



# Value of ADEM Webinar

Customer Success Team



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**Day 1**

**Few things to keep in mind!**

## Check GP version and device support

Entity		Supported version
Device OS	MacOS	10.15 and newer
	Windows	Windows 10, Build 1809 and newer
GlobalProtect		Version 5.2.11 or newer

# Check that the network isn't blocking ICMP tests

```
msharma2 -- -bash -- 80x24
ping google.Last login: Wed Oct 26 14:07:02 on console

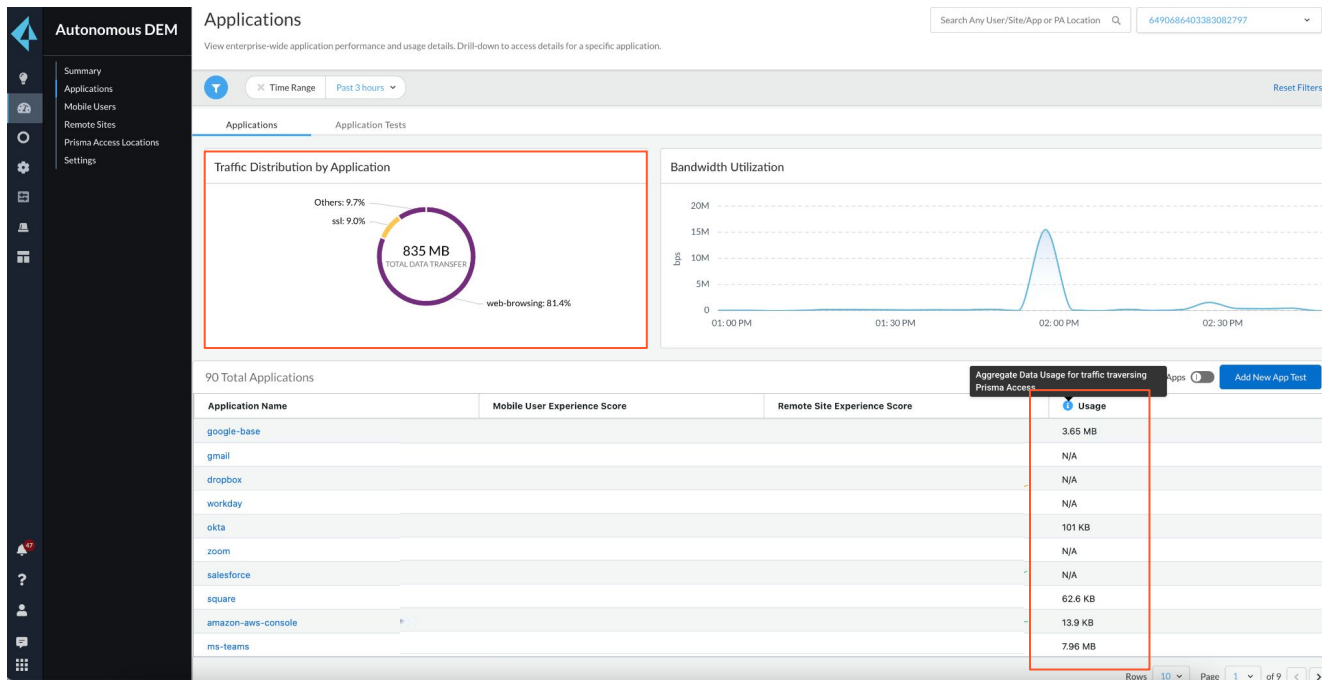
The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
[cM-C02FWDEAMD6M:~ msharma2$ ping google.com
PING google.com (142.250.188.14): 56 data bytes
64 bytes from 142.250.188.14: icmp_seq=0 ttl=58 time=22.404 ms
64 bytes from 142.250.188.14: icmp_seq=1 ttl=58 time=13.387 ms
64 bytes from 142.250.188.14: icmp_seq=2 ttl=58 time=17.784 ms
64 bytes from 142.250.188.14: icmp_seq=3 ttl=58 time=80.191 ms
64 bytes from 142.250.188.14: icmp_seq=4 ttl=58 time=15.908 ms
64 bytes from 142.250.188.14: icmp_seq=5 ttl=58 time=25.069 ms
64 bytes from 142.250.188.14: icmp_seq=6 ttl=58 time=12.980 ms
64 bytes from 142.250.188.14: icmp_seq=7 ttl=58 time=18.694 ms
64 bytes from 142.250.188.14: icmp_seq=8 ttl=58 time=18.678 ms
64 bytes from 142.250.188.14: icmp_seq=9 ttl=58 time=16.693 ms
64 bytes from 142.250.188.14: icmp_seq=10 ttl=58 time=14.592 ms
64 bytes from 142.250.188.14: icmp_seq=11 ttl=58 time=14.833 ms
64 bytes from 142.250.188.14: icmp_seq=12 ttl=58 time=32.642 ms
64 bytes from 142.250.188.14: icmp_seq=13 ttl=58 time=15.308 ms
64 bytes from 142.250.188.14: icmp_seq=14 ttl=58 time=14.180 ms
64 bytes from 142.250.188.14: icmp_seq=15 ttl=58 time=14.768 ms
64 bytes from 142.250.188.14: icmp_seq=16 ttl=58 time=15.495 ms
```

# Whitelist application processes

MACOS PROCESS		
PROCESS	PROCESS DESCRIPTION	USER/PERMISSION LEVEL
/Applications/GlobalProtect Autonomous DEM.app/Contents/MacOS/crypter	(This is a debugging tool as of 3.0.0) in previous versions it was used to read encrypted data from GlobalProtect: username, subtenant_id, certificate password.	__panwdem (sudo)
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemPathTestService.xpc/Contents/MacOS/mtr	Path Trace test for showing path visualization data on ADEM portal	__panwdem (sudo)
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemPathTestService.xpc/Contents/MacOS/DemPathTestService	Invokes the mtr process for path traces.	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemWebTestService.xpc/Contents/MacOS/DemWebTestService	Runs the curl process.	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemWebTestService.xpc/Contents/MacOS/curl	Application Performance test using Curl	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemUpdateService.xpc/Contents/MacOS/DemUpdateService	Endpoint DEM service software update manager	root
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemNetworkTestService.xpc/Contents/MacOS/DemNetworkTestService	Runs ICMP/TCP ping tests.	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemCollectionService.xpc/Contents/MacOS/DemCollectionService	Collects local system metrics such as cpu, memory, and wifi statistics.	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemPortalService.xpc/Contents/MacOS/DemPortalService	Provides connectivity to the ADEM portal for incoming configuration and transmission of test results.	__panwdem
/Applications/GlobalProtect Autonomous DEM.app/Contents/Services/DemTransmissionService.xpc/Contents/MacOS/DemTransmissionService	Runs periodically to collect test results from the other services and transmits them to the portal via the portal service.	__panwdem
/etc/sudoers.d/palo_alto_networks_dem.tmp'	File lists processes that requires sudo access	__panwdem (sudo)

WINDOWS PROCESS		
PROCESS	PROCESS DESCRIPTION	USER/PERMISSION LEVEL
C:\Program Files\Palo Alto Networks\DEM\bin\curl	Application Performance test using Curl	Network Service
C:\Program Files\Palo Alto Networks\DEM\bin\mtr-packet	Path Trace test for showing path visualization data on ADEM portal	Network Service
C:\Program Files\Palo Alto Networks\DEM\bin\mtr	Invokes the mtr process for path traces.	Network Service
C:\Program Files\Palo Alto Networks\DEM\bin\tcping	Network Performance test for Applications using TCP Ping	Network Service
C:\Program Files\Palo Alto Networks\DEM\AgentProcess	This is the main agent process that provides portal connectivity and test coordination.	Local System
C:\Program Files\Palo Alto Networks\DEM\GlobalProtectAutonomousDEM	The main service that launches the AgentProcess.	Local System
C:\Program Files\Palo Alto Networks\DEM\GlobalProtectAutonomousDEMUpdater	Endpoint DEM service software update manager	Local System

# Decide which apps to configure tests for



# Configure tests and associate users with tests

## Enable ADEM for selected user groups

**Autonomous DEM**

Application List > Add New App Test

### New App Test

Add tests to monitor application performance on your network.

Name\*

Description

**1. Select Mobile Users and/or Remote Sites**  
Select mobile users and remote sites you want to start the test on.

**2. Choose Apps**  
Confirm the apps you want to test.

**3. Save**  
Click on save to start the test and monitoring.

**Source**

Select mobile users and remote sites that you want to monitor.

**MOBILE USERS** Custom ▾

Mobile Users

javis@corp@demo-users ✕ shuf@corp@demo ✕

🔍

**REMOTE SITES** All Remote Sites Selected ▾

**Target**

Select target applications that you want to monitor.

**APPLICATION ENTITIES**

[Add Applications](#)

**Advanced Options**

ADVANCED NETWORK TEST OPTIONS ▾

ADVANCED WEB TEST OPTIONS ▾

ADVANCED MOBILE USERS TEST OPTIONS ▾

ADVANCED REMOTE SITES TEST OPTIONS ▾

\*Required Field

By default, all licensed Autonomous DEM mobile users and remote sites are assigned to this test. You can modify this default and select specific users and sites for which you want to enable a test.

Select an application for which you want to monitor the performance and user experience. For a custom application, define an application target by specifying the domain or an IP address to identify the application.

On Private Access, if you have configured a split tunnel to access your application directly without being forwarded for inspection, you can enable Split Tunnel under Advanced Options > Network Test Options for the test to use the same path.

