



Juniper JNCIS Mist Notes

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Subject **Juniper**

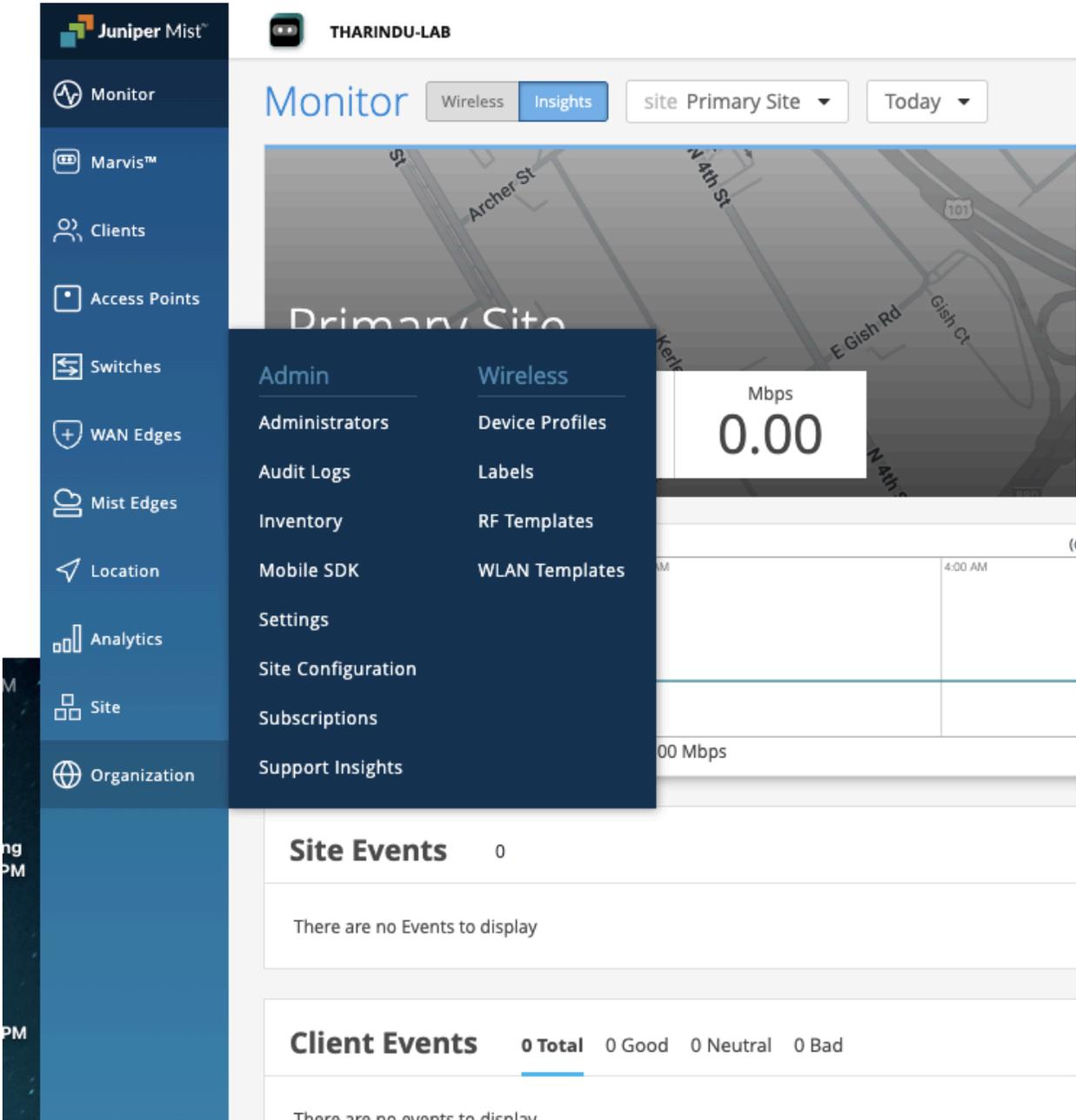
Resources **Juniper Official Website, Juniper Learning Portal**

