智慧網路系統建置與實作

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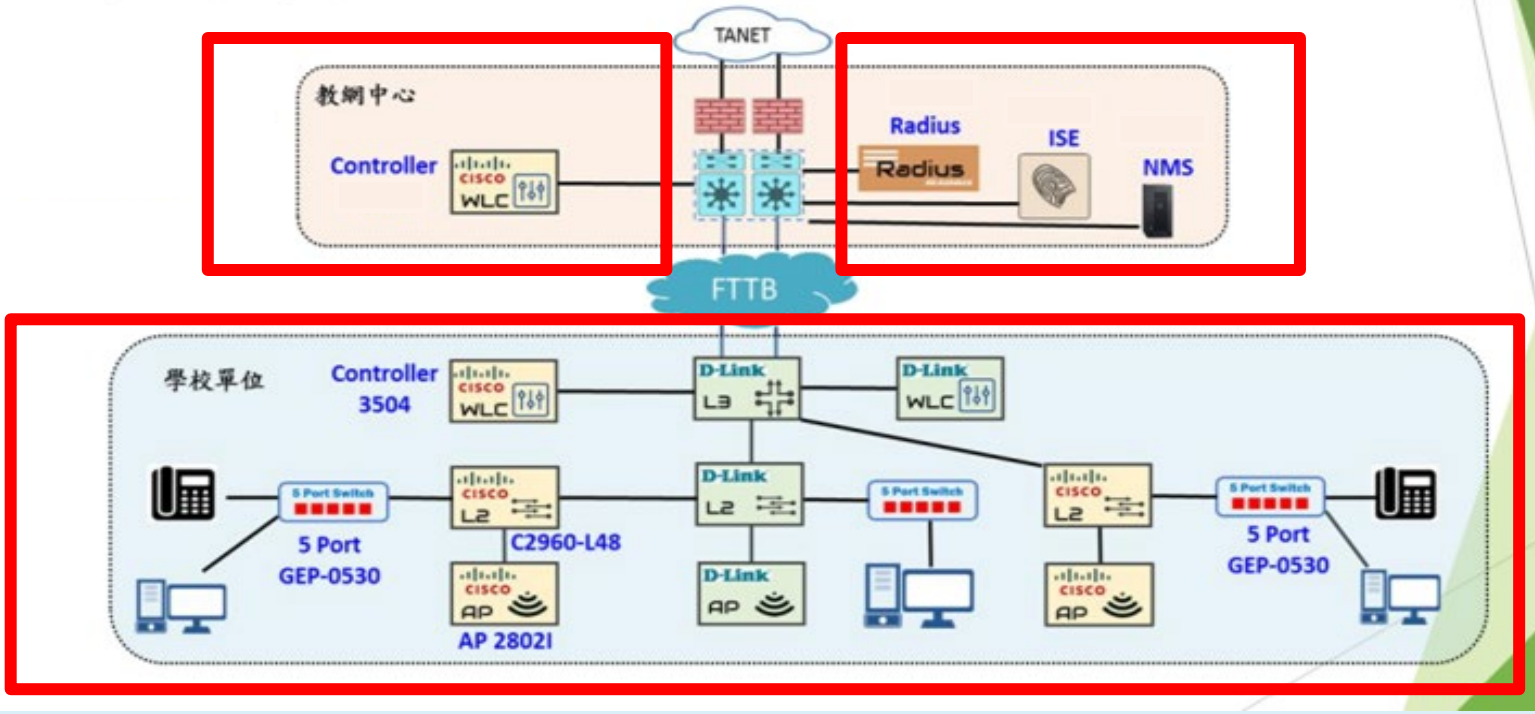
新北市教網

課程主題及環境需求

- Lab需求雙螢幕或是開兩台電腦上課較優。
- 在學校操作較好。校外要用vpn。
- 智慧　網路　管理　系統
- 網路架構說明
- 網段分配說明
- 瞭解使用siraya觀察各種交換器L2 、L3。
- 用PRTG實現
  - nms.ntpc.edu.tw
  - https://www.paessler.com/
- PRTG
  - DEVICE、Sensor、WLC sensor、sFlow
- 比較各家智慧網管。
- 網路偵測工具介紹tcpview、process explore

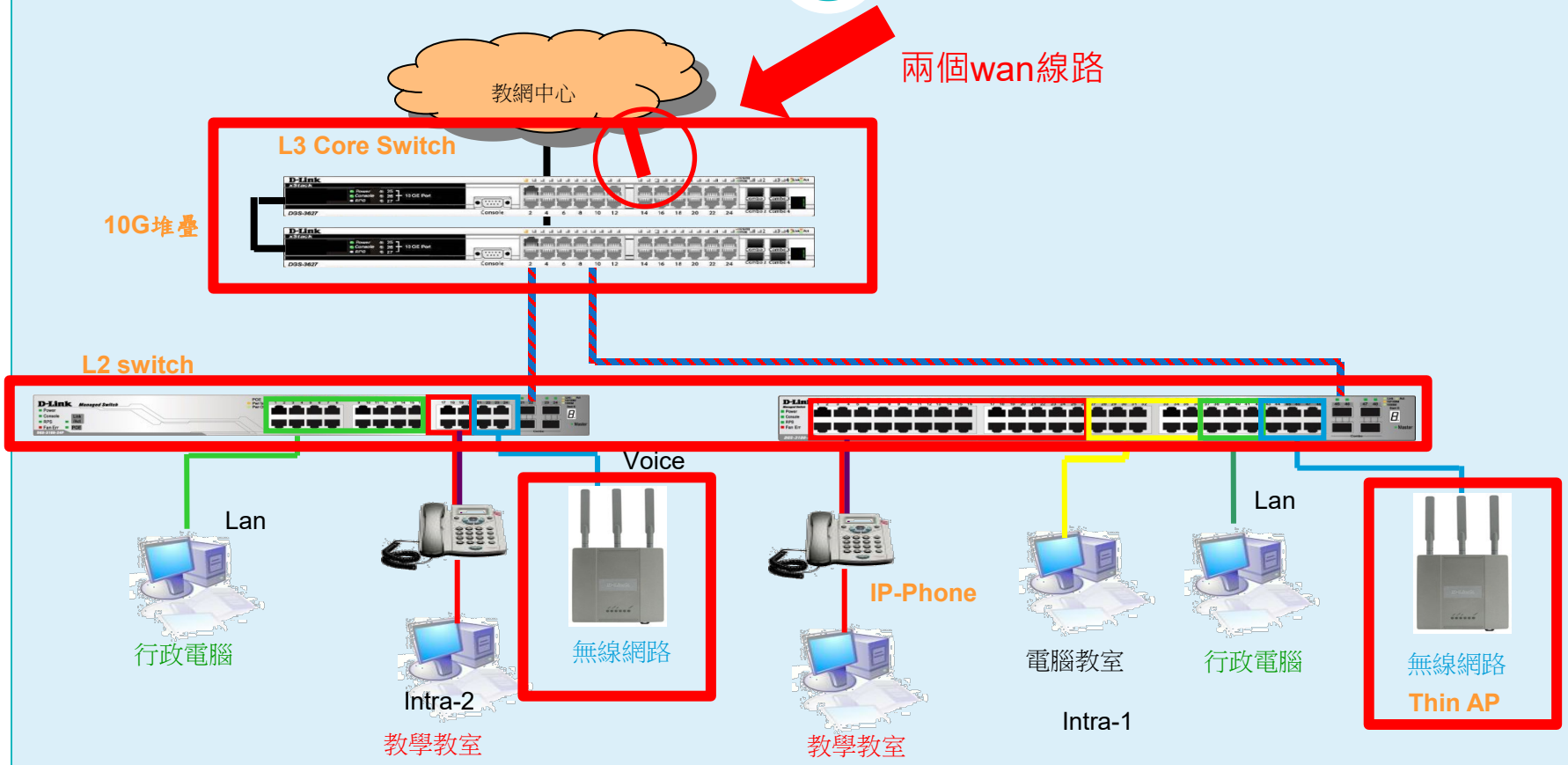
整體網路架構(拓譜topology建立)

- 整體系統架構圖

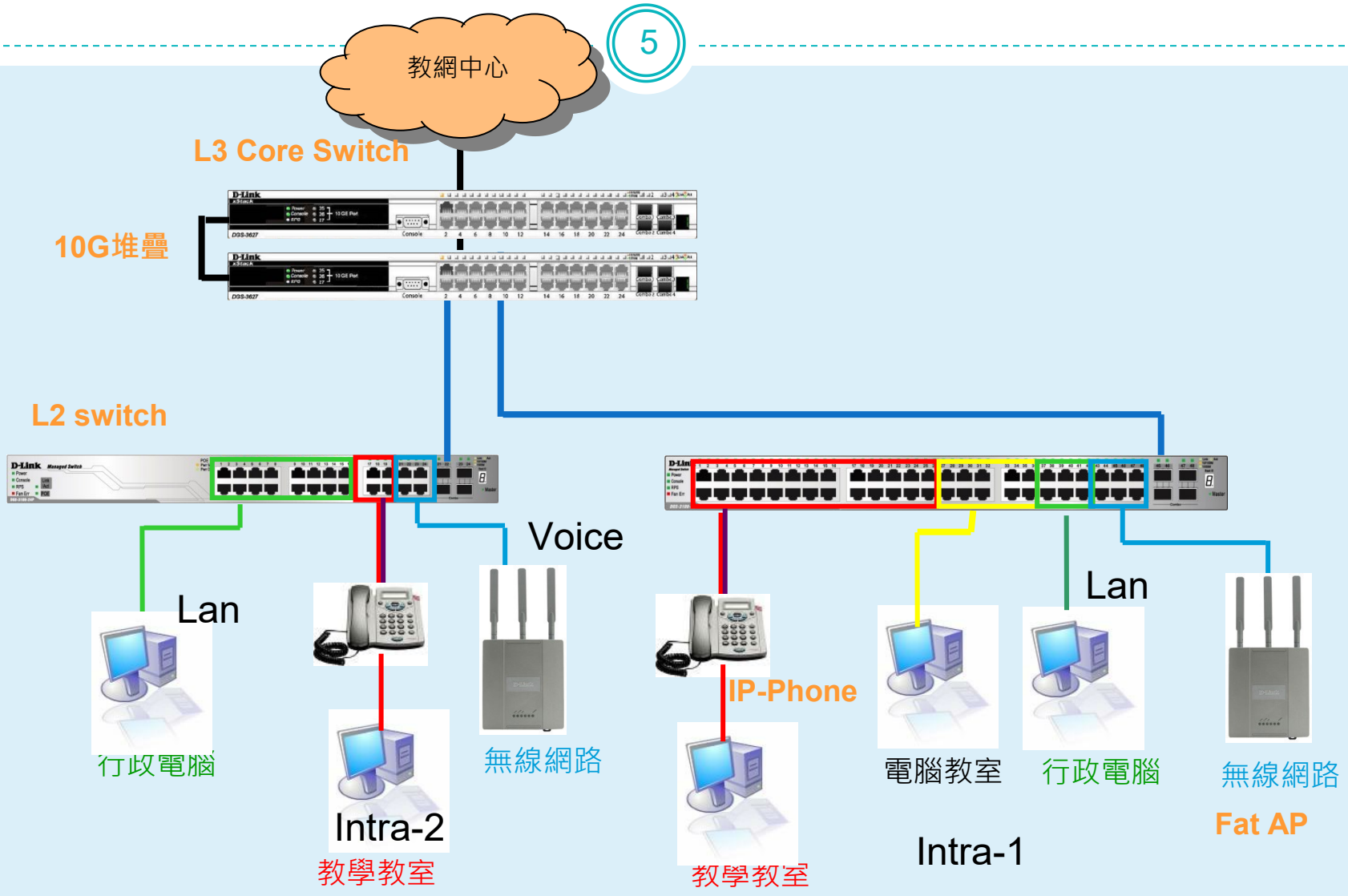


高國中小學校園網路vlan架構圖

4



新北市高國中小學校園網路架構圖



(實作資料) 學校ip分配表

- http://mis.ntpc.edu.tw
  重要資料彙整
  - 網路服務
  - 網路設定
  - 連線單位Ipv4分配
  - 連線單位Ipv6分配
  - 光纖連線單位

學校IP基本網段(考試：vlan 31-34網段)

Vlan	VID	網段	IPv6	用途
Mgt	1	10.226.56.254	2001:288:22xx:1::/64	網管用 >101 L2,>201 AP
Wan	2	163.20.202.184/29	2001:288:2201::xx/124	對外連結網段
Lan	5	163.20.66.254/24	2001:288:22xx:5::/64	行政用 保留<10 ；>250
dsa_wan	8	10.253.56.254/24	2001:288:22xx:8::/64	DSA-WAN IP (10.253.56.1)
Intra-1	10	10.231.56.254/24	2001:288:22xx:10::/64	電腦教室
Intra-2	20	10.241.56.254/24	2001:288:22xx:20::/64	教學教室
Voice	25	10.243.56.0/24	2001:288:22xx:25::/64	VoIP
Wlan	30	10.251.56.254/24	2001:288:22xx:30::/64	無線網路 (IP移至DSA-3600使用)
WPA2	35	10.245.56.0/24	2001:288:22xx:35::/64	無線WAP2用
MAC	36	10.247.56.0/24	2001:288:22xx:36::/64	無線Mobile用

PRTG NETWORK MONITOR

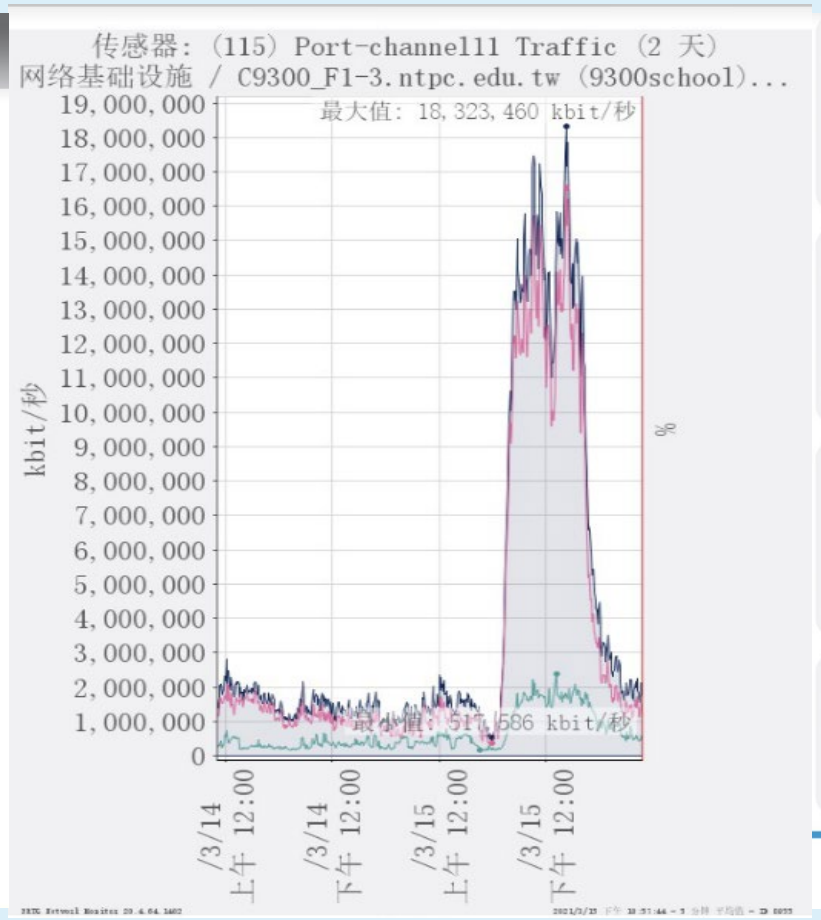
- 監視DHCP 、DNS、Gateway
- 監視學校L3 Router重要 port
- 監視重要電腦
- 監視cisco wifi
- sFlow
- 設計一個手機監控智慧網管