# Reference links for ADEM registration and set up

[TechDocs : Get started with Autonomous DEM](#)

[TechDocs : ADEM Monitoring and Tests](#)

[Video on ADEM registration and activation](#)



# Week 1

# Step 1 : Validate information on settings page

Validate the number of users that have been registered

Settings

Review and adjust the settings for managing the lifecycle of the agents

6490686403383082797

Reset Filters

Endpoint Agent Management Remote Site Agent Management Health Score Profiles Audit Logs License Details

153 Total Endpoint Agents

More Actions Upgrade Options

<input type="checkbox"/>	Last Logged in User	Device	Hostname	Last Seen ↓	First Seen	User Status	Monitoring State	Endpoint Agent Version
<input type="checkbox"/>	CStewart@alvisofincorp.com	Microsoft Windows 10 Pr	DESKTOP-8FR794F	Less than a minute a...	6 days ago	Online	Enabled	3.1.7
<input type="checkbox"/>	MeenaSehar@alvisofincorp.com	Microsoft Windows 10 Pr	DESKTOP-3N54NGK	Less than a minute a...	5 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	JahnviReddy@alvisofincorp.cor	Microsoft Windows 10 Pr	DESKTOP-7CO6I4G	Less than a minute a...	11 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	DBell@alvisofincorp.com	Microsoft Windows 11 Pr	ALICE-PC	4 mins ago	4 days ago	Online	Enabled	3.1.7
<input type="checkbox"/>	SatishKondalam@alvisofincorp.c	Microsoft Windows 10 Pr	DESKTOP-G8G6F00	4 mins ago	5 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	tiazhang@alvisofincorp.com	macOS	M-C02G202ZMD6N	4 mins ago	6 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	AaronEdwards@alvisofincorp.co	Microsoft Windows 10 Pr	DESKTOP-TAV1F7J	4 mins ago	5 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	DBell@alvisofincorp.com	Microsoft Windows 10 En	Nishit-Win-2	4 mins ago	6 months ago	Online	Enabled	3.1.7
<input type="checkbox"/>	HSimpson@alvisofincorp.com	macOS	Mike's-MBP-2	15 mins ago	6 days ago	Offline	Enabled	3.1.7
<input type="checkbox"/>	user777@alvisofincorp.com	Microsoft Windows 11 Pr	TEZ-XPS	3 hour ago	1 months ago	Offline	Enabled	3.1.7

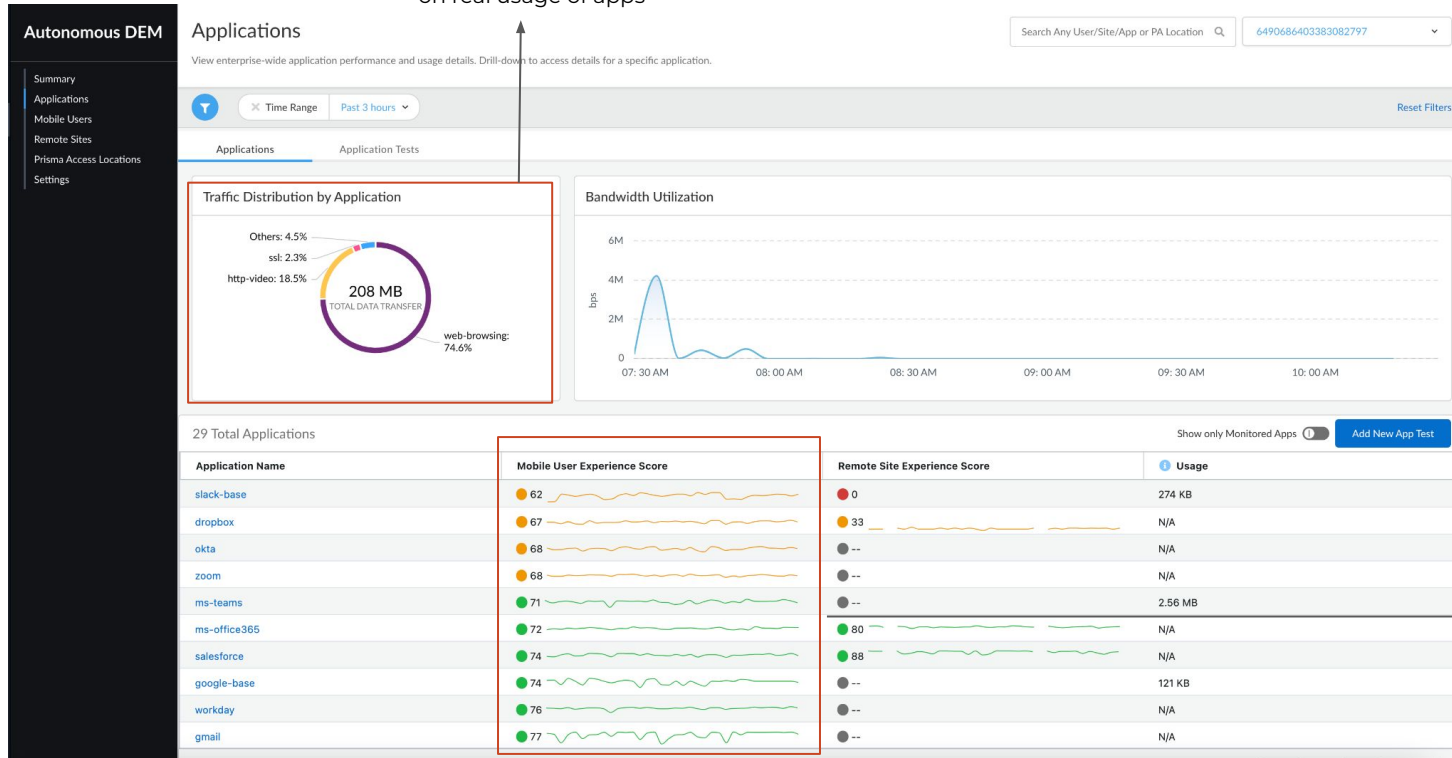
Are they updated to the right/latest version

Check if users are showing up as online if they are online

Rows 10 Page 1 of 16

# Step 2 : Validate information on applications page

Check if app traffic looks accurate based on real usage of apps



Average of MU experience for all apps

# Step 3 : Summary page

Total number of monitored users

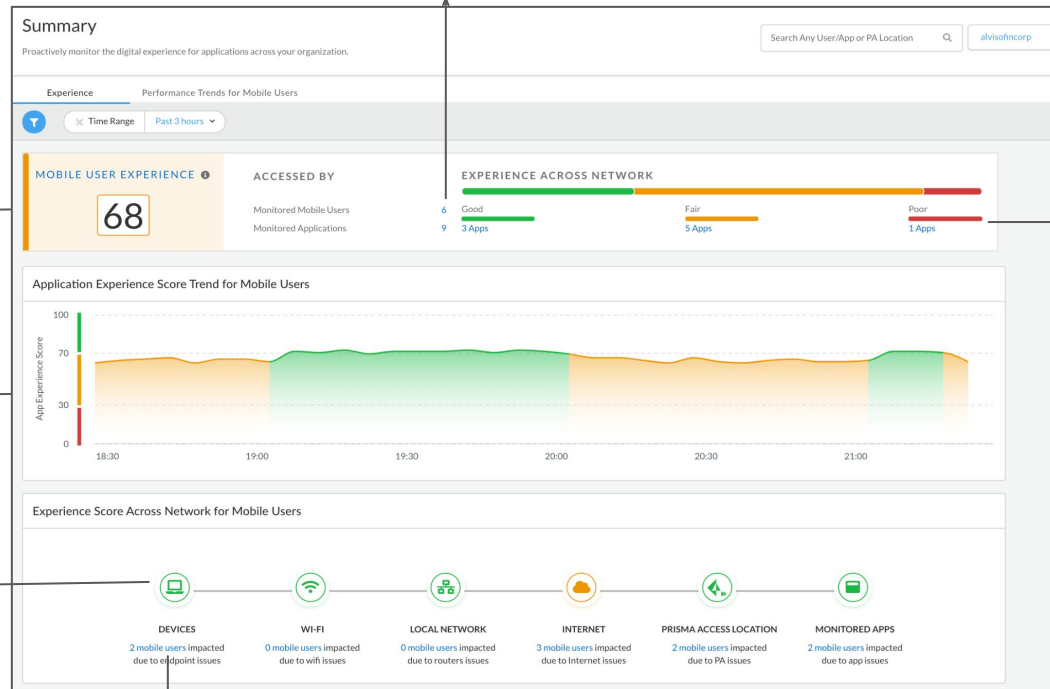
Total number of monitored applications

Average MU experience for all apps

Time series graph of average MU experience for all apps

Coloring based on average of segment health score for all MUs.

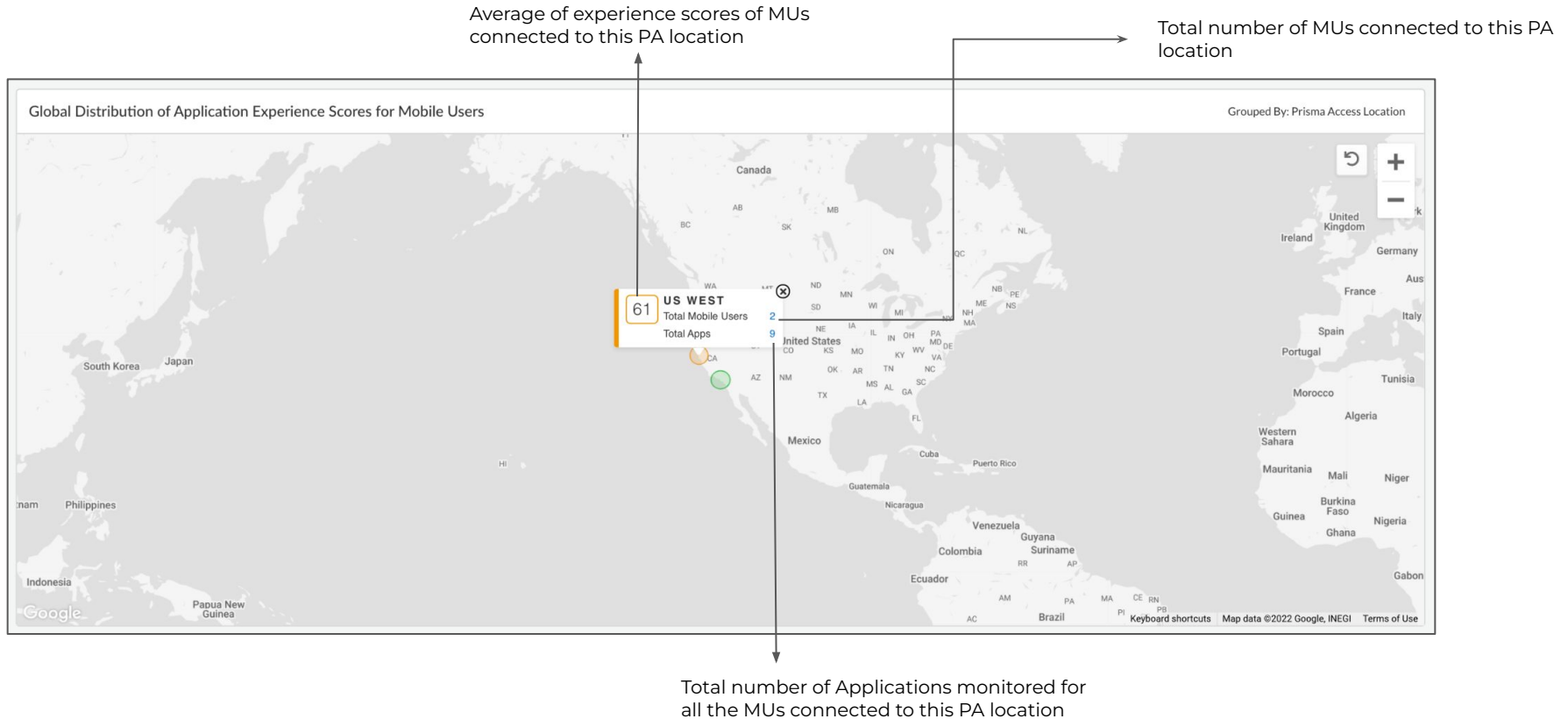
*Example: Average of Device health score for all MUs. Color will be based on the range in which the average falls.*