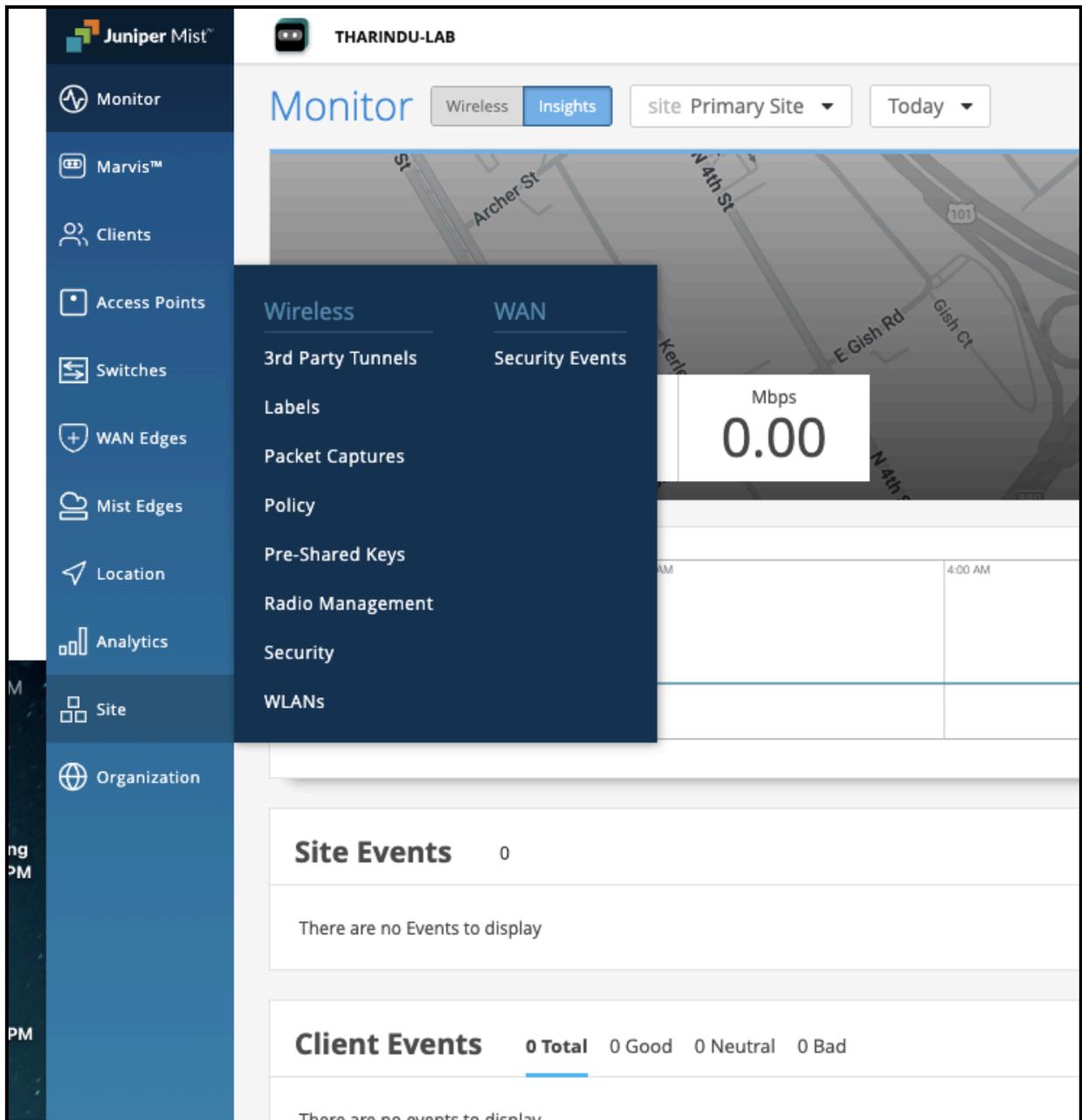
I have prepared this document (Quick short note 😊) by using the Juniper Official Website and Juniper Learning Center also in the content i include in here i got for my exam. So i think this will help you also to archive the JNCIS Mist title

Lecture #1: Mist Architecture

- Mist is build up using the 3 main pillars Organization, Site and Device
- Organization level we can configure Device Profile, RF Templates, Labels and WLAN Template

- At Site Level we can configure WLANs, Security, Radio Management etc.
- Device level we can configure the Device specific configuration





Lecture #2: Deployment of Mist

How to Create a Mist Account

- To create a Mist Account you Just need an Email Address and Need to fill the form, Then you can have a trail version of the Juniper Mist Account

- Browse <https://manage.mist.com/> and click on create an account



Email

Next

Need a Mist account? [Create Account](#)

- Then It will ask to select the region

AI Is In the Air™



Select the region in which you want to create your account.

Choose Region:

GLOBAL

EMEA

APAC

Take me back to [Sign In](#)

- Then it will prompt to Fill the Form page and then Click on Create account



First Name Last Name

Email

Password

Company Name

Company Address 1

Company Address 2 City

Select a State/Province Zip

Select a Country

By clicking on "Create Account", you acknowledge that you have read the [Juniper Purchase and License Agreement](#), and agree to its terms and conditions.