先備基礎知識

- NMS
- SNMP　service port　161　162
  - https://youtu.be/Lq7j-QipNrI

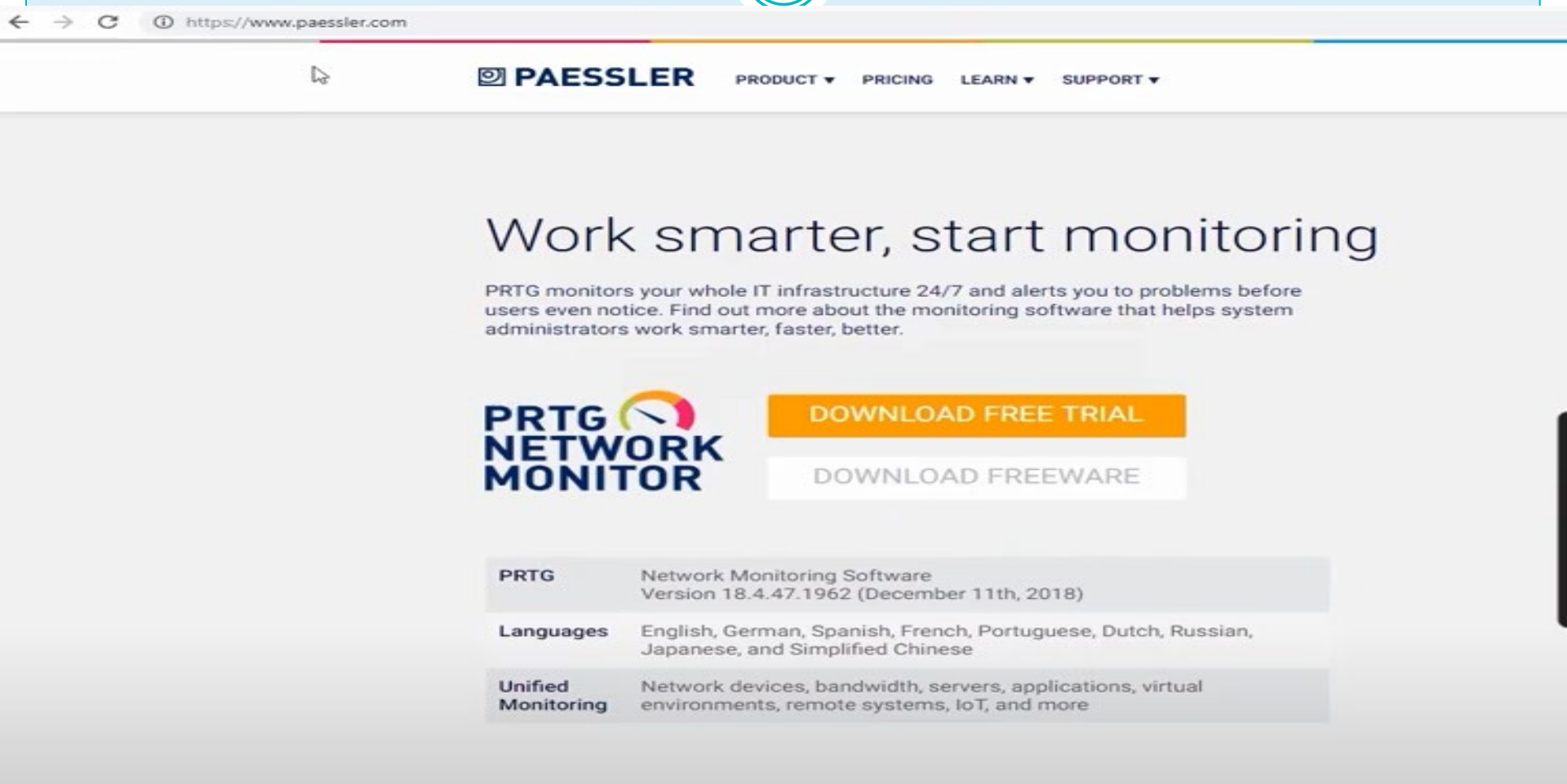
手機監控


Alfred
2021. 03. 15 下午 10:56
Back
网络基础设施
DNS: dns153
2
DNS: dns154
2
forti3950b-a
4
forti3950b-b
2
C9300_F1-3.ntpc.edu.tw (9300...
24
C9300-NCCU
15
NX_B (n7k-b) [Cisco Device]

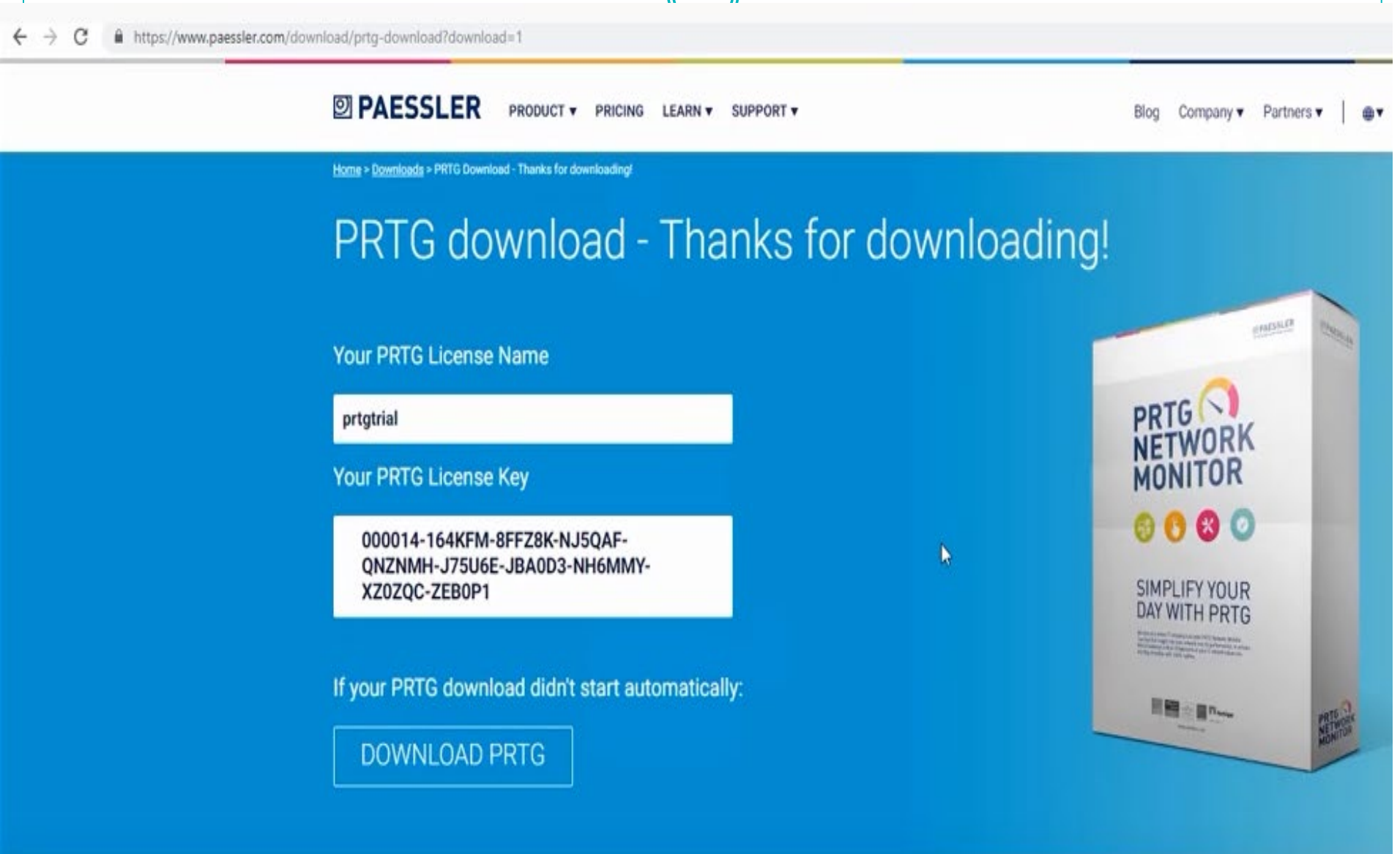

传感器：(115) Port-channel11 Traffic (2 天)
网络基础设施 / C9300_F1-3.ntpc.edu.tw (9300school)...
最大值: 18,323,460 kbit/秒
最小值: 517,586 kbit/秒
kbit/秒
%
19,000,000
18,000,000
17,000,000
16,000,000
15,000,000
14,000,000
13,000,000
12,000,000
11,000,000
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
/3/14 上午 12:00
/3/14 下午 12:00
/3/15 上午 12:00
/3/15 下午 12:00


(101) TenGigabitEthernet2/1/1 Traffic
确定
Last Value: 575,332 kbit/秒
(102) TenGigabitEthernet2/1/2 Traffic
确定
Last Value: 304,412 kbit/秒
(103) TenGigabitEthernet2/1/3 Traffic
确定
Last Value: 284,344 kbit/秒
(115) Port-channel11 Traffic
确定
Last Value: 1,738,718 kbit/秒
W 1
99
Last Update: 2021/3/15, 10:59 PM

下載 www.paessler.com



License key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PRICING
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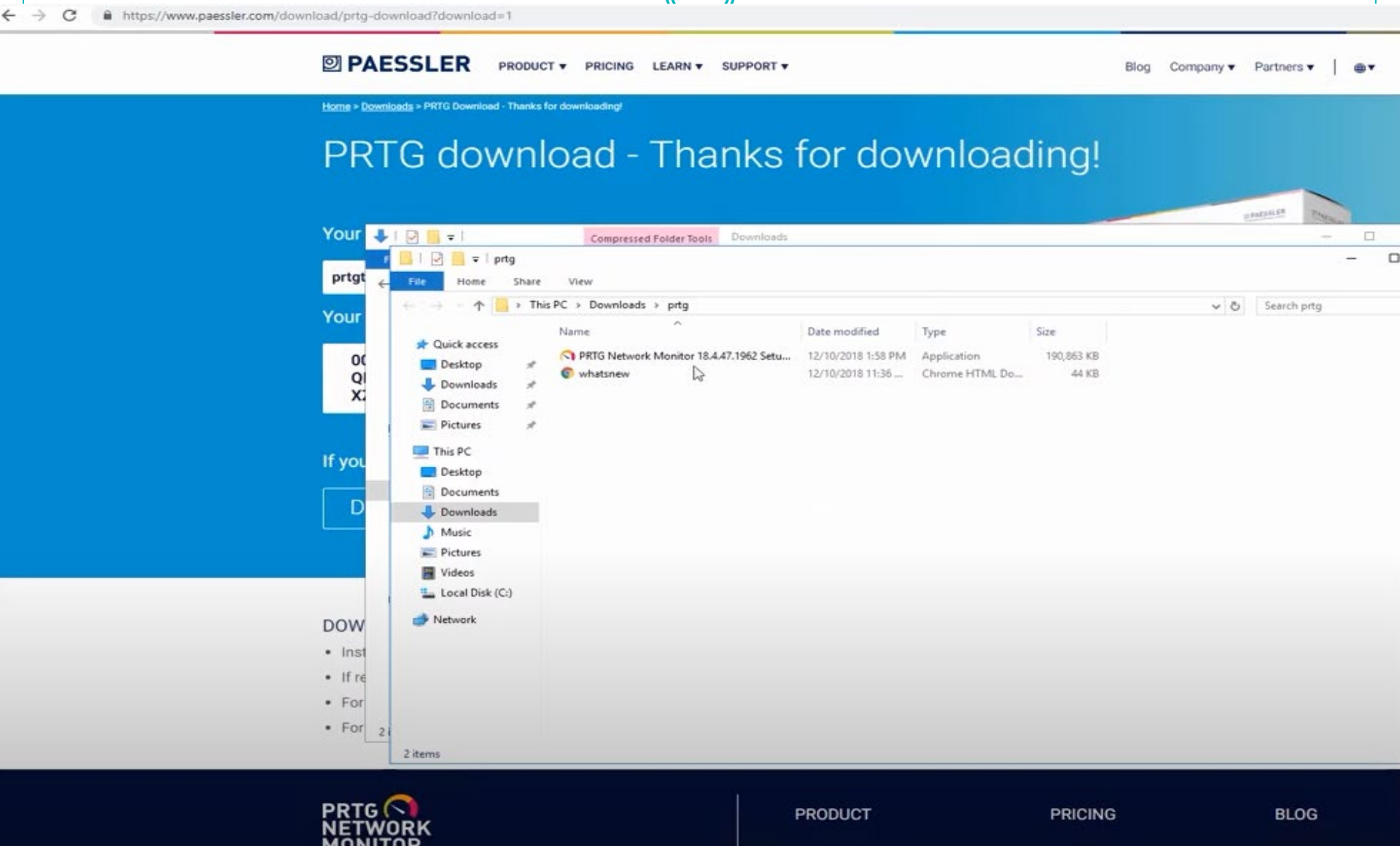
Partners ▾
Home > Downloads > PRTG Download - Thanks for downloading!
PRTG download - Thanks for downloading!
Your PRTG License Name
prtgtrial
Your PRTG License Key
000014-164KFM-8FFZ8K-NJ5QAF-QNZNMH-J75U6E-JBA0D3-NH6MMY-XZ0ZQC-ZEB0P1
If your PRTG download didn't start automatically:
DOWNLOAD PRTG
PRTG NETWORK MONITOR
SIMPLIFY YOUR DAY WITH PRTG

下載、安裝


https://www.paessler.com/download/prtg-download?download=1
PAESSLER
PRODUCT
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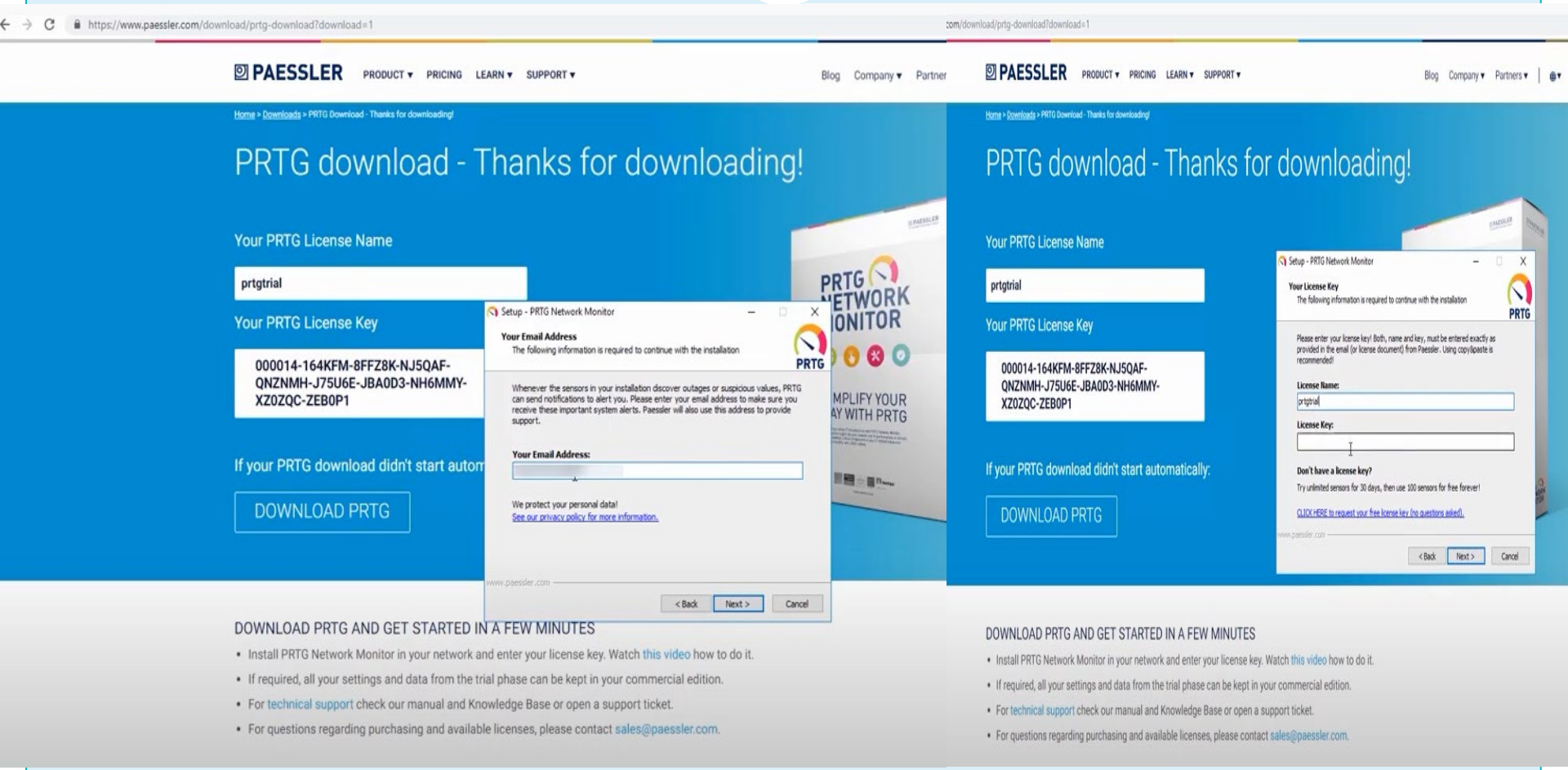
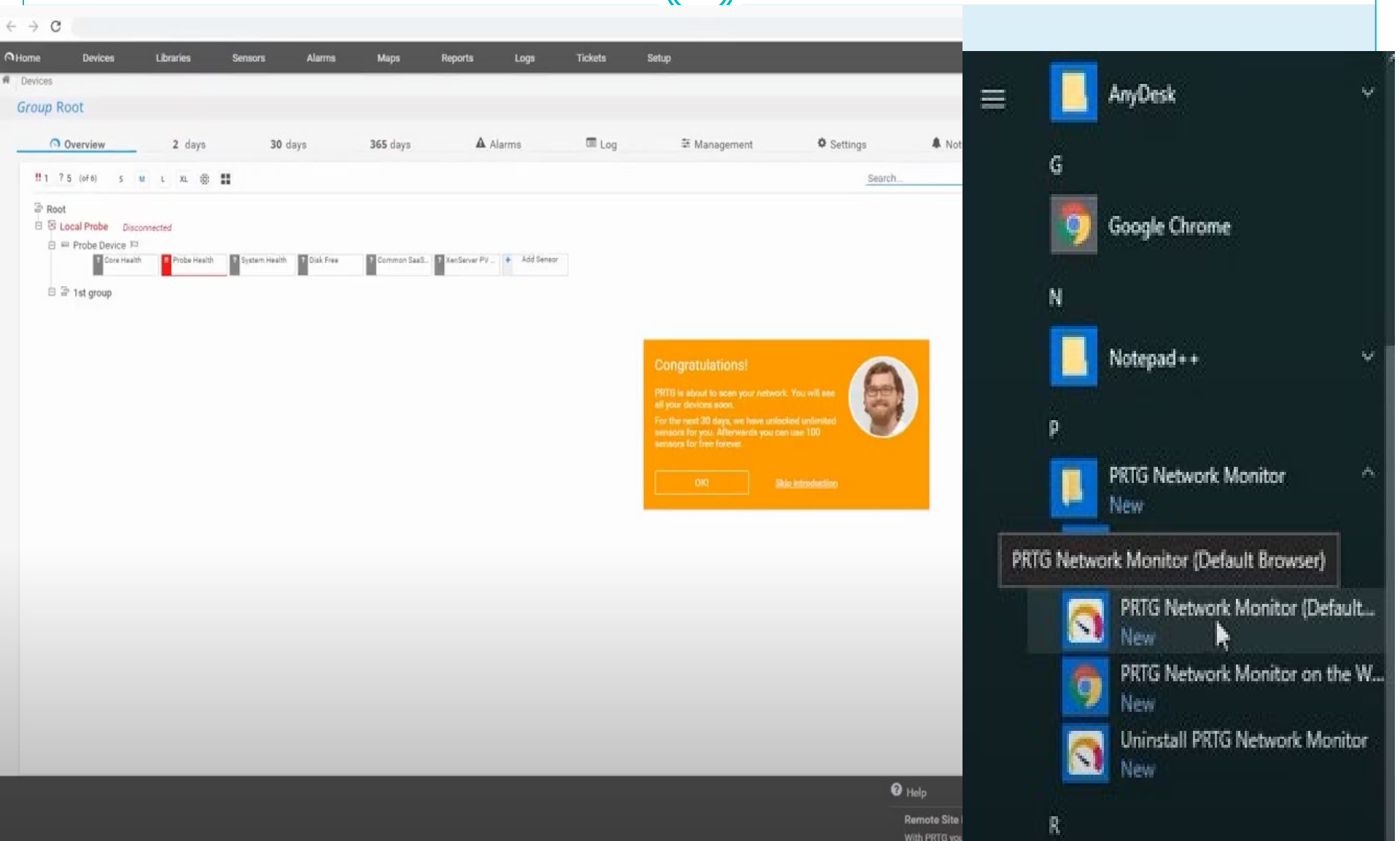
SUPPORT
Blog
Company
Partners
Home > Downloads > PRTG Download - Thanks for downloading!
PRTG download - Thanks for downloading!
Compressed Folder Tools
Downloads
prtg
File
Home
Share
View
This PC > Downloads > prtg
Search prtg
Quick access
Desktop
Downloads
Documents
Pictures
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
Network
Name
Date modified
Type
Size
PRTG Network Monitor 18.4.47.1962 Setu...
12/10/2018 1:58 PM
Application
190,863 KB
whatsnew
12/10/2018 11:36 ...
Chrome HTML Do...
44 KB
2 items
PRTG NETWORK MONITOR
PRODUCT
PRICING
BLOG