Based on the MU experience score across apps

Number of MUs for whom this segment is amber/red

# Summary page

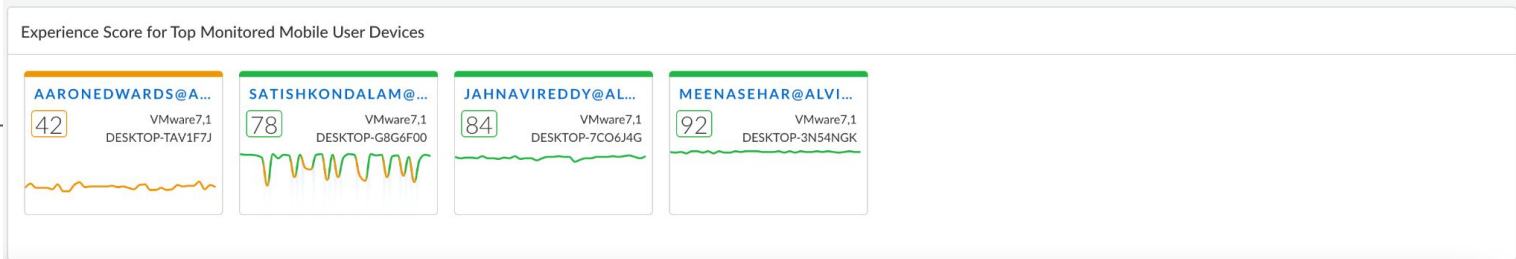


# Summary page

Average application experience score for all monitored MUs

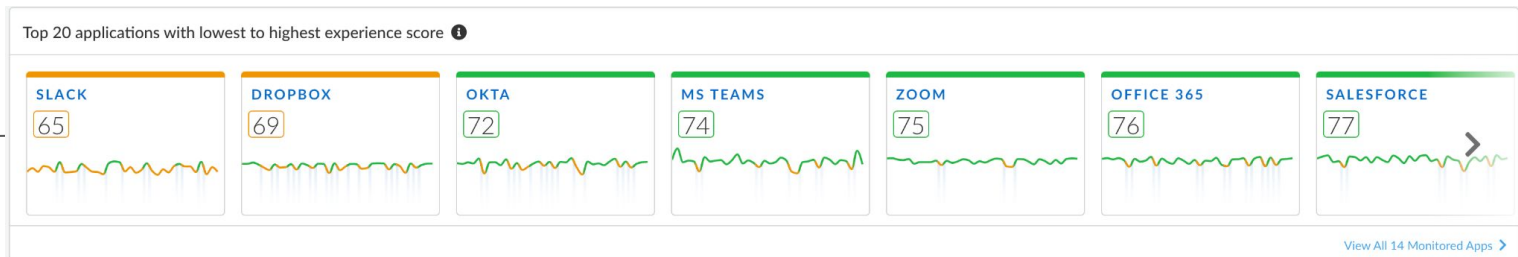


User experience score of top monitored MUs across all apps

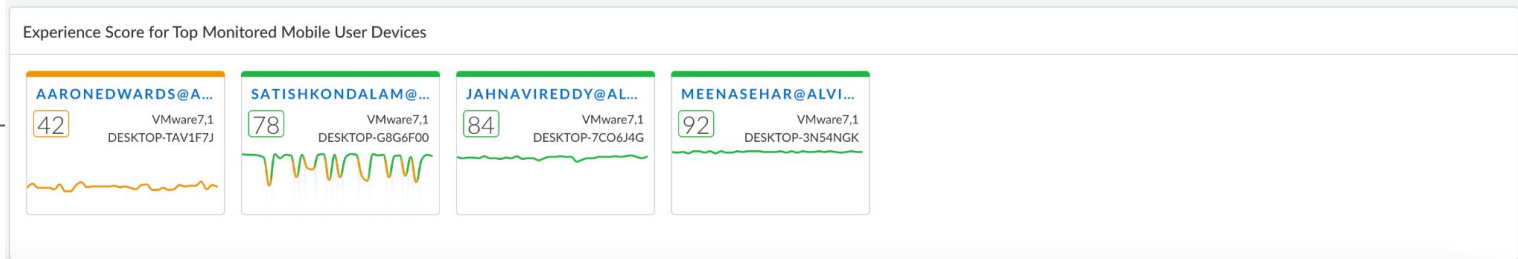


# Summary page

Average application experience score for all monitored MUs



User experience score of top monitored MUs across all apps

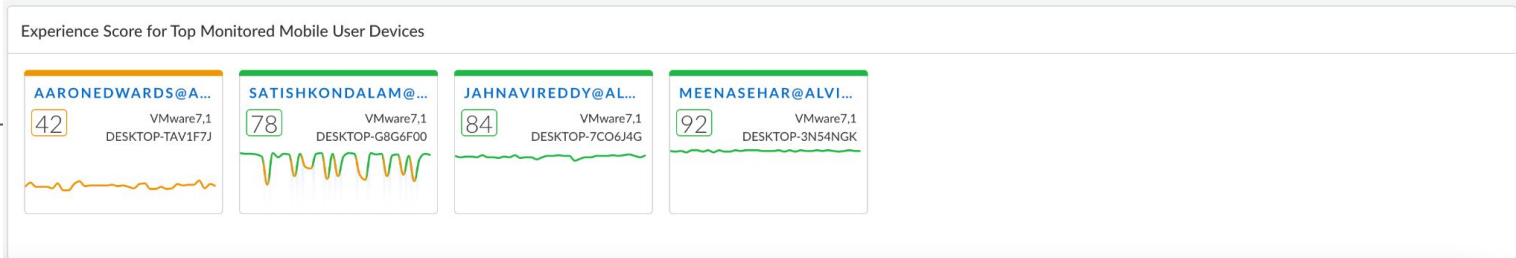


# Summary page

Average application experience score for all monitored MUs



User experience score of top monitored MUs across all apps





# Experience Thresholds

Entity	Threshold	Total Impact when threshold is out of range
Device	CPU usage: 20 -100 %	40%
	Memory: 80-100%	30%
	Disk Queue Length: 0 -8	20%
	Disk usage: 90- 100 %	10%
Local Area Network	Jitter: 0 -4 ms	20%
	Loss: 0 - 10 %	50%
	Latency: 2 - 10 ms	30%
WIFI	Rx : 0 - 200 Mbps	10%
	Signal : 0 - 100 dBm	80%
	Tx : 0 - 200 Mbps	10%

Entity	Threshold	Total Impact when threshold is out of range
Internet	Jitter: 5 - 50 ms	20%
	Loss: 0.5 - 10 %	50%
	Latency: 20 - 250 ms	30%
Prisma Access	Jitter: 5 - 50 ms	20%
	Loss: 0.5 - 10 %	50%
	Latency: 20 - 250 ms	30%
Application	TCP Lookup : 50 - 500 ms	20%
	Dns Lookup : 20 - 200 ms	20%
	SSL Connect : 50 - 500 ms	20%
	HTTP Latency : 50 - 1000 ms	40%

# Experience Score

- Experience score is based on the HTTP/S “app/web” test results only.



# Experience Score

- Experience score starts at 100.
- If Availability is 0 (app is unavailable), then the score is 0.
- DNS Lookup
  - If the DNS Lookup time is <20 msec, there is no impact.
  - If the DNS Lookup time is >200 msec, the impact is 20.
- TCP Connect
  - If the TCP Connect time is <50 msec, there is no impact.
  - If the TCP Connect time is >500 msec, the impact is 20.
- SSL Connect
  - If the SSL Connect time is <50 msec, there is no impact.
  - If the SSL Connect time is >500 msec, the impact is 20.
- HTTP Latency
  - If the HTTP Latency time is <50 msec, there is no impact.
  - If the HTTP Latency time is >=1,000 msec, the impact is 40.

Application	TCP Lookup : 50 - 500 ms	20%
	Dns Lookup : 20 - 200 ms	20%
	SSL Connect : 50 - 500 ms	20%
	HTTP Latency : 50 - 1000 ms	40%

# Summary page

The screenshot displays the 'Settings' page for 'Autonomous DEM'. The left sidebar contains navigation options: Summary, Applications, Mobile Users, Remote Sites, Prisma Access Locations, and Settings. The main content area is titled 'Settings' and includes a sub-header 'Review and adjust the settings for managing the lifecycle of the agents'. Below this, there are tabs for 'Endpoint Agent Management', 'Remote Site Agent Management', 'Health Score Profiles', 'Audit Logs', and 'License Details'. The 'Health Score Profiles' tab is active, showing a table with 8 total profiles. The table has two columns: 'Domain Health Score Metric Name' and 'Type'. The profiles listed are: Application Health Score Metrics (Default) - Default (Application); Prisma Access Health Score Metrics (Default) - Default (Prisma Access); Internet Health Score Metrics (Default) - Default (Internet); Device Health Score Metrics (Default) - Default (Device); Local Network Health Score Metrics (Default) - Default (Local Network); Wi-Fi Health Score Metrics (Default) - Default (Wi-Fi); Prisma SD-WAN Branch Device Health Score Metrics (Default) - Default (Prisma SD-WAN Branch); and Prisma SD-WAN Data Center Health Score Metrics (Default) - Default (Prisma SD-WAN Data Center). On the right, a modal window titled 'Application Health Score Metrics (Default)' is open. It contains a description: 'Check the default thresholds and weightage that determine the experience score for monitored applications and users. The metrics that constitute this score are: DNS Lookup, TCP Connect, SSL Connect, and HTTP Latency.' Below the description are four sections, each with a dropdown arrow, a toggle switch, and input fields for 'Lower Limit', 'Upper Limit', and 'Impact %':

- DNS LOOKUP** (toggle on): Lower Limit: 20, Upper Limit: 200, Impact %: 20
- TCP LOOKUP** (toggle on): Lower Limit: 50, Upper Limit: 500, Impact %: 20
- SSL CONNECT** (toggle on): Lower Limit: 50, Upper Limit: 500, Impact %: 20
- HTTP LATENCY** (toggle on): Lower Limit: 50, Upper Limit: 1000, Impact %: (empty)

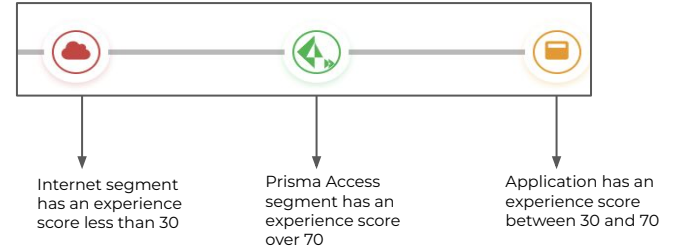
A 'Close' button is located at the bottom right of the modal.

