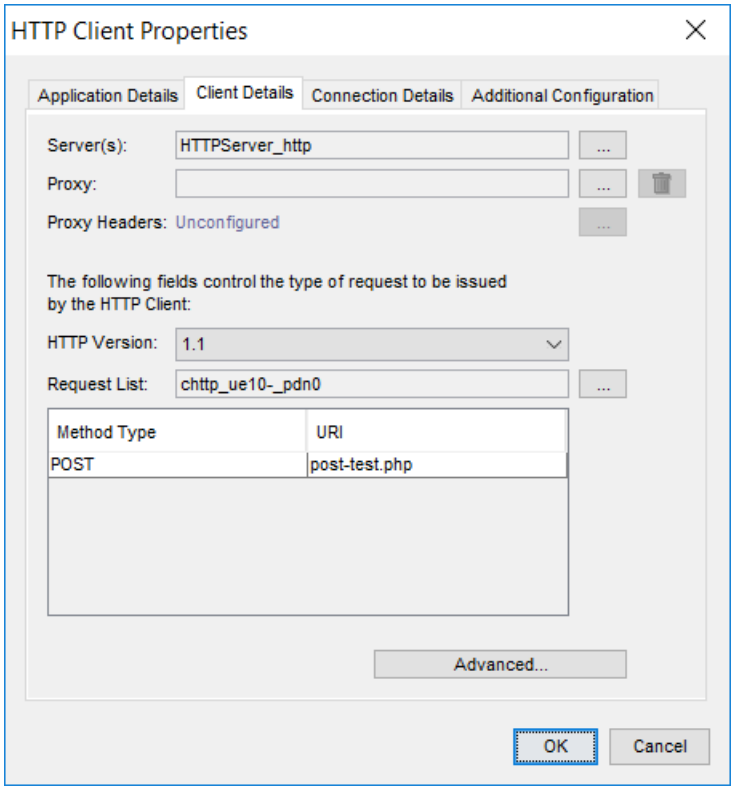




Applications – HTTP

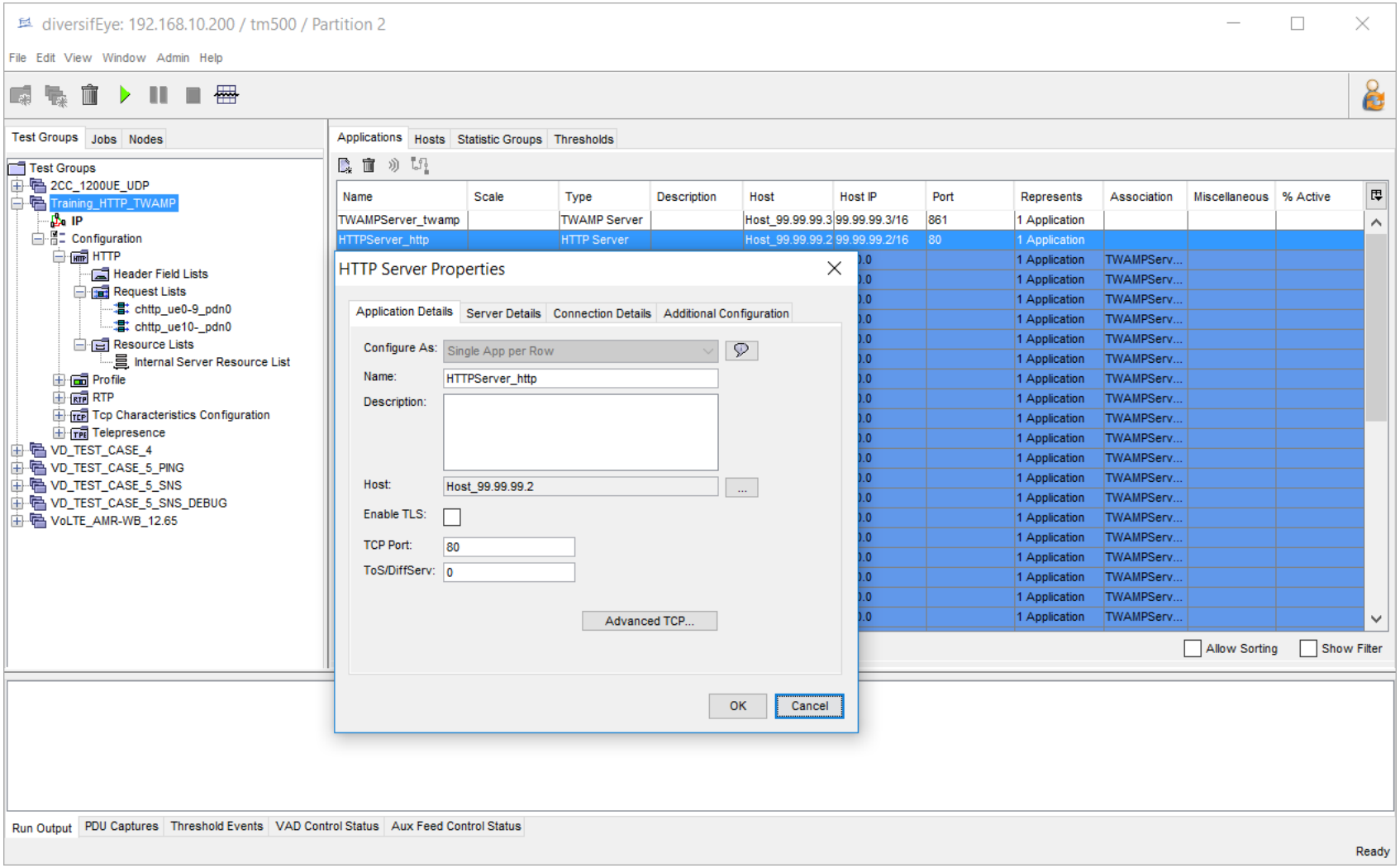
HTTP Client Properties





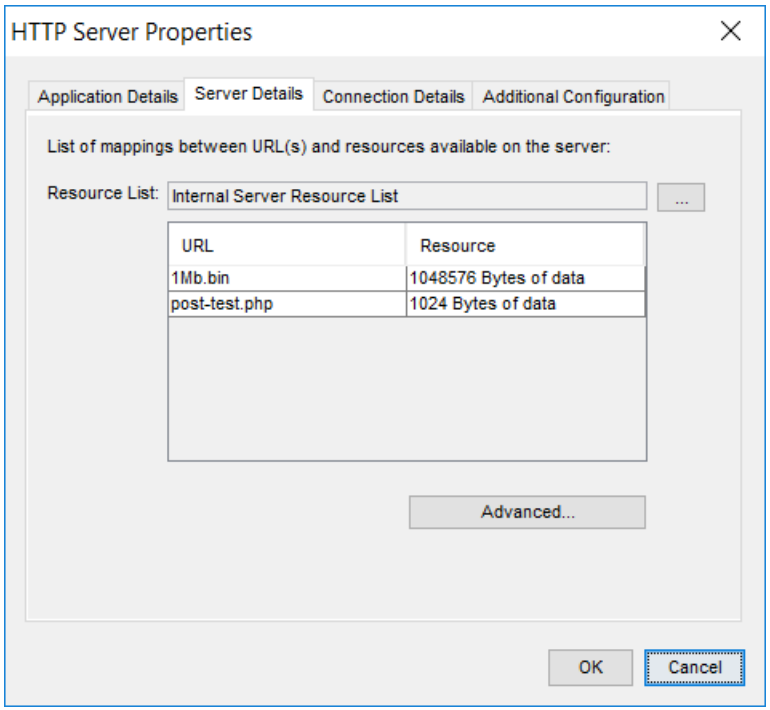
Applications – HTTP

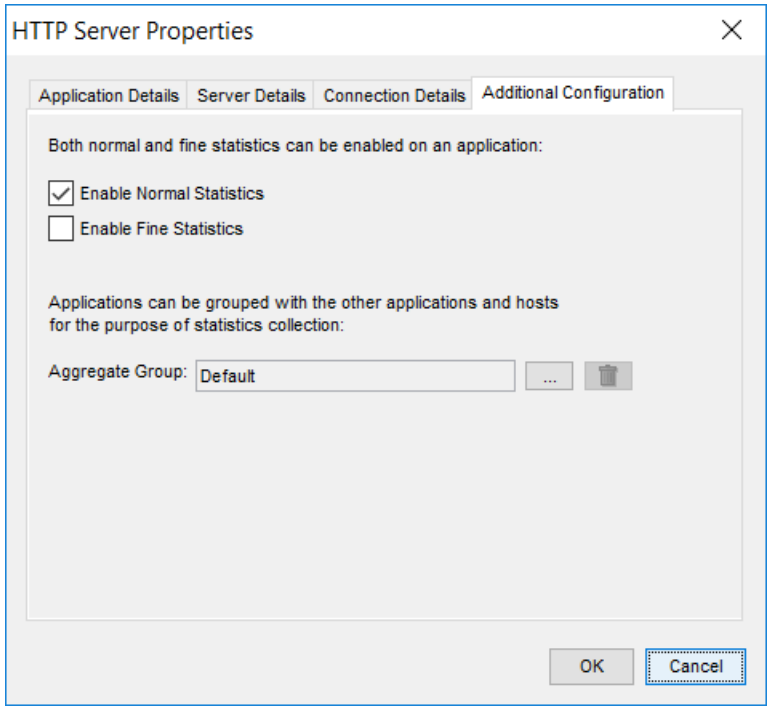
HTTP Server Properties



Applications – HTTP

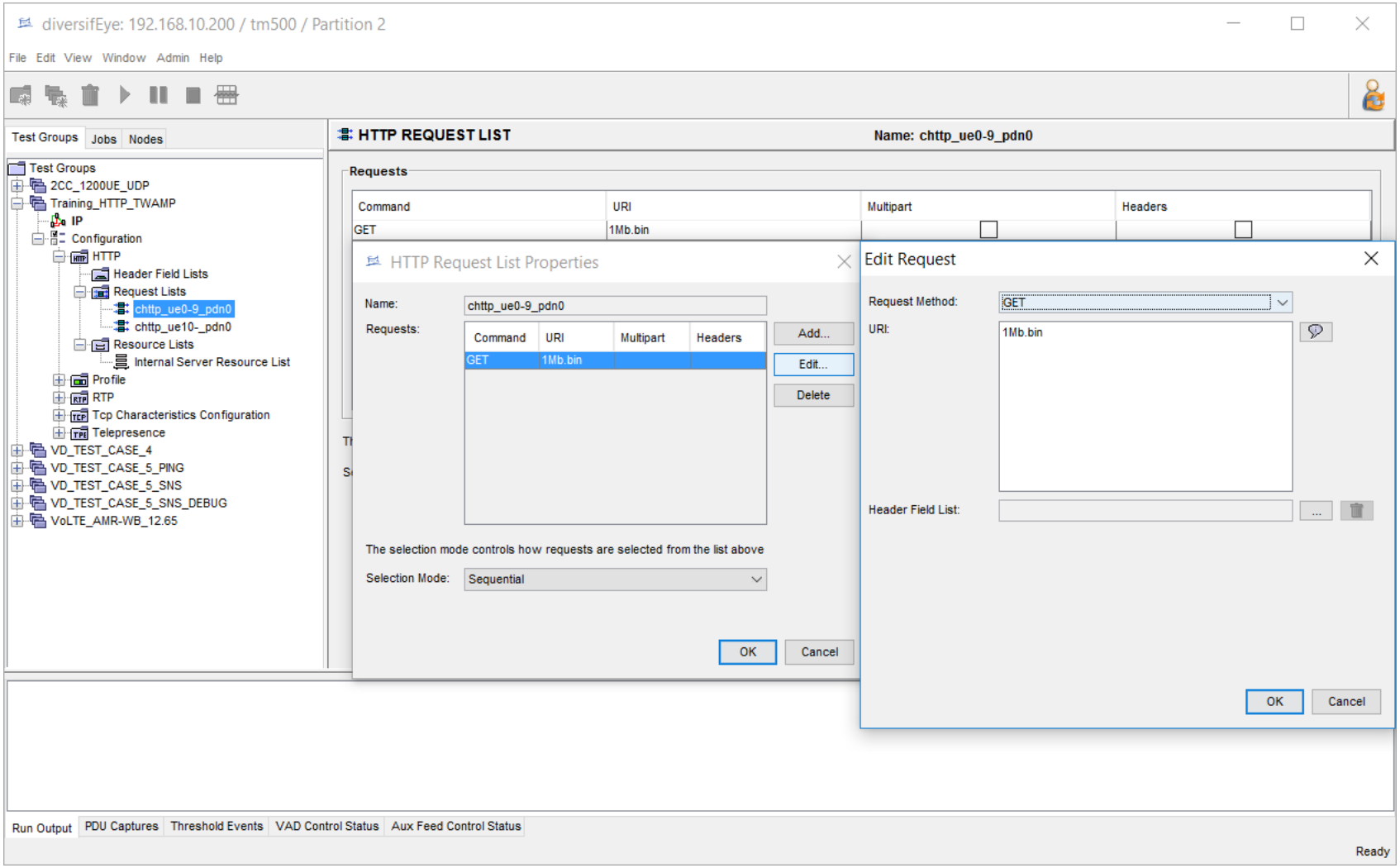
HTTP Server Properties





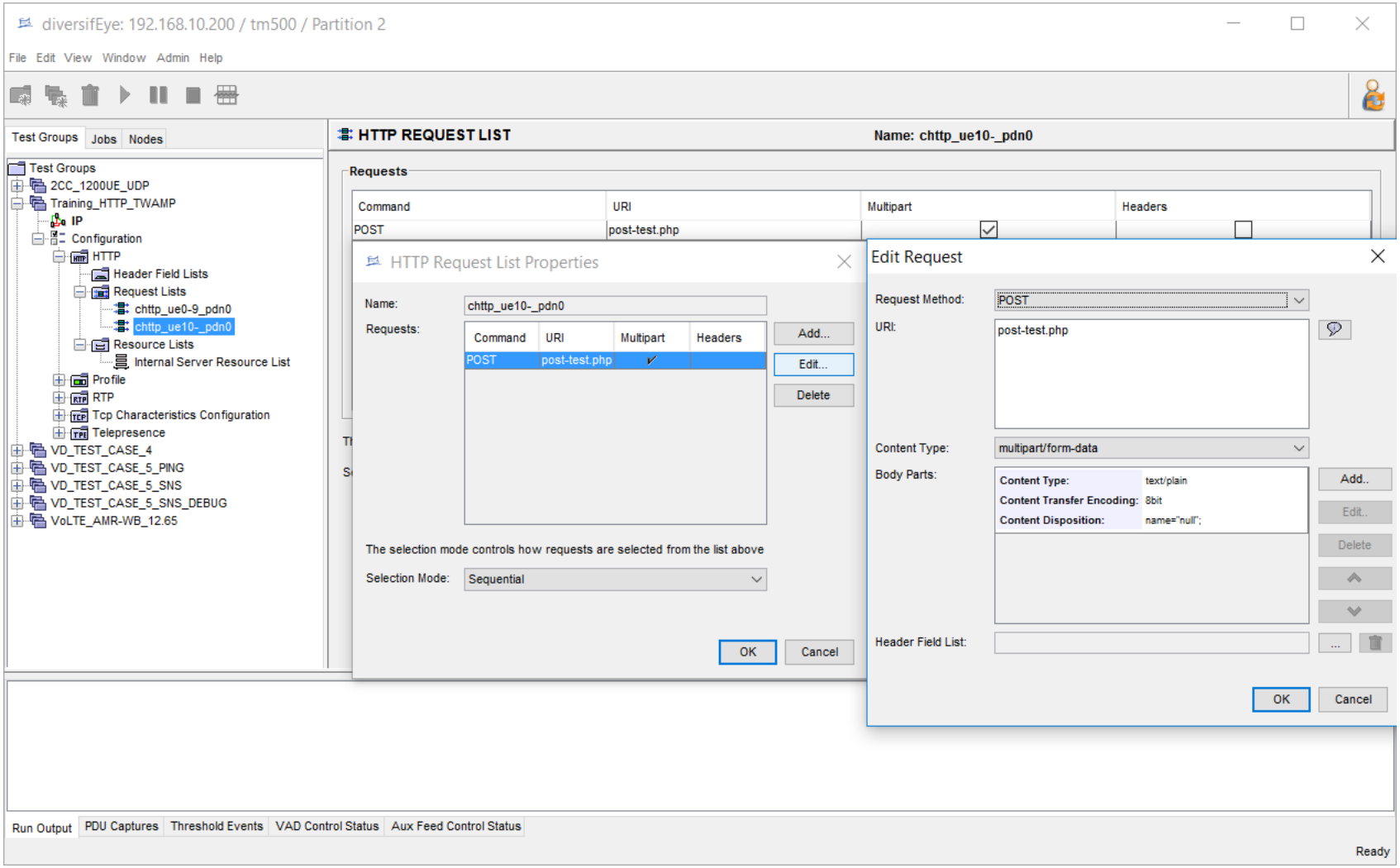
Applications – HTTP

Request Lists (GET)