We value your privacy

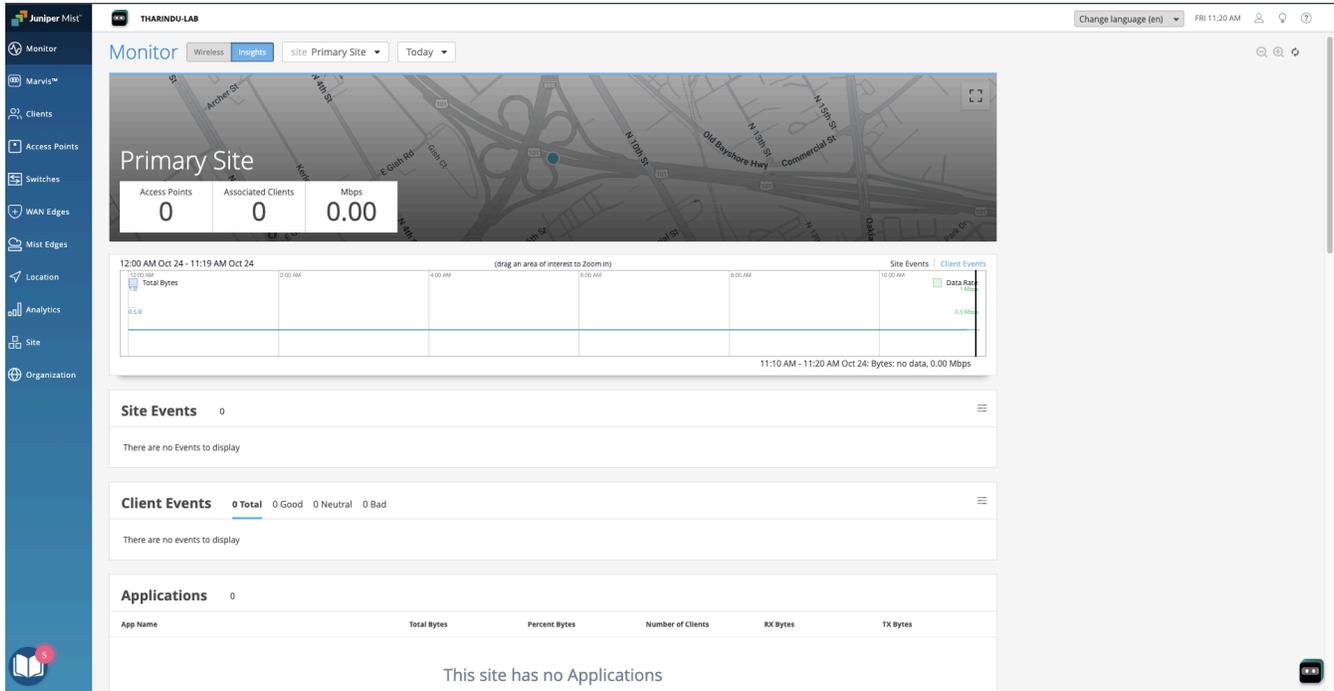
Allow Mist to analyze information about your interaction with the product to improve user experience, including by recreating user sessions (which may contain personal information).

For more information on how Juniper uses your personal information, see our [Privacy Notice](#). You can opt out at any time via the Privacy Settings in the My Account page of your Mist dashboard.

Create Account

This site is protected by [hCaptcha](#) and its [Privacy Policy](#) and [Terms of Service](#) apply.

Take me back to [Sign In](#)



How to create Sites

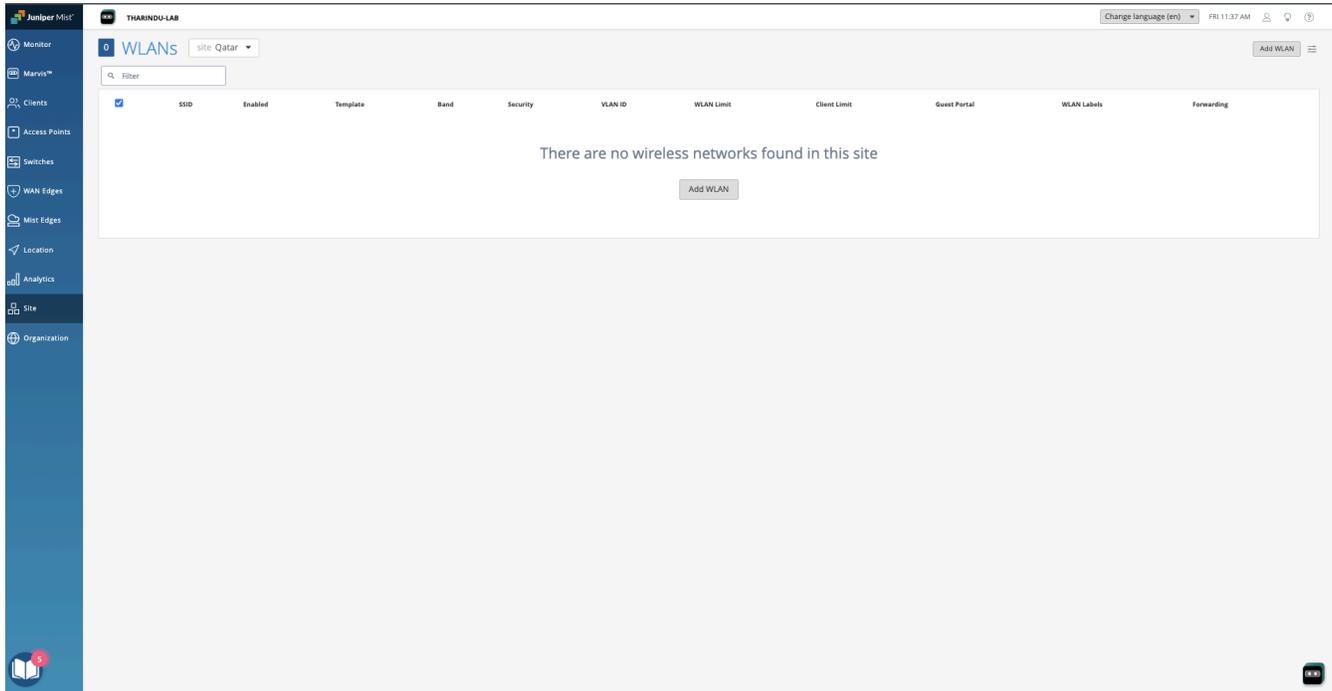
- To create a site click on Organization --> Site Configuration --> Create Site
- In the form it will pop up a form to fill the details mainly site Name, Location, Time Zone etc.