Domain Health Score Metric Name	Type
Application Health Score Metrics (Default)	Default (Application)
Prisma Access Health Score Metrics (Default)	Default (Prisma Access)
Internet Health Score Metrics (Default)	Default (Internet)
Device Health Score Metrics (Default)	Default (Device)
Local Network Health Score Metrics (Default)	Default (Local Network)
Wi-Fi Health Score Metrics (Default)	Default (Wi-Fi)
Prisma SD-WAN Branch Device Health Score Metrics (Default)	Default (Prisma SD-WAN Branch)
Prisma SD-WAN Data Center Health Score Metrics (Default)	Default (Prisma SD-WAN Data Center)

# Experience Indicators

Score range	Icon Color Indication	Experience Level
Score $\geq 70$	GREEN	Good
$30 < \text{Score} < 70$	YELLOW	Fair
Score $< 30$	RED	Poor

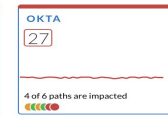
## Examples of Color Indicator across portal



Users are having a **fair** experience with the application score between 30 and 70



Users are having a **good** experience with the application score over 70



Users are having a **poor** experience with the application score below 30

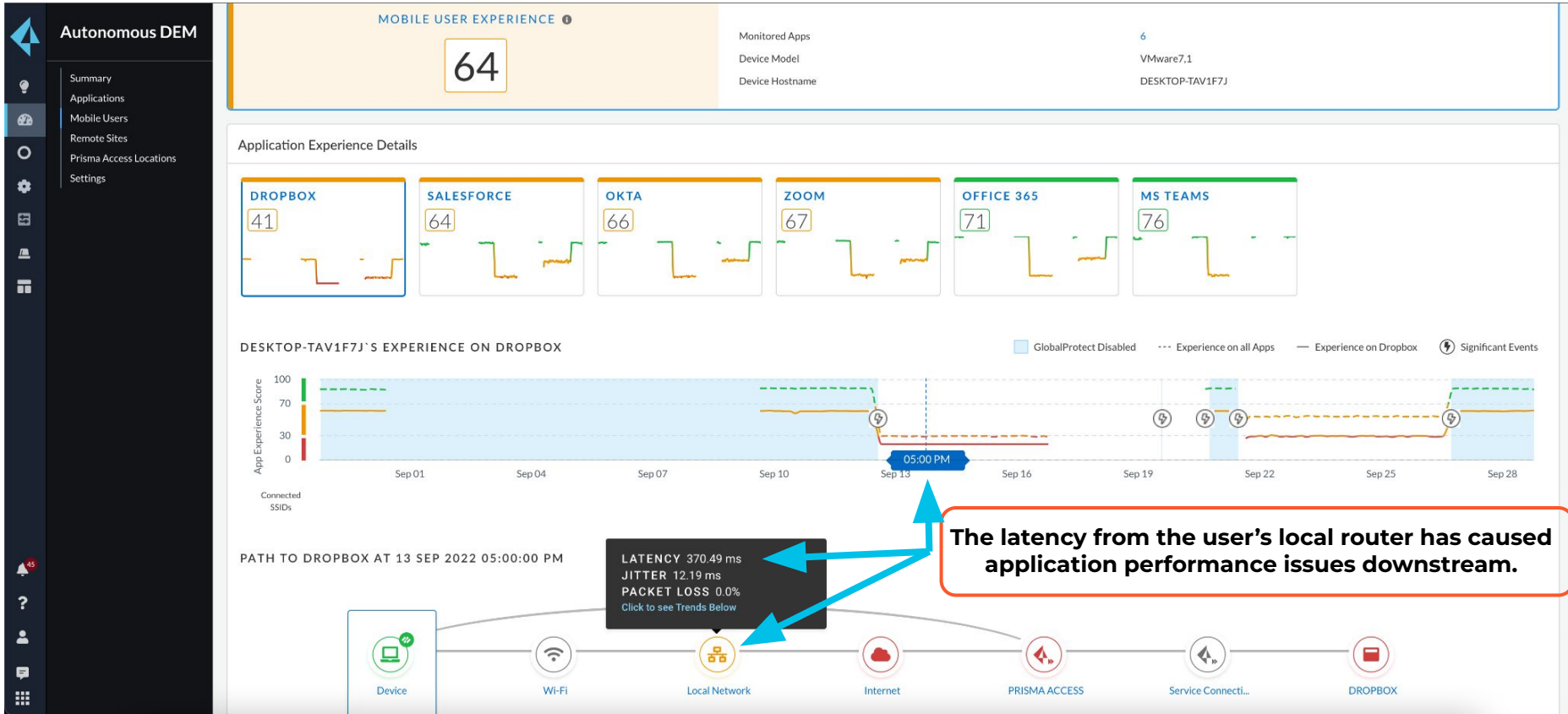
# Synthetic Test Frequency

- Network Performance Synthetics runs every **10 seconds**, results sent to DEM portal **every 5 mins**, contains average delay, jitter and loss comprising of up to 30 measurements.
  - ICMP test to LAN
  - Underlay ICMP test to SPN
  - Overlay ICMP test to SPN
  - End-to-End TCP Ping test to IP/Domain
- Path Trace Synthetic Test runs **5 traces in 5 minute sample period**, contains average delay, jitter and loss comprising of up to 5 measurements.
  - Underlay Path trace to SPN
  - End-to-End path trace to IP/Domain
- App (Web) Performance Synthetics Test uses HTTP/S to “GET” any user-defined IP/domain as part of a configured “test” **once every 5 mins**. Results sent to DEM portal **every 5 mins**, and contains HTTP/S timing metrics (DNS resolution, TCP Connect, SSL Connect, HTTP Latency)