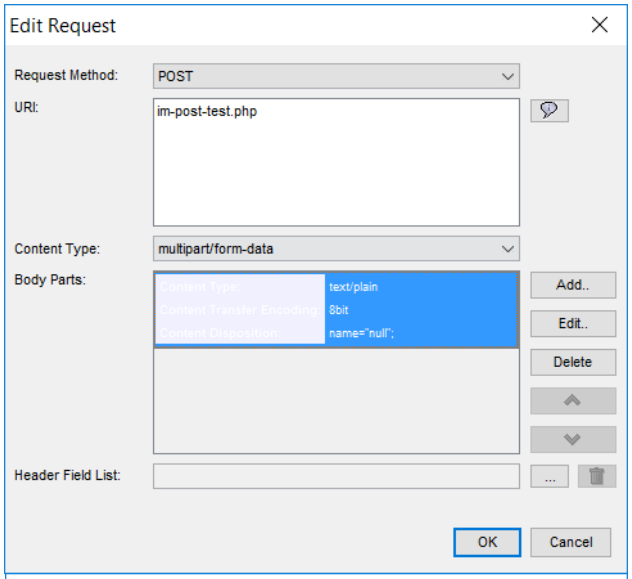
Applications – HTTP

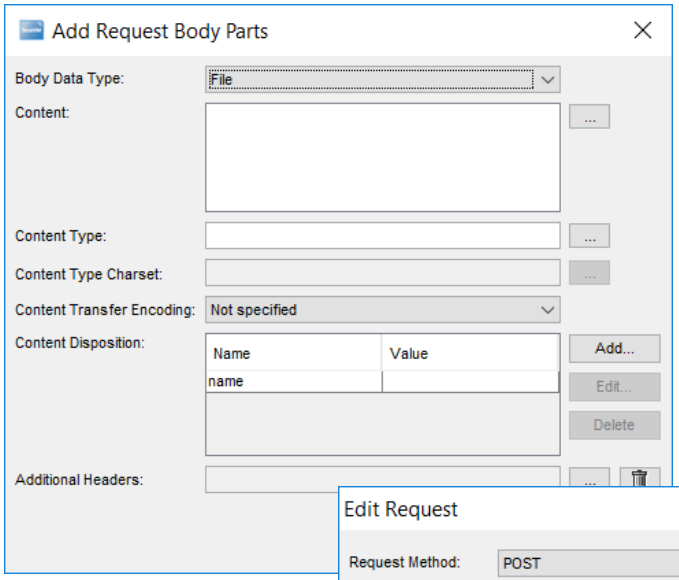
Request Lists (POST)

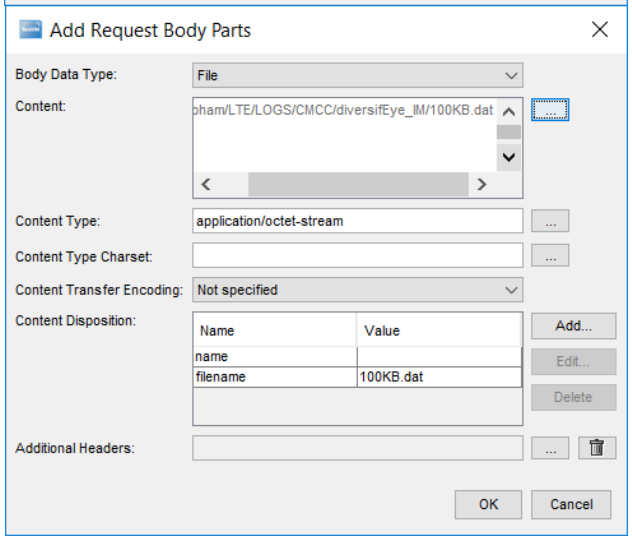


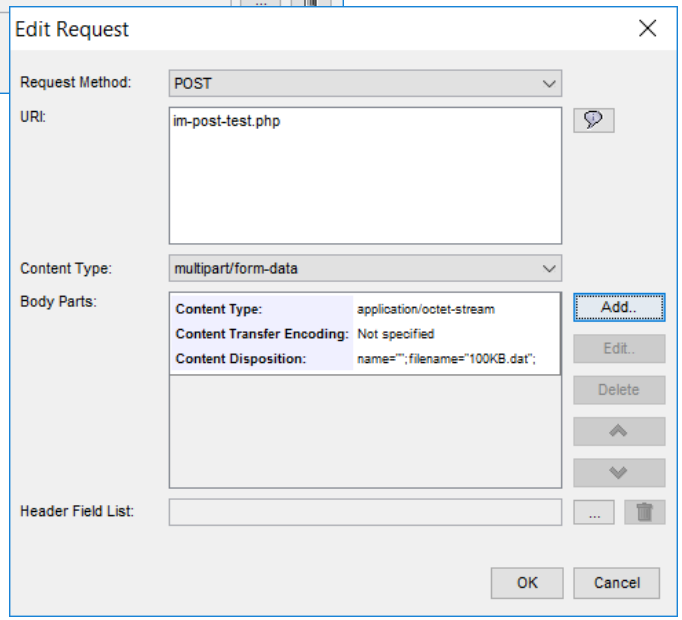
Applications – HTTP

Request Lists (POST)