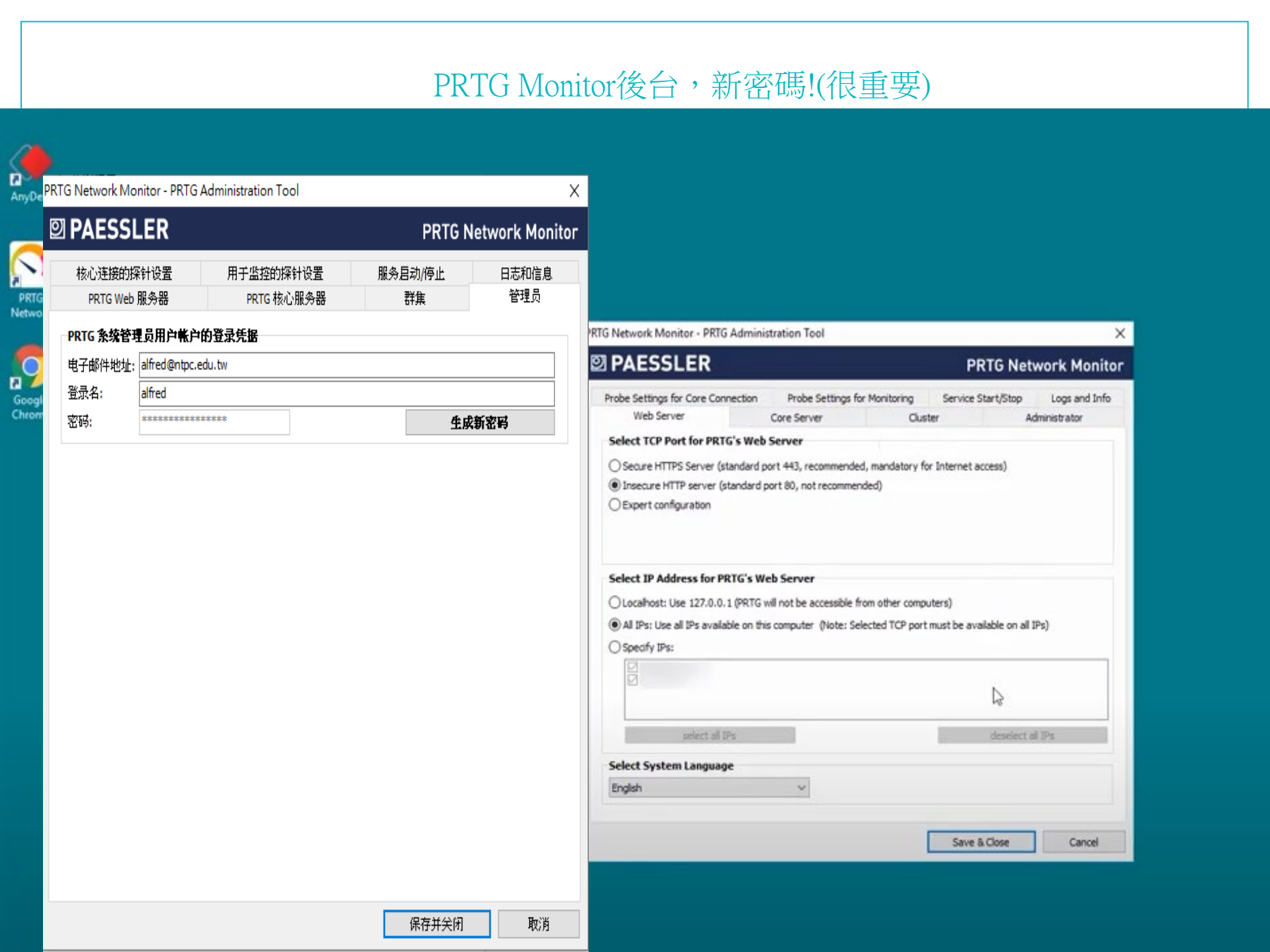
E-mail and license key



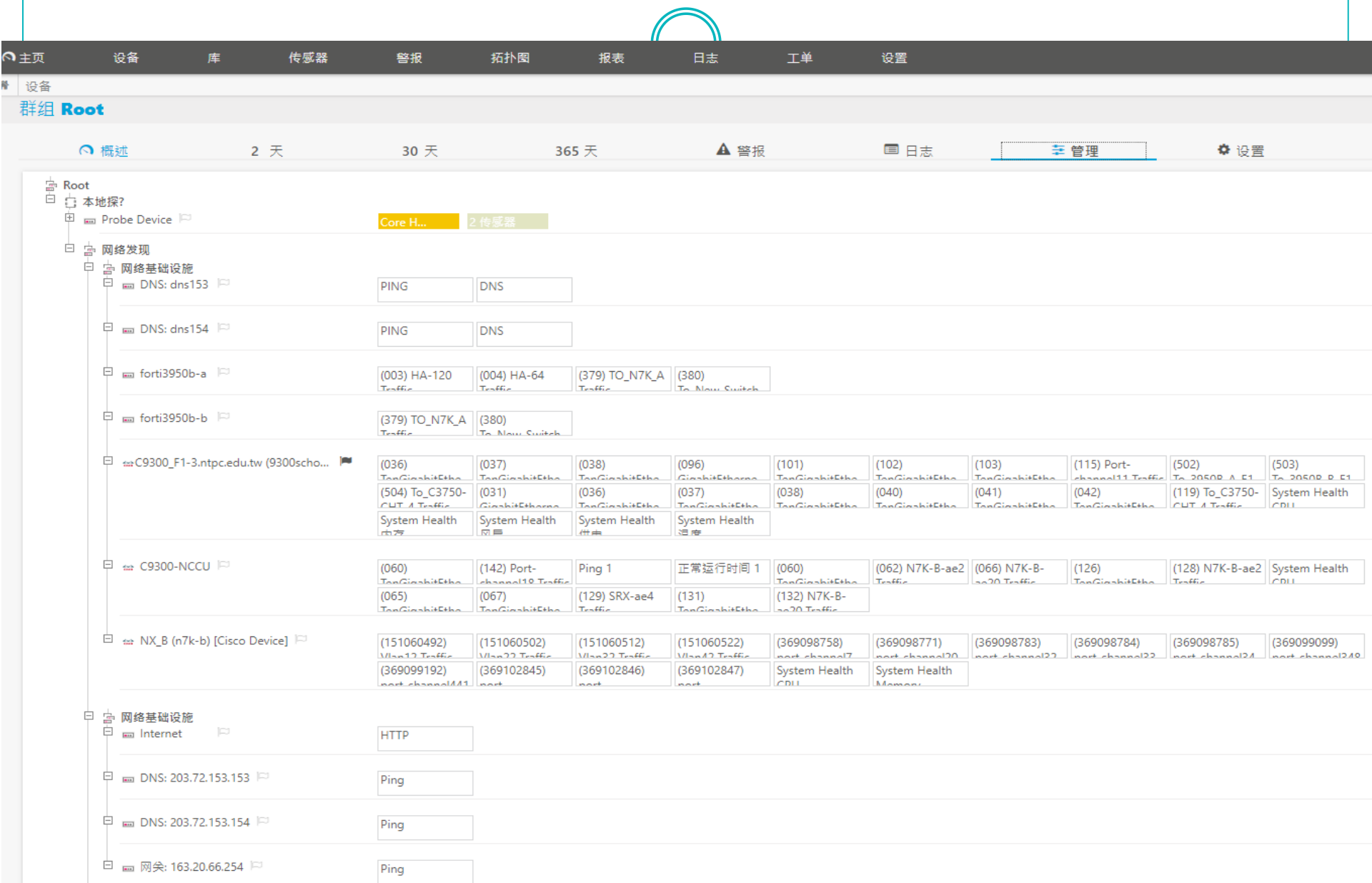
進入網頁設定(管理)
程式集 SNMP



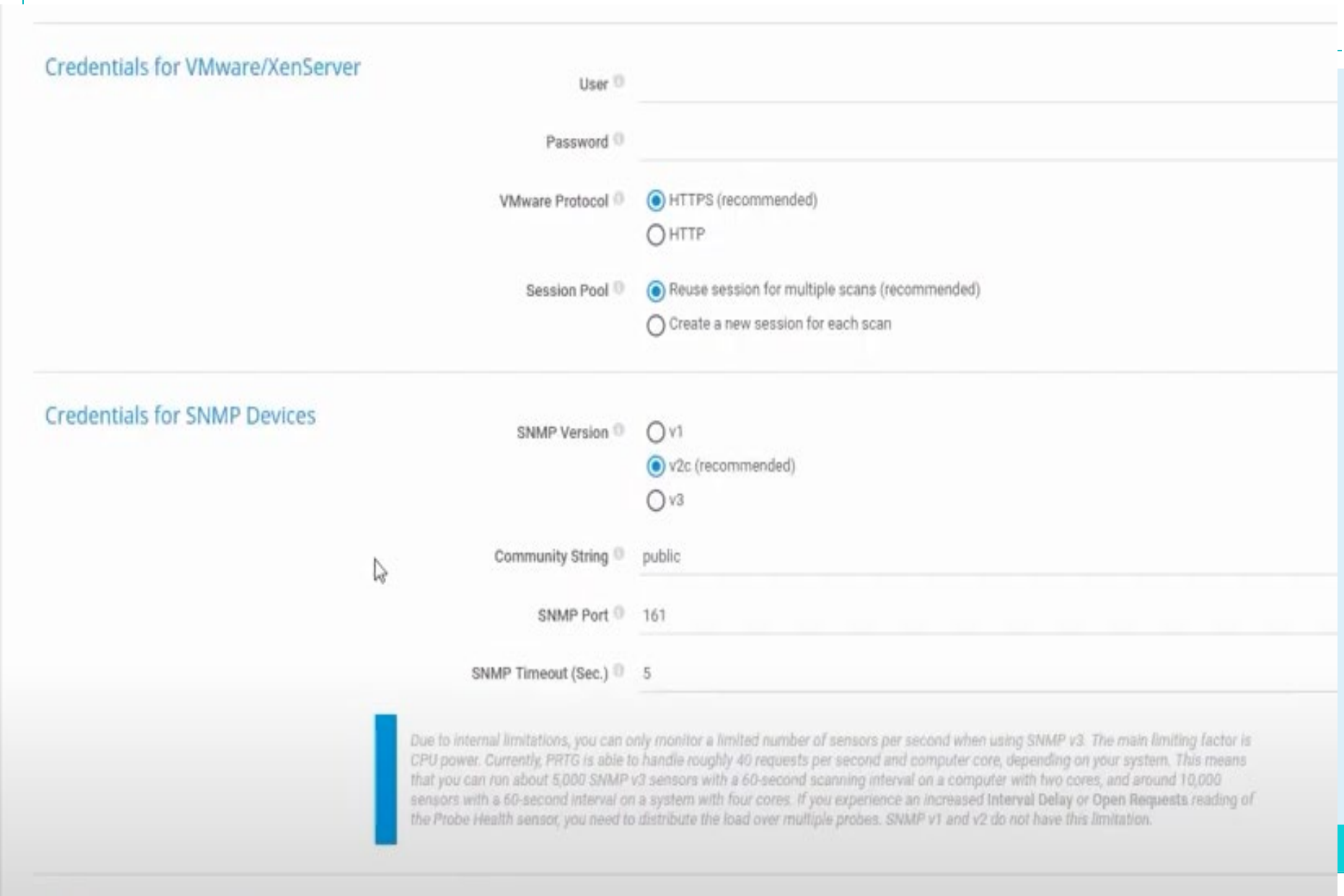
PRTG Monitor後台，新密碼!(很重要)



