



ARAM User Guide

AIRPORT RISK ASSESSMENT MODEL ONLINE TOOLS

January 2020

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Contents

1	User Roles	4
1.1	Administrators	4
1.2	Supervisors	4
1.3	Subscribers.....	4
2	Logging in	5
3	Administrator Interface.....	6
3.1	Setting up ARAM.....	7
3.1.1	Configuring and scoring ARAM.....	7
3.1.2	How changes take effect.....	7
3.2	Dashboard.....	8
3.2.1	Risk Status.....	9
3.2.2	Heatmap.....	10
3.2.3	Risk by Area.....	11
3.2.4	Countermeasure Deployment.....	12
3.2.5	History.....	13
3.3	Heatmap.....	14
3.4	Schedule.....	15
3.4.1	Viewing Schedules.....	16
3.4.2	Scheduling Countermeasures.....	18
3.4.3	Confirm Schedule	22
3.5	Configuration.....	23
3.5.1	Threats	24
3.5.2	Areas.....	29
3.5.3	Vulnerability Nodes (VNs).....	34
3.5.4	Countermeasures	40
3.5.5	Adjusting Randomness in Assignments.....	46
3.6	Risk Scores.....	47
3.6.1	Risk Scores by Threat.....	48
3.6.2	Area/VN Scores	50
3.6.3	Countermeasure Scores	55
3.7	Users.....	59
3.7.1	The Users List.....	60
3.7.2	Add a User	61
3.7.3	Edit a User	62
3.7.4	Delete a User.....	64

4	Supervisor Interface (Coming Phase II)	65
5	Subscriber Interface.....	66
5.1	Get an assignment.....	67

I User Roles

There are three primary user roles in the ARAM Tool—Administrators, Supervisors, and Subscribers.

I.1 Administrators

An **Administrator** is a user who has full access to view and edit all aspects of the ARAM tool at an airport.

Ability to create, edit and delete:

- Supervisors
- Subscribers

View:

- Full heat-map and dashboard information
- Scheduled Countermeasures
- Current and historical risk status for all Countermeasures

Edit/Configure:

- Risk scores
- Countermeasures
- Schedule for any available Countermeasures

I.2 Supervisors

A **Supervisor** is a user whose access to administrative functions is limited to a particular Countermeasure type. Supervisors cannot modify the ARAM Model configuration and risk scores.

A Supervisor can do each of the following, **limited to their assigned Countermeasure type**:

Ability to create, edit and delete:

- Subscribers

View:

- Full heat-map and dashboard information and anonymized stats for countermeasures that they don't have access to.
- Scheduled Countermeasures
- Current and historical risk status for assigned Countermeasures

Edit/Configure:

- Schedule for available Countermeasures

I.3 Subscribers

A **Subscriber** is the most limited user role. A subscriber is only able to input shifts and create schedules on an ad-hoc basis.

- Request a schedule for themselves and/or other countermeasures on their team.

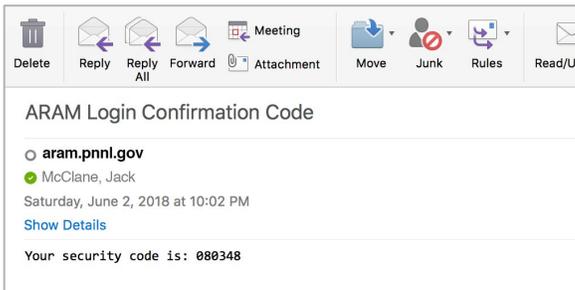
2 Logging in

ARAM uses a 2-factor authentication method for logging in. To login, you need the email associated with the account and a valid password. **Note:** first time logins will be required to set a password of a ‘good’ strength rating or better.

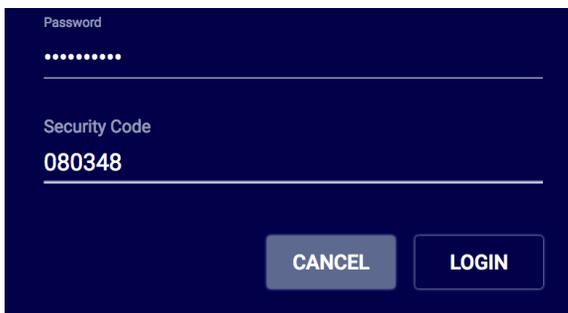
1. Enter your email and password in the associated fields and press **Login**. The Security code field will appear.



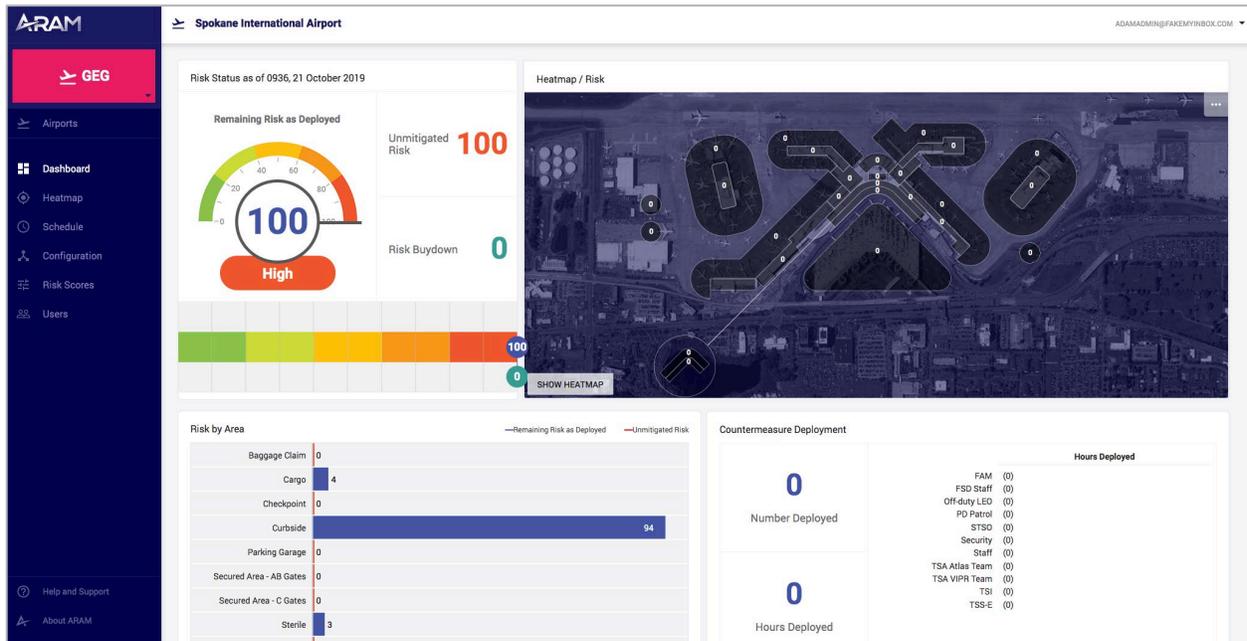
2. A numeric code will be sent to the email address entered. You should receive an email from aram@pnnl.gov with the subject “ARAM Login Confirmation Code”.