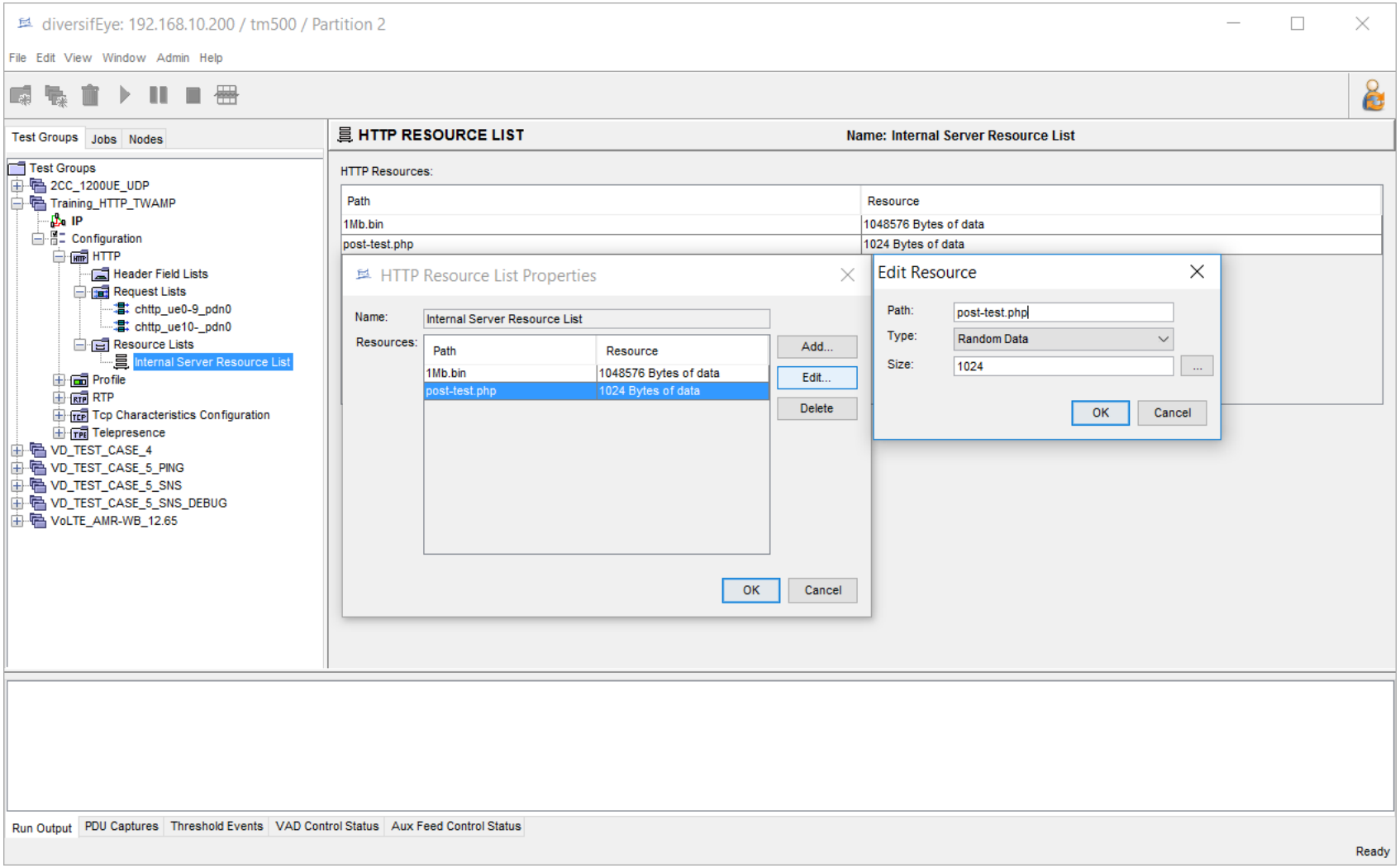






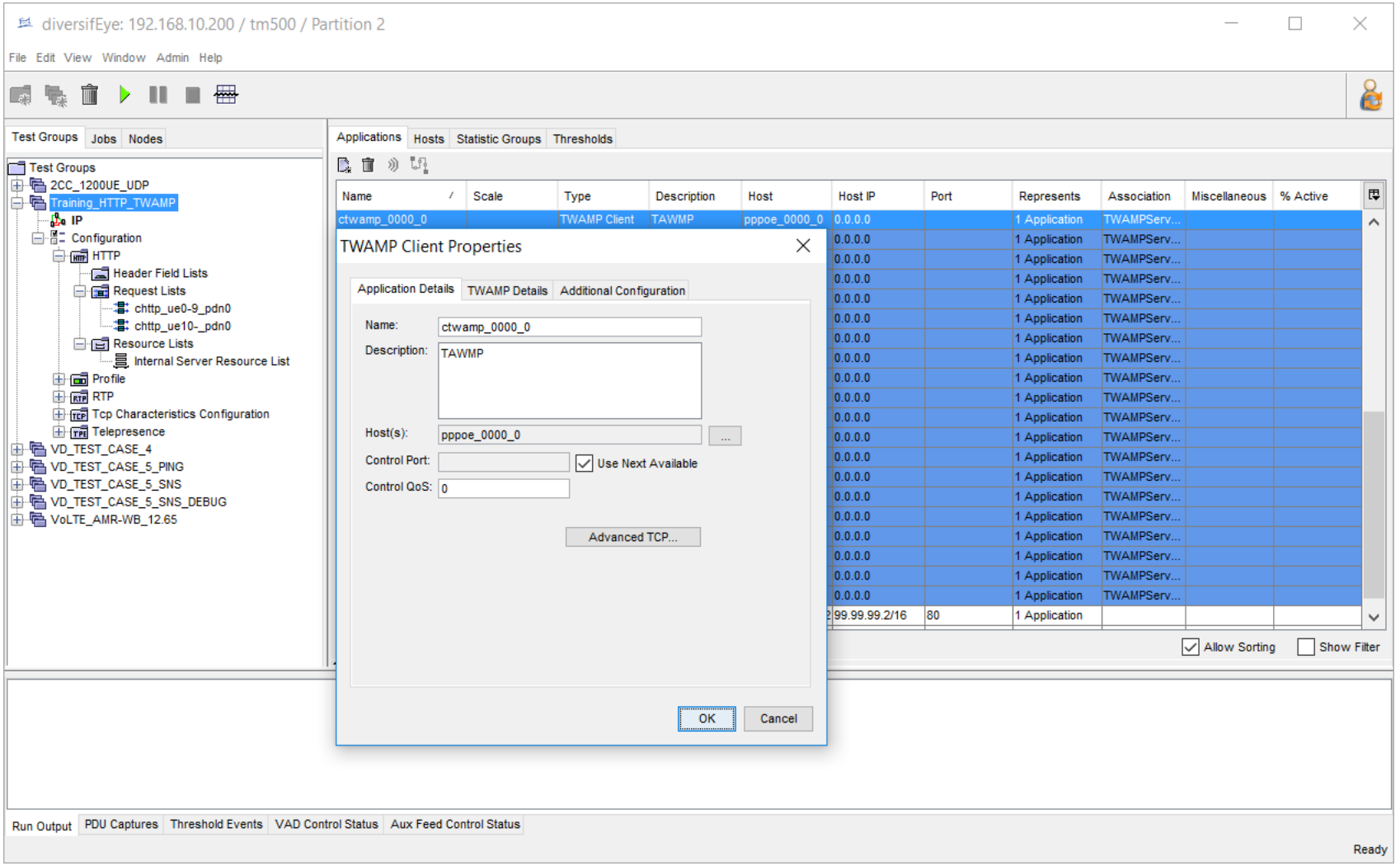
Applications – HTTP

Internal Server Resource List



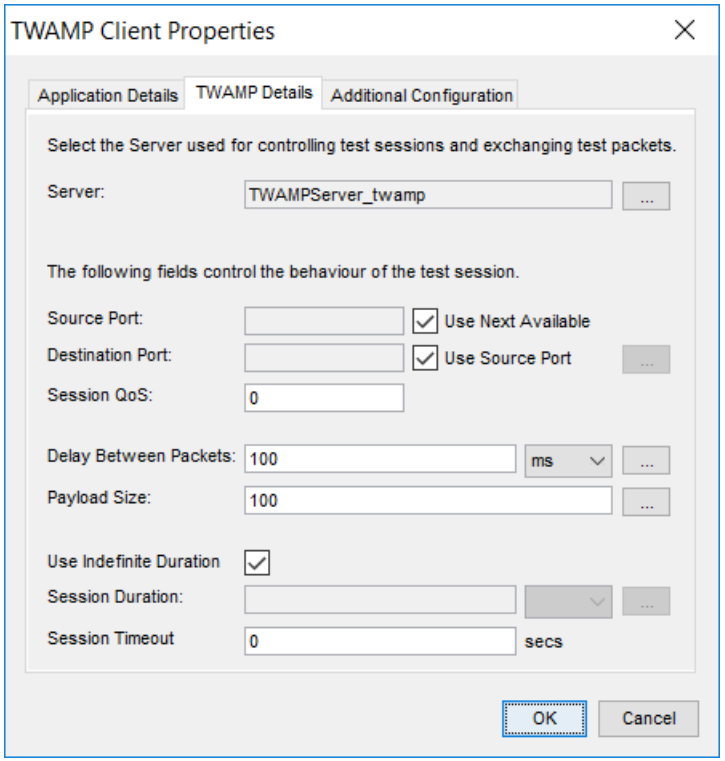
Applications – TWAMP

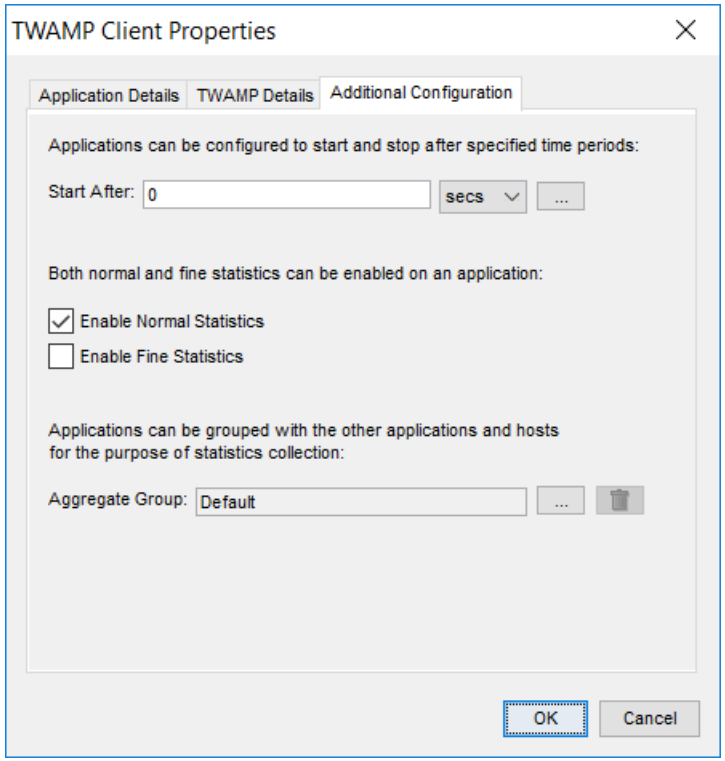
TWAMP Client Properties



Applications – TWAMP

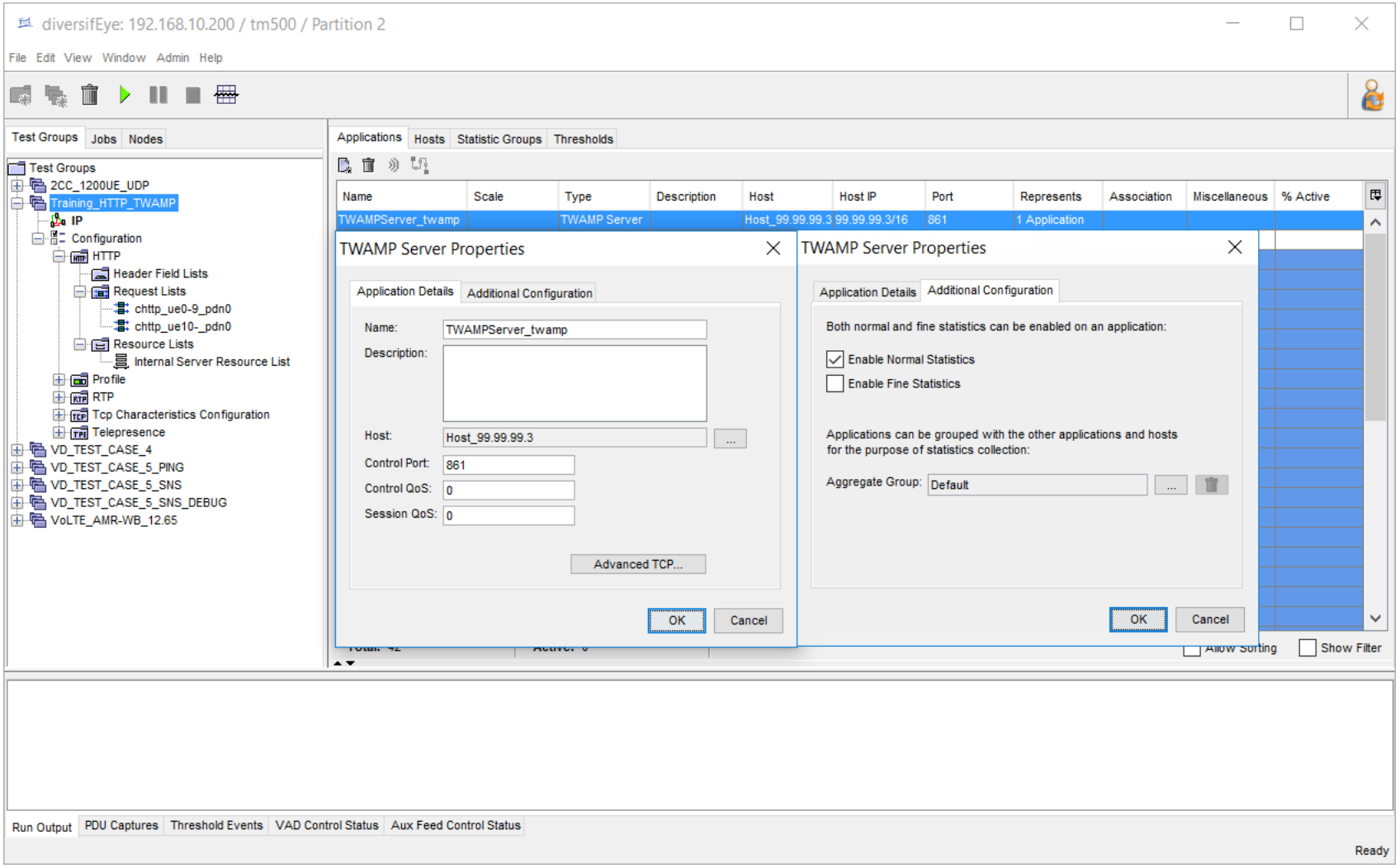
TWAMP Client Properties



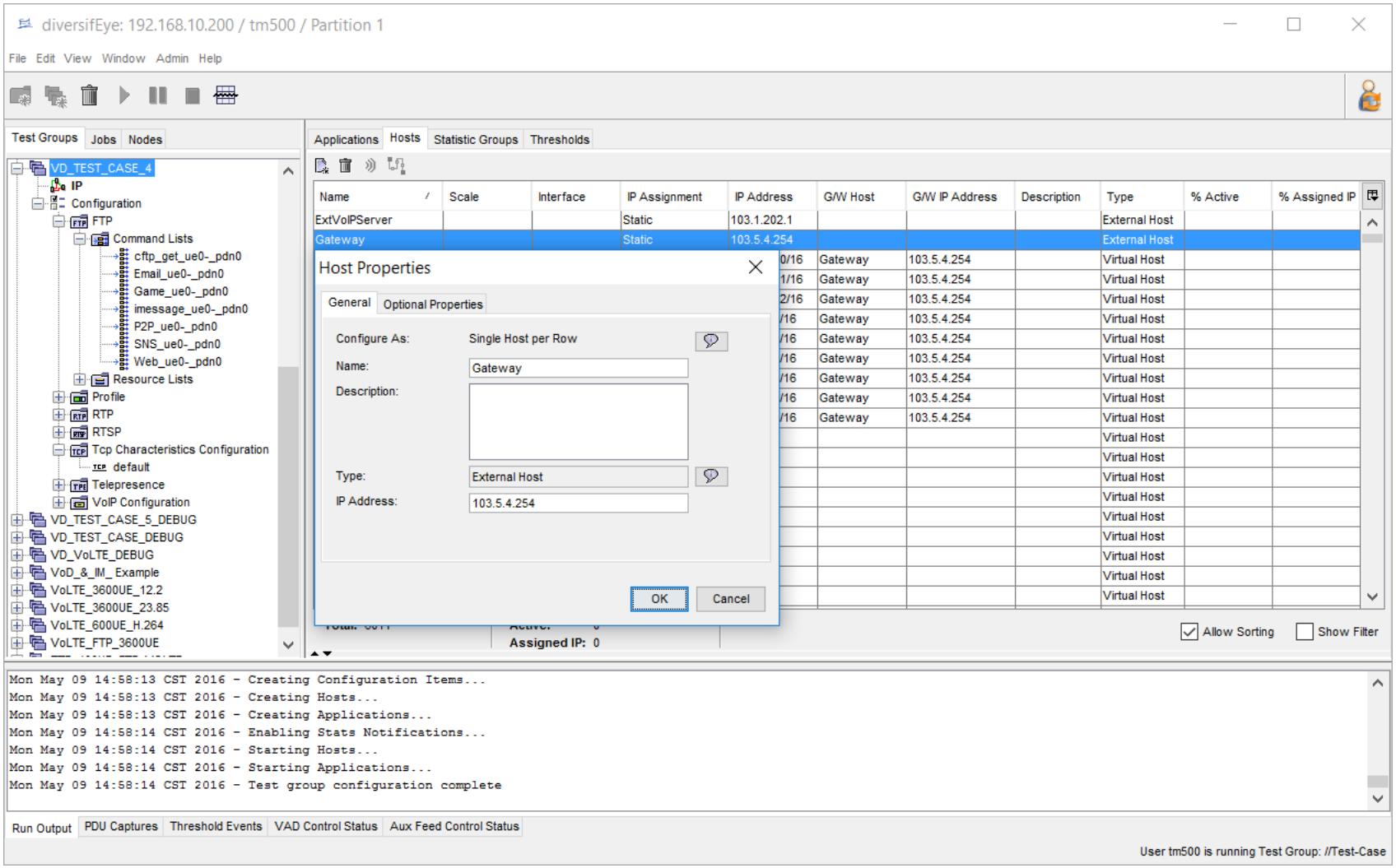


Applications – TWAMP

TWAMP Server Properties

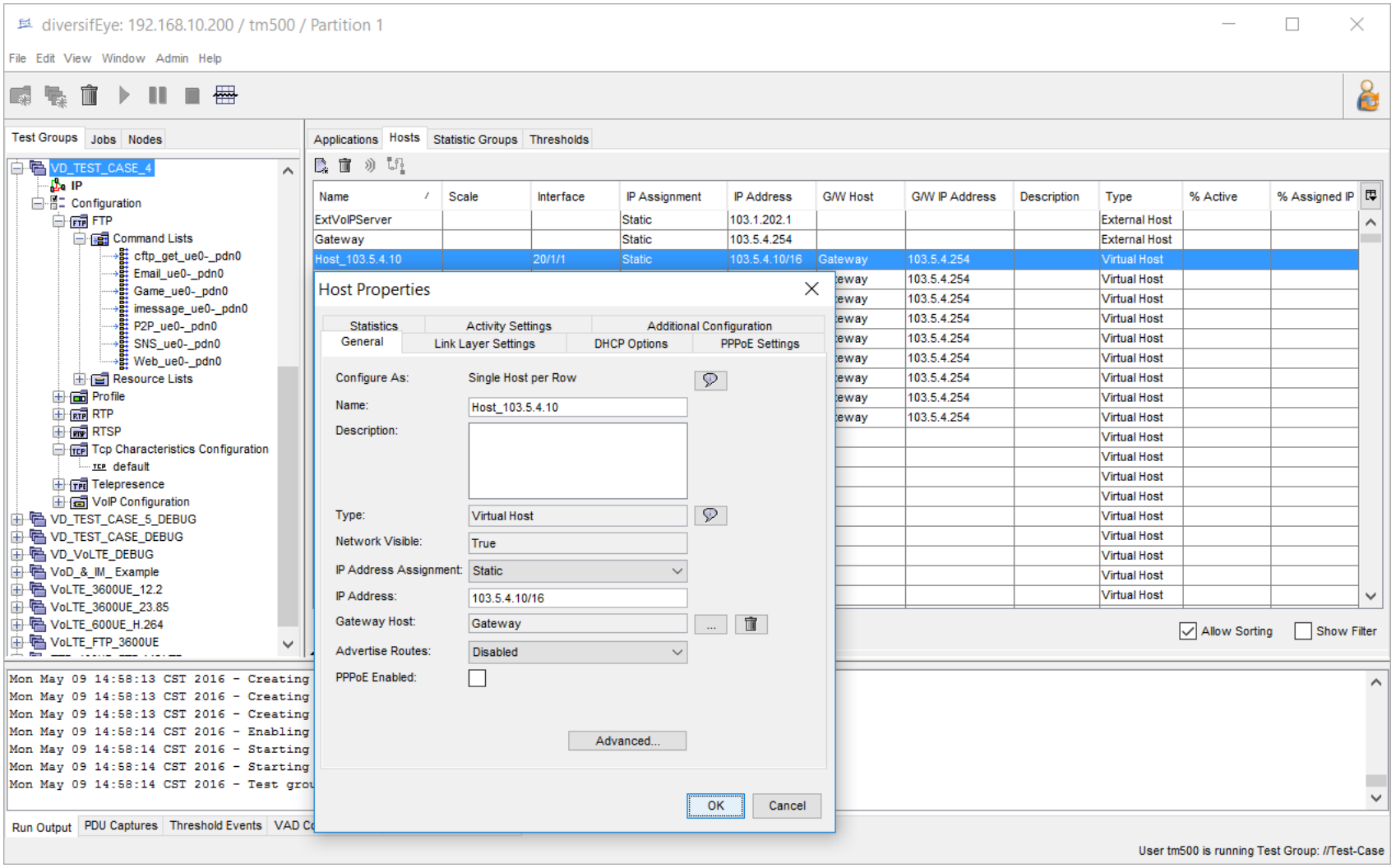


Hosts – Gateway



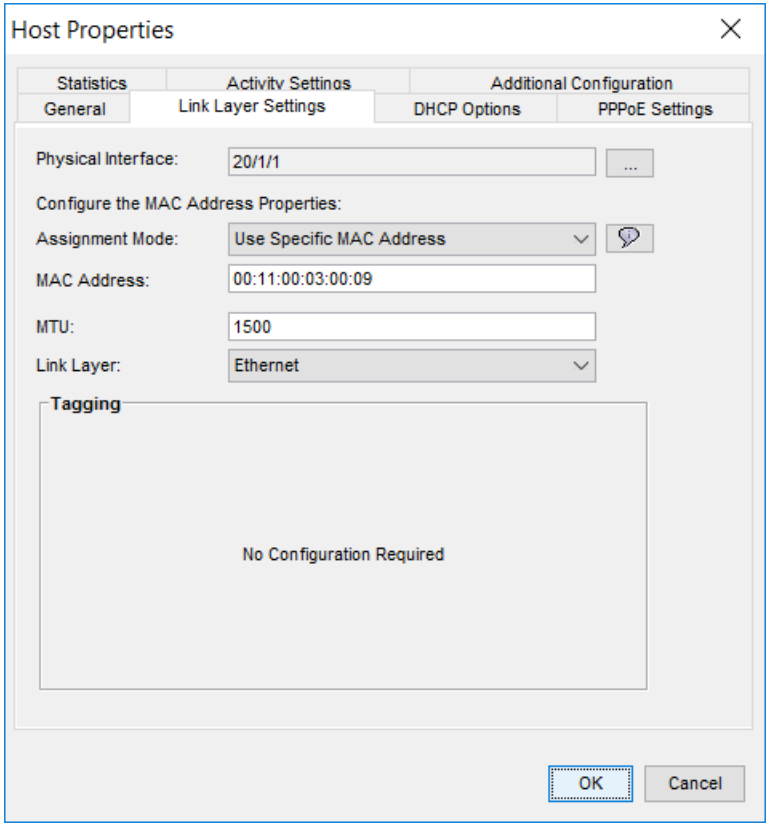
Hosts – Internal Server

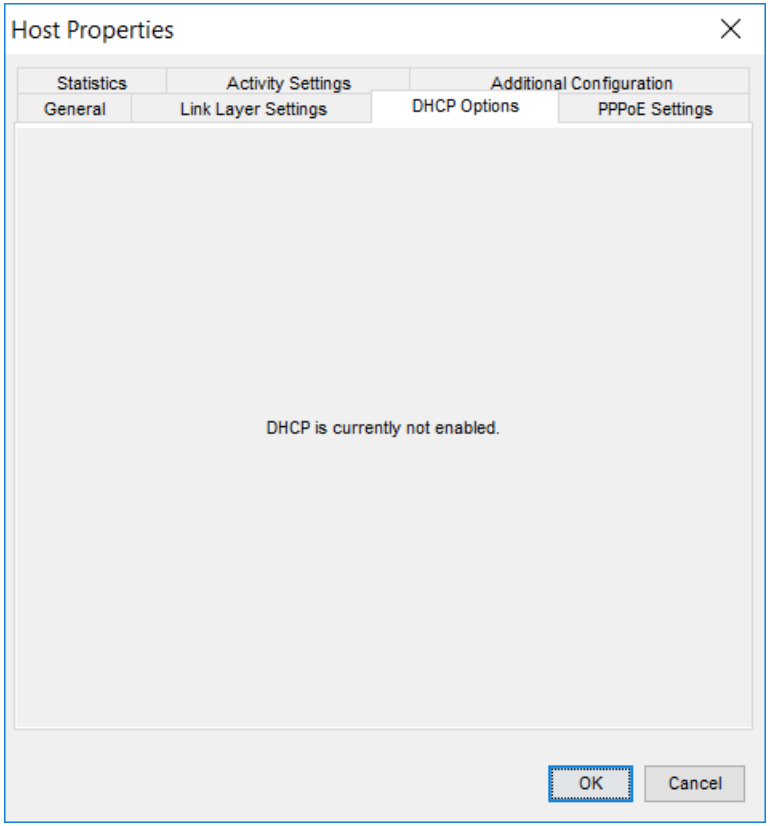
Host Properties



Hosts – Internal Server

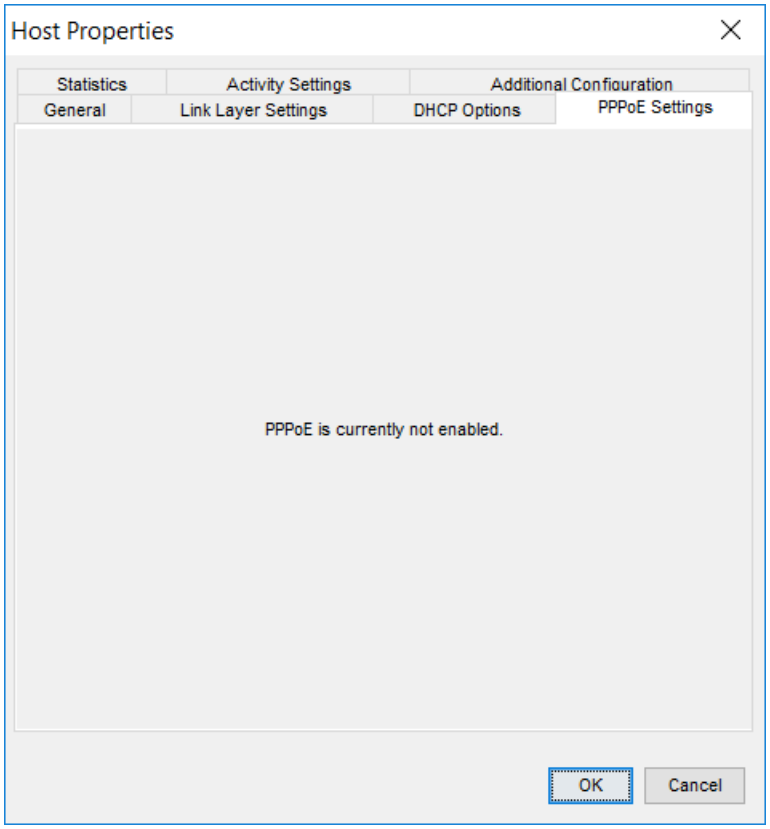
Host Properties

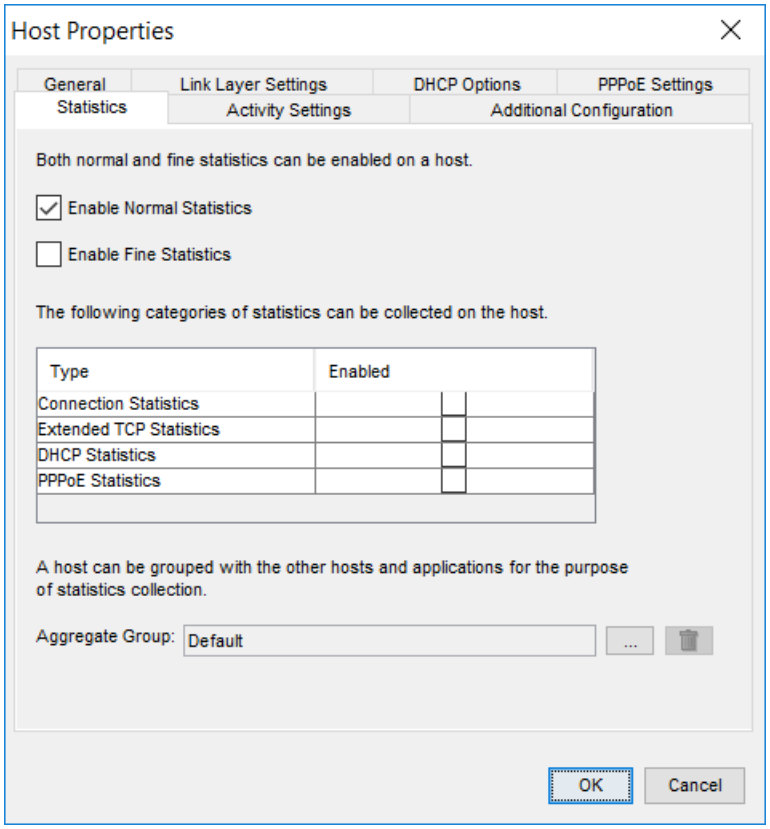




Hosts – Internal Server

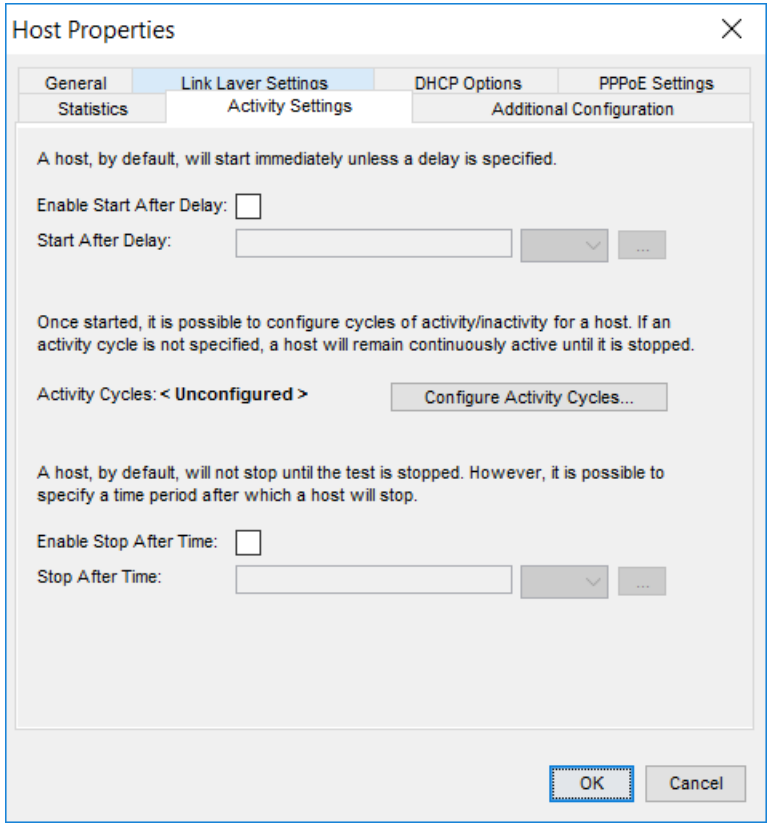