The screenshot shows the 'Site Configuration: New Site' form. It is organized into several panels:

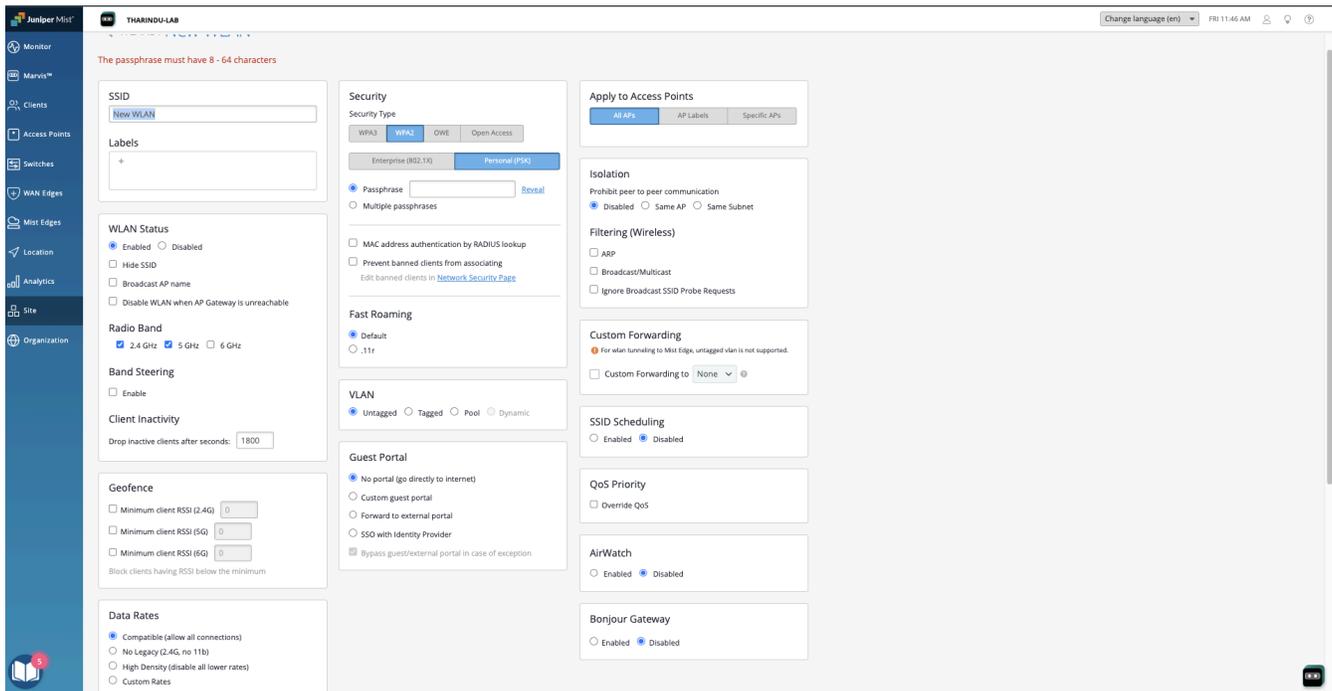
- Information:** Fields for Site Name (required), Country (required), and Time Zone (Asia/Qatar (GMT +03:00)).
- Location:** Includes a location search, a map, and fields for Street Address (709C+838, Ibn Omair St, Doha, Qatar), Latitude (25.26823), and Longitude (51.520187).
- Site Variables:** Section for defining site variables.
- Webhooks:** Section for adding webhooks.
- Marvis Minis:** Includes a checkbox to 'Override Organization Setting' and a 'Disable Marvis Minis' option.
- Site Proxy:** Fields for Proxy URL and a default value: http://username:password@proxy:internal:8080.
- Site Groups:** A list of site groups with a '+' button to add more.
- AP Firmware Upgrade:** Includes checkboxes for 'Enable Auto Update' and 'Switches', and radio buttons for 'Auto upgrade to production firmware', 'Auto upgrade to r2 firmware', and 'Auto upgrade to custom firmware'.
- Active Hours:** A table for defining active hours by day.