# Month 1

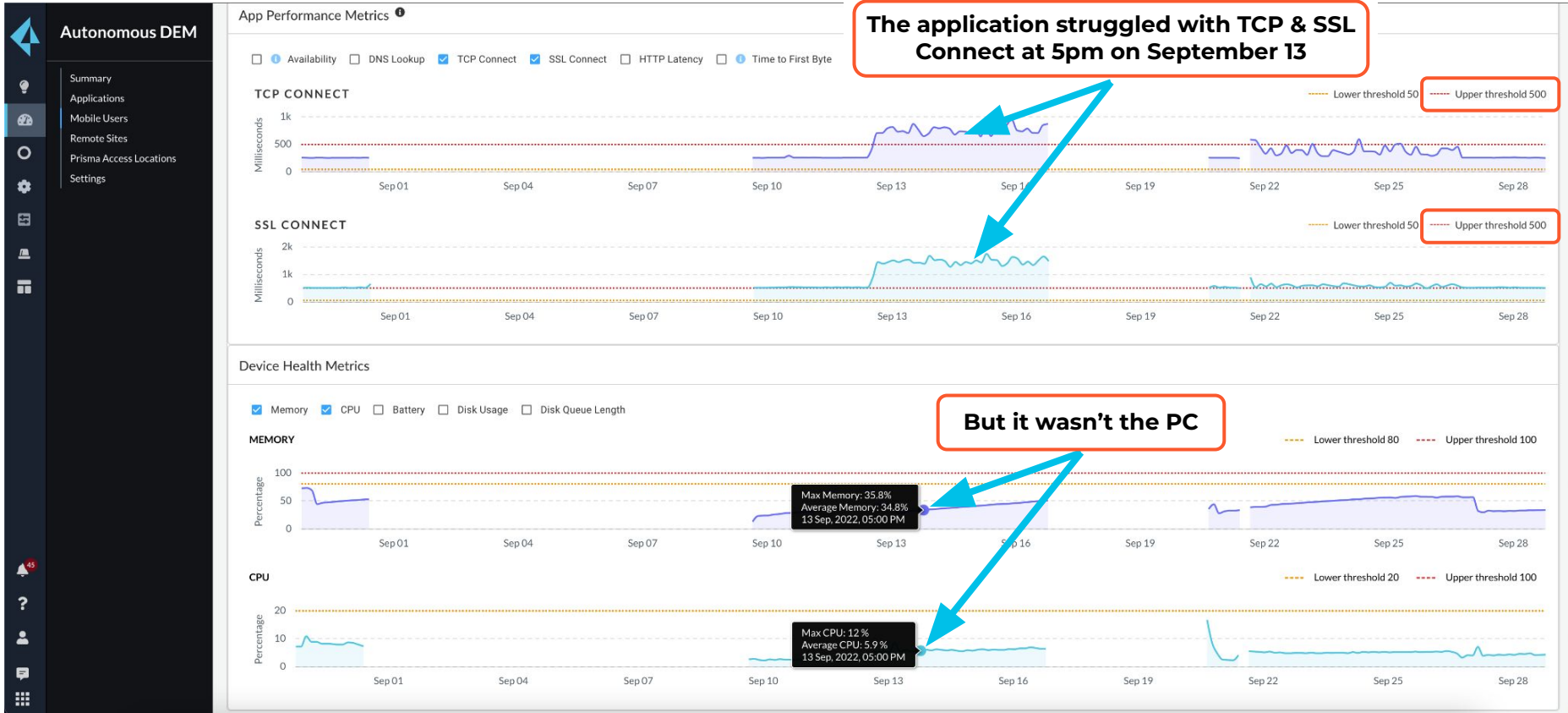
# Top ADEM use cases

# Issue #1 : LAN

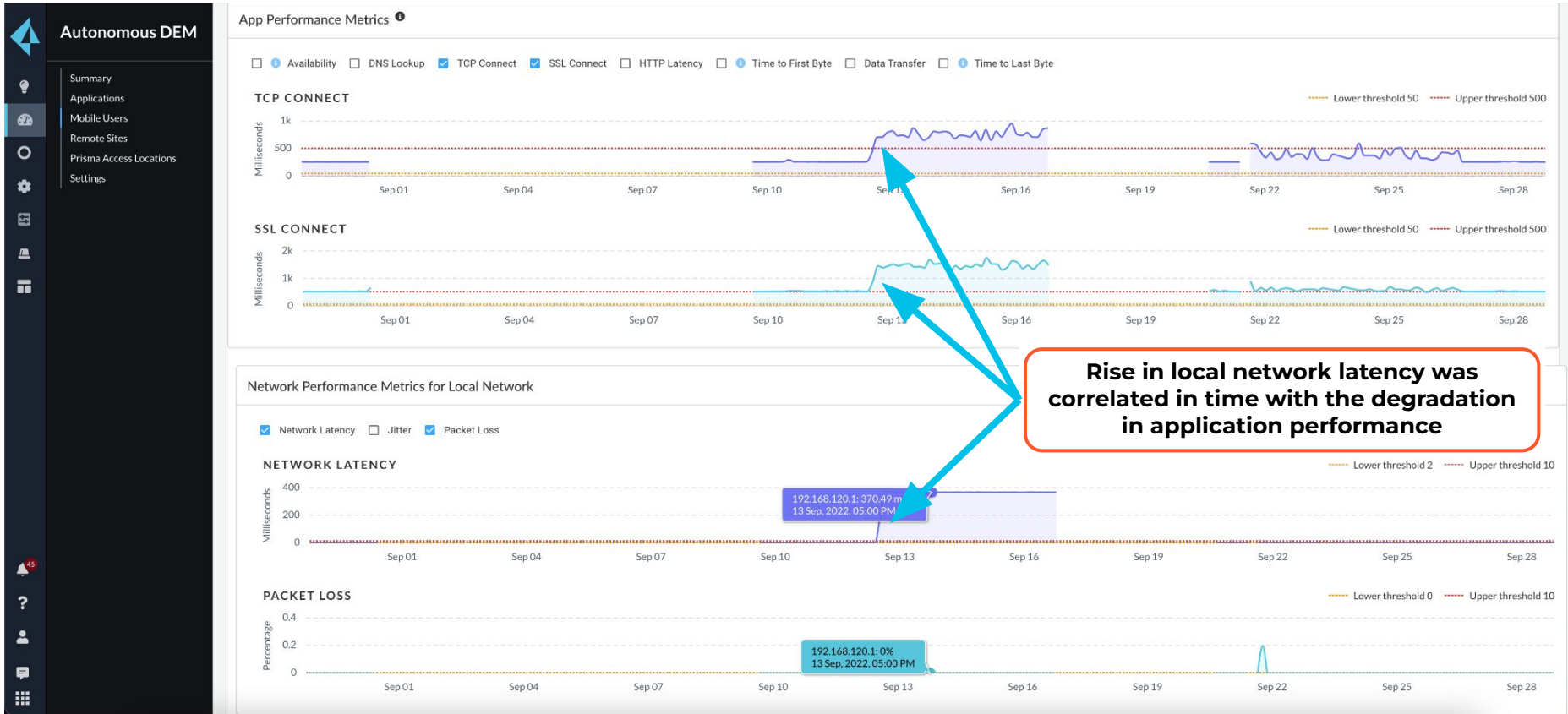




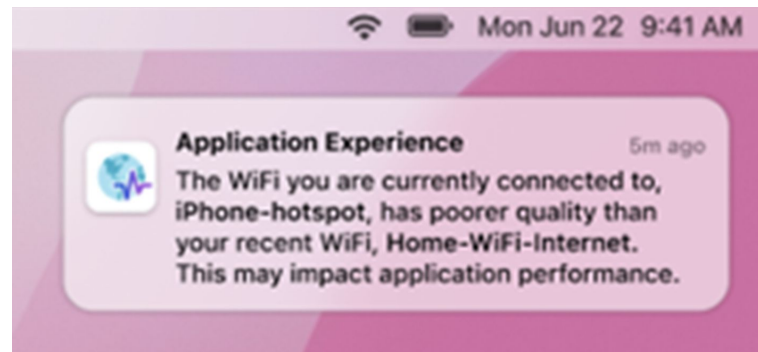
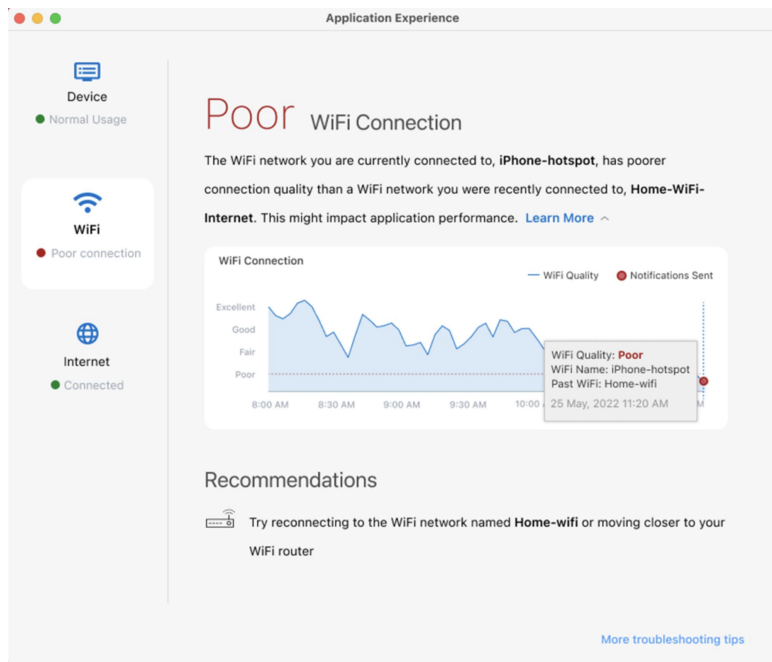
# Issue #1 : LAN