Host Properties

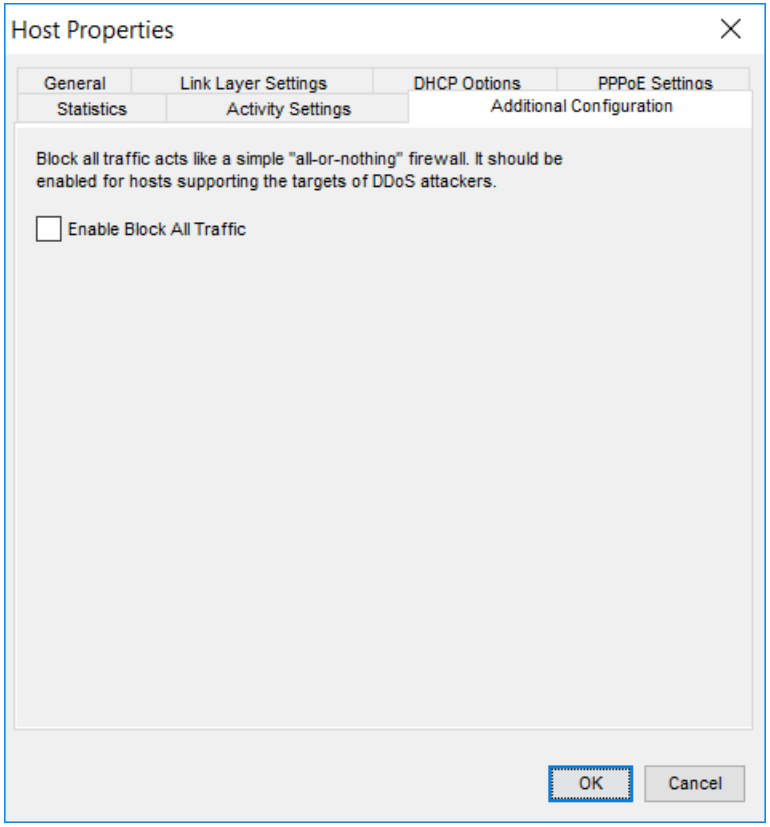




Hosts – Internal Server

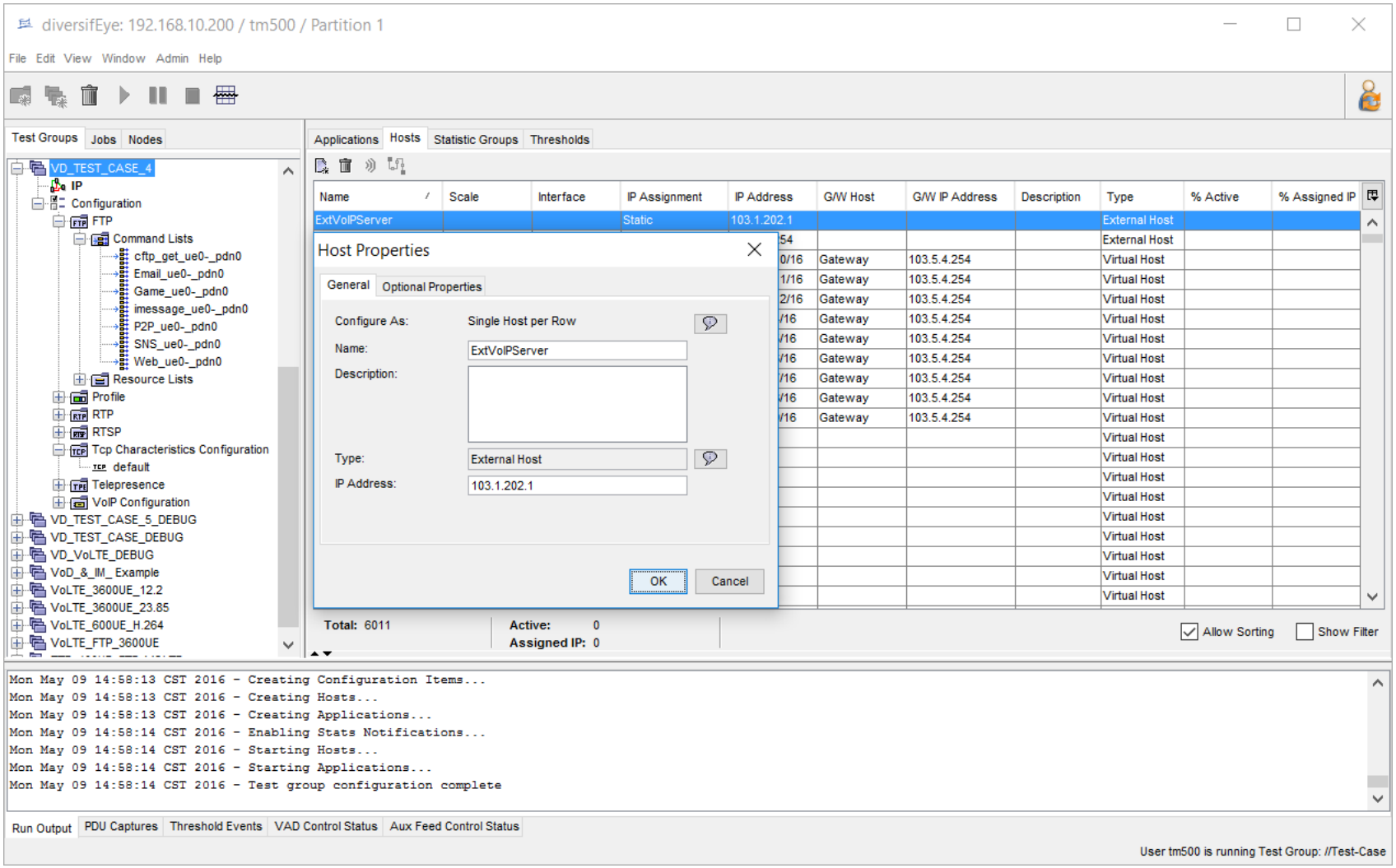
Host Properties





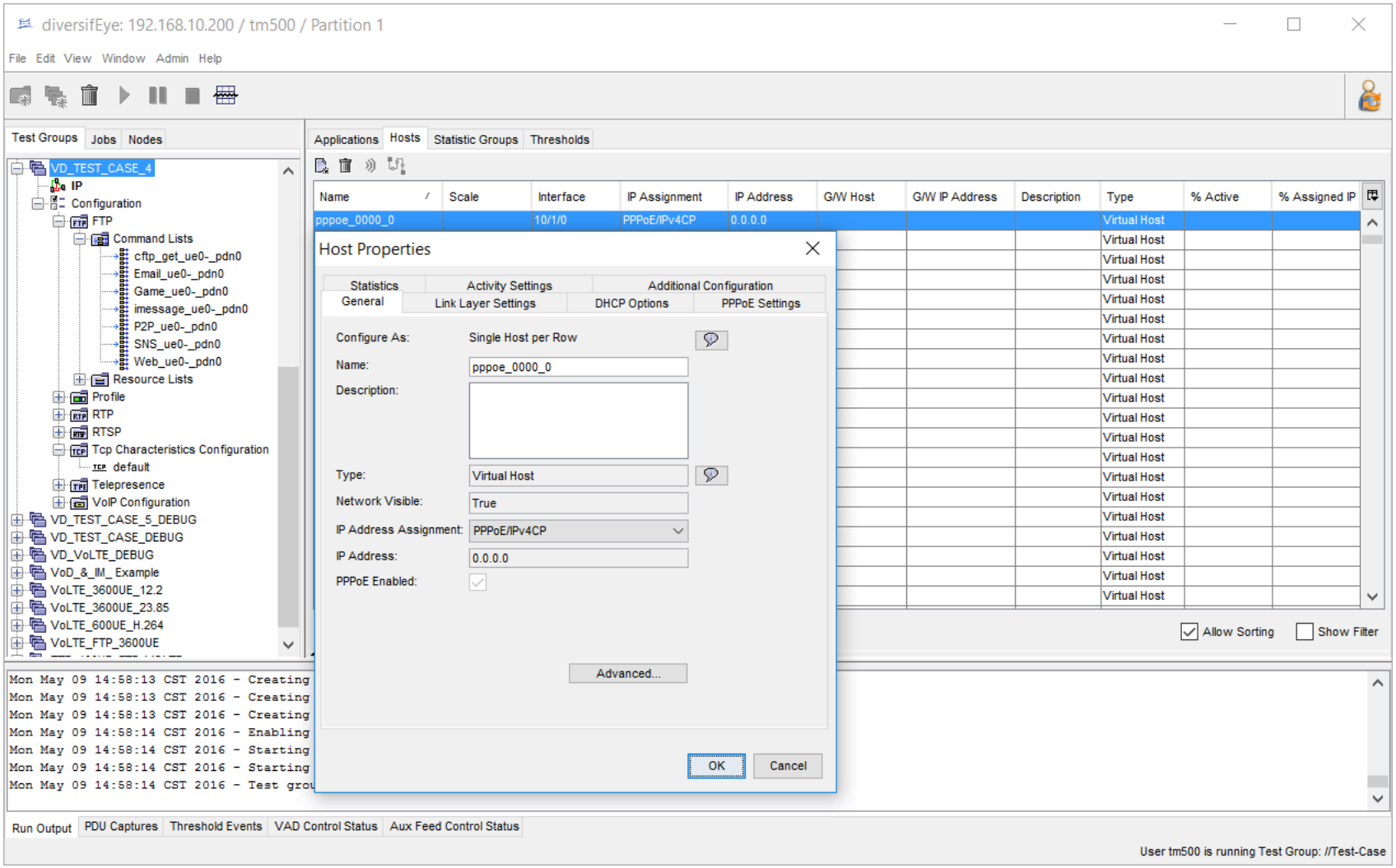
Hosts – External Server

Host Properties



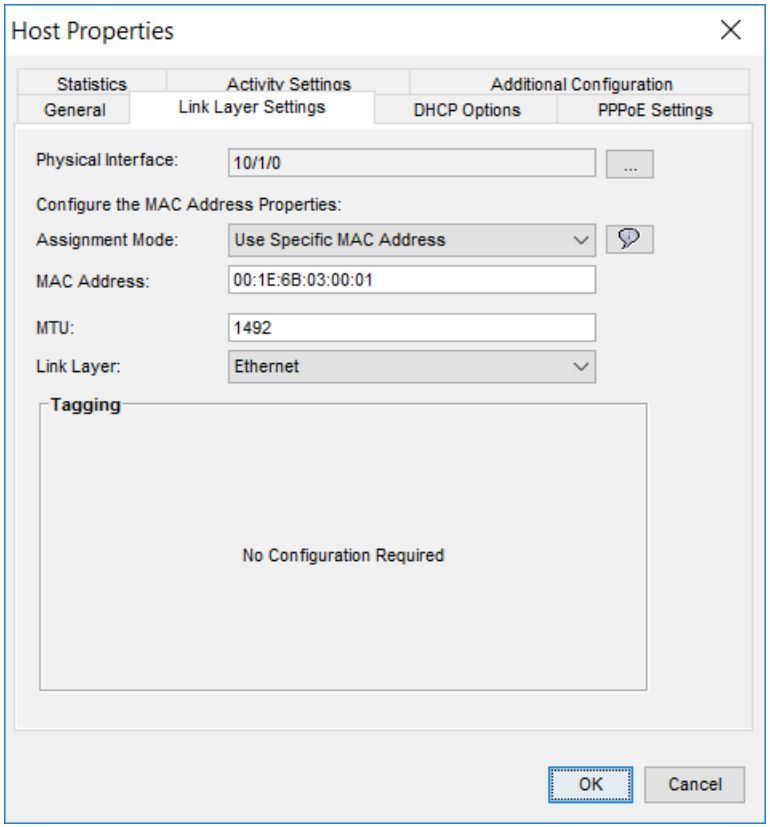
Hosts – PPPoE

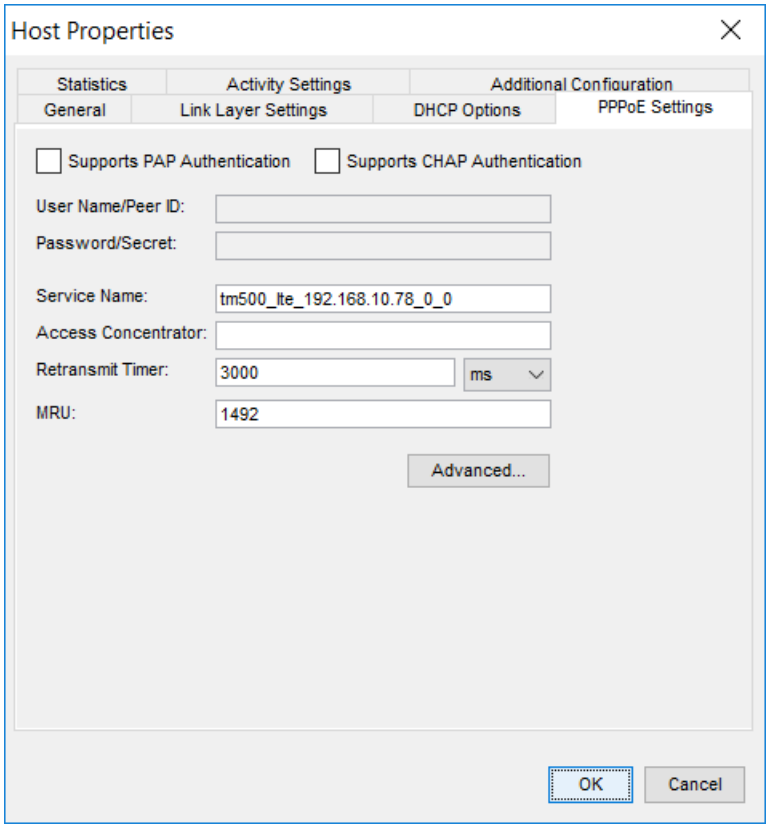
Host Properties



Hosts – PPPoE

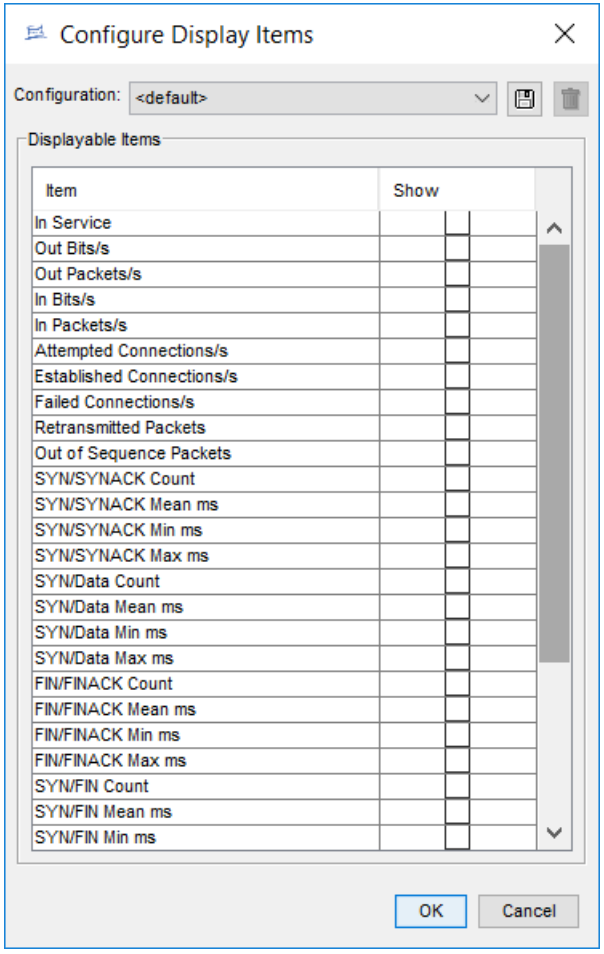
Host Properties

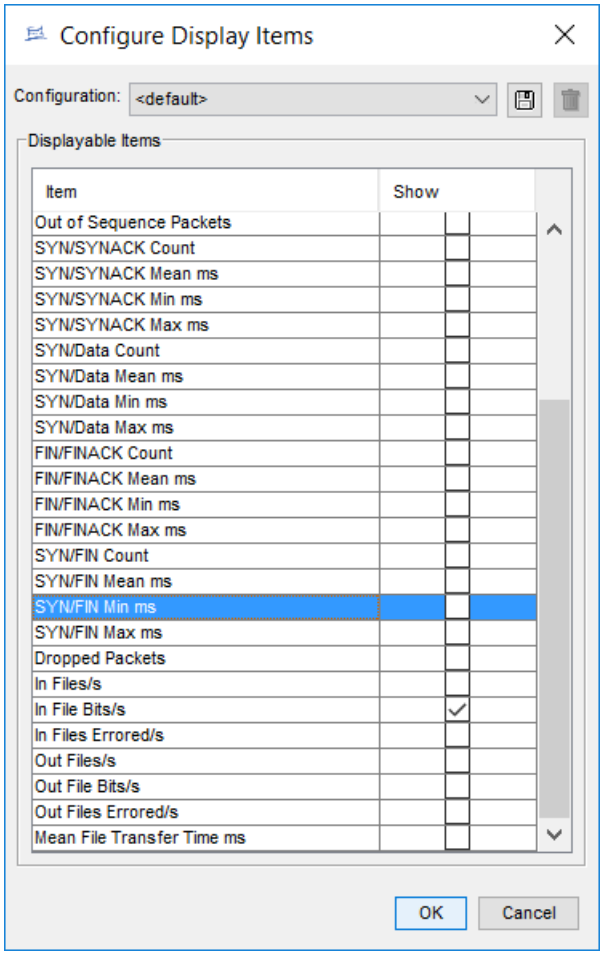




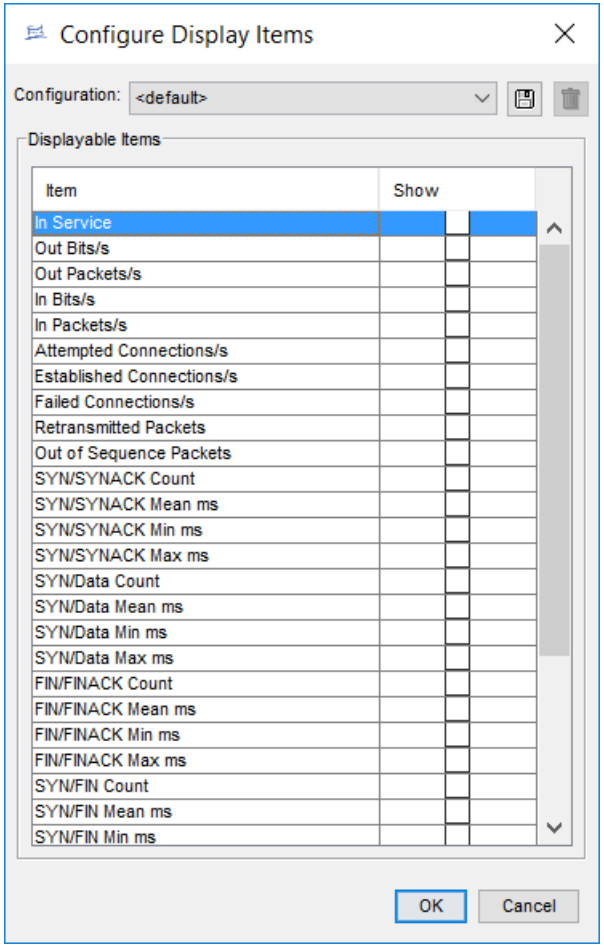
Normal/Fine Statistics

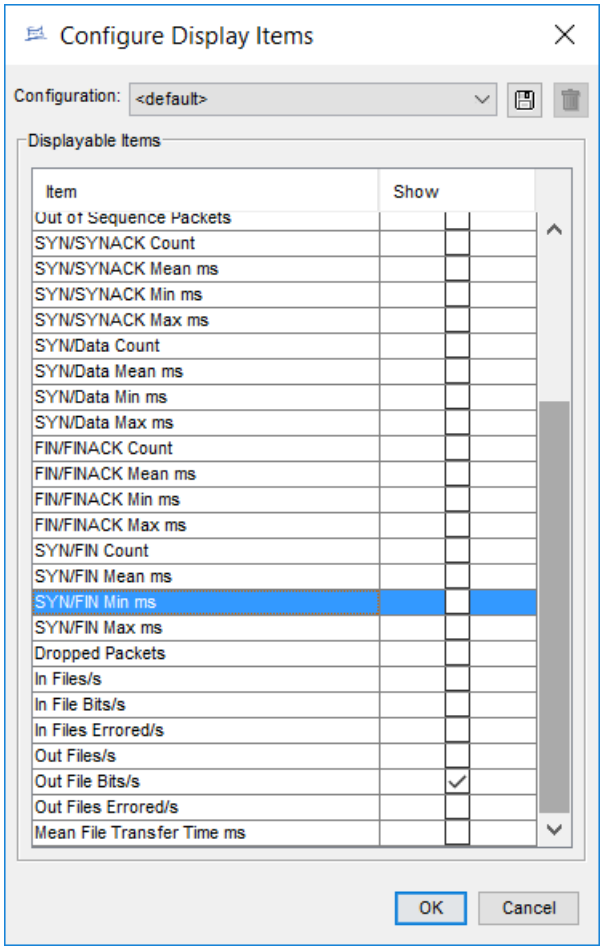
Applications – FTP Client



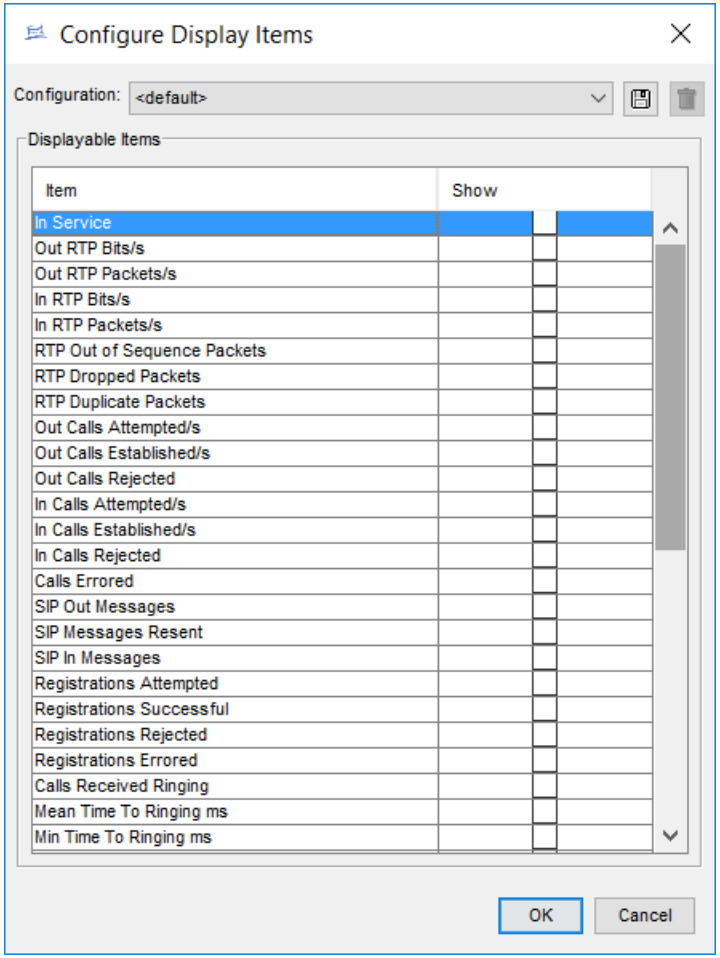


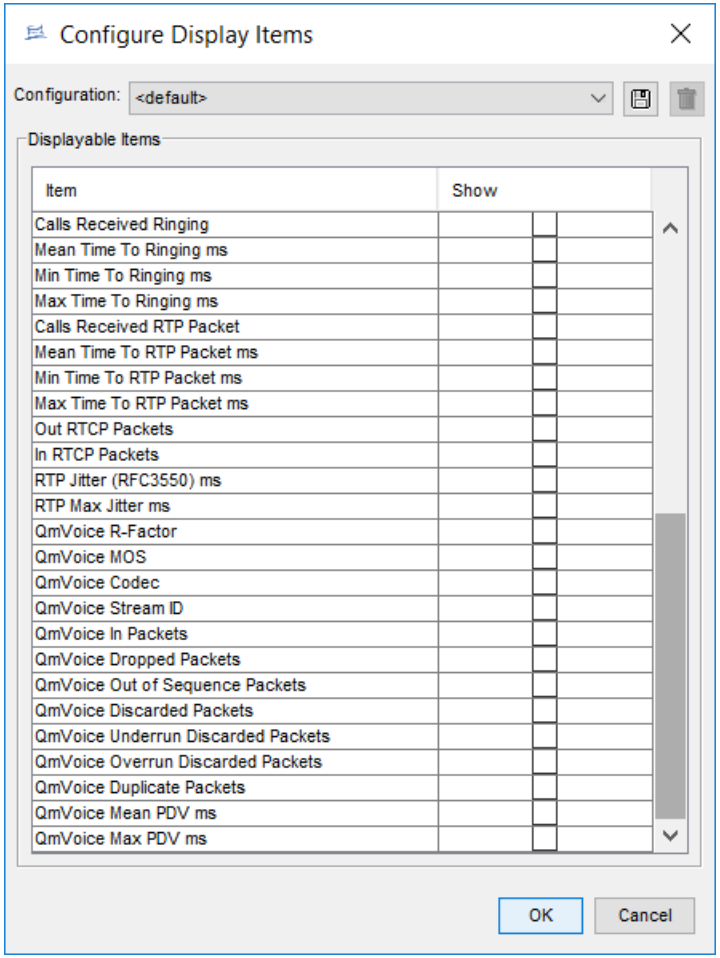
Applications – FTP Server



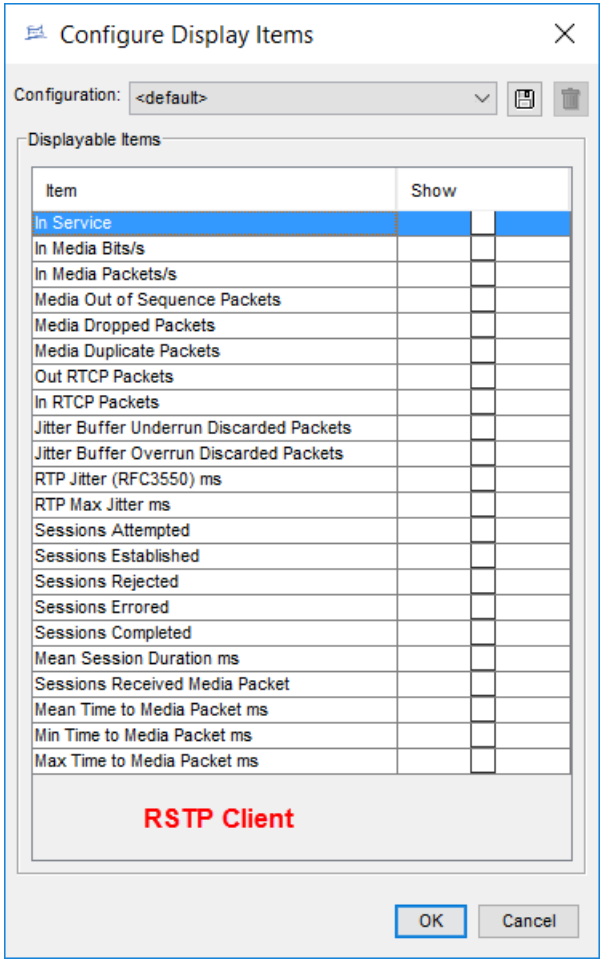


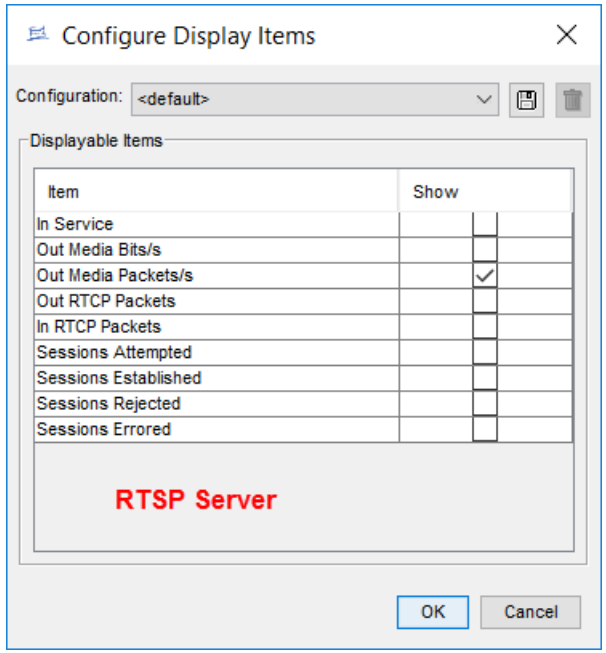
Applications – VoLTE