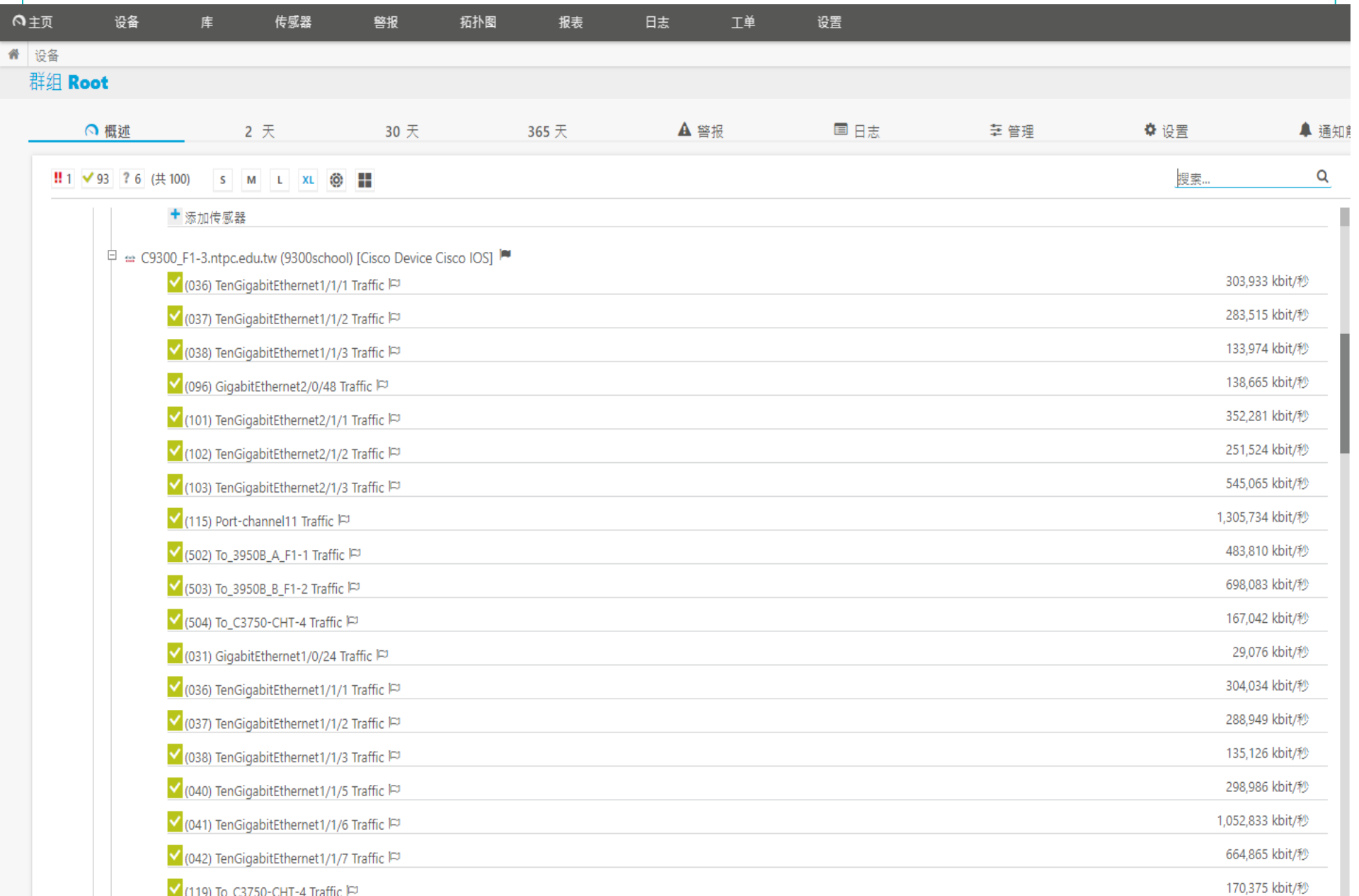
Setting設定


主页
设备
库
传感器
警报
拓扑图
报表
日志
工单
设置
设备
群组 Root
概述
2 天
30 天
365 天
警报
日志
管理
设置
Root
本地探?
Probe Device
Core H...
2 传感器
网络发现
网络基础设施
DNS: dns153
PING
DNS
DNS: dns154
PING
DNS
forti3950b-a
(003) HA-120
(004) HA-64
(379) TO_N7K_A
(380)
forti3950b-b
(379) TO_N7K_A
(380)
C9300_F1-3.ntpc.edu.tw (9300scho...
(036)
(037)
(038)
(096)
(101)
(102)
(103)
(115) Port-
(502)
(503)
(504) To_C3750-
(031)
(036)
(037)
(038)
(040)
(041)
(042)
(119) To_C3750-
System Health
System Health
System Health
System Health
System Health
C9300-NCCU
(060)
(142) Port-
Ping 1
正常运行时间 1
(060)
(062) N7K-B-ae2
(066) N7K-B-
(126)
(128) N7K-B-ae2
System Health
(065)
(067)
(129) SRX-ae4
(131)
(132) N7K-B-
NX_B (n7k-b) [Cisco Device]
(151060492)
(151060502)
(151060512)
(151060522)
(369098758)
(369098771)
(369098783)
(369098784)
(369098785)
(369099099)
(369099192)
(369102845)
(369102846)
(369102847)
System Health
System Health
网络基础设施
Internet
HTTP
DNS: 203.72.153.153
Ping
DNS: 203.72.153.154
Ping
网关: 163.20.66.254
Ping

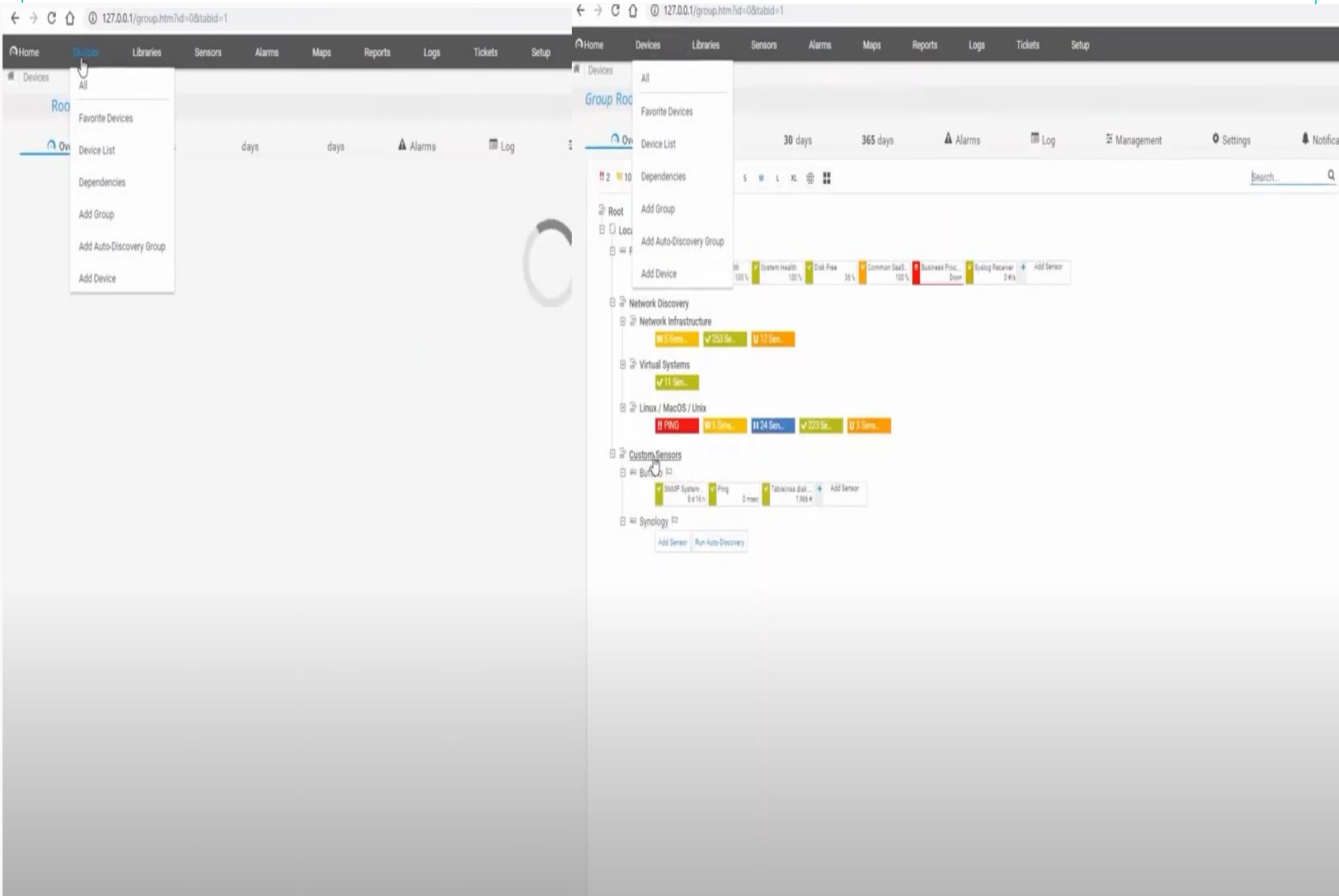
SNMP


Credentials for VMware/XenServer
User
Password
VMware Protocol
HTTPS (recommended)
HTTP
Session Pool
Reuse session for multiple scans (recommended)
Create a new session for each scan
Credentials for SNMP Devices
SNMP Version
v1
v2c (recommended)
v3
Community String
public
SNMP Port
161
SNMP Timeout (Sec.)
5
Due to internal limitations, you can only monitor a limited number of sensors per second when using SNMP v3. The main limiting factor is CPU power. Currently, PRTG is able to handle roughly 40 requests per second and computer core, depending on your system. This means that you can run about 5,000 SNMP v3 sensors with a 60-second scanning interval on a computer with two cores, and around 10,000 sensors with a 60-second interval on a system with four cores. If you experience an increased Interval Delay or Open Requests reading of the Probe Health sensor, you need to distribute the load over multiple probes. SNMP v1 and v2 do not have this limitation.

面板介紹


主页
设备
库
传感器
警报
拓扑图
报表
日志
工单
设置
设备
群组 Root
概述
2 天
30 天
365 天
警报
日志
管理
设置
1
93
6
(共 100)
S
M
L
XL
搜索...
添加传感器
C9300_F1-3.ntpc.edu.tw (9300school) [Cisco Device Cisco IOS]
(036) TenGigabitEthernet1/1/1 Traffic 303,933 kbit/秒
(037) TenGigabitEthernet1/1/2 Traffic 283,515 kbit/秒
(038) TenGigabitEthernet1/1/3 Traffic 133,974 kbit/秒
(096) GigabitEthernet2/0/48 Traffic 138,665 kbit/秒
(101) TenGigabitEthernet2/1/1 Traffic 352,281 kbit/秒
(102) TenGigabitEthernet2/1/2 Traffic 251,524 kbit/秒
(103) TenGigabitEthernet2/1/3 Traffic 545,065 kbit/秒
(115) Port-channel11 Traffic 1,305,734 kbit/秒
(502) To_3950B_A_F1-1 Traffic 483,810 kbit/秒
(503) To_3950B_B_F1-2 Traffic 698,083 kbit/秒
(504) To_C3750-CHT-4 Traffic 167,042 kbit/秒
(031) GigabitEthernet1/0/24 Traffic 29,076 kbit/秒
(036) TenGigabitEthernet1/1/1 Traffic 304,034 kbit/秒
(037) TenGigabitEthernet1/1/2 Traffic 288,949 kbit/秒
(038) TenGigabitEthernet1/1/3 Traffic 135,126 kbit/秒
(040) TenGigabitEthernet1/1/5 Traffic 298,986 kbit/秒
(041) TenGigabitEthernet1/1/6 Traffic 1,052,833 kbit/秒
(042) TenGigabitEthernet1/1/7 Traffic 664,865 kbit/秒
(119) To_C3750-CHT-4 Traffic 170,375 kbit/秒

Add device


127.0.0.1/group.htm?id=0&tabid=1
Home
Devices
Libraries
Sensors
Alarms
Maps
Reports
Logs
Tickets
Setup
All
Favorite Devices
Device List
Dependencies
Add Group
Add Auto-Discovery Group
Add Device
30 days
365 days
Alarms
Log
Management
Settings
Root
Network Discovery
Network Infrastructure
Virtual Systems
Linux / MacOS / Unix
PING
Custom Sensors
Synology
Add Sensor
Run Auto-Discovery

将设备添加到群组 网络发现

添加新设备

必要时定义设备名称、地址以及针对自动发现、凭据设置（Windows、Linux、VMware/XEN 和 SNMP）的选项。

PRTG 手册：添加设备

设备名称和地址

设备名称

Device

IP 版本

- (•) 使用 IPv4 连接
- ( ) 使用 IPv6 连接

IPv4 地址/DNS 名称

需要此字段。

标签

设备图标

取消　确定

将设备添加到群组 网络发现

SNMP 设备凭据

继承自 网络发现 (SNMP 版本: V2, SNMP 端口: 161, 超时 (秒): 5 秒)

SNMP 版本

- ( ) v1
- (•) v2c（推荐）
- ( ) v3

社区字符串 (Community String)

public

SNMP 端口

161

超时 (秒)

5

数据库管理系统的凭据

继承自 网络发现　(超时 (秒): 60 秒)