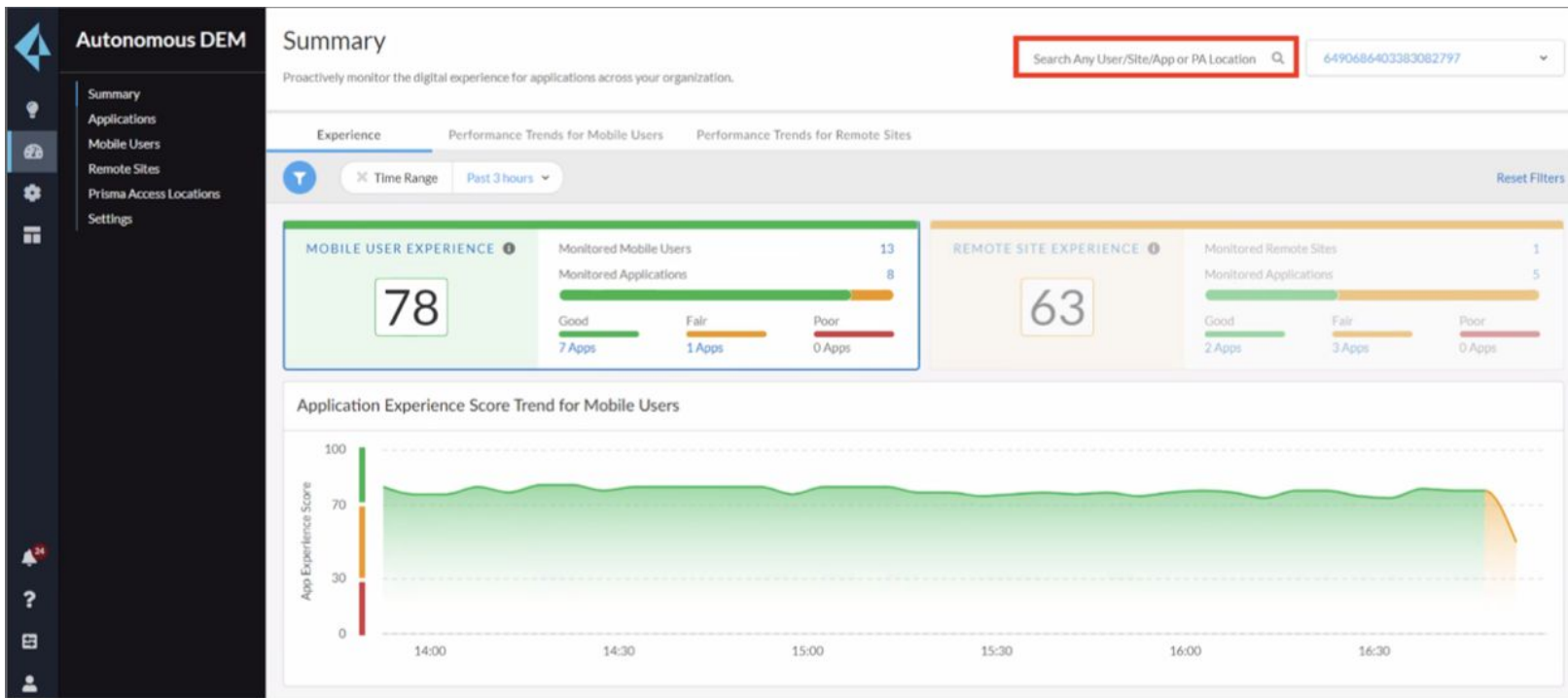
# Issue #1 : LAN



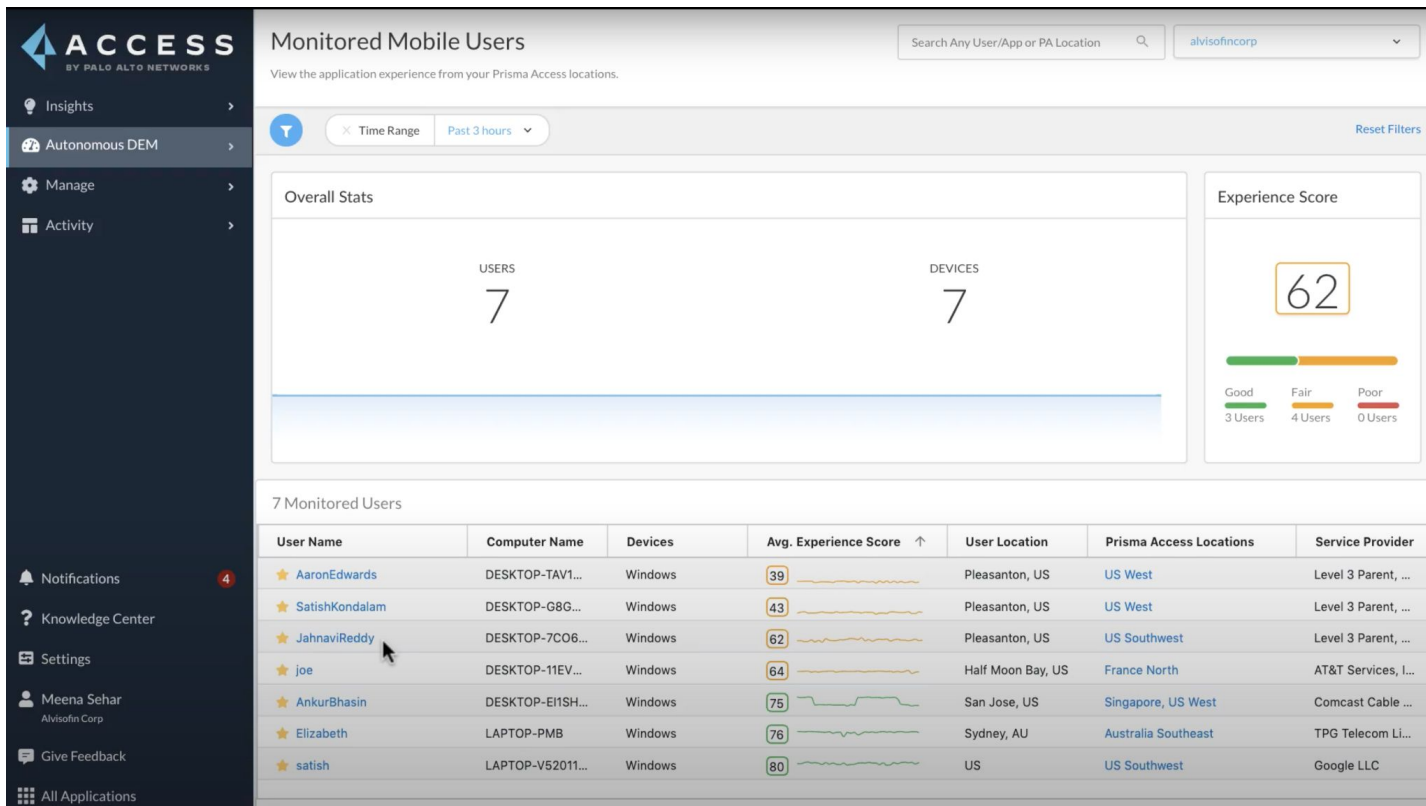
# Issue #1 : Wifi



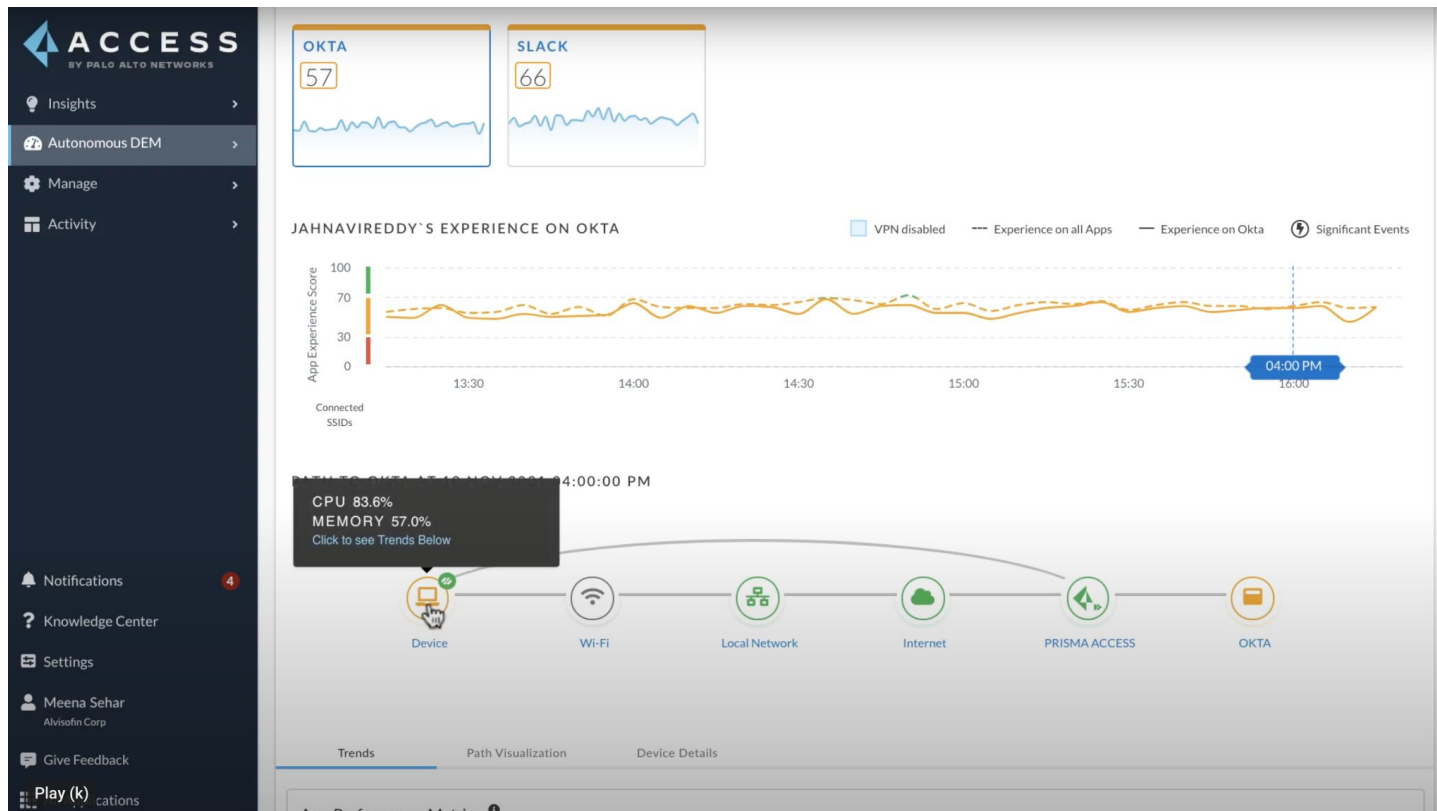
# Issue #3 : High CPU



# Issue #3 : High CPU



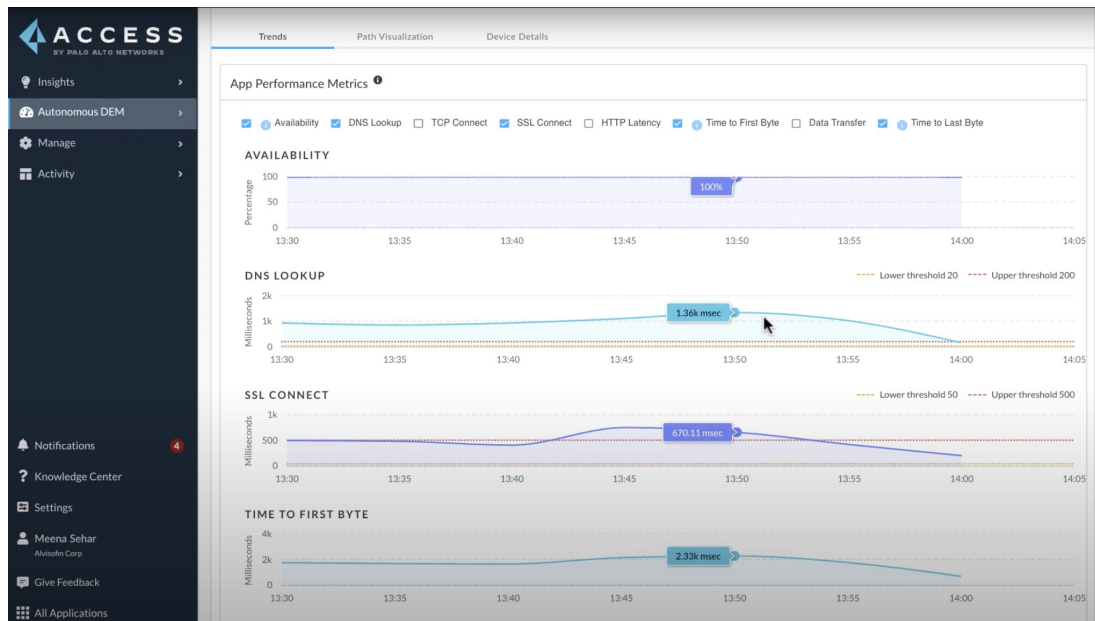
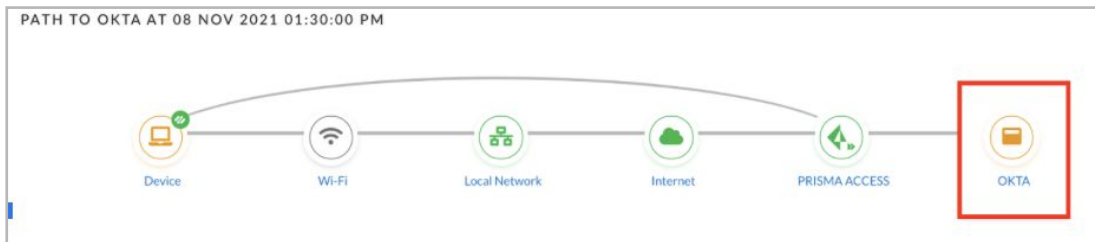
# Issue #3 : High CPU



# Issue #3 : High CPU



# Issue #3 : High CPU





# Issue #4 : ISP

Autonomous DEM

Remote Site List > Remote Site Details

Search Any User/Site/App or PA Location  6490686403383082797

## Site: Seattle (Branch 3)

This page shows application experience and related trends for all devices.

Time Range: Past 7 days | Application: salesforce | Reset Filters

### REMOTE SITE EXPERIENCE

75

Monitored Apps: 1  
Device Model: ion 3102v  
Device Hostname: Seattle - Branch 3

#### Application Experience Details

**Overall Salesforce performance in the Seattle Branch is Good. But 4 out of 7 paths are impacted.**

**All three of these poor performing links have one thing in common: Verizon Internet.**

SALESFORCE 75  
4 of 7 paths are impacted

TOTAL PATHS - 7 (6 ACTIVE, 1 BACKUP)  
6 Active paths to Salesforce

- PATH 1: SEATTLE (BRANC... Verizon Internet - PRISMA ACCESS (Score: 51)
- PATH 2: SEATTLE (BRANC... Verizon Internet - DIRECT ACCESS (Score: 53)
- PATH 3: SEATTLE (BRANC... Verizon Internet - DC1-ION3K-1 Comcast Internet (Score: 54)
- PATH 4: SEATTLE (BRANC... Comcast Internet - PRISMA ACCESS (Score: 80)
- PATH 5: SEATTLE (BRANC... Comcast Internet - Internet (Score: 80)

# Issue #4 : ISP

**Autonomous DEM**

Remote Site List > Remote Site Details

Search Any User/Site/App or PA Location 6490686403383082797

## Site: Seattle (Branch 3)

This page shows application experience and related trends for all devices.