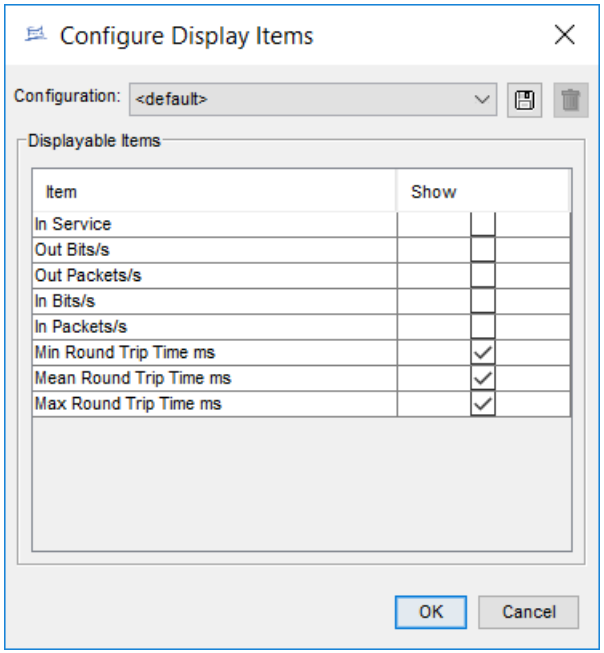


Applications – RTSP Client/Server

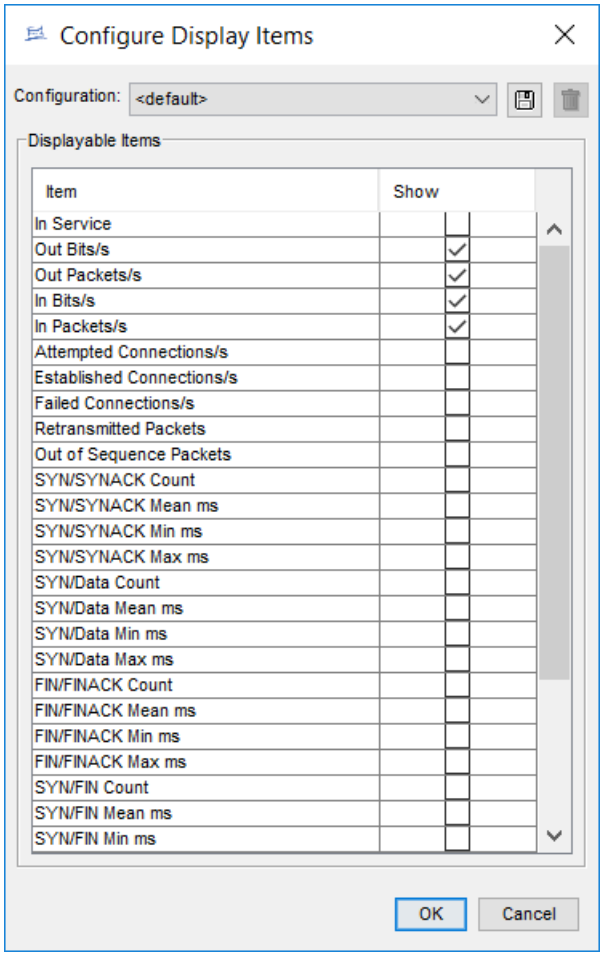


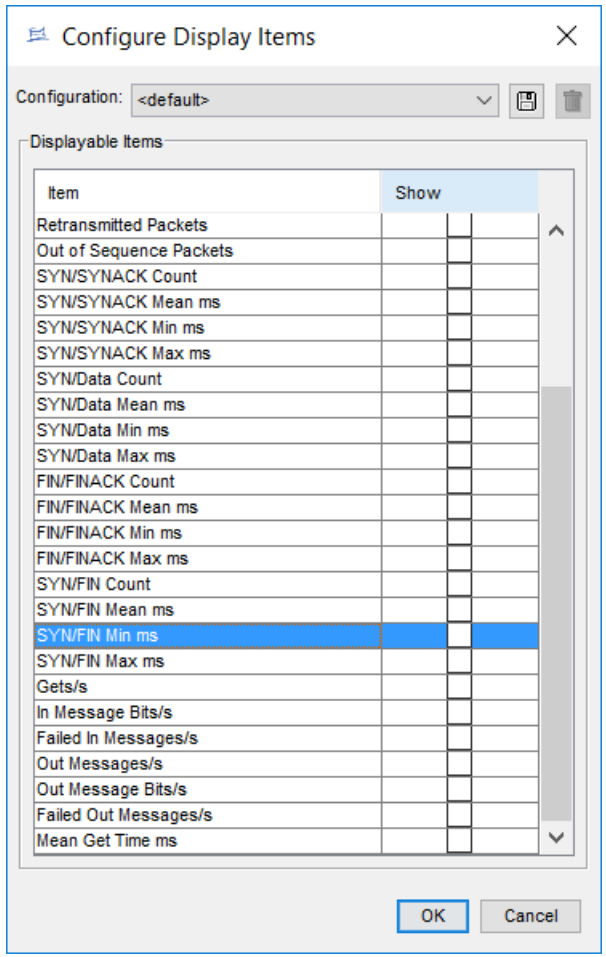


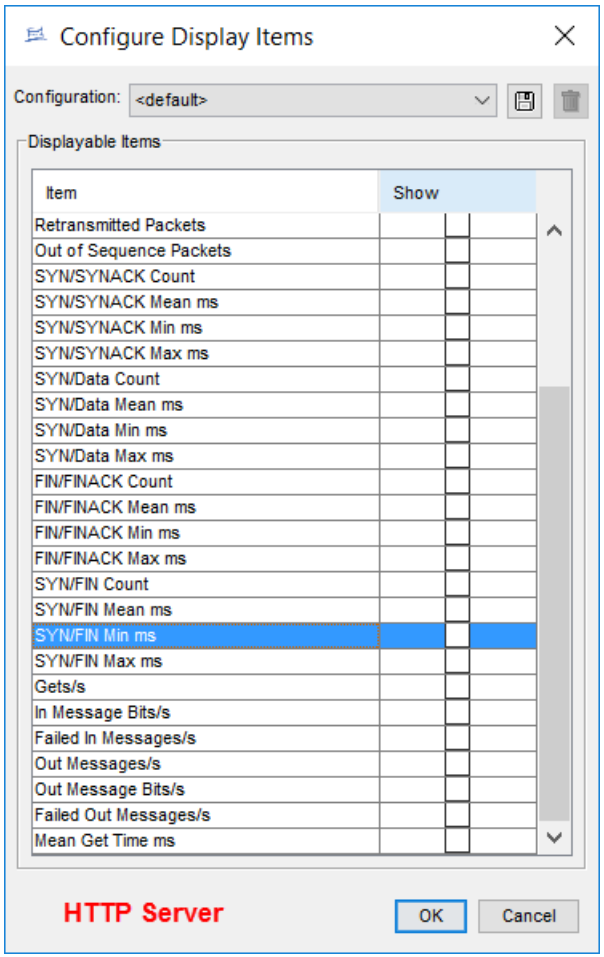
Applications – PING



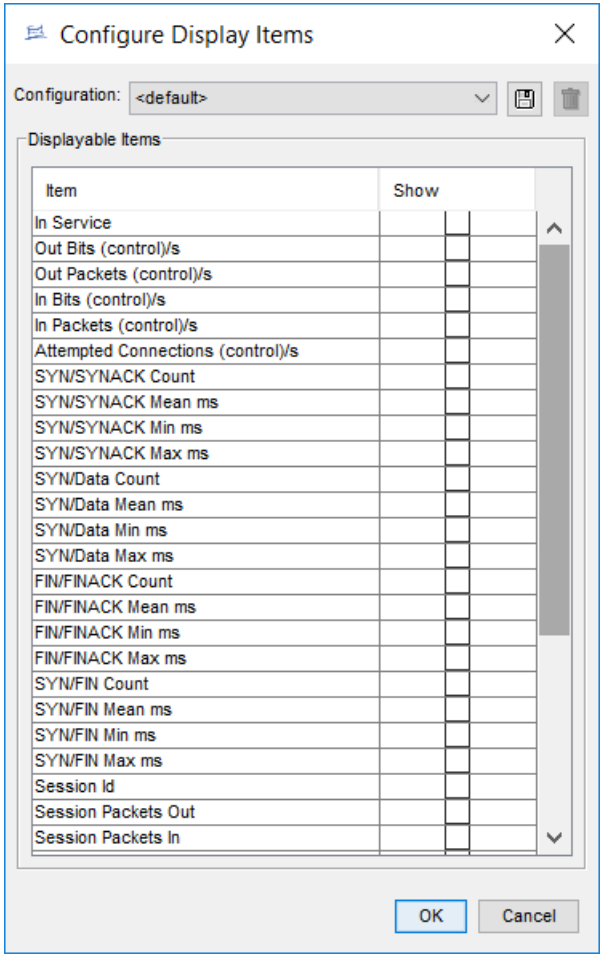
Applications – HTTP Client/Server

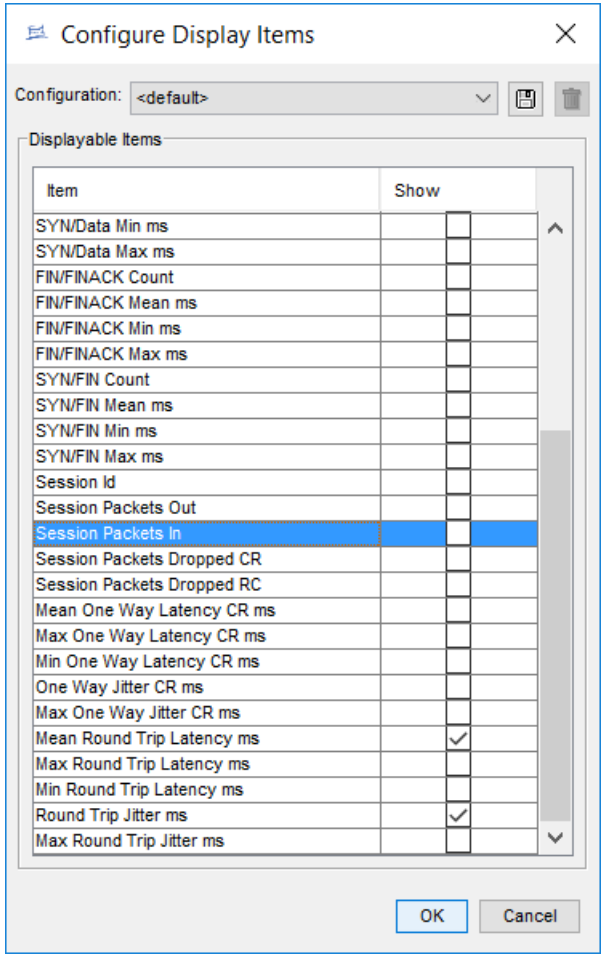


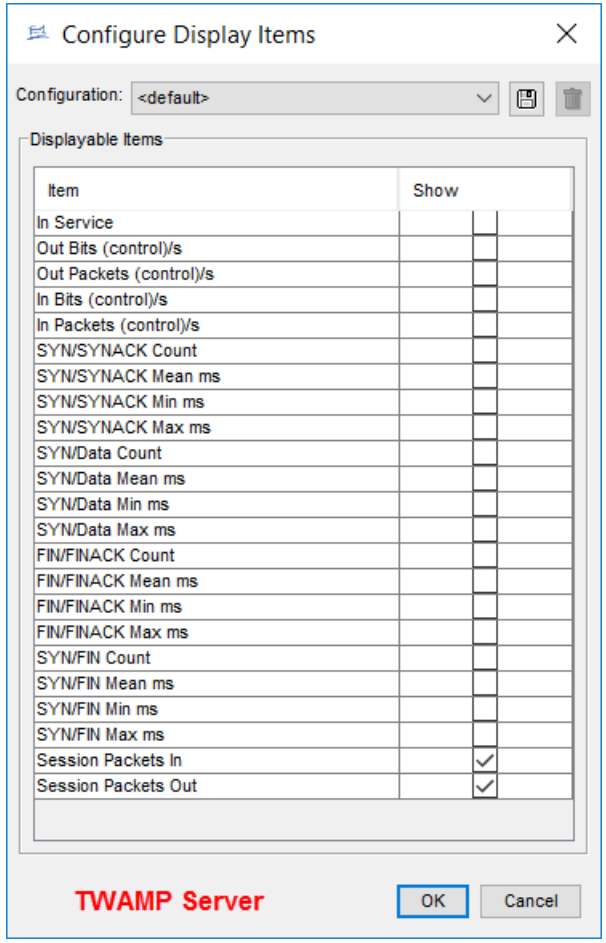




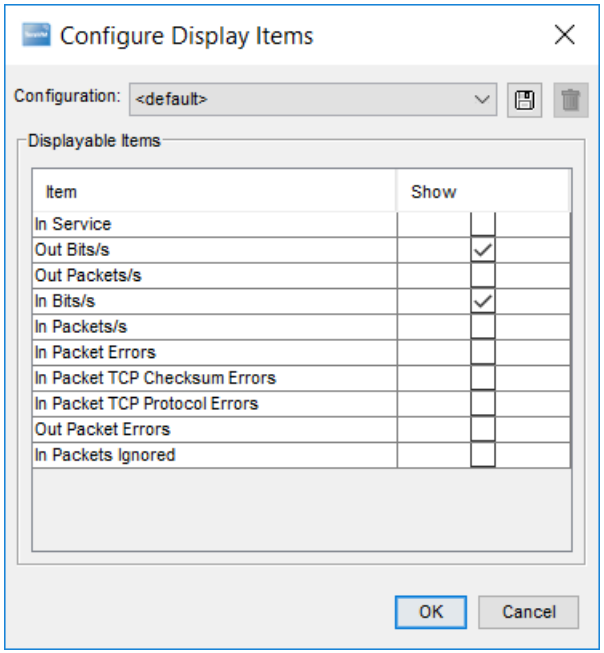
Applications – TWAMP Client/Server







Hosts – Internal Server/PPPoE



VLAN Configurations

VLAN Configurations

- 请参阅TTK780_001_Issue_3.pdf

Upgrade System & License Installation

RDA Upgrade System

- RDA软件版本升级，请联系TM500 FAE.

Additional Applications

- Voice services
- Video services
- Media & Voice Passive Analysis
- TWAMP – Two Way Active Measurement
- Thresholding
- TeraFlow