3. Copy the six-digit code from the body of the email into the **Security Code** field and press **Login** again.



3 Administrator Interface



Any user assigned an Administrator role can access the **Administrator Interface** which allows full access to view and edit all aspects of the ARAM tool at an airport.

The Administrator interface contains the following components:

- **Dashboard:**
 - View information on countermeasures:
 - Current and historical risk status
 - Comparison of unmitigated risk vs the risk-as-deployed
- **Heatmap:**
 - A geographical representation of the current risk, number of countermeasures deployed, or population.
- **Schedule:**
 - View scheduled Countermeasures at the airport.
 - Input fixed and flexible Countermeasure shifts and create an optimized schedule.
- **Configuration:**
 - Configure the flexible parameters being scored in the ARAM Model.
- **Risk Scores:**
 - Apply weights to the parameters being scored in the ARAM Model, affecting where and when Countermeasures will be assigned to POVs.
- **Users:**
 - Add, Edit and Delete Users of any role (Administrators, Supervisors, Subscribers).

3.1 Setting up ARAM

ARAM is easy to setup and use. The first step in using ARAM is to configure and score the model's risks. An overview of the setup is provided below (**3.2.1 Configuring and scoring ARAM**, **3.2.2 How changes take effect**). To get started with configuration and scoring immediately, skip to **4.5 Configuration**.

If your configuration and risk scores are already setup, you can proceed immediately to scheduling. To learn more about scheduling, skip to **3.4 Schedule**

3.1.1 Configuring and scoring ARAM

ARAM's underlying model relies on two user-configurable components:

- ARAM's **configuration**, which defines the flexible parameters that define risk at the airport.
- A set of **risk scores** assigned to the parameters defined in the configuration.

Important: Changes to the ARAM Configuration will require careful review of your Risk Scores. If you add or remove Threats, Areas, POVs, or Countermeasures, your Risk Scores may need to be updated.

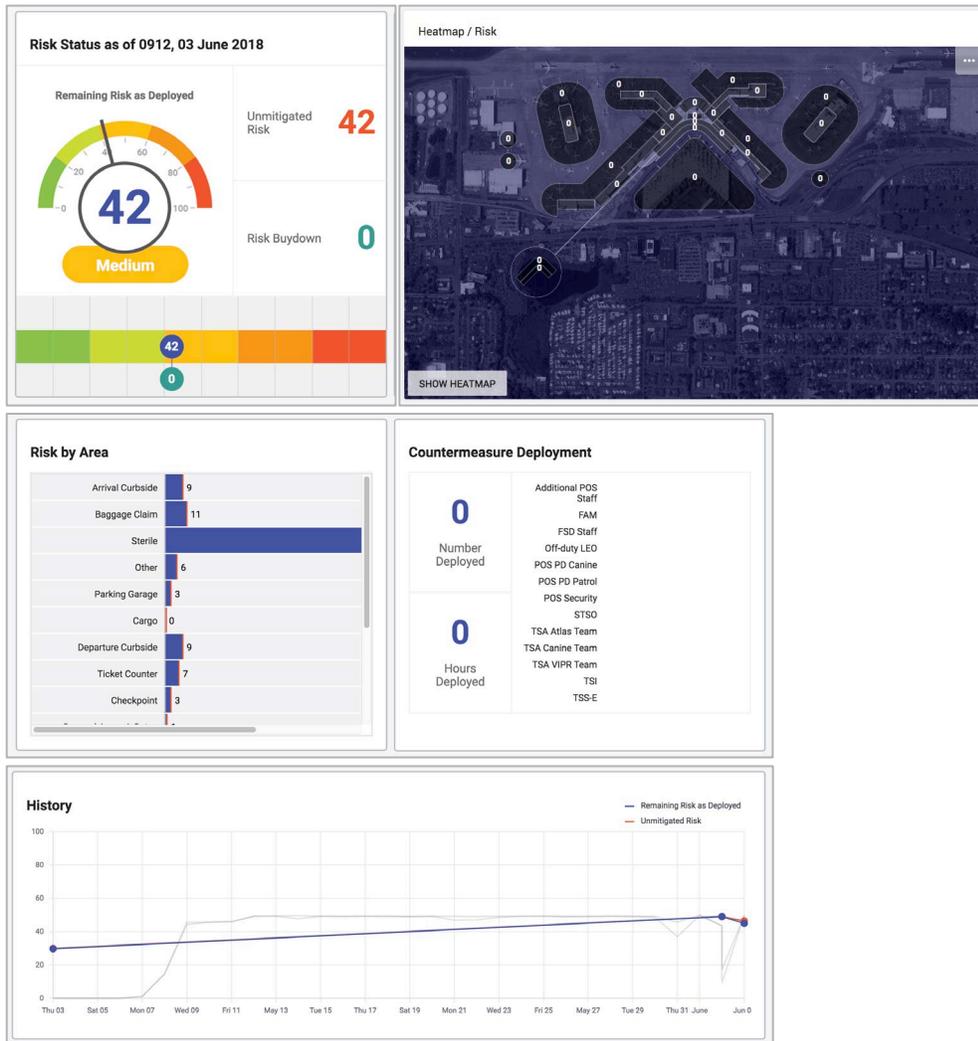
3.1.2 How changes take effect

Changing the configuration or risk scores will take effect immediately in the model. However, existing schedules will not be affected. Only schedules created after you have made your changes will optimize according to the new settings.