Time Range: Past 7 days | Application: salesforce

**REMOTE SITE EXPERIENCE**

**75**

Monitored Apps: 1  
Device Model: ion 3102v  
Device Hostname: Seattle - Branch 3

### Application Experience Details

**SALESFORCE**

**75**

4 of 7 paths are impacted

TOTAL PATHS - 7 (6 ACTIVE, 1 BACKUP)

**And these three well performing links also have one thing in common: Comcast Internet.**

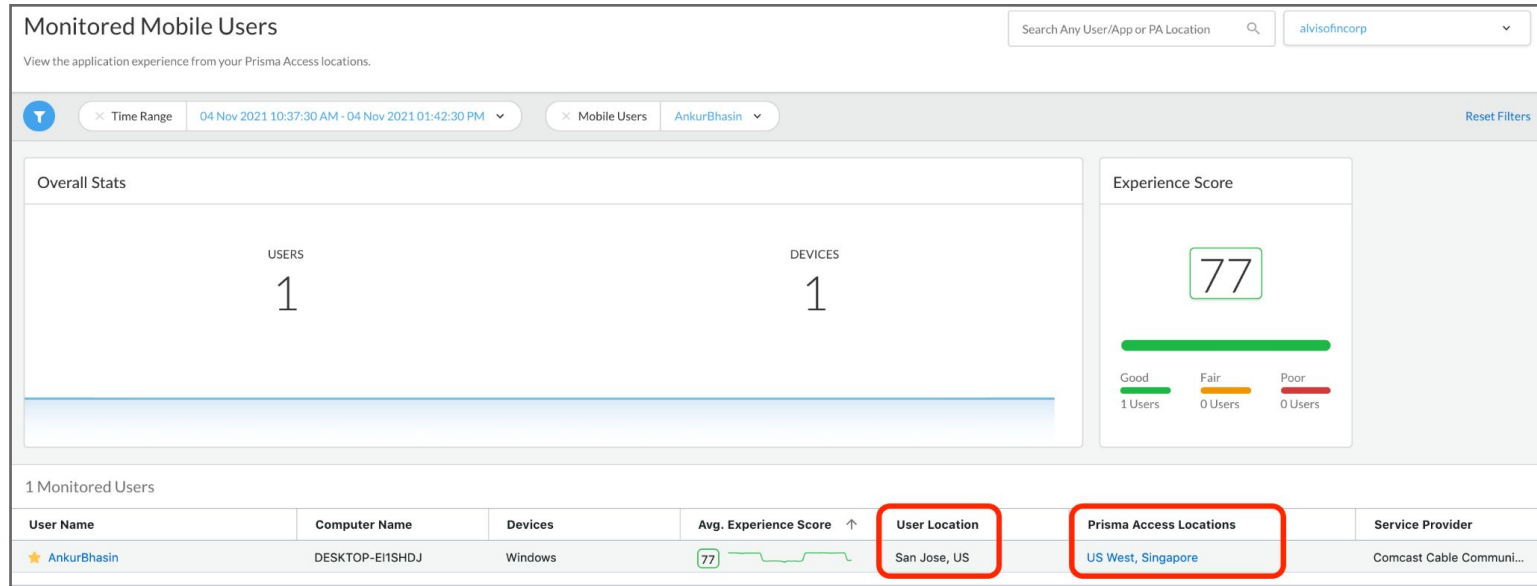
**Verizon also performing poorly on backup link as well**

DC1-ION3K-1 Comcast Internet | SEATTLE (BRANC... Comcast Internet | PRISMA ACCESS | SEATTLE (BRANC... Comcast Internet | DIRECT ACCESS | SEATTLE (BRANC... Comcast Internet | DC1-ION3K-1 Comcast Internet | SEATTLE (BRANC... Verizon Internet | DIRECT ACCESS

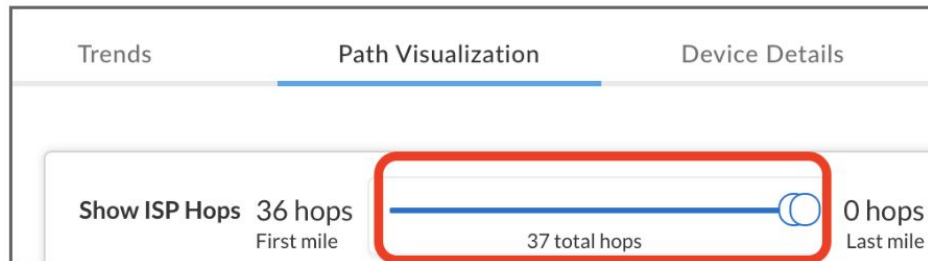
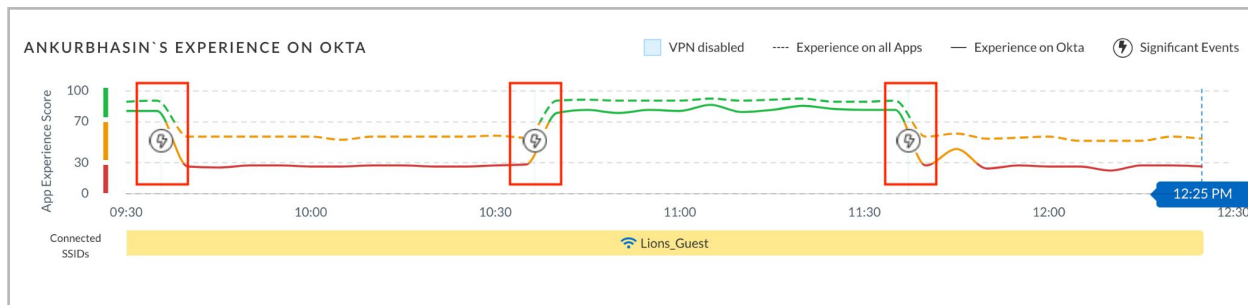
# Issue # 5 : PA gateway

The screenshot displays the 'Autonomous DEM' interface. The left sidebar contains navigation options: Summary, Applications, Mobile Users, Remote Sites, Prisma Access Locations, and Settings. The main content area is titled 'Summary' and includes a search bar with 'ankurj' and a dropdown menu showing '6490686403383082797'. A search dropdown is open, showing 'Users - 1 results' with the email 'AnkurBhasin@alvisofncorp.com' highlighted. Below the search bar, there are tabs for 'Experience', 'Performance Trends for Mobile Users', and 'Performance Trends for Remote Sites'. A 'Time Range' filter is set to 'Past 3 hours'. The 'MOBILE USER EXPERIENCE' section shows a score of 78, with 13 monitored mobile users and 8 monitored applications. A performance bar indicates 7 Apps in Good, 1 App in Fair, and 0 Apps in Poor. The 'REMOTE SITES' section shows a score of 63, with 1 Remote Site and 5 Applications. A performance bar indicates 2 Apps in Good, 3 Apps in Fair, and 0 Apps in Poor. At the bottom, there is a chart titled 'Application Experience Score Trend for Mobile Users' with a scale from 0 to 100.

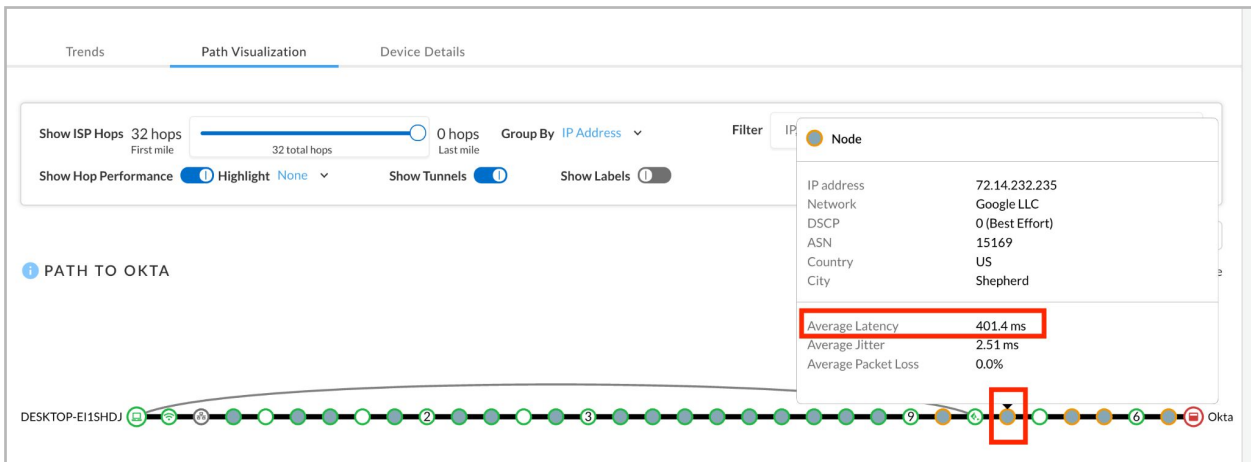
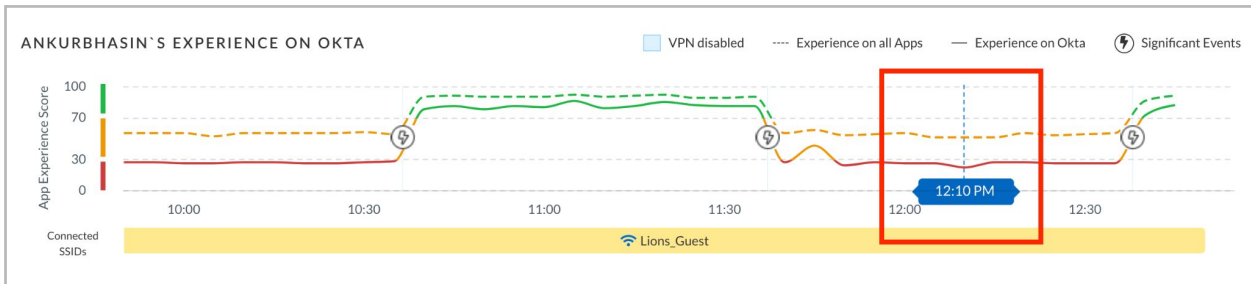
# Issue # 5 : PA gateway



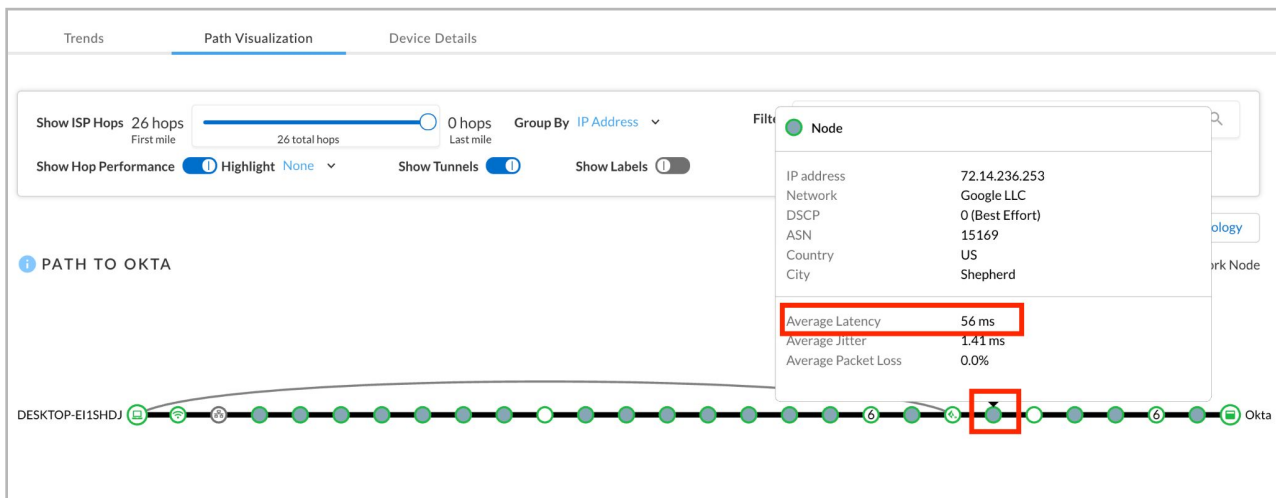
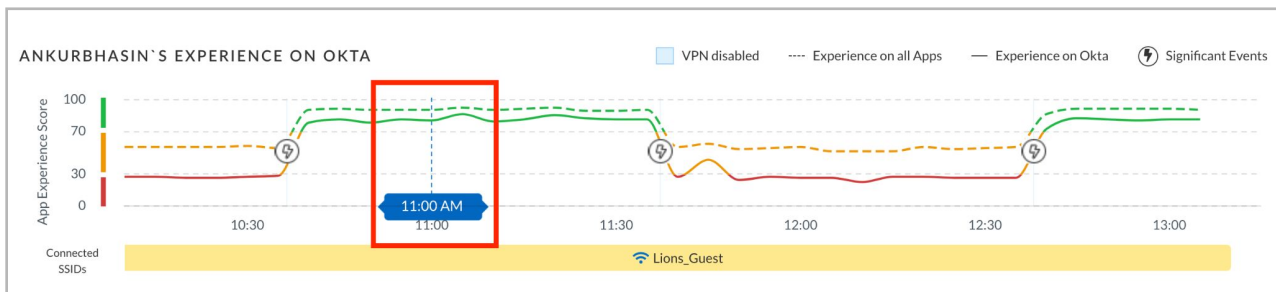
# Issue # 5 : PA gateway