- SMS over IMS

Voice services

Will Voice be "just" data?

- Explosive demand, increasing price pressure and OTT competition drive VoLTE
- Opens new business opportunities
- Helps improve customer experience

Cobham VoLTE option allows emulation of VoLTE UEs with different audio codecs to ensure that the coveted QoE improvements are achieved, VoLTE traffic is prioritized appropriately through the entire network and performance can be optimized

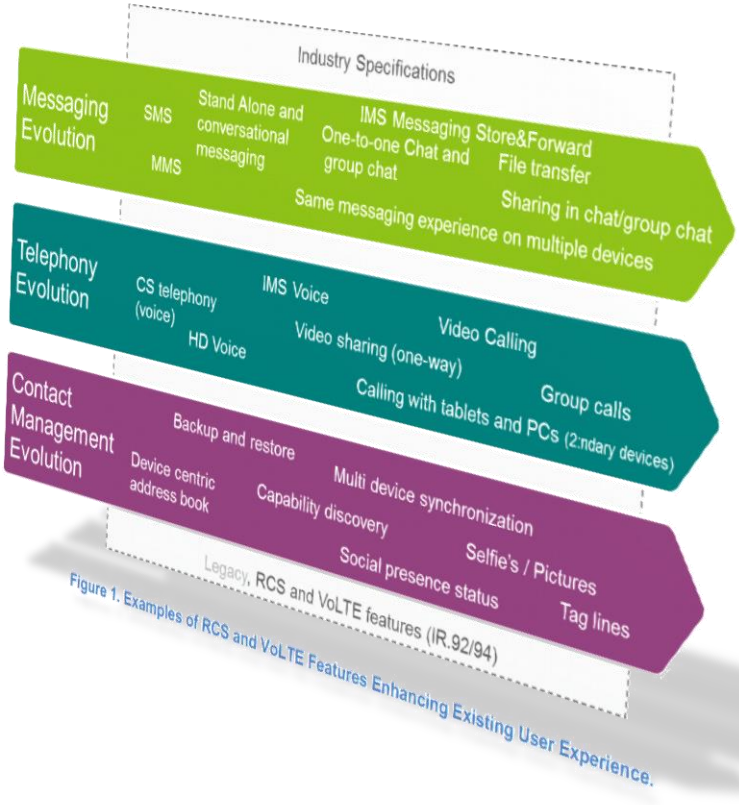


Figure 1. Examples of RCS and VoLTE Features Enhancing Existing User Experience.

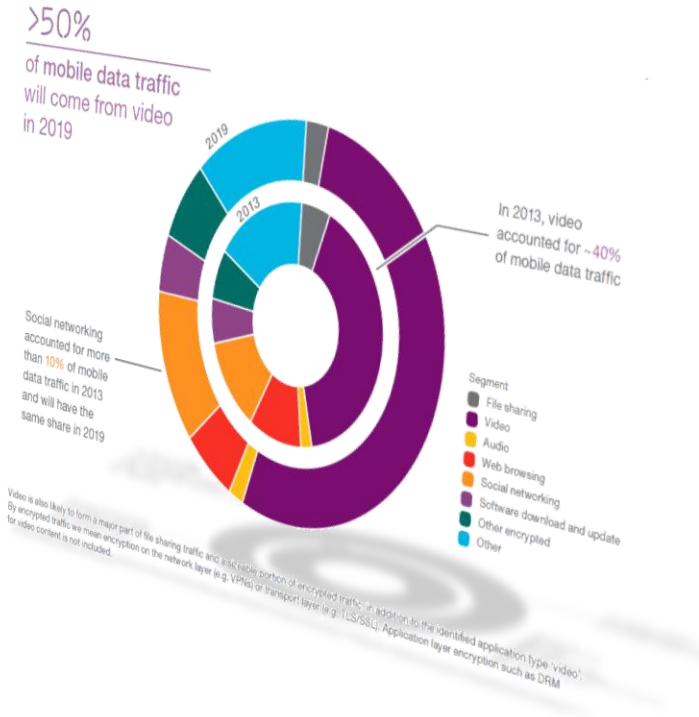
Connected – Seamless – Wireless

Video services

Video on demand (VoD) and video streaming (VS) are the most popular applications in LTE networks and thus are under most scrutiny for quality of experince.