3.2 Dashboard

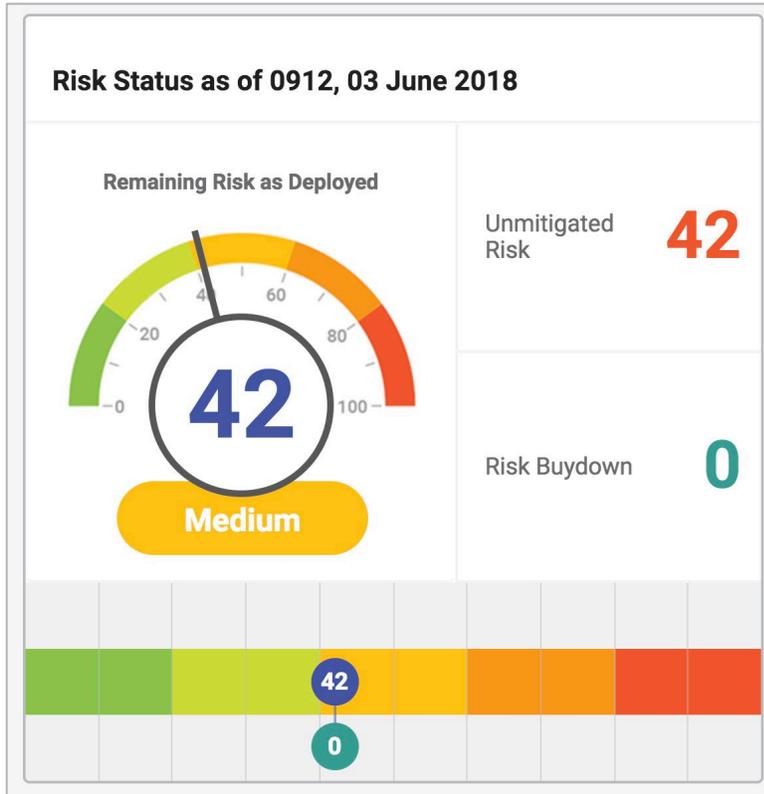
The ARAM dashboard gives the administrator a snapshot of the current risk status of the airport, the recent and long-term history of the risk profile and the distribution of countermeasures for the day.

In all of the charts, **red** indicates the maximum calculated risk based on threat, vulnerability and consequence. **Blue** indicates the remaining risk with the countermeasures deployed by ARAM.



3.2.1 Risk Status

The Risk Status meter shows the current risk based on the countermeasures that ARAM has assigned for the day. Much like roadside “fire hazard” displays, a lower score in the dial indicates lower risk. The bar at the bottom shows the unmitigated risk and the risk as deployed, separated by the amount of total risk buy-down.

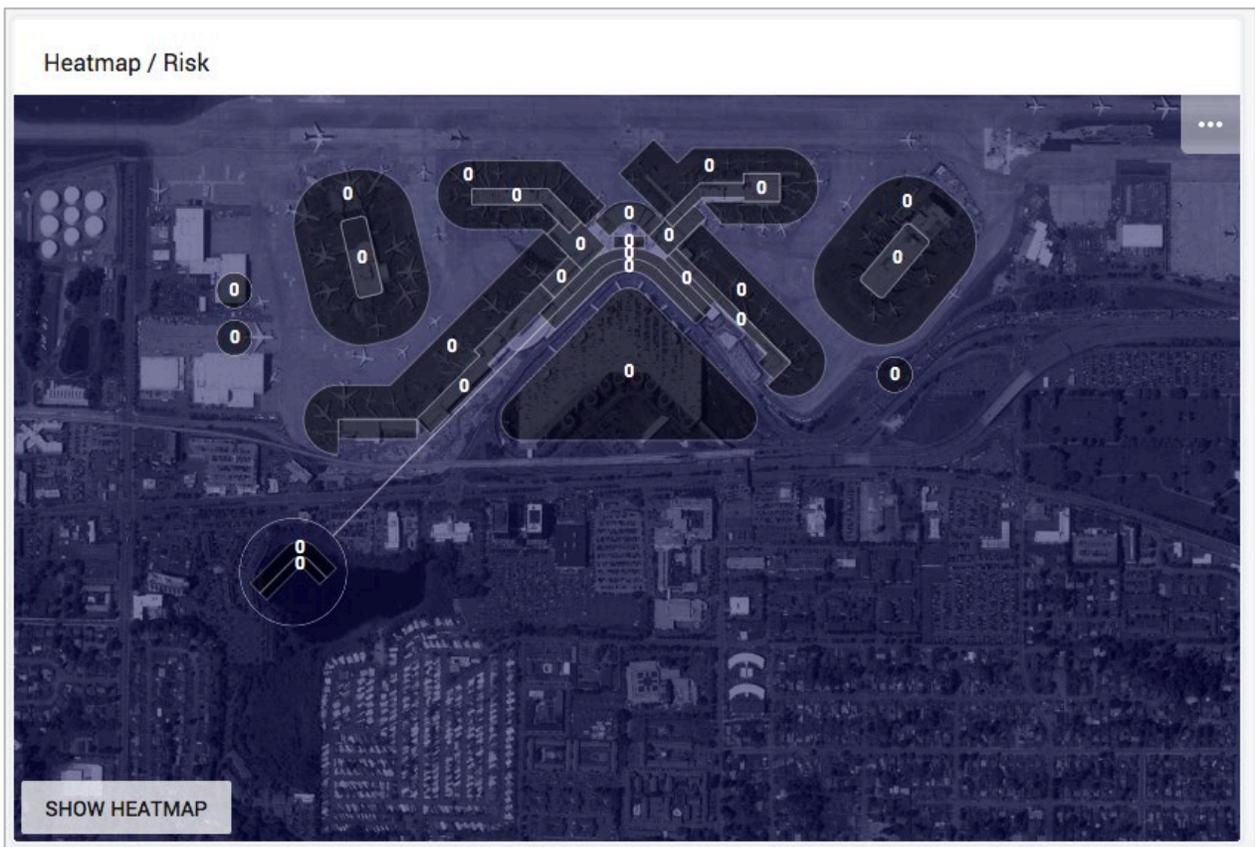
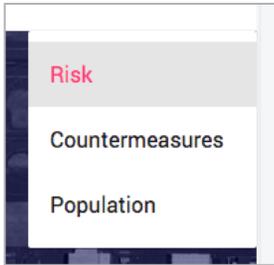