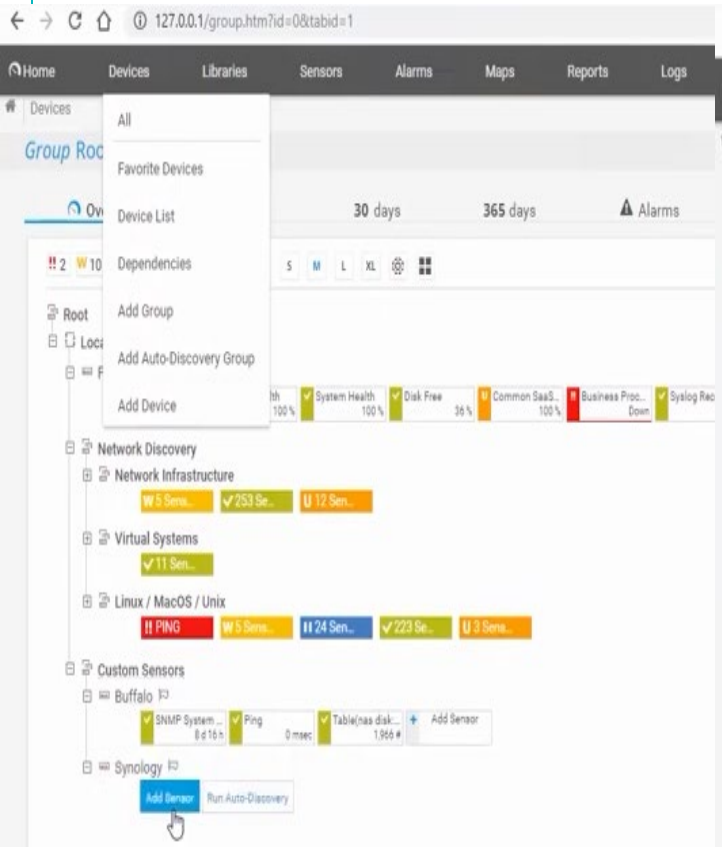
AWS 的凭据

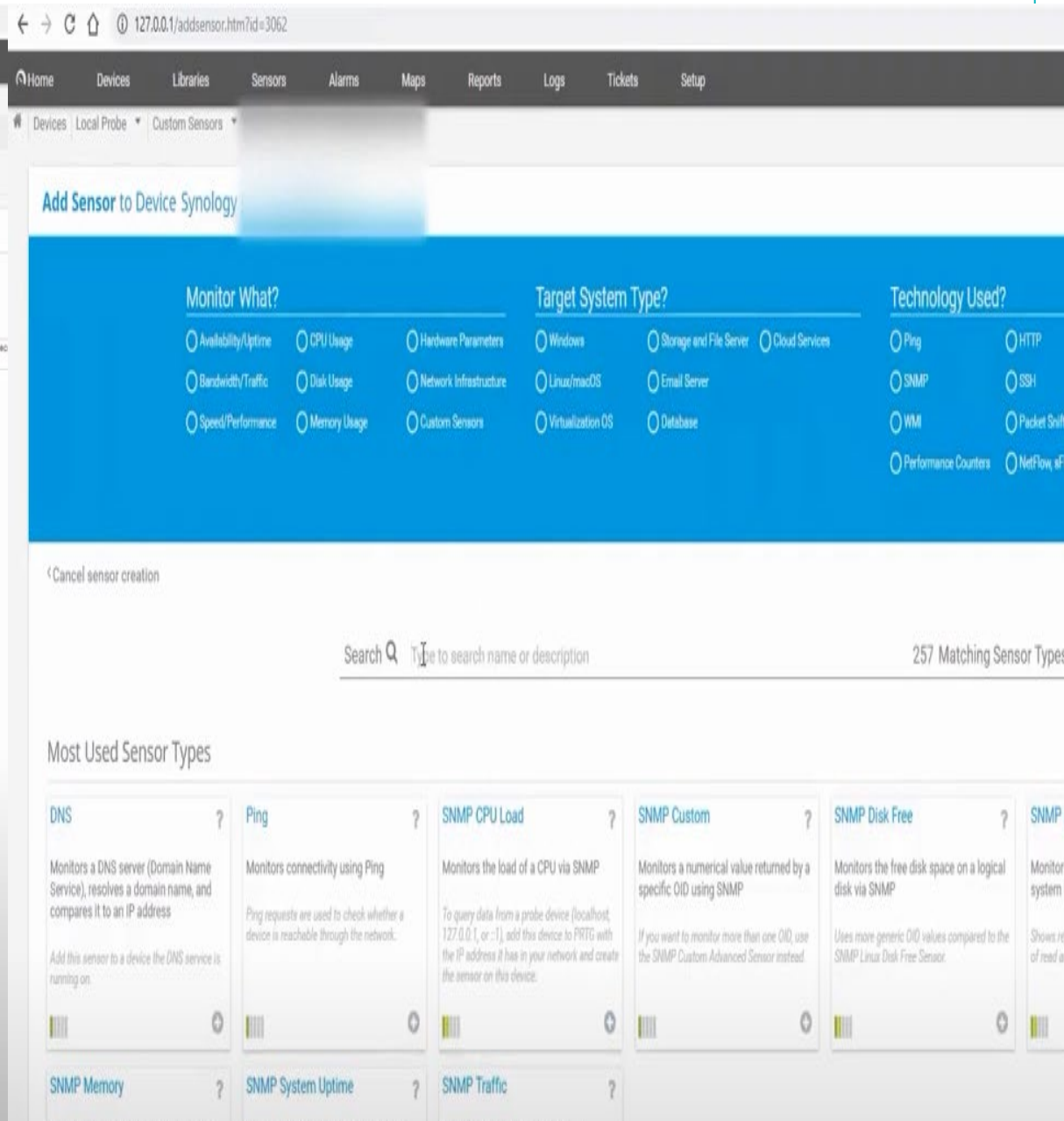
继承自 网络发现

Credentials for Dell EMC

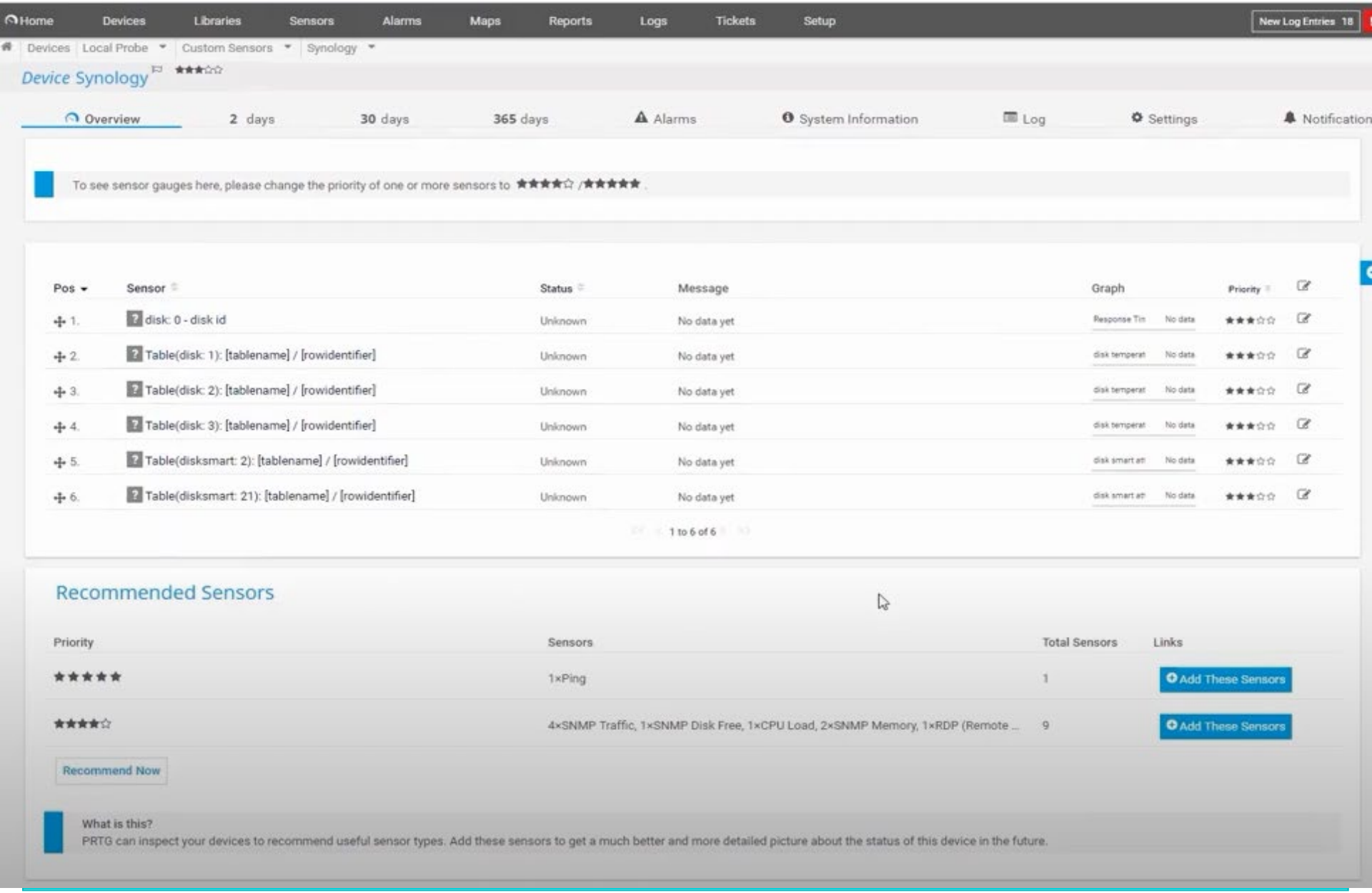
取消　确定

Add sensor


127.0.0.1/group.htm?id=0&tabid=1
Home
Devices
Libraries
Sensors
Alarms
Maps
Reports
Logs
All
Favorite Devices
Device List
Dependencies
Add Group
Add Auto-Discovery Group
Add Device
30 days
365 days
Alarms
Root
Network Discovery
Network Infrastructure
Virtual Systems
Linux / MacOS / Unix
Custom Sensors
Buffalo
Synology
Add Sensor
Run Auto-Discovery


127.0.0.1/addsensor.htm?id=3062
Home
Devices
Libraries
Sensors
Alarms
Maps
Reports
Logs
Tickets
Setup
Devices
Local Probe
Custom Sensors
Add Sensor to Device Synology
Monitor What?
Availability/Uptime
CPU Usage
Hardware Parameters
Bandwidth/Traffic
Disk Usage
Network Infrastructure
Speed/Performance
Memory Usage
Custom Sensors
Target System Type?
Windows
Storage and File Server
Cloud Services
Linux/macOS
Email Server
Virtualization OS
Database
Technology Used?
Ping
HTTP
SNMP
SSH
WMI
Performance Counters
Cancel sensor creation
Search
Type to search name or description
257 Matching Sensor Types
Most Used Sensor Types
DNS
Monitors a DNS server (Domain Name Service), resolves a domain name, and compares it to an IP address
Ping
Monitors connectivity using Ping
SNMP CPU Load
Monitors the load of a CPU via SNMP
SNMP Custom
Monitors a numerical value returned by a specific OID using SNMP
SNMP Disk Free
Monitors the free disk space on a logical disk via SNMP
SNMP Memory
SNMP System Uptime
SNMP Traffic

加減sensor


Home
Devices
Libraries
Sensors
Alarms
Maps
Reports
Logs
Tickets
Setup
New Log Entries 18
Devices
Local Probe
Custom Sensors
Synology
Device Synology
Overview
2 days
30 days
365 days
Alarms
System Information
Log
Settings
Notification
To see sensor gauges here, please change the priority of one or more sensors to ★★★★☆ /★★★★★ .
Pos
Sensor
Status
Message
Graph
Priority
1. disk: 0 - disk id Unknown No data yet
2. Table(disk: 1): [tablename] / [rowidentifier] Unknown No data yet
3. Table(disk: 2): [tablename] / [rowidentifier] Unknown No data yet
4. Table(disk: 3): [tablename] / [rowidentifier] Unknown No data yet
5. Table(disksmart: 2): [tablename] / [rowidentifier] Unknown No data yet
6. Table(disksmart: 21): [tablename] / [rowidentifier] Unknown No data yet
1 to 6 of 6
Recommended Sensors
Priority
Sensors
Total Sensors
Links
★★★★★ 1×Ping 1 Add These Sensors
★★★★☆ 4×SNMP Traffic, 1×SNMP Disk Free, 1×CPU Load, 2×SNMP Memory, 1×RDP (Remote ... 9 Add These Sensors
Recommend Now
What is this?
PRTG can inspect your devices to recommend useful sensor types. Add these sensors to get a much better and more detailed picture about the status of this device in the future.

添加传感器到设备 C9300_F1-3.ntpc.edu.tw (9300school) [Cisco Device Cisco IOS] [163.20.250.252]

(第 1 步，共 2 步

监控什么?

- ○ 可用性/正常运行时间
- ○ CPU 使用情况
- ○ 硬件参数
- ○ 带宽/流量
- ○ 磁盘使用情况
- ○ 网络基础设施
- ○ 速度/性能
- ○ 内存使用情况
- ○ 自定义传感器

目标系统类型?

- ○ Windows
- ○ 存储和文件服务器
- ○ 数据库
- ○ Linux/macOS
- ○ 电子邮件服务器
- ○ 云服务
- ○ 虚拟化操作系统

使用的技术?

- ○ Ping
- ○ HTTP
- ○ PowerShell
- ○ SNMP
- ○ SSH
- ○ 推送消息接收程序
- ○ WMI
- ○ 数据包嗅探
- ○ PRTG Cloud
- ○ 性能计数器
- ○ xFlow

› 查找更多传感器类型？查看 PRTG 全球

‹ 取消传感器创建

搜索 键入以搜索名称或描述

284 正在匹配传感器类型

最常用的传感器类型

AWS Cost

Monitors the costs of an AWS account by reading its data from the AWS Cost Explorer API

Needs valid credentials for AWS in the settings of the parent device or group. Every sensor scan generates API call costs in your AWS account.

DNS

监控 DNS 服务器、解析域名并将其与 IP 地址进行比较

将此传感器添加到 DNS 服务运行的设备上。

HTTP

使用 HTTP 监控 Web 服务器

显示网站或特定网站元素是否可达。

Microsoft Azure Subscription Cost BETA

Monitors the cost in a Microsoft Azure subscription

Requires valid Azure AD credentials in the settings of the parent device or group. Make sure that you assigned the correct permissions and roles in your Microsoft Azure subscription.

MQTT 往返

监控 MQTT 代理（服务器）的可用性、连接时间，以及数据包的往返时间。PRTG 将作为发布和订阅客户端连接到代理，并使用预定义主题发送数据包。

需要在父设备中定义的有效 MQTT 凭据。

NetApp 卷 BETA

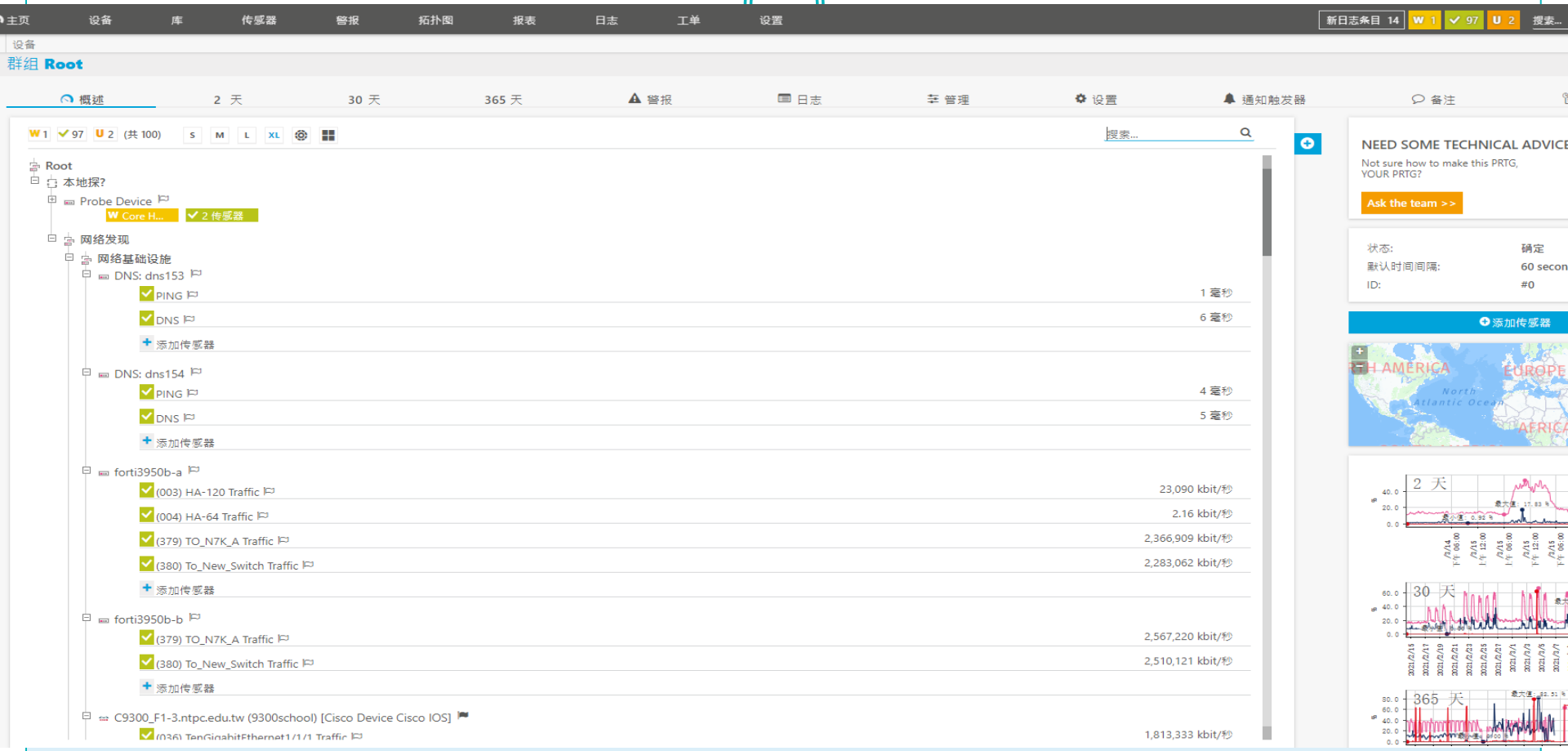
使用 SOAP 监控 NetApp cDOT 或 ONTAP 存储系统的卷

在探针系统上需要 .NET 4.7.2，支持 NetApp cDOT 版本 8.3 及更高版本，并支持 NetApp ONTAP 版本 9.0 及更高版本。

Ping

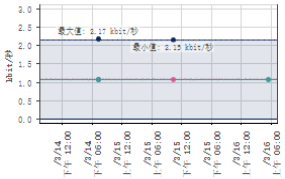
POP3

SNMP 流量


主页
设备
库
传感器
警报
拓扑图
报表
日志
工单
设置
新日志条目 14
W 1
97
U 2
搜索...
设备
群组 Root
概述
2 天
30 天
365 天
警报
日志
管理
设置
通知触发器
备注
W 1
97
U 2
(共 100)
S
M
L
XL
搜索...
Root
本地探?
Probe Device
W Core H...
2 传感器
网络发现
网络基础设施
DNS: dns153
PING
1 毫秒
DNS
6 毫秒
添加传感器
DNS: dns154
PING
4 毫秒
DNS
5 毫秒
添加传感器
forti3950b-a
(003) HA-120 Traffic
23,090 kbit/秒
(004) HA-64 Traffic
2.16 kbit/秒
(379) TO_N7K_A Traffic
2,366,909 kbit/秒
(380) To_New_Switch Traffic
2,283,062 kbit/秒
添加传感器
forti3950b-b
(379) TO_N7K_A Traffic
2,567,220 kbit/秒
(380) To_New_Switch Traffic
2,510,121 kbit/秒
添加传感器
C9300_F1-3.ntpc.edu.tw (9300school) [Cisco Device Cisco IOS]
1,813,333 kbit/秒
NEED SOME TECHNICAL ADVICE
Not sure how to make this PRTG,
YOUR PRTG?
Ask the team >>
状态:
确定
默认时间间隔:
60 secon
ID:
#0
添加传感器
2 天
30 天
365 天

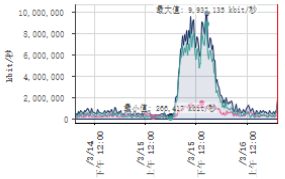
主页 设备 库 传感器 警报 拓扑图 报表 日志 工单 设置 新日志条目 14 W 1 97 U 2 搜索...