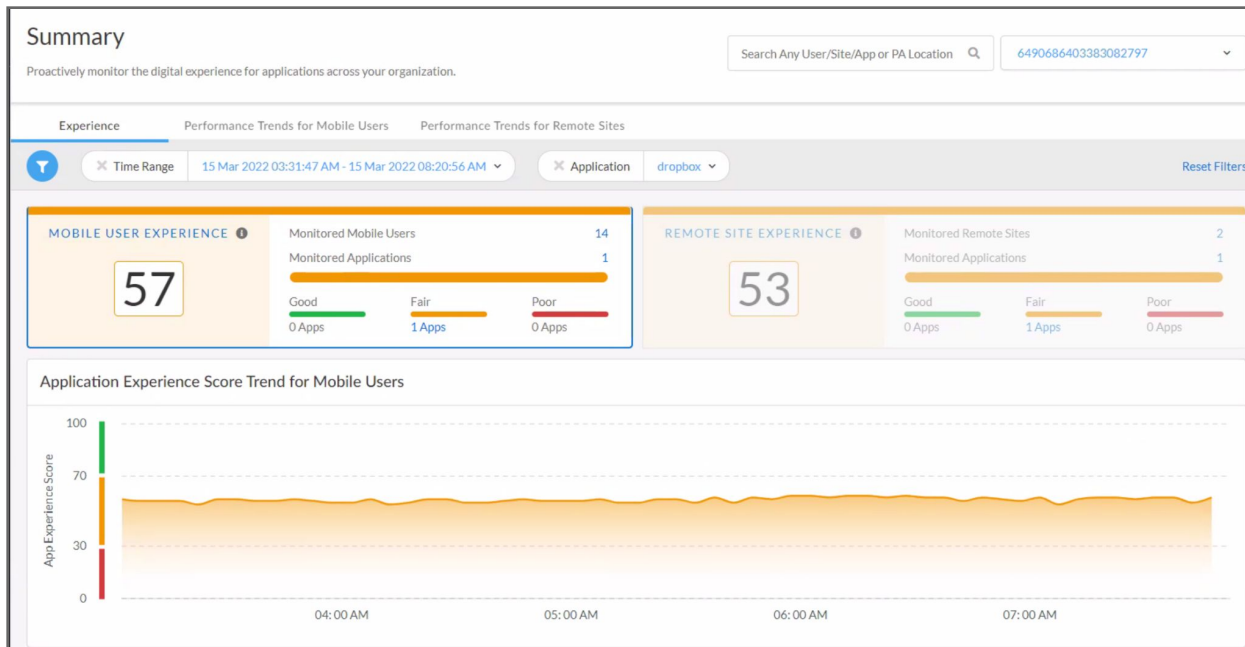
# Issue # 5 : PA gateway



# Issue # 5 : PA gateway

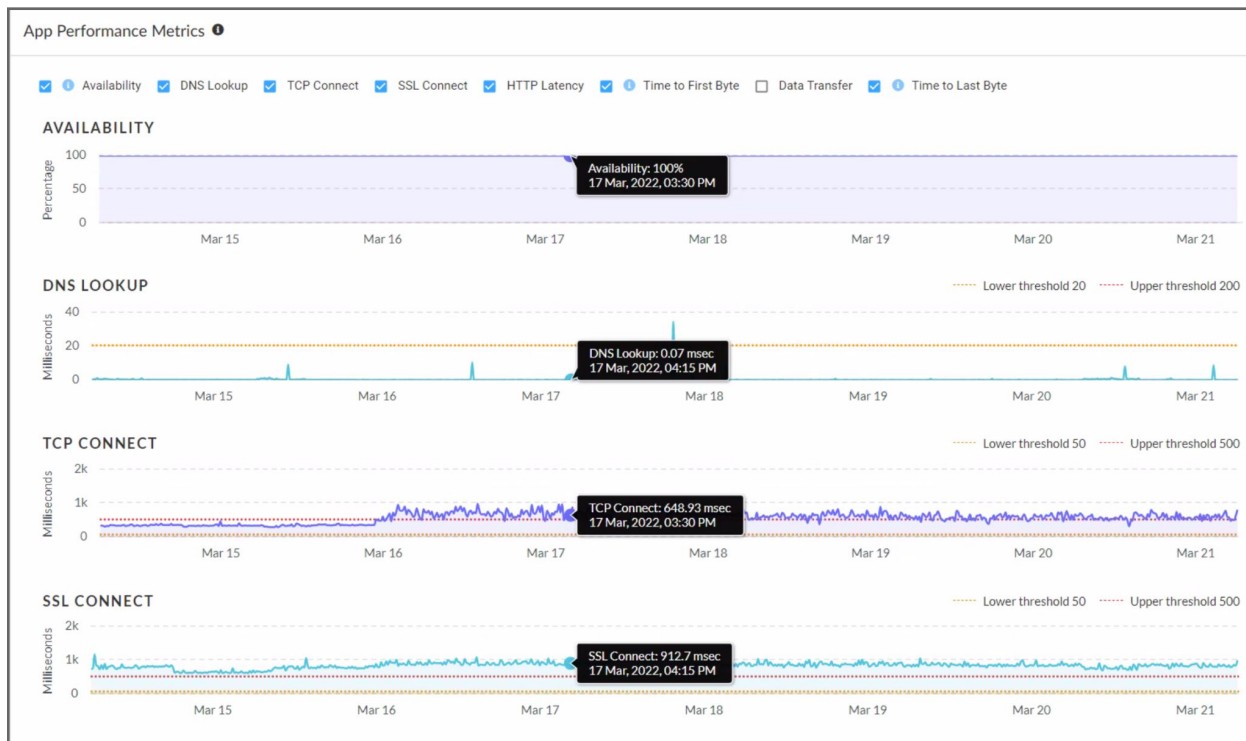


# Issue # 6 : SaaS App





# Issue # 6 : SaaS App

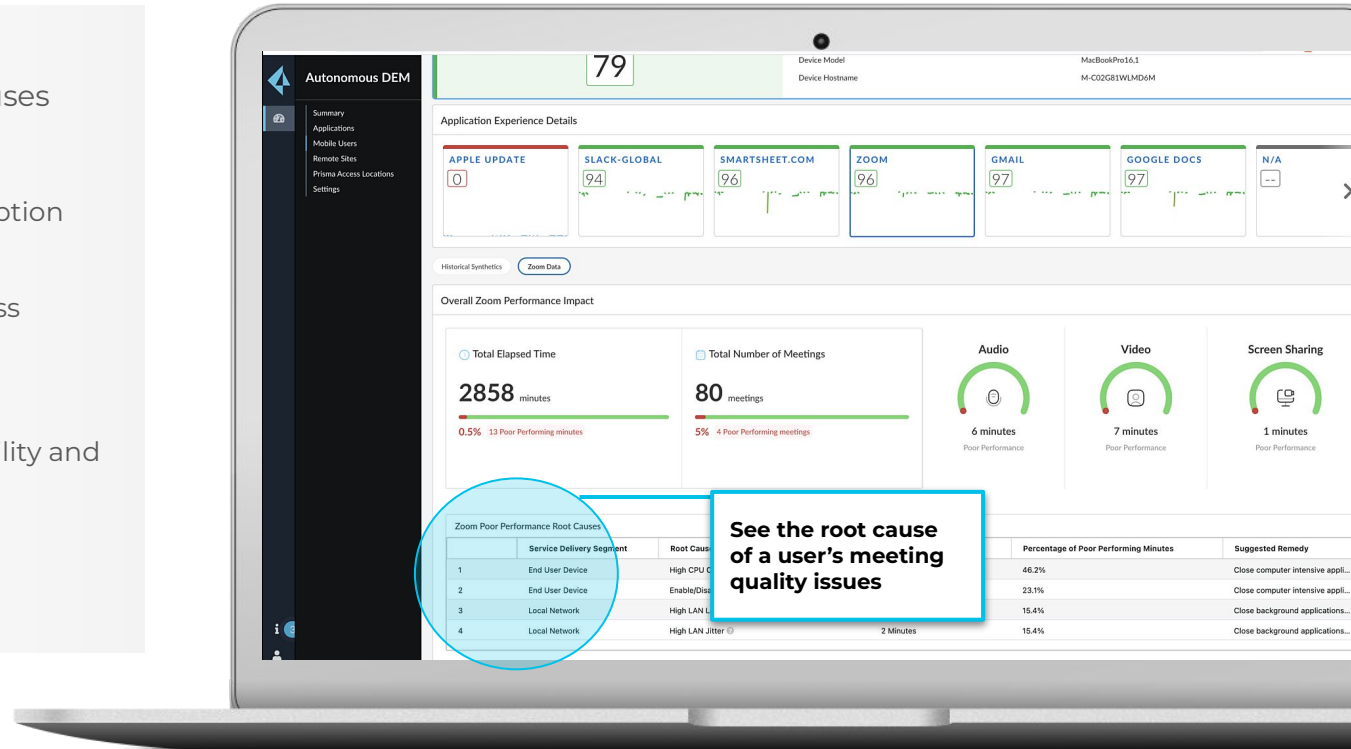


# Issue # 7 : Zoom

## See the root cause of a user's Zoom meeting quality issue

Quickly identify root causes including:

- CPU/RAM Consumption
- WiFi Issues
- Network Packet Loss
- Jitter
- Latency
- Application availability and performance



**Thank you!**