3.2.2 Heatmap

The heatmap geographically represents the current risk, number of countermeasures, deployed, or population.

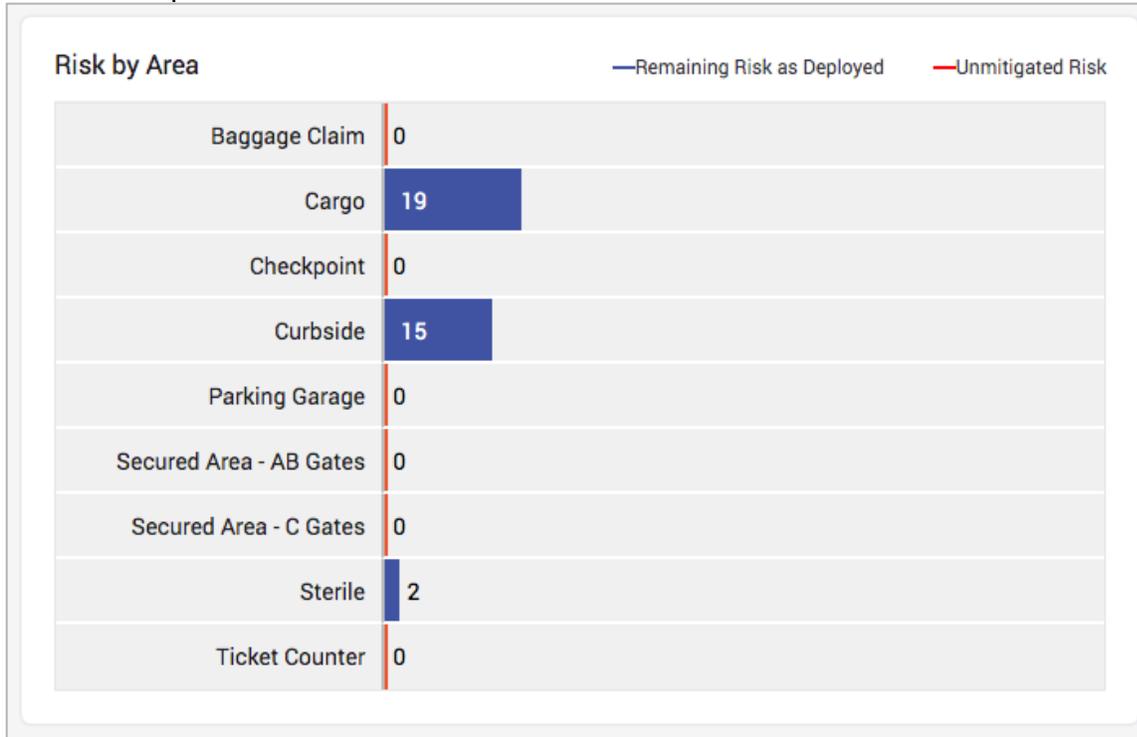


By clicking on the  in the top right corner you can choose to view the map by risk, countermeasures, or population. The heatmap will change the color of the locations based on the data you select to view. The top title will also change depending on the data displayed. You can also click on the bottom right button to view the entire heatmap.