How to Create SSIDs

- To configure SSIDs Site --> WLAN --> Select the Site that you want to publish the SSID --> Add WLAN



- WLANs can be configured as a WPA2-Enterprise, WPA2-PSK, WPA3-PSK, WPA3-Enterprise and Guest Base Captive Portals also



Lecture #3: Mist AP Models

AP Models	Wifi Standards
AP47	Wi-Fi 7
AP24	Wi-Fi 6E
AP34	Wi-Fi 6E
AP45	Wi-Fi 6E
AP64	Wi-Fi 6E
AP12	Wi-Fi 6
AP32	Wi-Fi 6
AP33	Wi-Fi 6
AP43	Wi-Fi 6
AP63	Wi-Fi 6
AP21	Wi-Fi 5
AP41	Wi-Fi 5
AP61	Wi-Fi 5
BT11	Location Tracking

Lecture #4: What is Wi-Fi 6, 6E and 6GHz

Wi-Fi 6

- **What it is:** The 802.11ax standard, designed for higher efficiency and performance in crowded network environments.

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- **Frequency bands:** Operates on the traditional 2.4 GHz and 5 GHz bands.
-
- **Key features:** Includes technologies like [OFDMA](#), [MU-MIMO](#), and [Target Wake Time](#) to improve speed, capacity, and battery life for devices.
-

Wi-Fi 6E

- **What it is:** An extension of Wi-Fi 6 that adds the 6 GHz band to the supported frequencies. The "E" stands for "Extended".
-
- **Frequency bands:** Operates on 2.4 GHz, 5 GHz, and the new 6 GHz band.
-
- **Key features:** Includes all the features of Wi-Fi 6 but with the significant advantage of the 6 GHz band.
-

6 GHz

- **What it is:** A brand-new, high-frequency wireless band that is a major component of the Wi-Fi 6E standard.
- **Key benefits:**
 - **Reduced interference:** The 6 GHz band is not shared with older Wi-Fi devices or other common household items like microwaves, which greatly reduces network congestion.
 -
 - **Wider channels:** It allows for wider channels (up to 160 MHz), leading to higher, more consistent speeds.
 -
 - **Higher capacity:** Provides more spectrum to support more devices and higher-bandwidth applications like AR/VR and 4K/8K video streaming.
 -

- **Compatibility:** Only Wi-Fi 6E (and newer) devices can access this band, creating an "exclusive highway" for the latest hardware.

Lecture #5: What is ARP Filter and how is it work

An ARP filter is a network security feature used to manage Address Resolution Protocol (ARP) packets, preventing network attacks or improving performance by filtering invalid, malicious, or unnecessary ARP packets.

If ARP filter is enable AP will check his station table and say it is one of the connected Client

If ARP filter is not enable if any station send an ARP request AP will broadcast that to all available station

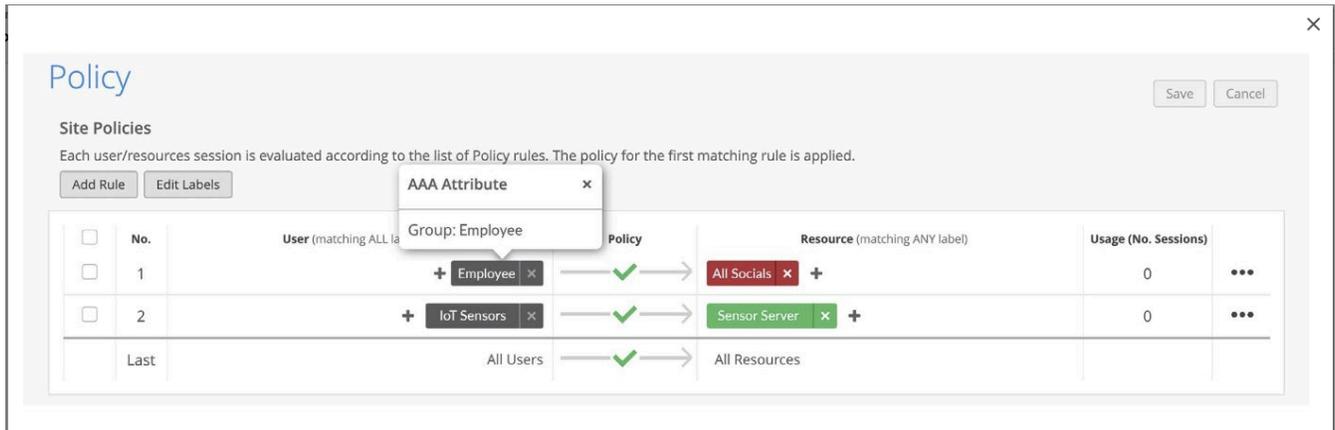
Lecture #6: What is WxLAN Access Policies

WxLAN policies are used to control what users can access and what users can not access. If you have aruba wireless background like me 😊 this is same as user roles.