(004) HA-64 Traffic



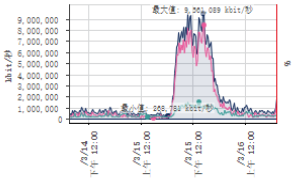
停机时间 (%) 流量合计 (kbit/秒)
入站流量 (kbit/秒) 出站流量 (kbit/秒)

(379) TO_N7K_A Traffic



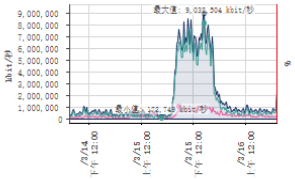
停机时间 (%) 流量合计 (kbit/秒)
入站流量 (kbit/秒) 出站流量 (kbit/秒)

(380) To_New_Switch Traffic



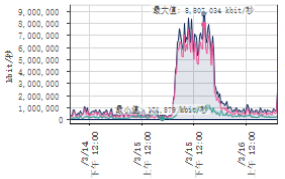
停机时间 (%) 流量合计 (kbit/秒)
入站流量 (kbit/秒) 出站流量 (kbit/秒)

(379) TO_N7K_A Traffic



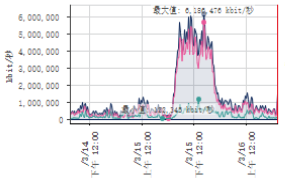
停机时间 (%) 流量合计 (kbit/秒)
入站流量 (kbit/秒) 出站流量 (kbit/秒)

(380) To_New_Switch Traffic



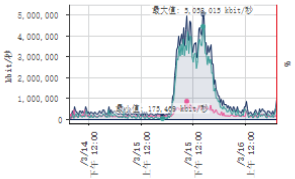
停机时间 (%) 流量合计 (kbit/秒)
入站流量 (kbit/秒) 出站流量 (kbit/秒)

(036) TenGigabitEthernet1/1/1 Traffic



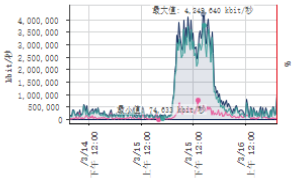
停机时间 (%) Traffic Total (kbit/秒)
Traffic In (kbit/秒) Traffic Out (kbit/秒)

(037) TenGigabitEthernet1/1/2 Traffic



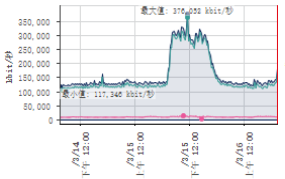
停机时间 (%) Traffic Total (kbit/秒)
Traffic In (kbit/秒) Traffic Out (kbit/秒)

(038) TenGigabitEthernet1/1/3 Traffic



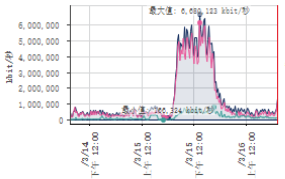
停机时间 (%) Traffic Total (kbit/秒)
Traffic In (kbit/秒) Traffic Out (kbit/秒)

(096) GigabitEthernet2/0/48 Traffic



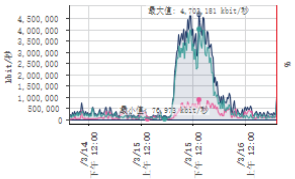
停机时间 (%) Traffic Total (kbit/秒)

(101) TenGigabitEthernet2/1/1 Traffic



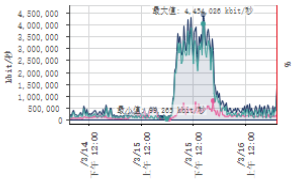
停机时间 (%) Traffic Total (kbit/秒)

(102) TenGigabitEthernet2/1/2 Traffic

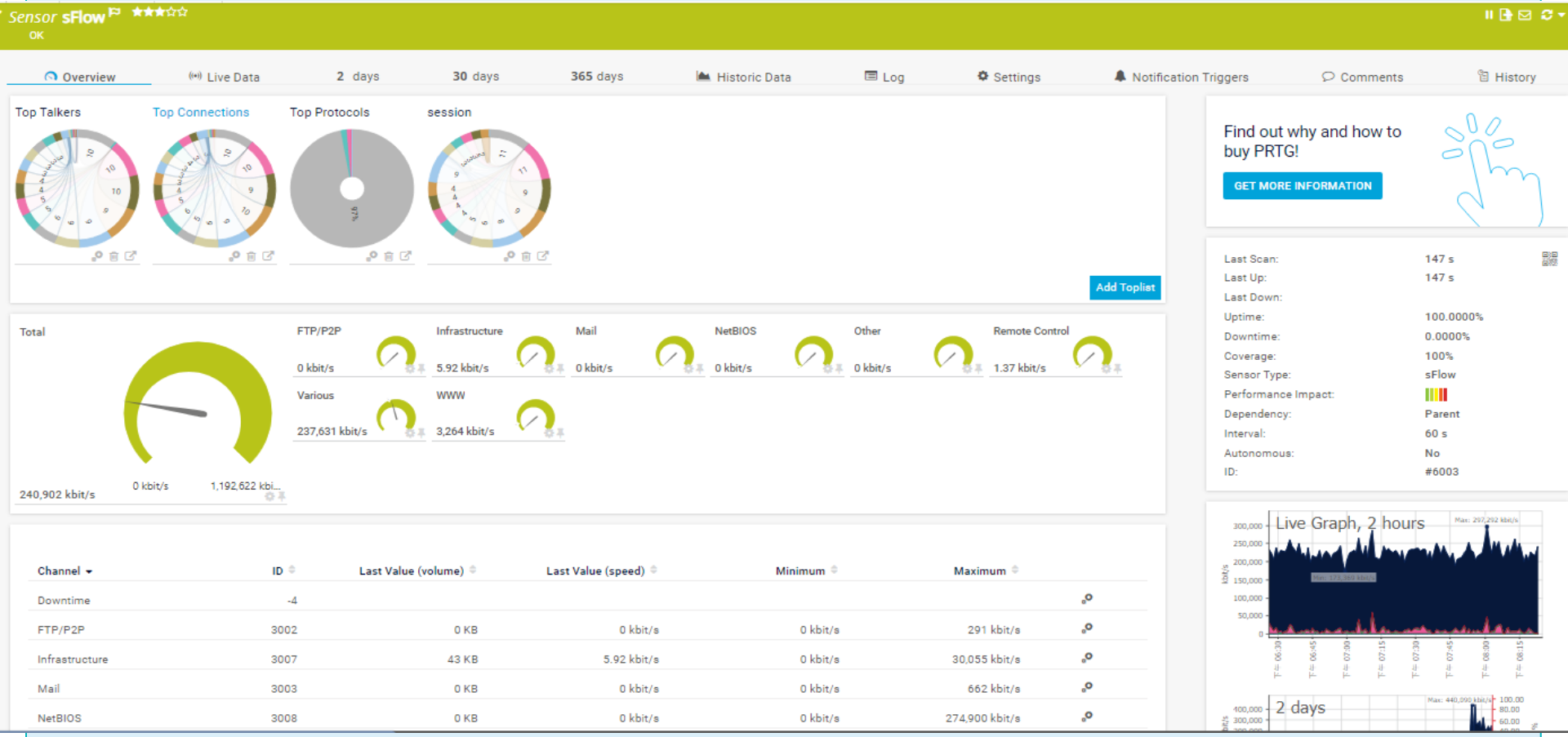


Downtime (%) Traffic Total (kbit/秒)

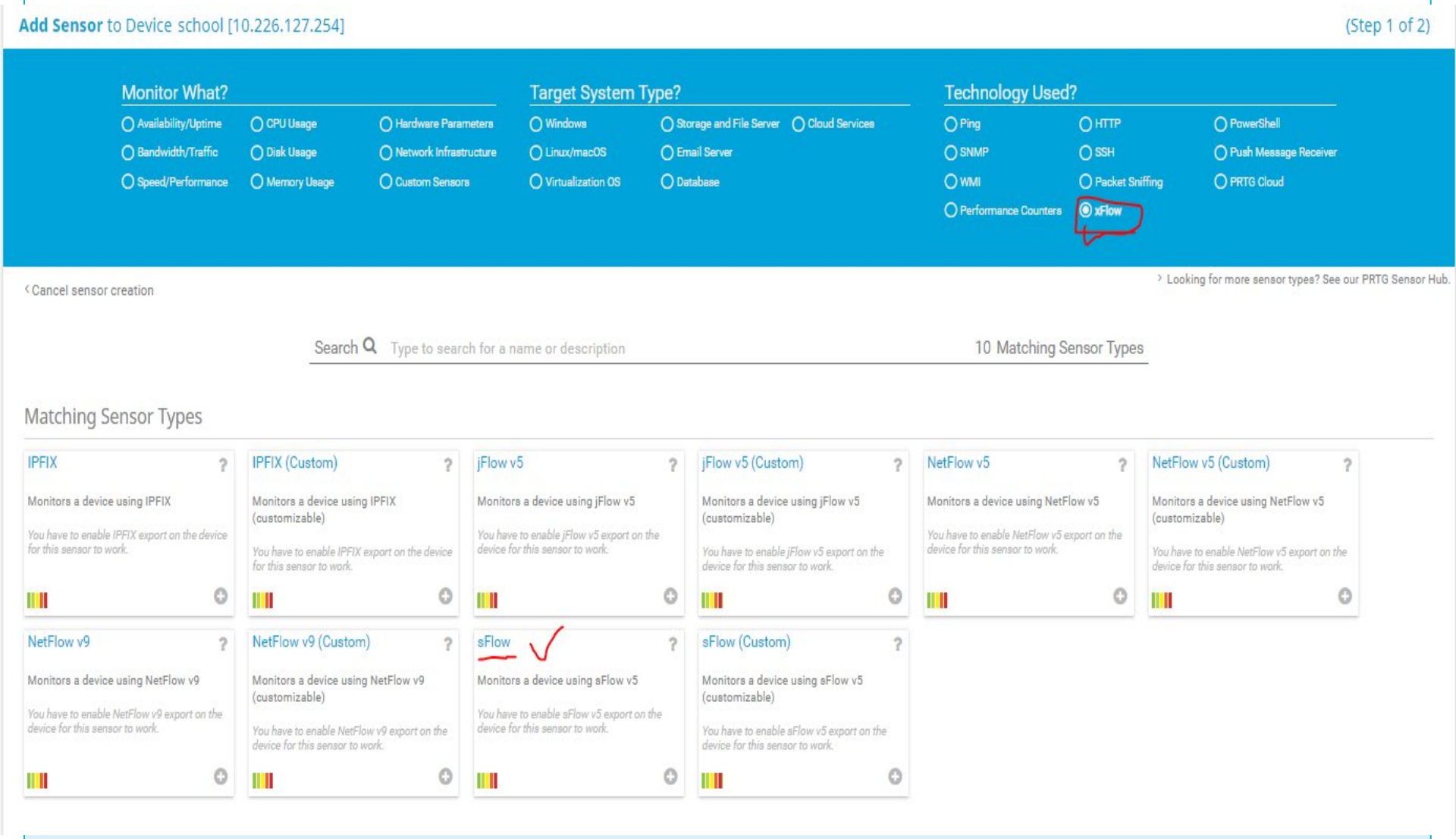
(103) TenGigabitEthernet2/1/3 Traffic



停机时间 (%) Traffic Total (kbit/秒)


sFlow
Sensor sFlow
OK
Overview
Live Data
2 days
30 days
365 days
Historic Data
Log
Settings
Notification Triggers
Comments
History
Top Talkers
Top Connections
Top Protocols
session
Add Toplist
Total
240,902 kbit/s
0 kbit/s
1,192,622 kbi...
FTP/P2P
0 kbit/s
Infrastructure
5.92 kbit/s
Mail
0 kbit/s
NetBIOS
0 kbit/s
Other
0 kbit/s
Remote Control
1.37 kbit/s
Various
237,631 kbit/s
WWW
3,264 kbit/s
Channel
ID
Last Value (volume)
Last Value (speed)
Minimum
Maximum
Downtime -4
FTP/P2P 3002 0 KB 0 kbit/s 0 kbit/s 291 kbit/s
Infrastructure 3007 43 KB 5.92 kbit/s 0 kbit/s 30,055 kbit/s
Mail 3003 0 KB 0 kbit/s 0 kbit/s 662 kbit/s
NetBIOS 3008 0 KB 0 kbit/s 0 kbit/s 274,900 kbit/s
Find out why and how to buy PRTG!
GET MORE INFORMATION
Last Scan: 147 s
Last Up: 147 s
Last Down:
Uptime: 100.0000%
Downtime: 0.0000%
Coverage: 100%
Sensor Type: sFlow
Performance Impact:
Dependency: Parent
Interval: 60 s
Autonomous: No
ID: #6003
Live Graph, 2 hours
2 days

Add sensor


Add Sensor to Device school [10.226.127.254]
(Step 1 of 2)
Monitor What?
Availability/Uptime
CPU Usage
Hardware Parameters
Bandwidth/Traffic
Disk Usage
Network Infrastructure
Speed/Performance
Memory Usage
Custom Sensors
Target System Type?
Windows
Storage and File Server
Cloud Services
Linux/macOS
Email Server
Virtualization OS
Database
Technology Used?
Ping
HTTP
PowerShell
SNMP
SSH
Push Message Receiver
WMI
Packet Sniffing
PRTG Cloud
Performance Counters
xFlow
Cancel sensor creation
Looking for more sensor types? See our PRTG Sensor Hub.
Search
Type to search for a name or description
10 Matching Sensor Types
Matching Sensor Types
IPFIX
Monitors a device using IPFIX
You have to enable IPFIX export on the device for this sensor to work.
IPFIX (Custom)
Monitors a device using IPFIX (customizable)
You have to enable IPFIX export on the device for this sensor to work.
jFlow v5
Monitors a device using jFlow v5
You have to enable jFlow v5 export on the device for this sensor to work.
jFlow v5 (Custom)
Monitors a device using jFlow v5 (customizable)
You have to enable jFlow v5 export on the device for this sensor to work.
NetFlow v5
Monitors a device using NetFlow v5
You have to enable NetFlow v5 export on the device for this sensor to work.
NetFlow v5 (Custom)
Monitors a device using NetFlow v5 (customizable)
You have to enable NetFlow v5 export on the device for this sensor to work.
NetFlow v9
Monitors a device using NetFlow v9
You have to enable NetFlow v9 export on the device for this sensor to work.
NetFlow v9 (Custom)
Monitors a device using NetFlow v9 (customizable)
You have to enable NetFlow v9 export on the device for this sensor to work.
sFlow
Monitors a device using sFlow v5
You have to enable sFlow v5 export on the device for this sensor to work.
sFlow (Custom)
Monitors a device using sFlow v5 (customizable)
You have to enable sFlow v5 export on the device for this sensor to work.

Dlink 3620 sflow 指令

- enable sflow
- create sflow analyzer_server 1 owner NTPC timeout infinite collectoraddress 163.20.66.192 collectorport 6343 maxdatagramsize 1400
- create sflow flow_sampler ports 1:1-24 analyzer_server_id 1 rate 1 tx_rate 1 maxheadersize 256
- 說明：163.20.66.192 要改成安裝prtg的server ip

Top Talkers

✓ *Sensor* **sFlow** — *Toplist* Top Talkers

Sensor Overview | Print This Toplist

Top Talkers | Top Connections | Top Protocols | session

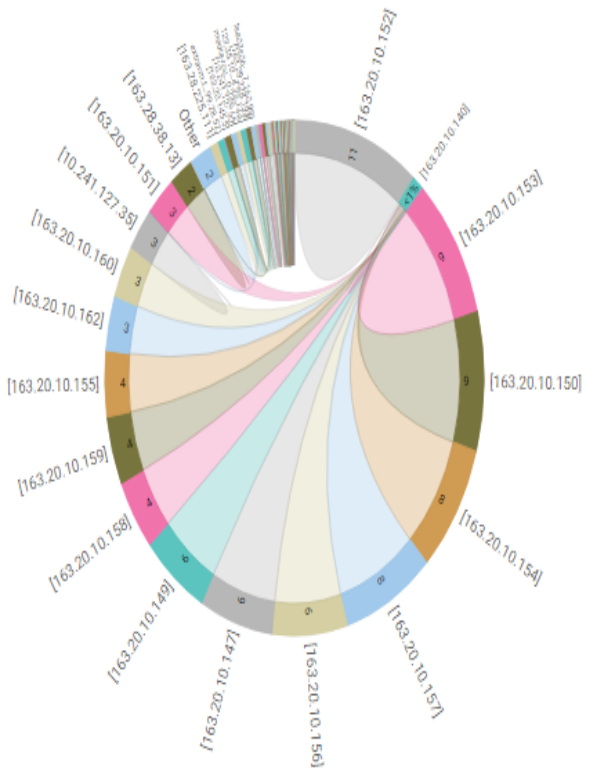
Start

End

2021/11/24

下午 08:15:00 - 下午 08:30:00
下午 08:00:00 - 下午 08:15:00
下午 07:45:00 - 下午 08:00:00
下午 07:30:00 - 下午 07:45:00
下午 07:15:00 - 下午 07:30:00
下午 07:00:00 - 下午 07:15:00
下午 06:45:00 - 下午 07:00:00
下午 06:30:00 - 下午 06:45:00
下午 06:15:00 - 下午 06:30:00
下午 06:00:00 - 下午 06:15:00
下午 05:45:00 - 下午 06:00:00
下午 05:30:00 - 下午 05:45:00
下午 05:15:00 - 下午 05:30:00
下午 05:00:00 - 下午 05:15:00
下午 04:45:00 - 下午 05:00:00
下午 04:30:00 - 下午 04:45:00
下午 04:15:00 - 下午 04:30:00
下午 04:00:00 - 下午 04:15:00
下午 03:45:00 - 下午 04:00:00
下午 03:30:00 - 下午 03:45:00