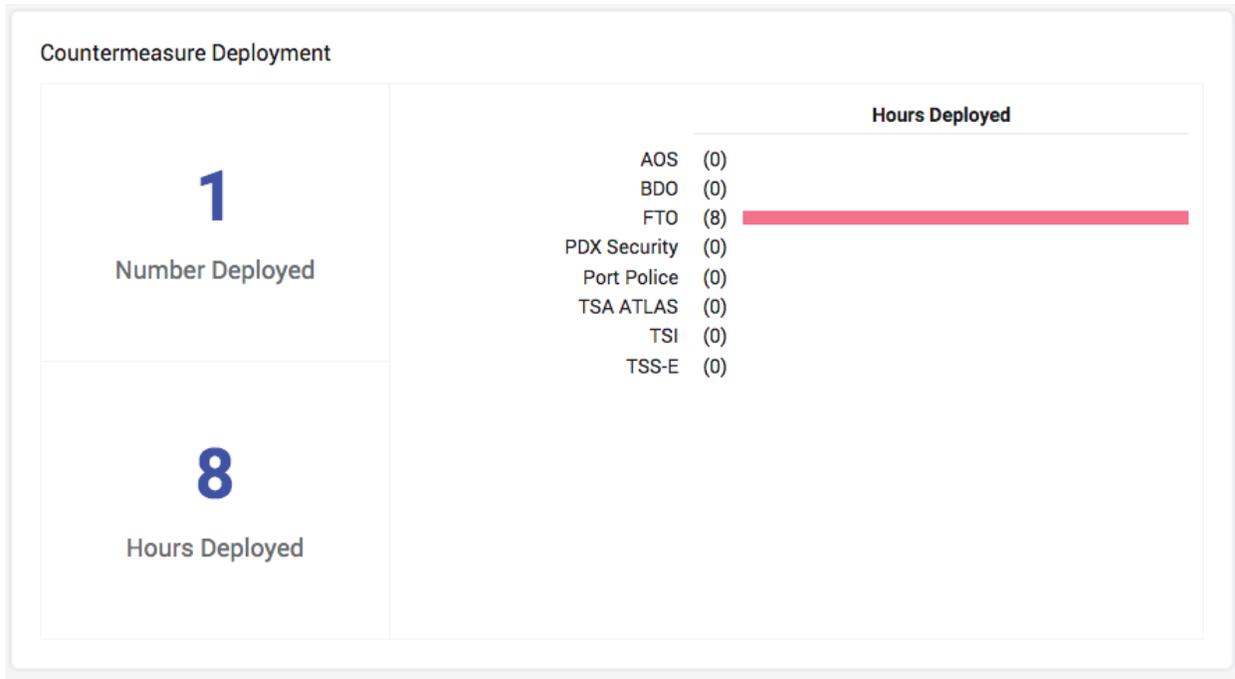
3.2.3 Risk by Area

The Risk by Area chart shows the unmitigated risk (red lines) and risk as deployed (blue bars) for each area at the airport.



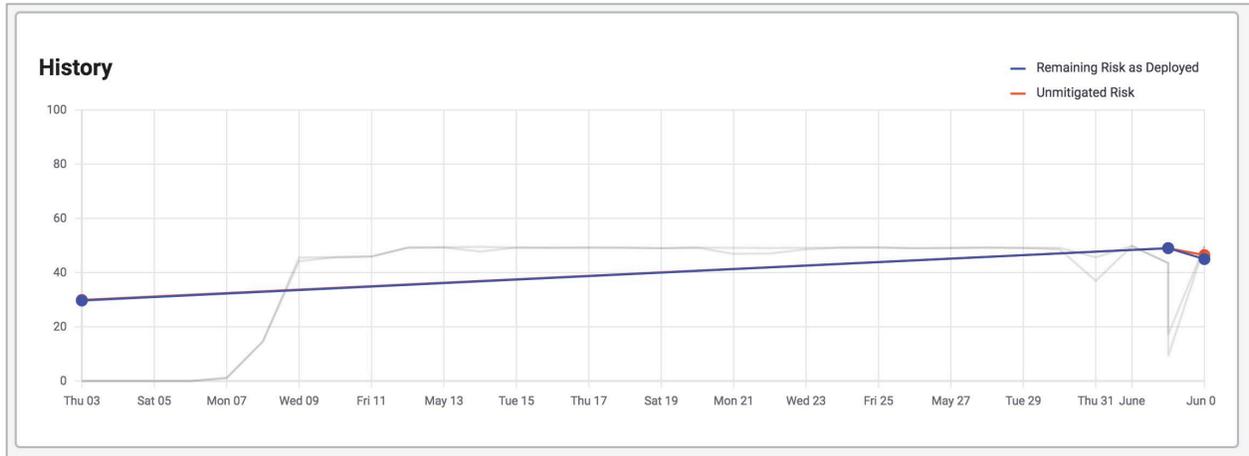
3.2.4 Countermeasure Deployment

The Countermeasure Deployment chart shows the number of each countermeasure type that has been deployed for the day. It also displays the total number of countermeasures deployed and the total number of hours that have been assigned for all countermeasures.