Cobham Video service option allows emulation of UEs connecting to VoD or VS servers as well as emulation of these servers to see the impact on the network performance or to see the network impact on the Video service performance.

Cobham implementation supports multiple Audio and Video codecs which allows users to test with scenarios that reflect their own network or to evaluate planned deployment performance.



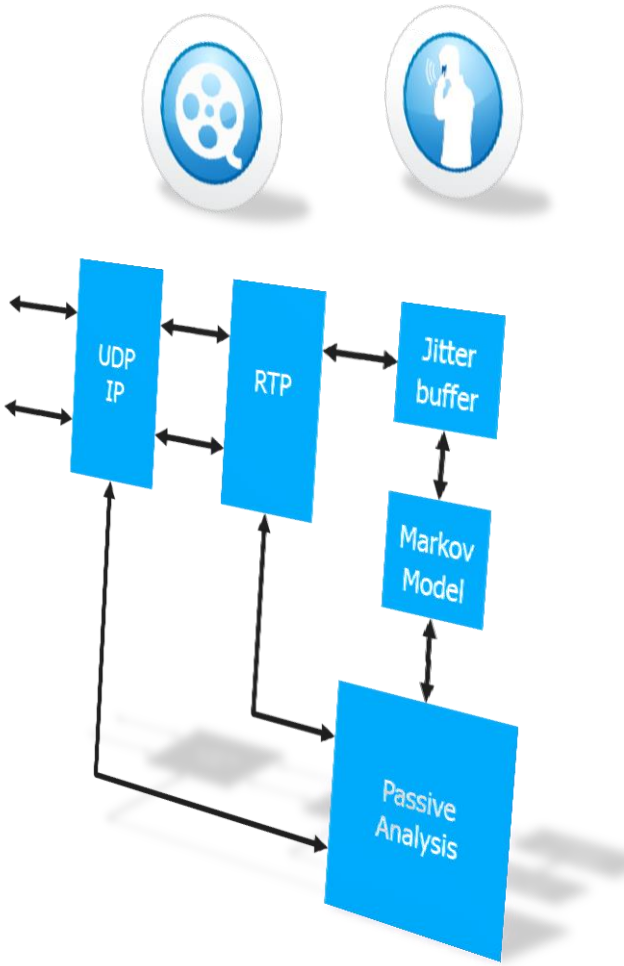
•*Ericsson-mobility-report-june-2014*

Media & Voice Passive Analysis

Service's overall quality is how the **video** or the **audio** quality is perceived by consumers. This is typically examplified with Mean Opinion Score (MOS). Cobham's Passive Analysis option allows to quantify how network layer imperfections affect this quality of experience (QoE) factor.

Cobham implementation supports both audio and video quality analysis and also uses:

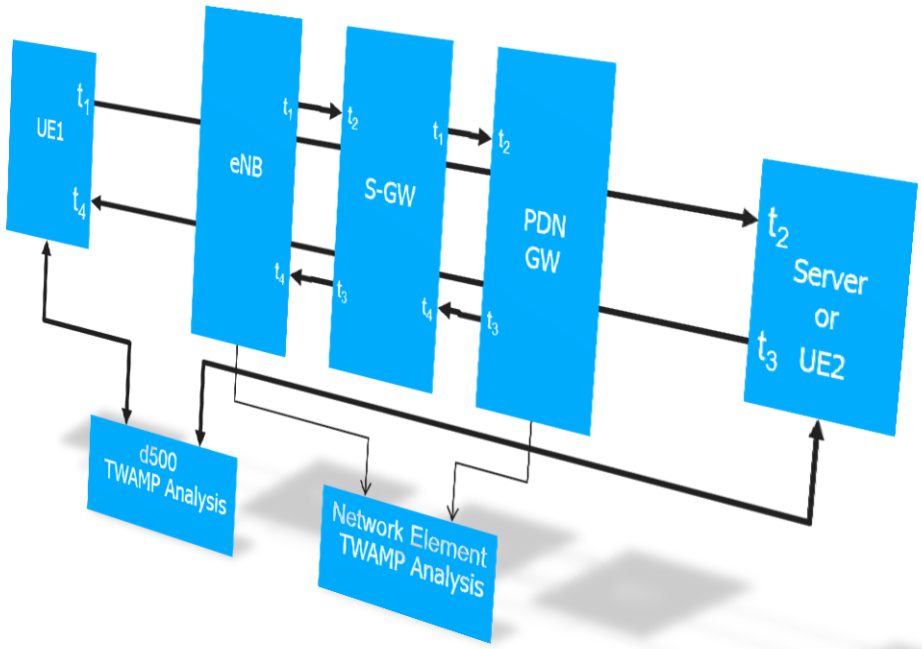
- Jitter Buffer models real UE packet queuing and playback effects to
  - detect lost packet
  - Predict which packets would be discarded
- Markov Model to statistically learn the distribution of lost and discarded packets during a call, and then apply this distribution for MOS calculation



TWAMP – Two Way Active Measurement

- Measuring the performance of IP networks is a challenge
  - Standard tools were designed for simple troubleshooting

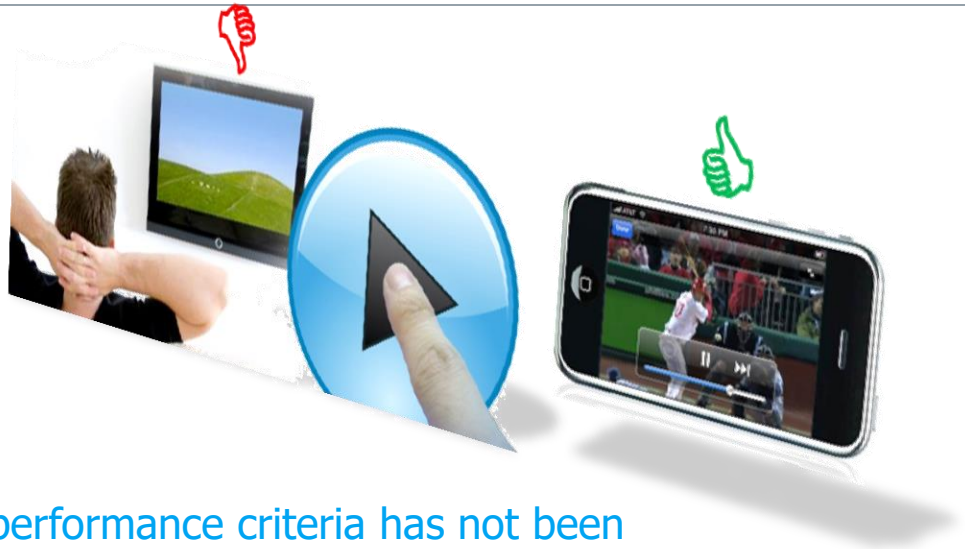
- The Two-Way Active Measurement Protocol (TWAMP)
  - defines a flexible method for measuring round trip IP performance among any two devices in a network that support the standard
  - provides a flexible choice of solutions and full visibility into network performance



Cobham TWAMP option is

- Compliant to work with any network element that supports TWAMP
- Allows measurements between any two endpoints
- IP performance can be measured effectively at all locations in the network

Thresholding



Cobham Thresholding Option

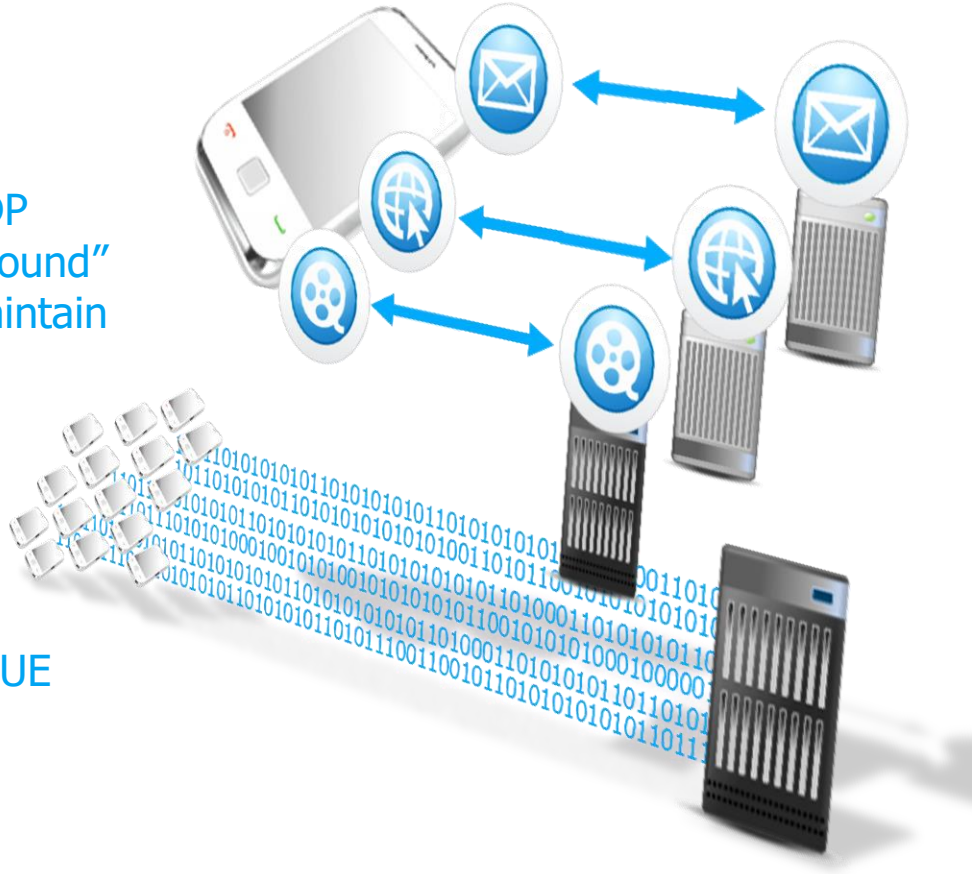
- automatically determines if the expected performance criteria has not been met during testing
- Saves time by identifying what, where and when it has been outside of tolerance
- Allows monitoring of multiple applications simultaneously with different criteria
  - Different UE groups (for example VIP customers and data only subscriptions) can have individual criteria
  - Setting up different violation and clearance duration

TeraFlow

Cobham TeraFlow Option creates TCP and/or UDP protocol traffic. This allows easily create "background" traffic while validating that other applications maintain acceptable level of performance.

Cobham TeraFlow Option

- Generation of traffic at pre-defined level
- Mirroring the UE data back for bi-directional measurement
- Can be configured and turned On and Off per UE



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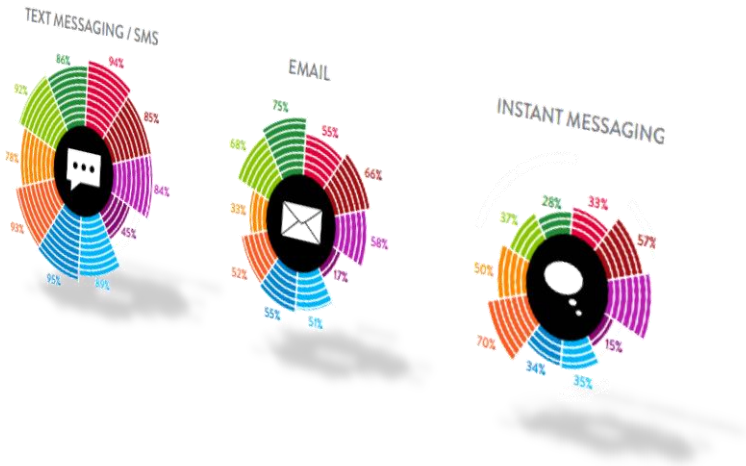
SMS over IMS

The IP Multimedia System (IMS) is not only used for VoLTE, but also to deliver other services such as traditional messaging services (SMS).

Cobham SMS option allows emulation UEs to connect to IMS SMS servers and ensure that the coveted integration of SMS services function properly and transmission and reception of SMS messages works properly through the entire network.



•*Nielsen Mobile-Consumer-Report-2013*

Troubleshooting

Troubleshooting

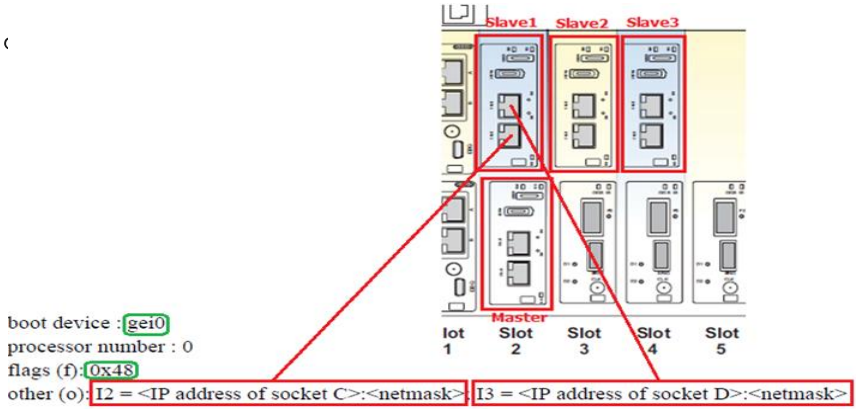
脚本无法导入RDA内

- 检查脚本Physical Interface是否和当前RDA硬件配置匹配。
  - 例如，当前RDA脚本是基于D500 Pairt （Core & Edge）Partition 1生成的，那么对应的Physical Interface分别为10/1/0（Host -> PPPoE）和20/1/1（Host -> Internal Server），如果导入Standalone D500，则需先用文本编辑器把Server对应的Physical Interface更新为10/1/1。
- 可以用文本编辑器批量替换修改RDA脚本。
  - 例如，把基于Partition 1生成的脚本导入Partition 2使用，则在导入脚本前，需要批量替换PPPoE对应的所有Physical Interface。

Troubleshooting

PPPoE IP地址获取不到

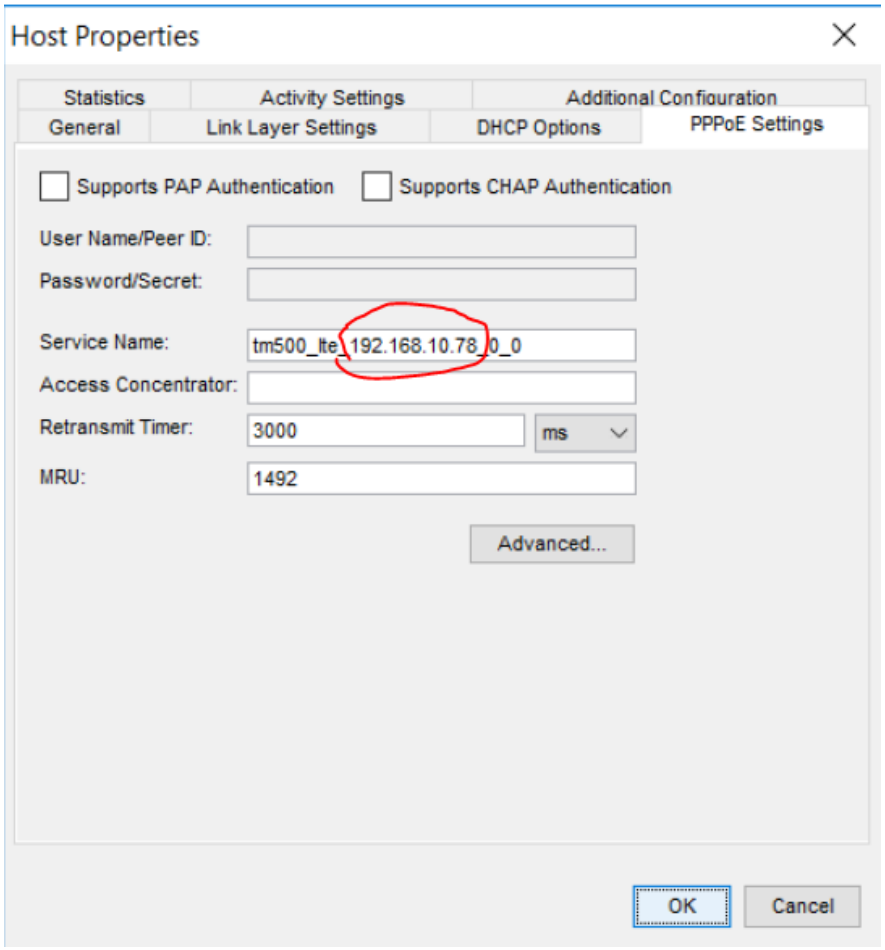
- 检查网线连接是否正确，尤其是RDA Hub上的端口是否和当前分区对应。
  - 例如，如果当前使用单台D500，并且使用的是分区2，那么RDA的Gb2口应该连接到Hub的1口，TM500的PPPoE口连接到Hub的3口，核心网SGi口连接到Hub的6口。
- 另外，还需注意TM500侧连接的网口是否是正确的PPPoE口（在TM500上排HLP卡上）。
- 检查TM500 PPPoE IP地址是否配置正确，可以通过串口线连接到TM500上排的HLP卡查看配置，PPPoE地址为other(o)字段内I2=后面的IP地址。