Why do we need Access Policies for the users ?

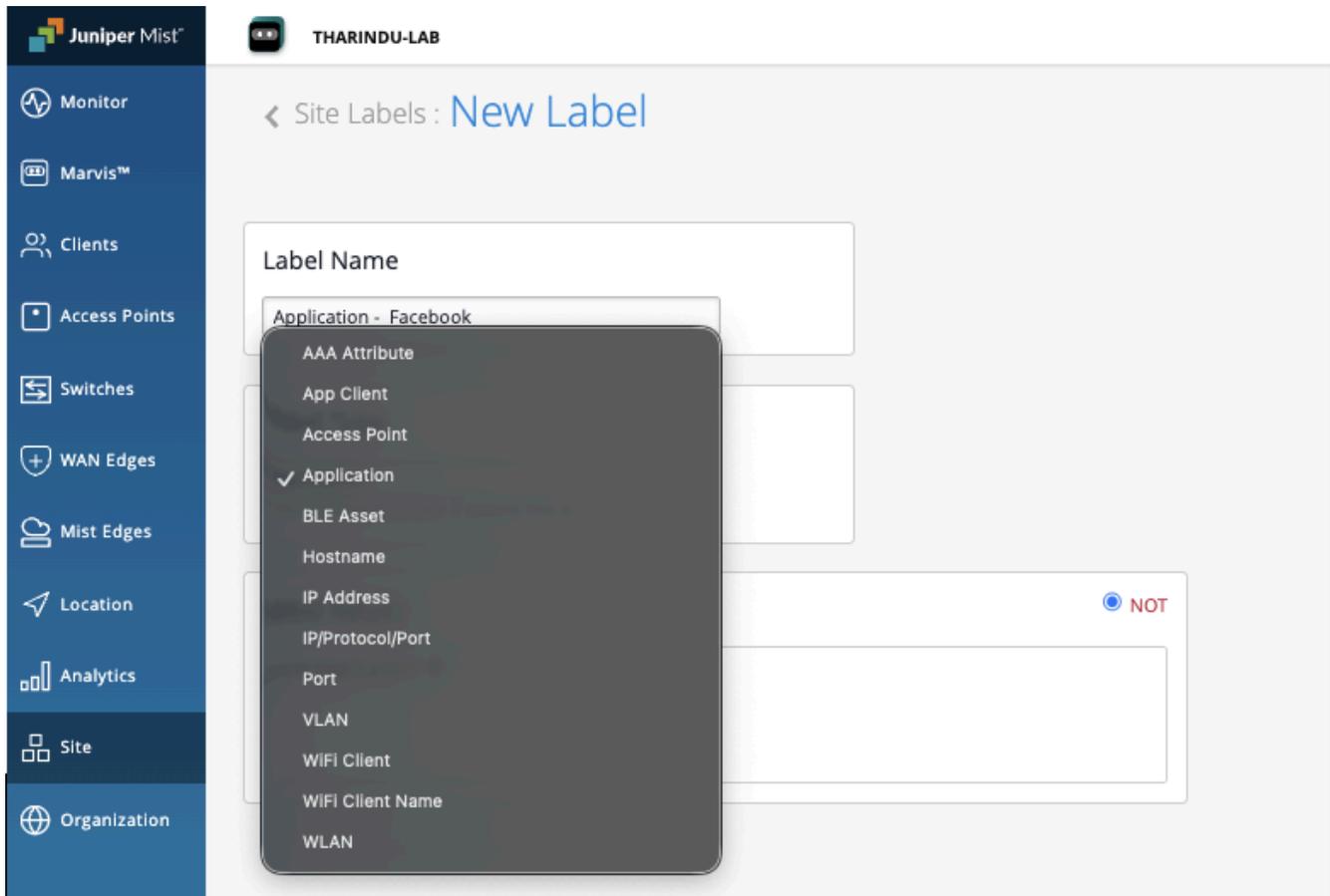
- Network segmentation
- Role base policies

- Micro Segmentation
- Least privilege



To configure WxLAN policies for your organization. As a first step you have to create a Label here in below i mention how to configure label in Juniper Mist