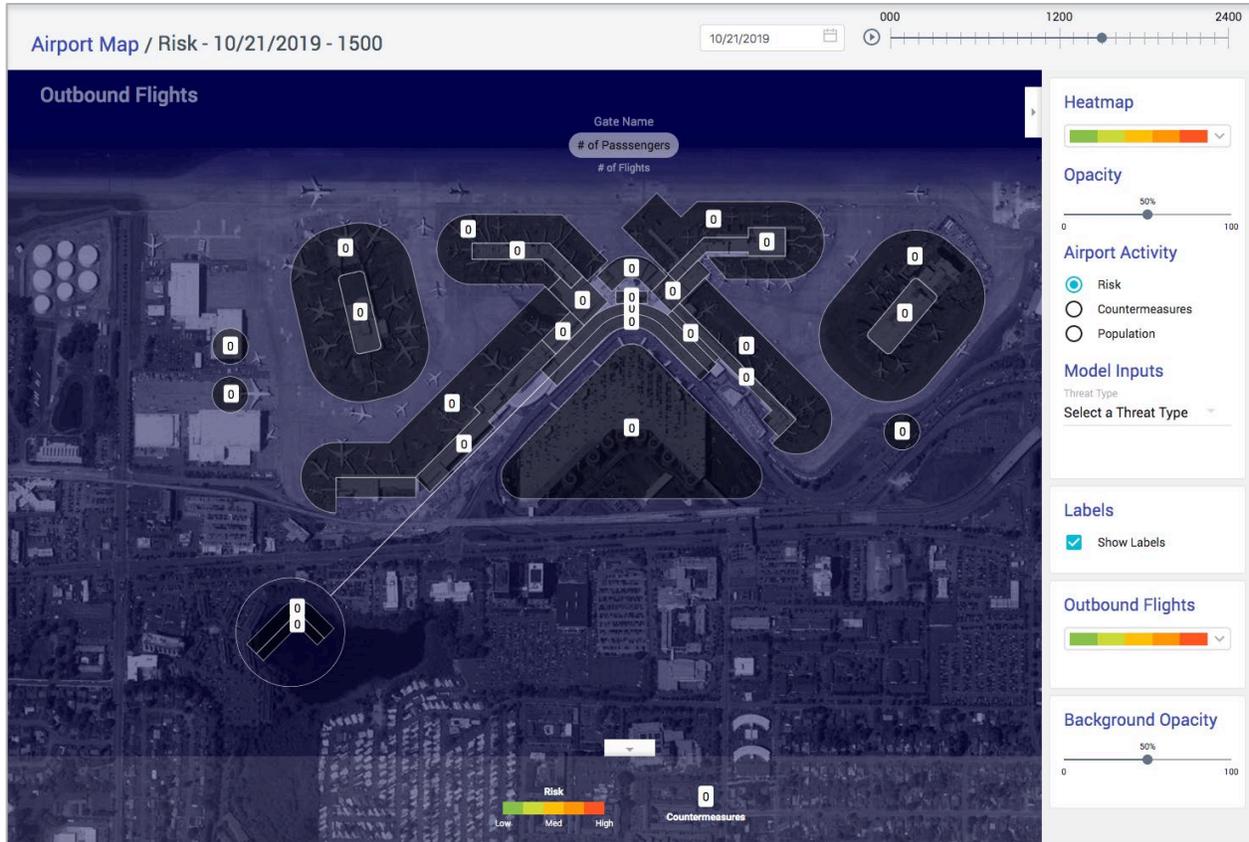
3.2.5 History

The History chart displays the unmitigated risk (red line) and the remaining risk as deployed (blue line) for the past 30 days as day-by-day trend lines. The gray line represents the actual values of the risk, hour by hour.



3.3 Heatmap

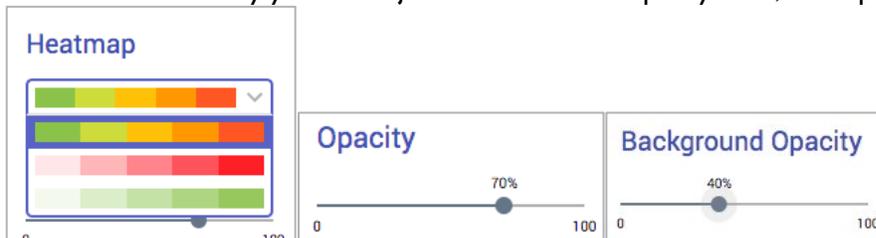
ARAM's **Heatmap** allows you to view airport activity by **risk**, **countermeasures**, or **population** through a selected **threat type**. The map allows you to get an overview of the current state of the airport and the effects of specific threat types.



You can select a different date and/drag the time indicator, to the threat type's effects over time depending on the date.



For color accessibility you can adjust the colors and opacity used, to help with contrast.



Once a threat type is selected, you can select to view the **threat**, **consequences**, or **vulnerability** on the map.

3.4 Schedule

ARAM's **Schedule** allows you to view assignments for countermeasures and submit additional countermeasures with their availability to determine their schedules. Countermeasures can be assigned to a specific location ("Fixed Assets") or ARAM can select the optimal location based on its internal model ("Flexible Assets"). Multiple assets and multiple types of assets can be scheduled at one time. The schedule can be view in a List view or a Timeline view.

List View

The screenshot shows the ARAM interface for the 'Sea-Tac' location. The left sidebar contains navigation options: Airports, Dashboard, Heatmap, Schedule (selected), and Configuration. The main content area is titled 'Schedule' and shows the date 'Sunday, September 22, 2019'. There are tabs for 'Timeline' and 'List', with 'List' selected. A red arrow points to the 'List' tab. The interface includes buttons for 'CLEAR SCHEDULE' and '+ ADD SHIFTS'. Below is a table of scheduled countermeasures:

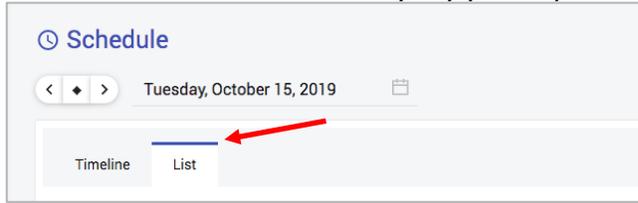
Countermeasure	Area/VN	Arrive	Depart	Shift Start	Shift End	Type	% Risk Buydown
FAM / 1	Secured Area - South Satellite (planeside)	06:00	07:00	06:00	18:00	Random	56.57%
FAM / 1	Parking Garage	07:00	08:00	06:00	18:00	Random	52.09%
FAM / 1	Food Court	08:00	09:00	06:00	18:00	Random	69.91%

Timeline View

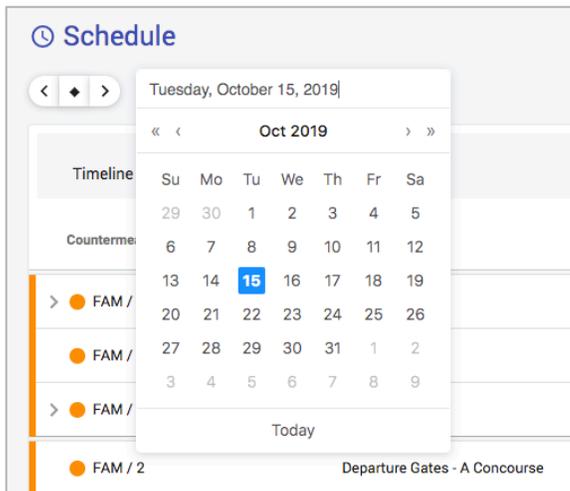
The screenshot shows the ARAM interface for the 'Sea-Tac' location, displaying the 'Timeline' view of the schedule. The left sidebar is the same as in the List View. The main content area shows the date 'Sunday, September 22, 2019' and tabs for 'Timeline' and 'List', with 'Timeline' selected. A red arrow points to the 'Timeline' tab. The interface includes buttons for 'CLEAR SCHEDULE' and '+ ADD SHIFTS'. The timeline is grouped by 'Countermeasures' and has a horizontal axis from 000 to 2300. The countermeasures listed are FIS/IFA Checkpoint, Food Court, Parking Garage, and Secured Area - South Satellite (planeside). The timeline shows orange bars representing the duration of each countermeasure, with labels 'FA...' and 'FAM #1' indicating the type of asset.