Top Talkers 2021/11/24 下午 08:00:00 - 下午 08:15:00



Items: 50

Pos	Source IP	Destination IP	Bytes	
1.	[163.20.10.152]	[163.20.10.140]	2,782 MB	11 %
2.	[163.20.10.153]	[163.20.10.140]	2,317 MB	9 %
3.	[163.20.10.150]	[163.20.10.140]	2,248 MB	9 %
4.	[163.20.10.154]	[163.20.10.140]	2,086 MB	8 %
5.	[163.20.10.157]	[163.20.10.140]	2,001 MB	8 %
6.	[163.20.10.156]	[163.20.10.140]	1,643 MB	6 %
7.	[163.20.10.147]	[163.20.10.140]	1,602 MB	6 %
8.	[163.20.10.149]	[163.20.10.140]	1,457 MB	6 %
9.	[163.20.10.158]	[163.20.10.140]	1,155 MB	4 %
10.	[163.20.10.159]	[163.20.10.140]	1,099 MB	4 %
11.	[163.20.10.155]	[163.20.10.140]	1,063 MB	4 %
12.	[163.20.10.162]	[163.20.10.140]	886 MB	3 %
13.	[163.20.10.160]	[163.20.10.140]	849 MB	3 %
14.	[10.241.127.35]	[163.20.10.201]	697 MB	3 %
15.	[163.20.10.151]	[163.20.10.140]	672 MB	3 %
16.	[163.28.38.13]	[10.197.2.164]	515 MB	2 %
Other			485 MB	2 %

TOP Connections

✓ *Sensor* **sFlow** — *Toplist* Top Connections

Sensor Overview | Print This Toplist

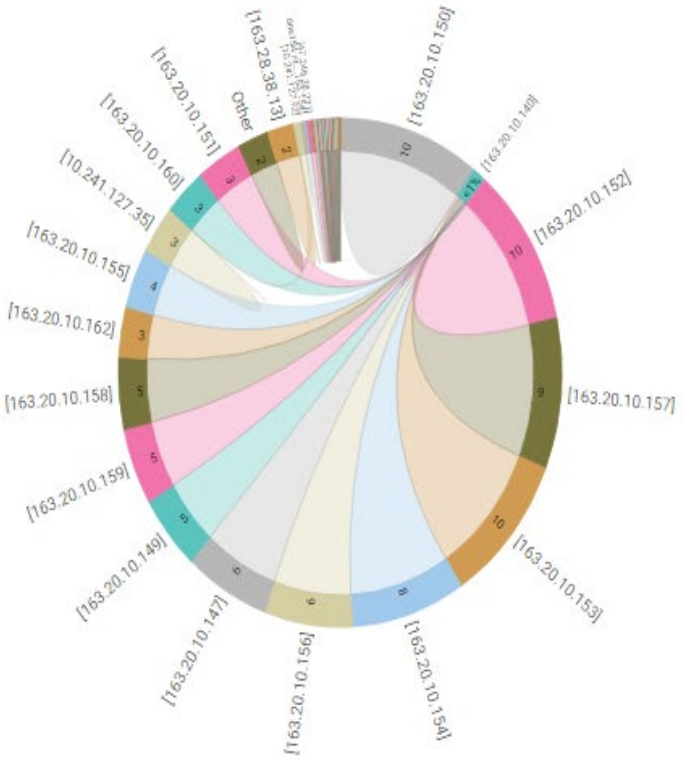
Top Talkers | Top Connections | Top Protocols | session

Start ×
End ×

2021/11/24

下午 08:15:00 - 下午 08:30:00
下午 08:00:00 - 下午 08:15:00
下午 07:45:00 - 下午 08:00:00
下午 07:30:00 - 下午 07:45:00
下午 07:15:00 - 下午 07:30:00
下午 07:00:00 - 下午 07:15:00
下午 06:45:00 - 下午 07:00:00
下午 06:30:00 - 下午 06:45:00
下午 06:15:00 - 下午 06:30:00
下午 06:00:00 - 下午 06:15:00
下午 05:45:00 - 下午 06:00:00
下午 05:30:00 - 下午 05:45:00
下午 05:15:00 - 下午 05:30:00
下午 05:00:00 - 下午 05:15:00
下午 04:45:00 - 下午 05:00:00
下午 04:30:00 - 下午 04:45:00
下午 04:15:00 - 下午 04:30:00
下午 04:00:00 - 下午 04:15:00
下午 03:45:00 - 下午 04:00:00
下午 03:30:00 - 下午 03:45:00

Top Connections 2021/11/24 下午 08:15:00 - 下午 08:30:00 (Live Toplist, 89 % Complete)



Items: 50

Pos	Source IP	Source Port	Destination IP	Destination Port	Protocol	Bytes	
1.	[163.20.10.150]	10000	[163.20.10.140]	65391	6	2,194 MB	10 %
2.	[163.20.10.152]	10000	[163.20.10.140]	63874	6	2,179 MB	10 %
3.	[163.20.10.157]	10000	[163.20.10.140]	65394	6	2,011 MB	9 %
4.	[163.20.10.153]	10000	[163.20.10.140]	65393	6	1,846 MB	8 %
5.	[163.20.10.154]	10000	[163.20.10.140]	65390	6	1,709 MB	8 %
6.	[163.20.10.156]	10000	[163.20.10.140]	63883	6	1,306 MB	6 %
7.	[163.20.10.147]	10000	[163.20.10.140]	65388	6	1,053 MB	5 %
8.	[163.20.10.149]	10000	[163.20.10.140]	65515	6	1,039 MB	5 %
9.	[163.20.10.159]	10000	[163.20.10.140]	65376	6	977 MB	4 %
10.	[163.20.10.158]	10000	[163.20.10.140]	65392	6	937 MB	4 %
11.	[163.20.10.155]	554	[163.20.10.140]	65445	6	699 MB	3 %
12.	[163.20.10.162]	10000	[163.20.10.140]	65514	6	694 MB	3 %
13.	[163.20.10.160]	10000	[163.20.10.140]	65396	6	674 MB	3 %
14.	[10.241.127.35]	6921	[163.20.10.201]	6910	17	657 MB	3 %
Other						516 MB	2 %
15.	[163.20.10.151]	554	[163.20.10.140]	65450	6	503 MB	2 %
16.	[163.28.38.13]	443	[10.197.2.164]	64572	17	436 MB	2 %
17.	[163.20.10.147]	10000	[163.20.10.140]	65386	6	291 MB	1 %
18.	[120.102.234.81]	443	[163.20.145.95]	55921	6	230 MB	1 %
19.	[163.20.10.151]	554	[163.20.10.140]	65454	6	216 MB	< 1 %
20.	[163.20.10.153]	10000	[163.20.10.140]	65387	6	195 MB	< 1 %
21.	[163.20.10.155]	554	[163.20.10.140]	65473	6	138 MB	< 1 %
22.	[10.241.127.92]	6921	[163.20.10.201]	6910	17	117 MB	< 1 %

TOP Protocols

Sensor sFlow — Toplist Top Protocols

Sensor Overview | Print This Toplist

Top Talkers | Top Connections | Top Protocols | session

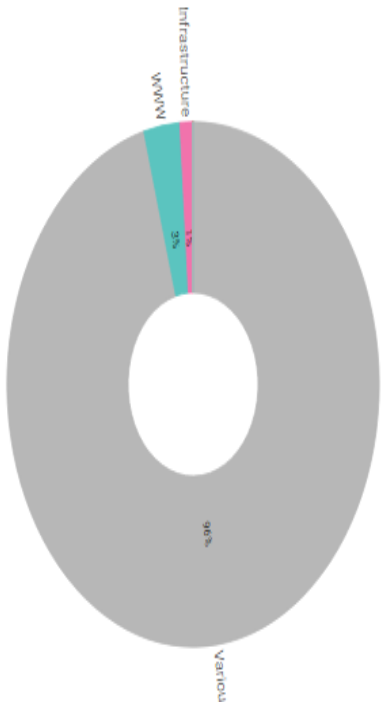
Start

End

2021/11/24

下午 08:15:00 - 下午 08:30:00
下午 08:00:00 - 下午 08:15:00
下午 07:45:00 - 下午 08:00:00
下午 07:30:00 - 下午 07:45:00
下午 07:15:00 - 下午 07:30:00
下午 07:00:00 - 下午 07:15:00
下午 06:45:00 - 下午 07:00:00
下午 06:30:00 - 下午 06:45:00
下午 06:15:00 - 下午 06:30:00
下午 06:00:00 - 下午 06:15:00
下午 05:45:00 - 下午 06:00:00
下午 05:30:00 - 下午 05:45:00
下午 05:15:00 - 下午 05:30:00
下午 05:00:00 - 下午 05:15:00
下午 04:45:00 - 下午 05:00:00
下午 04:30:00 - 下午 04:45:00
下午 04:15:00 - 下午 04:30:00
下午 04:00:00 - 下午 04:15:00
下午 03:45:00 - 下午 04:00:00
下午 03:30:00 - 下午 03:45:00

Top Protocols 2021/11/24 下午 08:15:00 - 下午 08:30:00



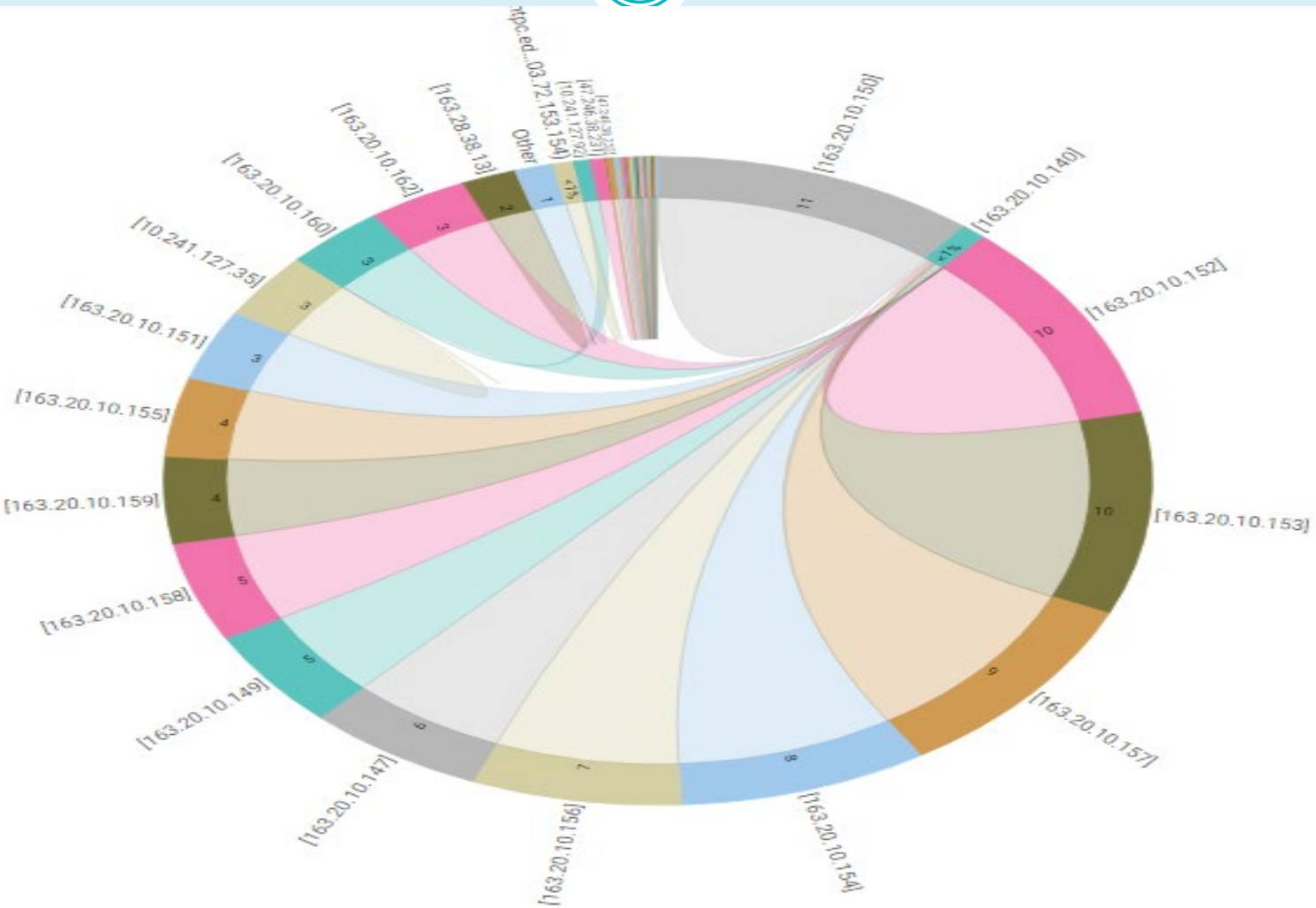
Pos	Channel	Bytes	
1.	Various	23 GB	96 %
2.	WWW	762 MB	3 %
3.	Infrastructure	270 MB	1 %
4.	NetBIOS	2,410 KB	< 1 %
5.	Remote Control	1,364 KB	< 1 %
Other		0 Byte	< 1 %

1 to 6 of 6

Items: 30

Pos	Source IP	Source Port	Destination IP	Destination Port	Protocol	IPv4 ToS	Channel	IP	Port	Interface	Sender IP	Inbound Interface	Outbound Interface	Bytes
1.	[163.20.10.150]	10000	[163.20.10.140]	65391	6	0	Various	[163.20.10.150]	10000	23	[163.20.204.241]	23	27	120 M
2.	[163.20.10.150]	10000	[163.20.10.140]	65391	6	0	Various	[163.20.10.140]	65391	27	[163.20.204.241]	23	27	104 M
3.	[163.20.10.149]	10000	[163.20.10.140]	65515	6	0	Various	[163.20.10.149]	10000	26	[163.20.204.241]	26	27	96 ME
4.	[163.20.10.158]	10000	[163.20.10.140]	65392	6	0	Various	[163.20.10.158]	10000	23	[163.20.204.241]	23	27	89 ME
5.	[163.20.10.158]	10000	[163.20.10.140]	65392	6	0	Various	[163.20.10.140]	65392	27	[163.20.204.241]	23	27	86 ME
6.	[163.20.10.149]	10000	[163.20.10.140]	65515	6	0	Various	[163.20.10.140]	65515	27	[163.20.204.241]	26	27	86 ME
7.	[163.20.10.147]	10000	[163.20.10.140]	65388	6	0	Various	[163.20.10.147]	10000	23	[163.20.204.241]	23	27	80 ME
8.	[163.20.10.147]	10000	[163.20.10.140]	65388	6	0	Various	[163.20.10.140]	65388	27	[163.20.204.241]	23	27	79 ME
9.	[163.20.10.157]	10000	[163.20.10.140]	65394	6	0	Various	[163.20.10.157]	10000	23	[163.20.204.241]	23	27	75 ME
10.	[163.20.10.157]	10000	[163.20.10.140]	65394	6	0	Various	[163.20.10.140]	65394	27	[163.20.204.241]	23	27	74 ME
11.	[163.20.10.153]	10000	[163.20.10.140]	65393	6	0	Various	[163.20.10.153]	10000	23	[163.20.204.241]	23	27	72 ME
12.	[163.20.10.153]	10000	[163.20.10.140]	65393	6	0	Various	[163.20.10.140]	65393	27	[163.20.204.241]	23	27	69 ME
13.	[163.20.10.156]	10000	[163.20.10.140]	63883	6	0	Various	[163.20.10.156]	10000	25	[163.20.204.241]	25	27	66 ME
14.	[163.20.10.156]	10000	[163.20.10.140]	63883	6	0	Various	[163.20.10.140]	63883	27	[163.20.204.241]	25	27	64 ME
15.	edge-star-shv-01-tpe1.facebo...	443	[10.197.0.248]	61112	17	0	Various	edge-star-shv-01-tpe1.facebo...	443	24	[163.20.206.249]	24	23	61 ME
16.	[163.20.10.152]	10000	[163.20.10.140]	63874	6	0	Various	[163.20.10.152]	10000	25	[163.20.204.241]	25	27	60 ME
17.	[163.20.10.155]	554	[163.20.10.140]	65445	6	184	Various	[163.20.10.155]	554	23	[163.20.204.241]	23	27	59 ME
18.	[163.20.10.152]	10000	[163.20.10.140]	63874	6	0	Various	[163.20.10.140]	63874	27	[163.20.204.241]	25	27	59 ME
19.	[163.20.10.155]	554	[163.20.10.140]	65445	6	184	Various	[163.20.10.140]	65445	27	[163.20.204.241]	23	27	54 ME
20.	[163.20.10.159]	10000	[163.20.10.140]	65376	6	0	Various	[163.20.10.159]	10000	23	[163.20.204.241]	23	27	52 ME
21.	[163.20.10.159]	10000	[163.20.10.140]	65376	6	0	Various	[163.20.10.140]	65376	27	[163.20.204.241]	23	27	51 ME
22.	[163.20.10.162]	10000	[163.20.10.140]	65514	6	0	Various	[163.20.10.162]	10000	26	[163.20.204.241]	26	27	46 ME
23.	[163.20.10.162]	10000	[163.20.10.140]	65514	6	0	Various	[163.20.10.140]	65514	27	[163.20.204.241]	26	27	37 ME