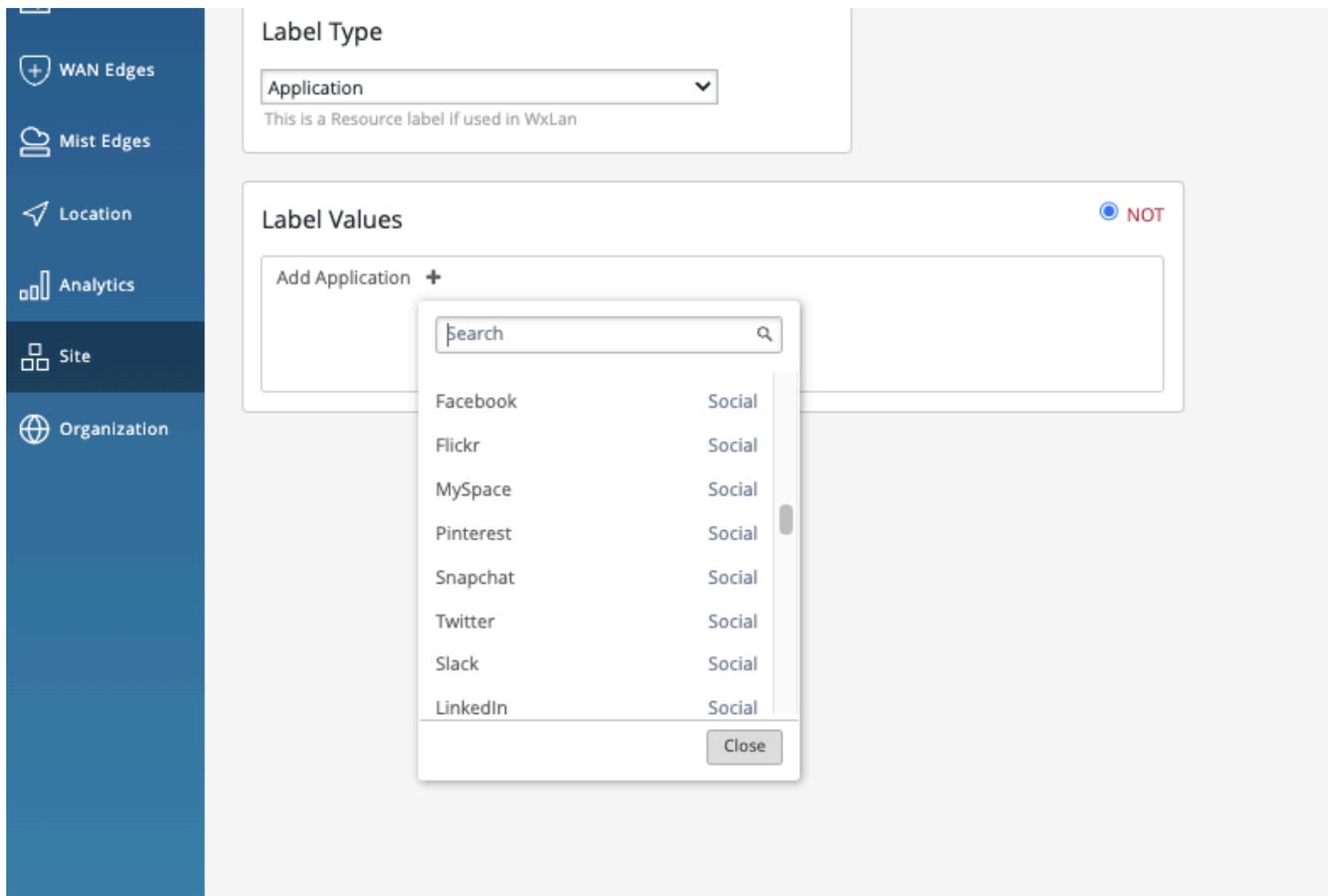
1. Select the correct menu option for organization-level or site-level labels:
 - Organization-level label—From the left menu of the Juniper Mist portal, select Organization > Wireless > Labels.
 - Site-level label—From the left menu of the Juniper Mist portal, select Site > Wireless > Labels.
2. Click Add Label at the top-right corner of the page.
3. Enter a Label Name.
4. Select a Label Type.



5. Enter the Label Values.

The required fields depend on the selected Label Type.

6. Click Create at the top-right corner of the page



After configuration of the label then we can move with Policy Configuration

1. Navigate to the site-level or template-level policies:
 - Organization-level policies (in a WLAN template)—Select Organization>Wireless | WLAN Templates, and then select the template that you want to add the policy to. Scroll down to the Policy section.
 - Site-level policies—Select Site > Wireless | Policy to open the Policy page.
2. Click Add Rule to expose the rule line.
3. Click the add icon (+) in the User column and select a user or user label from the list that appears.
4. In the Policy column, click the check mark icon (✓), and then select the action you want to enforce: Allow or Block.

- Click the add icon (+) in the Resources column and select one or more predefined applications from the list. You can also define a new resource if you prefer, and these will appear at the top of the list.

Policy

Template Policies

Each user/resources session is evaluated according to the list of Policy rules. The policy for the first matching rule is applied. These rules will be applied to the users who are connected using the current template WLAN.