3.4.1 Viewing Schedules

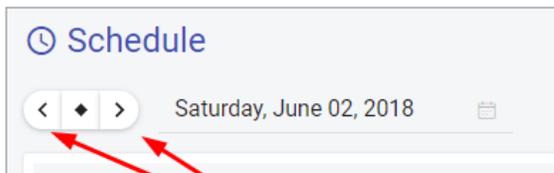
You can view the schedule for any day you request in either a **timeline** or **list view**.



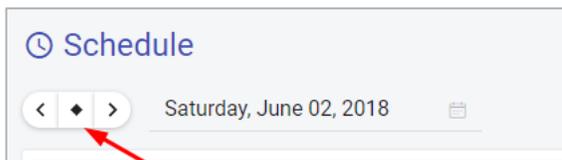
1. Select the date of interest using the date selection tool



2. Or, use the Date navigation buttons to move one day forward or backward



3. Use the "Go to Today" button to return to the current date



3.4.1.1 Optimized vs. Random Assignments

The majority of scheduled assignments are assigned the **optimized** POV location for that countermeasure at that time, but a few countermeasures will be assigned to a **random** location to ensure coverage to all areas and reduce the predictability of countermeasure assignments. The type of assignment (random/optimized) is shown in the “Type” column on the Schedule screen. The frequency of random assignments is controlled with the Randomness Factor (see Section 4.5.5).

Countermeasure ▲	Area/VN	Arrive	Depart	Shift Start	Shift End	Type	% Risk Buydown
▼ ● FAM / 1	Parking Garage	00:00	18:00	00:00	00:00	Optimized	Multiple Values
● FAM / 1	Parking Garage	00:00	17:00	00:00	00:00	Optimized	47.48%
● FAM / 1	Parking Garage	17:00	18:00	00:00	00:00	Optimized	48.68%
● FAM / 1	Food Court	18:00	19:00	00:00	00:00	Optimized	55.96%
> ● FAM / 1	Parking Garage	19:00	00:00	00:00	00:00	Optimized	Multiple Values

3.4.2 Scheduling Countermeasures

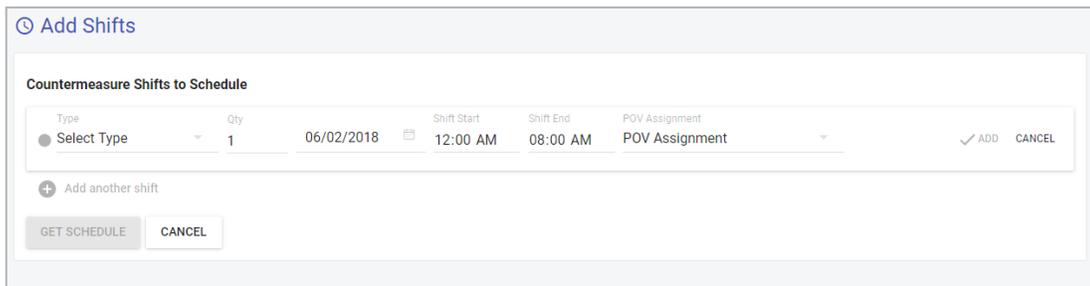
1. Select **Schedule** from the main navigation.



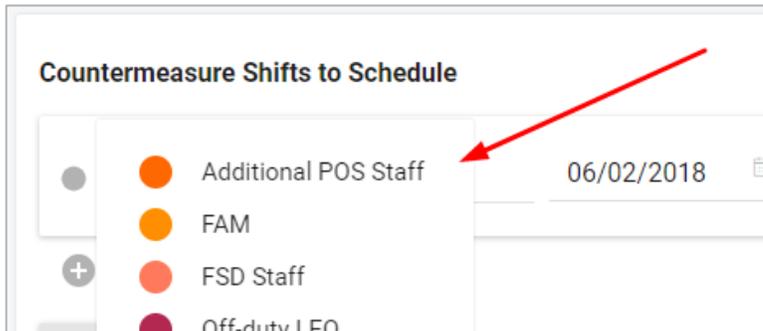
2. Press the **+ Add Shifts** button.



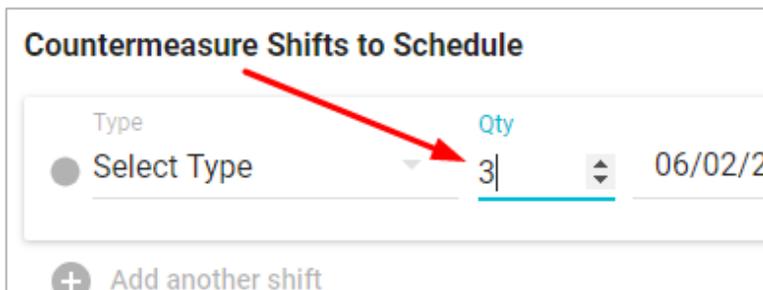
3. The Add Shifts Screen is displayed



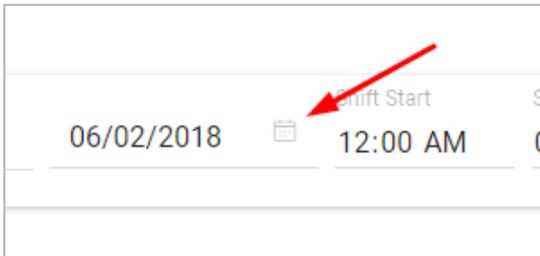
4. Select the type of Countermeasure available