Troubleshooting

PPPoE IP地址获取不到

- 检查RDA脚本内PPPoE的IP地址是否与TM500 PPPoE口的IP地址一致。



Troubleshooting

PPPoE IP地址获取不到

- 检查RDA脚本内PPPoE的Physical Interface是否正确。例如，如果当前使用单台D500，并且使用的是分区3，那么PPPoE的Physical Interface应该是12/1/0。
- 如果以上配置和连线都没有问题，那么需要检查VLAN配置是否正确。注意单台RDA和一对RDA使用时配置的不同。比如，单台D500时，只需要一个Hub，VLAN 10在2口，VLAN11在3口，VLAN12在4口为Untag状态，VLAN16在5口，VLAN17在6口，VLAN 18在7口为Untag状态；一对D500时，需要两个HUB，VLAN 10~15分别在EDGE HUB的2~7口上Untag，VLAN 16~21分别在CORE HUB的2~7口上Untag。

Troubleshooting

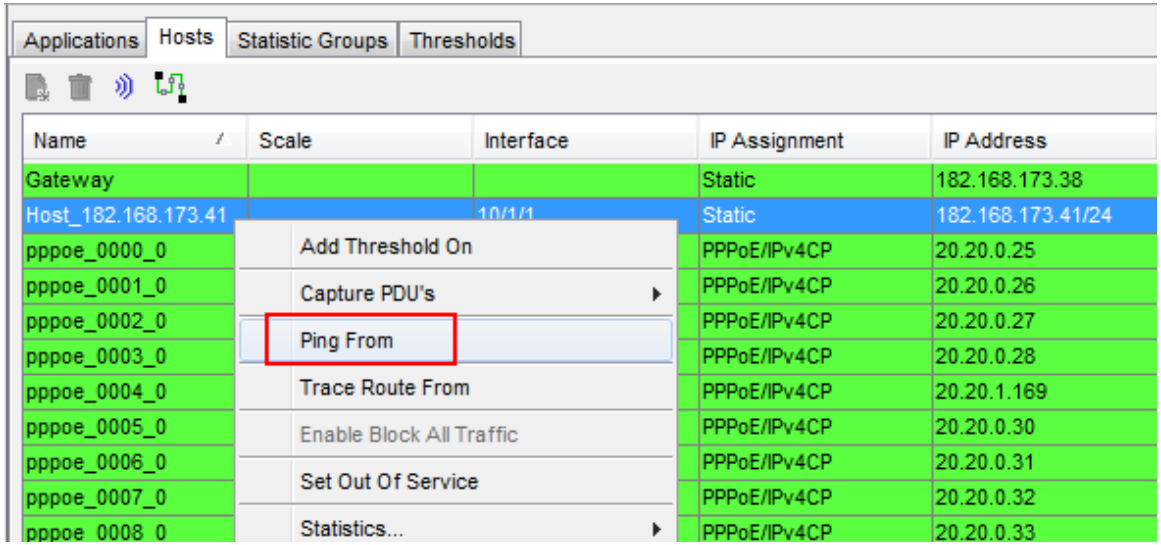
TMA无法调用RDA脚本

- 检查TMA脚本内，RDA脚本名称和分区等信息是否配置正确。
- TM500控制口和RDA管理口Gb1需连在同一个Hub，且它们的IP在同一个网段。

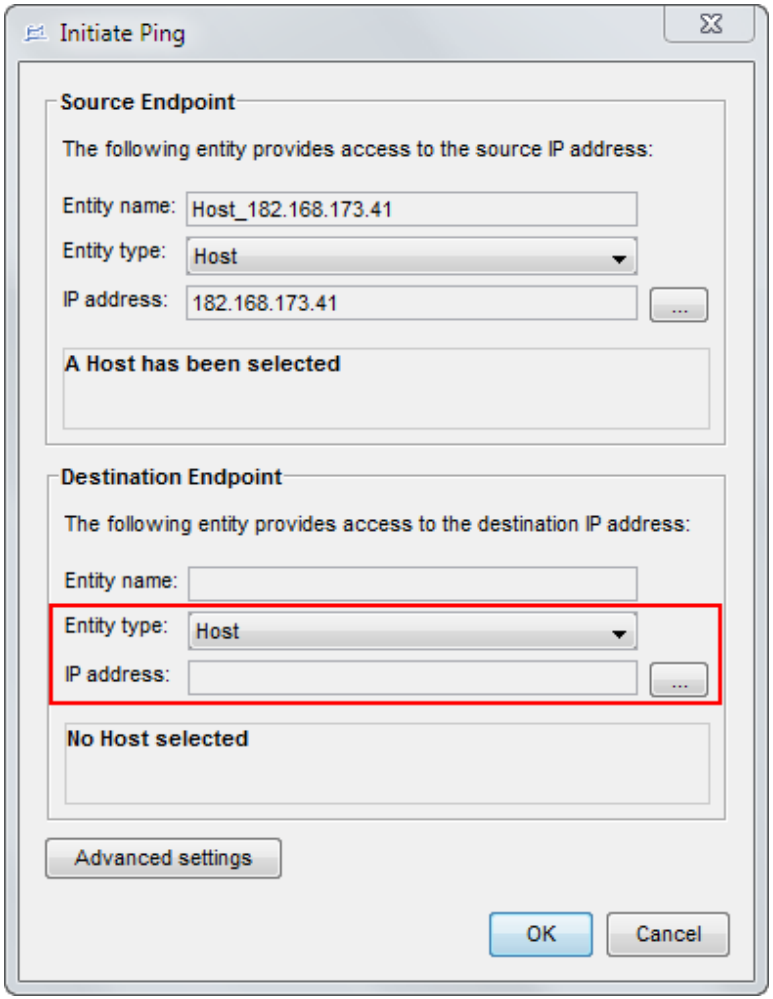
Troubleshooting

如何调试RDA业务不通

- 请先检查FTP/HTTP/UDP Server能否Ping通Gateway和pppoe_0000_0.
  - 在RDA客户端Hosts页面，右键点击FTP/HTTP/UDP Server，选择Ping From；



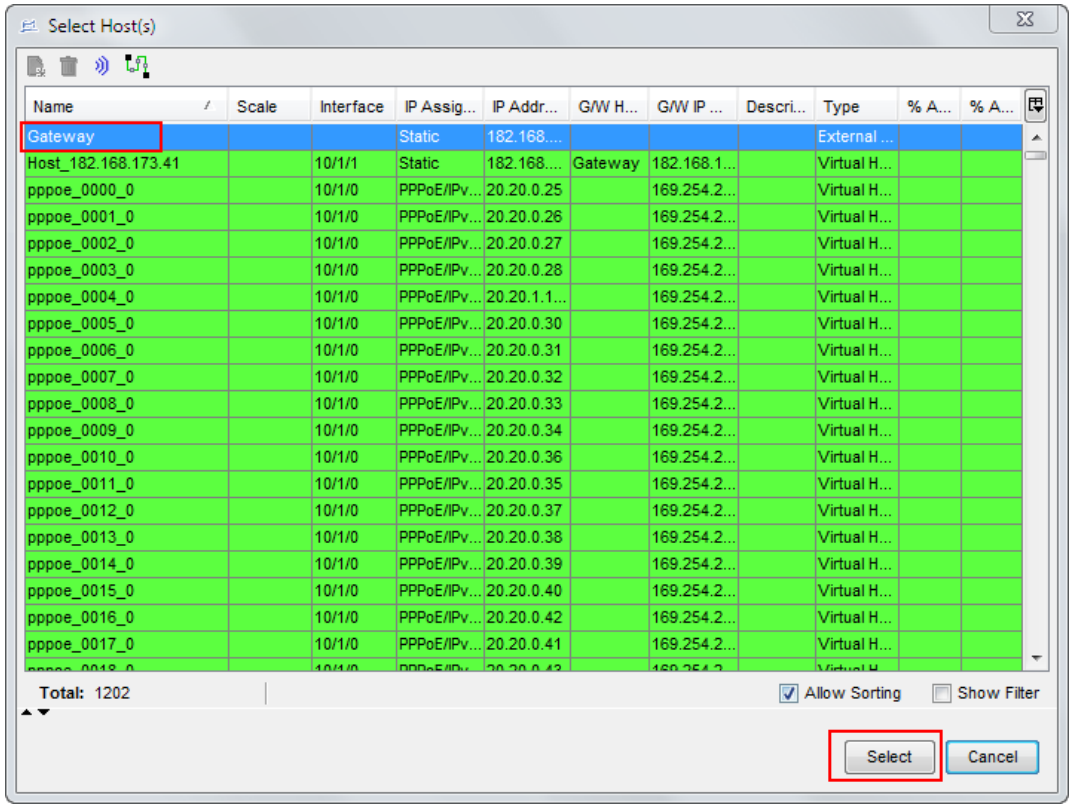
– 选择Entity type为Host，然后点击IP address右边的小图标；

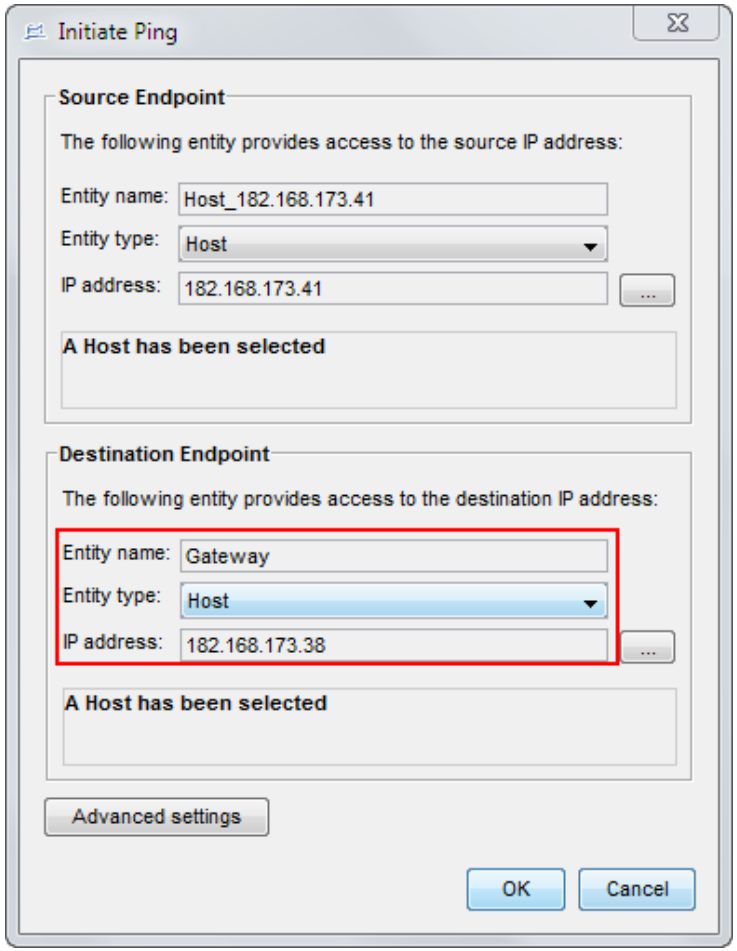


Troubleshooting

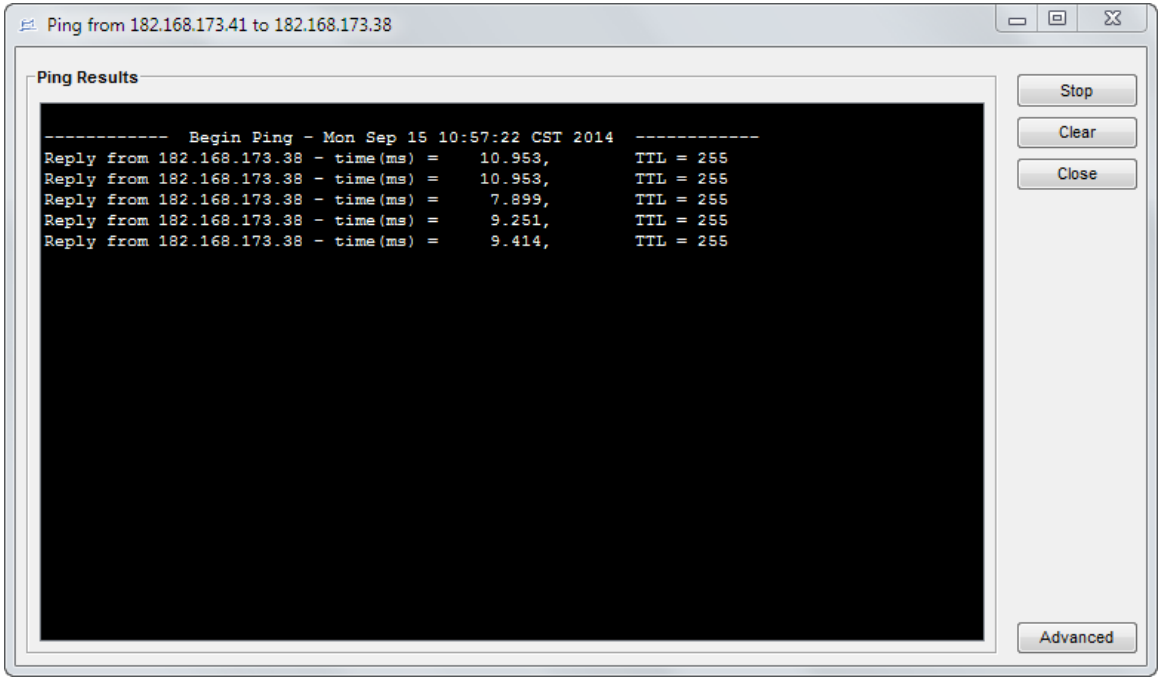
如何调试RDA业务不通

– 选择Host为Gateway；





- 确保从FTP/HTTP/UDP Server可以Ping通Gateway；

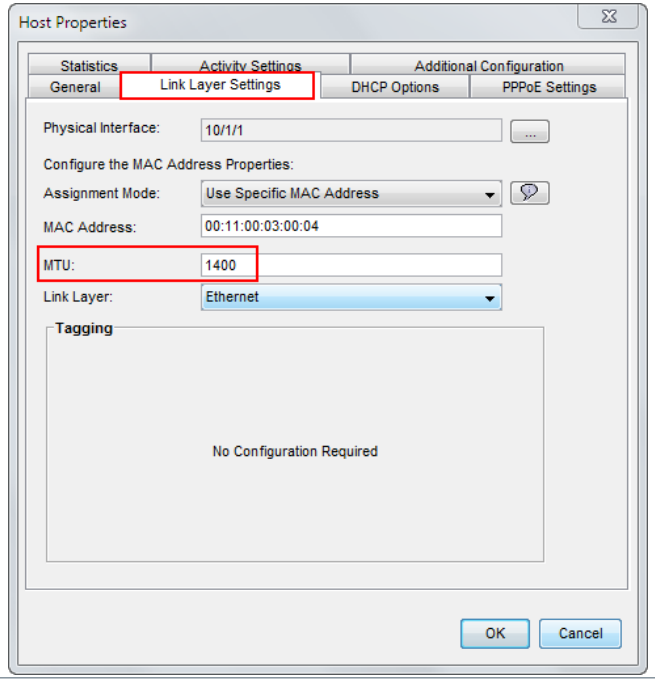


- 同理，请确认从FTP/HTTP/UDP Server可以 Ping通pppoe_0000_0；

- 如果FTP/HTTP/UDP Server无法Ping通Gateway，请确认：
  - Gateway是否可Ping；
  - Gateway/FTP/HTTP/UDP Server IP及子网掩码是否配置正确；

- 尝试找一台电脑，把IP配置为Gateway的IP，然后连接到VLAN Hub对应的SGi口，确认能否从FTP/HTTP/UDP Server Ping通这个IP，以确定是Gateway还是Gateway与SGi连接网线引起的异常；

- 如果FTP/HTTP/UDP Server都能Ping通Gateway和pppoe_0000_0，但是Shenick依然业务不通，请检查FTP/HTTP/UDP Server属性所配置的MTU是否超过了EPC/eNB配置的MTU。



Troubleshooting

无法抓取有效的出问题UE的PDU

- 比如VoIP测试中，有些问题会随机出现在某些UE上，如果问题出现之后再到对应的Application上抓取PDU，将不能抓到出问题时的log，如果提前抓取，又不确定问题会出现在哪些UE上。对于这种情况，可以随意选择一个UE的Application然后在抓取PDU时去掉对于源和目标IP地址的限制，这样就可以抓取所有UE的log了，问题出现之后，再在WiresharK内过滤出对应UE的IP地址就可以了。

References

- Real Data Apps Overview.pptx
- RDA_D500-D1000.pptx
- TTK780_001_Issue_3.pdf

Change History

Version	Date	Author	Reviewed by	Approved by	Change history
0.1	10/05/2016	Klein Jiang	NA	NA	Initial draft
0.2	29/05/2016	Klein Jiang	NA	NA	Reviewed by Corey/Sining
0.3	21/06/2016	Klein Jiang	NA	NA	Reviewed by Klein
0.4	25/07/2016	Klein Jiang	NA	NA	Update

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