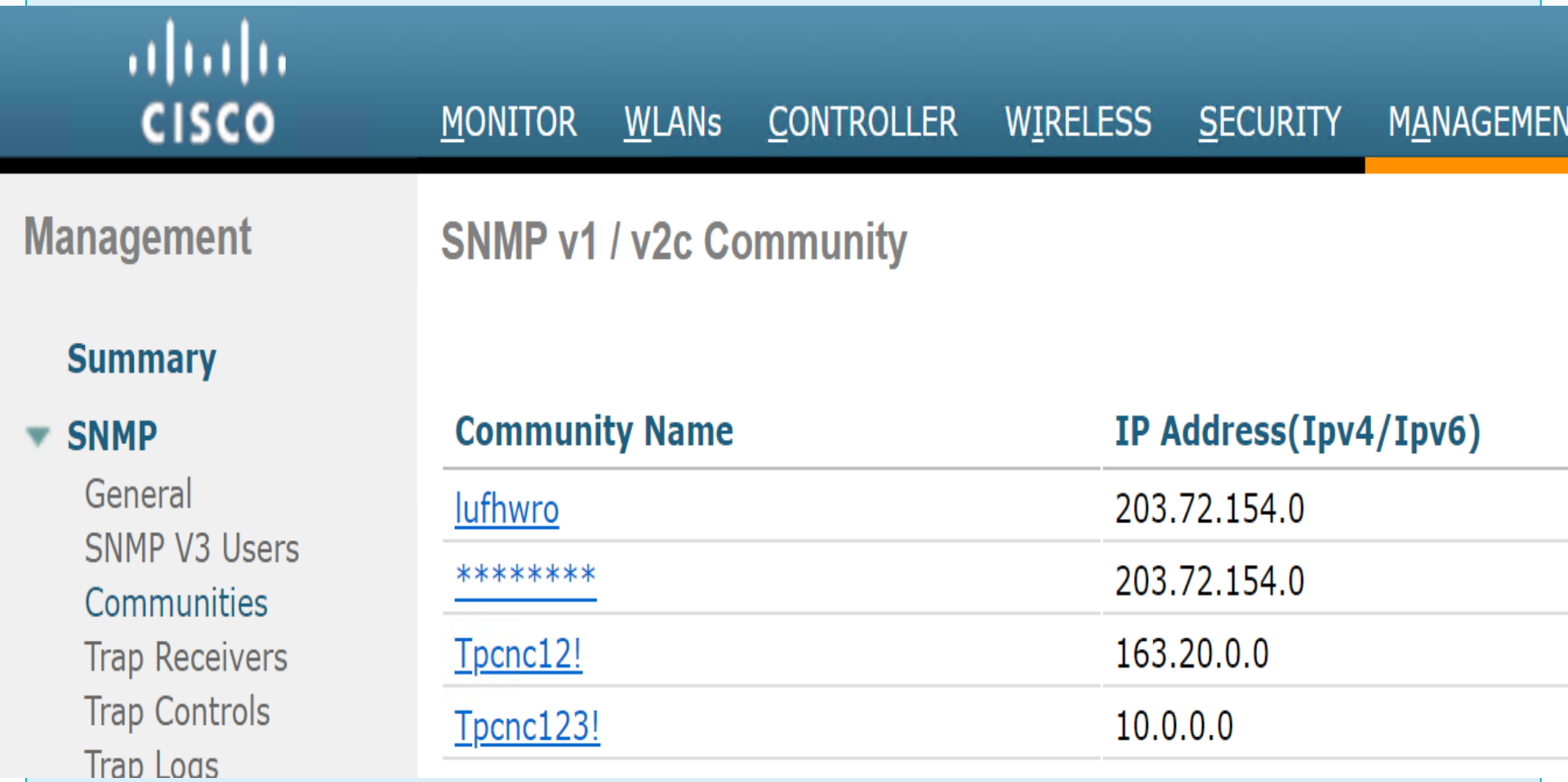
Sflow


[163.20.10.150]
[163.20.10.140]
[163.20.10.152]
[163.20.10.153]
[163.20.10.157]
[163.20.10.154]
[163.20.10.156]
[163.20.10.147]
[163.20.10.149]
[163.20.10.158]
[163.20.10.159]
[163.20.10.155]
[163.20.10.151]
[10.241.127.35]
[163.20.10.160]
[163.20.10.162]
[163.28.38.13]
Other
ntpc.ed...03.72.153.154)

https://kb.paessler.com/en/topic/75561-how-can-i-monitor-a-cisco-wlc-deployment-with-prtg

- Deployment and Usage
- Download the required zip archive here.
- Extract the archive to your PRTG program directory. By default, this is %Program Files (x86)%\PRTG Network Monitor\. Move the contents of the single folders to the corresponding ones within the application directory.
- In PRTG, restart the core server: open Setup | System Administration | Administrative Tools | Restart Core Server and click Go!. This ensures that the MIB and lookups are loaded before you run the auto-discovery.
- Create a new device in PRTG with the address (IP or FQDN) of the device that you want to monitor and configure the SNMP credentials accordingly.

Cisco wlc 3504 snmp 設定



- Right-click your new device, select Run Auto Discovery with Template, browse for wlc and select the Custom Cisco WLC Access Point Status v0.2 and Custom Cisco WLC SSID Statistics v0.2 templates from the list.
  Note: Using the auto-discovery with a dedicated device template is convenient here because it automates the creation of the custom sensors in an organized fashion.
- The sensors are deployed after a couple of seconds.
- You can adjust the channel limits or lookups to your needs later.

https://kb.paessler.com/en/topic/75561-how-can-i-monitor-a-cisco-wlc-deployment-with-prtg

- 部署和使用
- 在此處下載所需的*zip 存檔* 。
- 將存檔解壓縮到您的**PRTG 程序目錄**。默認情況下，這是**%Program Files (x86)%\PRTG Network Monitor**。將單個文件夾的內容移動到應用程序目錄中的相應文件夾。
- 在 PRTG 中，重新啟動核心服務器：打開**Setup | 系統管理| 管理工具| 重新啟動核心服務器**並單擊**執行！**. 這可確保在您運行自動發現之前加載 MIB 和查找。
- 在 PRTG 中使用您要監控的設備的地址（IP 或 FQDN）創建一個新設備，並相應地配置SNMP 憑據。
- 右鍵單擊您的新設備，選擇**Run Auto Discovery with Template**，瀏覽*wlc*並從列表中選擇**Custom Cisco WLC Access Point Status v0.2**和**Custom Cisco WLC SSID Statistics v0.2**模板。
  注意：在這裡使用帶有專用設備模板的自動發現很方便，因為它會以有組織的方式自動創建自定義傳感器。
- 傳感器在幾秒鐘後部署。
- 您可以稍後根據需要 調整通道限製或查找。
- 結果

手機安裝

- 1、PRTG APP 下載\
  - Wifi
  - 4G
  - vpn
- 2、PRTG ip
- 3、user name/password
- 4、password random

參考附件

- 老師平時維運常用指令
- 指令標準對照
- 校園除錯步驟

Sflow 收取

- enable sflow
- create sflow analyzer_server 1 owner NTPC timeout infinite collectoraddress 163.20.66.142 collectorport 6343 maxdatagramsize 1400
- create sflow flow_sampler ports 1:1-24 analyzer_server_id 1 rate 1 tx_rate 1 maxheadersize 256
- delete sflow flow_sampler ports 1:1-24

Cisco指令 and Dlink指令對照表

- L3維護指令
- L2常用維護指令
- Cisco維護指令

創Vlan

- DGS-3620
- create vlan lan tag 5

- DGS-1510
- configure terminal
- vlan 5
- name lan

- Cisco-3750X
- C3750X_CHT_F1-3(config)#vlan 5

設定vlan_port Accesc port

DGS-3620

- Config vlan lan add untagged 1
- DGS-1510
- configure terminal
- interface ethernet 1/0/1
- switchport hybrid native vlan 5
- switchport hybrid allowed vlan untagged 5
- Cisco-3750X
- C3750X_CHT_F1-3(config) interface TenGigabitEthernet1/1/1
- C3750X_CHT_F1-3(config) switchport mode access
- C3750X_CHT_F1-3(config) switchport access vlan 5

trunk port

- DGS-3620
- Config vlan default add untagged 1
- Config vlan intra-1 add tagged 1
- Config vlan intra-2 add tagged 1
- DGS-1510
- configure terminal
- interface ethernet 1/0/1
- switchport hybrid native vlan 1
- switchport hybrid allowed vlan untagged 1
- switchport hybrid allowed vlan tagged 10,20
- Cisdo-3750X
- interface TenGigabitEthernet1/1/1
- switchport trunk encapsulation dot1q
- switchport trunk allowed vlan 10,20
- switchport mode trunk

查看arp

- DGS-3620
- Sh arpentry
- DGS-1510
- Sh arp
- Cisco-3750X
- Sh arp

DGS-3620

```
ERDC-L3:admin#show arpentry
Command: show arpentry


 ARP Aging Time : 20
 ARP Retry Times : 4

Interface       IP Address        MAC Address         Type
--------------  ----------------  ------------------  ---------------
System          10.226.56.0       FF-FF-FF-FF-FF-FF   Local/Broadcast
System          10.226.56.2       54-B8-0A-C6-39-E0   Dynamic
System          10.226.56.4       54-B8-0A-C6-78-00   Dynamic
System          10.226.56.5       54-B8-0A-C6-78-80   Dynamic
```

DGS-1510

```
ERDC-L2-02>sh arp


S - Static Entry

IP Address         Hardware Addr      IP Interface   Age (min)
-----------------  -----------------  -------------  ---------------
  10.226.56.2      54-B8-0A-C6-39-E0  vlan1          forever
  10.226.56.254    3C-1E-04-B6-C2-00  vlan1          20

Total Entries: 2
```

Cisco-3750X

```
C3750X_CHT_F1-3#sh arp
Protocol  Address          Age (min)  Hardware Addr   Type   Interface
Internet  10.1.1.1                -   c067.af06.a2c0  ARPA   Vlan1
Internet  163.20.202.185        191   0009.0fab.7a9d  ARPA   Vlan256
Internet  163.20.202.187        119   3c1e.04b6.c201  ARPA   Vlan256
Internet  163.20.202.188          -   c067.af06.a2c3  ARPA   Vlan256
Internet  163.20.202.190          0   0009.0f09.0008  ARPA   Vlan256
```

查看mac

```
ERDC-L3:admin#sh fdb
Command: show fdb

 Unicast MAC Address Aging Time  = 300

 VID  VLAN Name                        MAC Address        Port  Type     Status
 ---- -------------------------------- ------------------ ----- -------- -------
 1    default                          00-21-91-A7-1E-00 20    Dynamic Forward
 1    default                          00-21-91-A7-1E-FF 20    Dynamic Forward
 1    default                          3C-1E-04-B6-C2-00 CPU   Self    Forward
 1    default                          54-B8-0A-C6-39-E0 23    Dynamic Forward
 1    default                          54-B8-0A-C6-6E-C0 20    Dynamic Forward
 1    default                          54-B8-0A-C6-77-E0 23    Dynamic Forward
```

DGS-1510

```
ERDC-L2-02>sh mac-address-table

VLAN   MAC Address         Type         Ports
----   ----------------    ----------   ------------------------
   1   3C-1E-04-B6-C2-00   Dynamic      eth1/0/24
   1   3C-1E-04-B6-C3-16   Dynamic      eth1/0/24
   1   54-B8-0A-C6-39-E0   Static       CPU
   1   54-B8-0A-C6-77-E0   Dynamic      eth1/0/24
   1   54-B8-0A-C6-78-1A   Dynamic      eth1/0/24
```

Cisco-3750X

```
C3750X_CHT_F1-3#sh mac address-table
          Mac Address Table
-------------------------------------------

Vlan    Mac Address         Type         Ports
----    -----------         --------     -----
 All    0100.0ccc.cccc      STATIC       CPU
 All    0100.0ccc.cccd      STATIC       CPU
 All    0180.c200.0000      STATIC       CPU
```

Sh vlan

六.查看vlan

DGS3620

```
ERDC-L3:admin#show vlan
Command: show vlan

VLAN Trunk State           : Disabled
VLAN Trunk Member Ports    :

VID                : 1                    VLAN Name         : default
VLAN Type          : Static               Advertisement     : Enabled
Member Ports       : 5,8,19-23,26-28
Static Ports       : 5,8,19-23,26-28
Current Tagged Ports    :
Current Untagged Ports: 5,8,19-23,26-28
Static Tagged Ports     :
Static Untagged Ports   : 5,8,19-23,26-28
Forbidden Ports         :
```

DGS1510

```
ERDC-L2-02#show vlan

 VLAN 1
   Name : default
   Tagged Member Ports    :
   Untagged Member Ports : 1/0/24-1/0/26,2/0/24-2/0/26

 VLAN 5
   Name : lan
   Tagged Member Ports    : 1/0/24-1/0/26,2/0/24-2/0/26
   Untagged Member Ports :
```

Cisco3750X

```
C3750X_CHT_F1-3#sh vlan

VLAN Name                             Status     Ports
---- -------------------------------- ---------- -------------------
1    default                          active     Gi1/0/22, Gi1/0/23
```

Sh port

五.查看port狀態

DGS-3620

```
ERDC-L3:admin#show ports
Command: show ports

Port       State/          Settings                Connection              Address   AutoSpeed
           MDIX       Speed/Duplex/FlowCtrl   Speed/Duplex/FlowCtrl   Learning  Downgrade
---------- ---------- ----------------------- ----------------------- --------- ----------
1          Enabled    Auto/Disabled           1000M/Full/None         Enabled   Disabled
             Auto
2          Enabled    Auto/Disabled           1000M/Full/None         Enabled   Disabled
             Auto
3          Enabled    Auto/Disabled           1000M/Full/None         Enabled   Disabled
```

DGS-1510

```
ERDC-L2-02#sh interfaces status

Port            Status          VLAN            Duplex   Speed              Type
--------------- --------------- --------------- -------- ---------------- --------------
eth1/0/1        not-connected 20              auto     auto               1000BASE-T
eth1/0/2        not-connected 20              auto     auto               1000BASE-T
eth1/0/3        not-connected 20              auto     auto               1000BASE-T
eth1/0/4        connected       20              a-full   a-100              1000BASE-T
eth1/0/5        not-connected 20              auto     auto               1000BASE-T
eth1/0/6        not-connected 20              auto     auto               1000BASE-T
```

Cisco-3750X

```
C3750X_CHT_F1-3#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Vlan1                      10.1.1.1        YES NVRAM  up                    down
Vlan40                     163.20.250.254  YES NVRAM  up                    up
Vlan200                    unassigned      YES unset  up                    up
Vlan256                    163.20.202.188  YES NVRAM  up                    up
Vlan626                    unassigned      YES unset  up                    up
FastEthernet0              unassigned      YES NVRAM  administratively down down
GigabitEthernet1/0/1       unassigned      YES unset  down                  down
GigabitEthernet1/0/2       unassigned      YES unset  down                  down
GigabitEthernet1/0/3       unassigned      YES unset  down                  down
GigabitEthernet1/0/4       unassigned      YES unset  up                    up
GigabitEthernet1/0/5       unassigned      YES unset  up                    up
```

LAB用指令

- Vlan database
- Vlan xx name LAN(Intra-1)
- Config t
- Interface vlan
- interface fa0/X
- Switch port trunk encapsalution dot.1q
- Switchport mode trunk (Access)
- Switchport access vlan xx
- Switchport trunk allow vlan xx,xx-xx
- Ip add xx.xx.xx.xx xx.xx.xx.xx xx.xxx.xx.xx
- Ip route xx.xx.xx.xx xx.xx.xx.xx aa.aa.aa.aa

模擬斷線除錯

- 1.vlan斷線 或是被攻擊(要做出三台電腦測試)
- 2.學校L3故障
- 3.中華電信到教網線路斷線。
- 4.教網firewall掛點
- 5.教網ServerFarm掛點
- 教網核心交換器掛點
- 政大區網掛點

一般公文、公務雲除錯

- 需協助，Teamviewer、anydesk裝起來。
- 公務雲在骨幹GOV段
- Nslookup看DNS解析是否為172.18.x.x not 61.60.x.x
- Ping cloud.ntpc.gov.tw doc2.ntpc.gov.tw
- Tracert看路由走法

一般學校網路除錯

- 電話:80723456----542 工程師
- Ping gateway
- Ping wan
- Ping firewall
- Ping serverfarm
- Ping gov
- Ping nccu
- Ping www.google.com
- Tracert看路由