No.	User (matching ALL labels)	Policy	Resource (matching ANY label)
1	+ All Users	✓	TikTok +
2	+ WLAN-Guest	✓	Internal-employees Internet Private Net 10.0.0.0 TikTok +
3	+ WLAN-Internal	✓	Facebook Snapchat WLAN-Guest +

Lecture #7: Monitoring

In the monitoring section wireless assurance is the most useful feature in the Mist. This is contained in 7 sections. This is also called as a Service level Expectations (SLE)

- Successful connects

success or failure of authorization, association, DHCP, ARP, and DNS attempts. These connection attempts include initially connecting to the network, roaming from one AP to another, and ongoing connectivity.

This is Contain with 5 classifiers which are Association, Authorization, DHCP, ARP,DNS

Also Additionally DHCP Sub category is contain another 4 sub classifiers which are NACK, Discover Unresponsive, Incomplete, Renew Unresponsive

- Time to Connect

Time to Connect is the number of seconds that elapse between the point when a client sends an association packet and the moment when the client can successfully move data.

This SLE also has 4 classifiers: Association, Authorization, Internet services, DHCP. Here also DHCP is having Sub classifiers those are stuck, Nack, Unresponsive

- Throughput

estimated throughput on a per-client basis for the entire site. This calculation is done for every client every minute.

This SLE is contained with 4 classifiers Network Issues, Coverage, Device Capability, Capacity. Capacity is contain another 4 sub classifiers Excessive client load, Wifi Interference, Non WiFi interference, High Bandwidth utilization

- Coverage

Active clients' Received Signal Strength Indicator (RSSI), as measured by the AP. This SLE is contained 3 classifiers Asymmetry downlink, Weak signal, Asymmetry uplink

- Capacity

percentage of the total RF channel capacity that is available to clients. This contains 4 classifiers. Non-Wifi Interference, Wifi Interference, Client count, Client Usage.

- Roaming

successful roams between access points. This SLE contains 3 classifiers Latency, Stability, Signal Quality. Latency has 3 sub classifiers: Slow OKC Roam, Slow Standard Roam and Slow 11r roam. Stability has 1 sub classifier which fails to fast roam. Signal quality classifier has 3 sub classifiers which are sticky client, Interband roam, suboptimal roam

- AP health

percentage of time the APs are operational without rebooting or losing connectivity to the cloud. This SLE has 4 classifiers: Low power, AP disconnected, Ethernet, Network.

AP Disconnected have 4 sub classifiers Switch Down, Site Down, AP Unreachable, AP Reboot

Ethernet has 2 sub classifiers ethernet errors and speed mismatch

The network has 3 sub classifiers Latency, tunnel down and jitter.

Note:- Keep in mind for these SLE and also their classifiers and Sub classifiers these points will have Questions for the exam



Lecture #8: Location services

By using virtual Beacon technology mist is tracing the locations. This is a patented technology for indoor location tracking.

Main components of Location service is

- **Virtual Bluetooth LE (vBLE):** Juniper access points have a multi-element directional antenna array that blankets an area with BLE signals. This technology creates "virtual beacons" that are configured via software, eliminating the need for physical, battery-powered hardware.
- **Juniper Mist Cloud:** The cloud architecture uses artificial intelligence and machine learning to analyze the radio frequency (RF) fingerprints received from devices via the APs. It continually adapts to the RF environment to provide a precise location estimate, typically with 1- to 3-meter accuracy.
- **Mobile SDK:** A Software Development Kit (SDK) can be integrated into a mobile app (for iOS or Android) to enable wayfinding and proximity notifications. The app listens for BLE packets and sends the signal information to the Mist cloud, which returns the device's X,Y coordinates.

Why we need location base services in the Wireless

The Mist platform offers several applications that leverage its location services for different business needs.

User Engagement

This service provides contextual, location-based experiences to customers and employees.

- **Real-time wayfinding:** Gives turn-by-turn indoor navigation in large venues like hospitals, airports, and malls.
- **Proximity notifications:** Sends relevant alerts or promotional messages to a user's mobile device when they enter a specific virtual beacon's coverage area.
- **Augmented reality (AR) and virtual reality (VR) wayfinding:** Allows applications to provide enhanced navigation experiences using a device's camera.

Asset Visibility

Designed for tracking high-value equipment and personnel, this service provides real-time and historical location data.

- **Asset tracking:** Locates items with attached Bluetooth LE tags, which is useful for managing hospital equipment, warehouse inventory, or IT assets.
- **Staff and resource tracking:** Helps locate personnel like nurses, security guards, or sales associates.
- **Space utilization analytics:** Uses location data to provide insights on traffic patterns and resource usage.

Premium Analytics

A subscription service that extends the platform's analytical capabilities with extended data retention.

- **Long-term data storage:** Provides up to 13 months of historical data for in-depth analysis of network performance and location trends.
- **Business intelligence:** Helps organizations make data-driven decisions based on insights into customer behavior and traffic patterns.

Contact Tracing

Uses location data to help with business continuity, particularly during a pandemic.

- **Proximity tracing:** Identifies and notifies individuals who were in close contact with a person who self-reports an illness.
- **Journey mapping:** Tracks the movements of an infected person to help with targeted cleaning of the areas they visited.