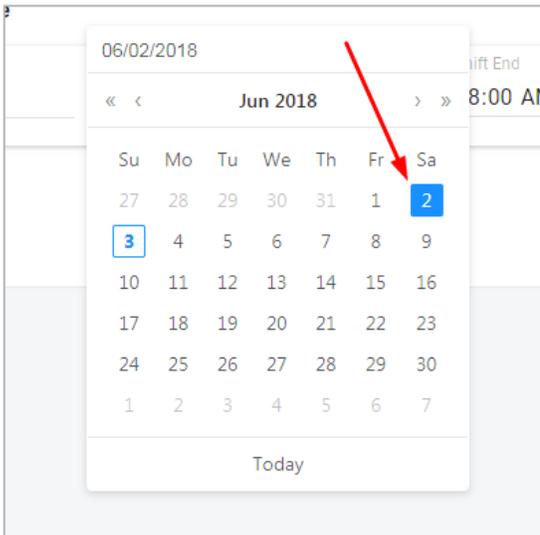
5. Select the quantity of that countermeasure that are available for the same period of time



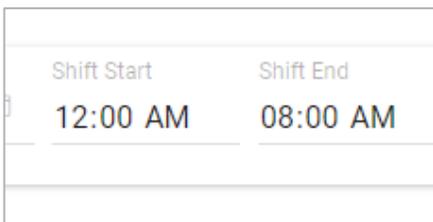
6. Select the date and times that the Countermeasure(s) are available



A screenshot of a form field labeled "Shift Start". The field contains the date "06/02/2018" and the time "12:00 AM". A red arrow points to a calendar icon next to the date.

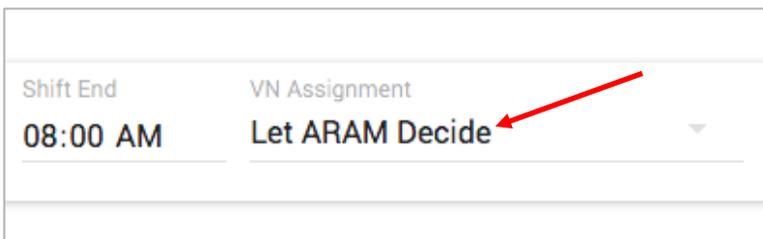


A screenshot showing a calendar selection interface. The calendar is for June 2018. The date "06/02/2018" is selected, and a red arrow points to the number "2" in the Saturday column. The number "3" in the Sunday column is also highlighted with a blue box.

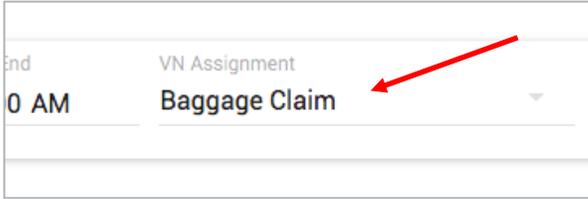


A screenshot of a form field labeled "Shift End". The field contains the time "08:00 AM".

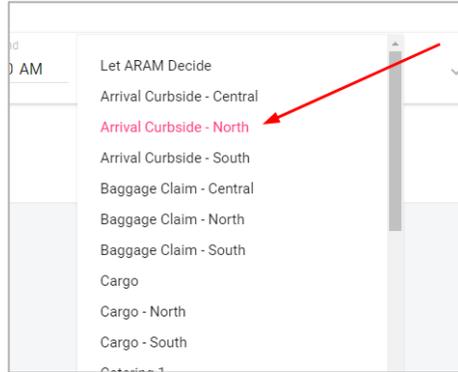
7. Select the Vulnerability Node the Countermeasure should be assigned to (Fixed Assignment), or allow ARAM to select the optimal location (Flexible Assignment)



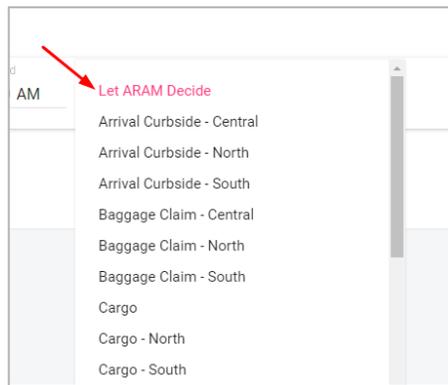
A screenshot of a form field labeled "VN Assignment". The field contains the text "Let ARAM Decide". A red arrow points to a dropdown arrow next to the text.



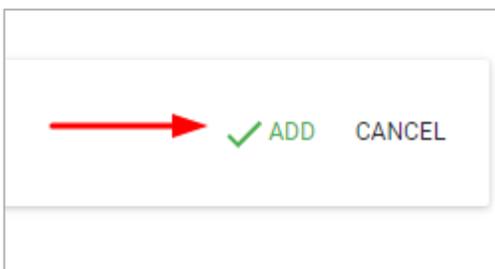
a. For a “Fixed Assignment”, select a specific Vulnerability Node



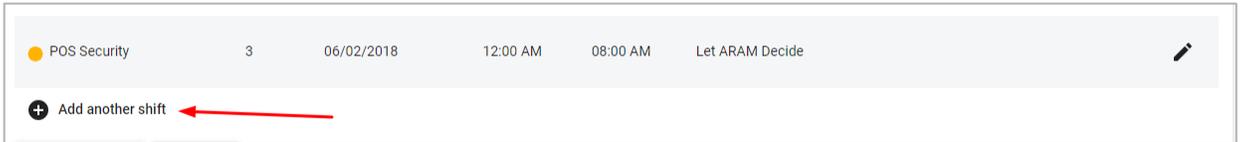
b. For a “Flexible Assignment”, select “Let ARAM Decide”



8. Once all selections have been made, select “ADD”



9. Additional Countermeasures can be added by clicking the “Add Another Shift” button



10. Countermeasure shifts can be changed by clicking the Edit icon (pencil)

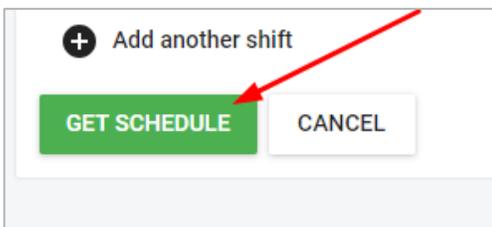


11. Countermeasure shifts can be removed by clicking the Delete icon (trash can)



Note: if there is only one shift scheduled, it cannot be deleted.

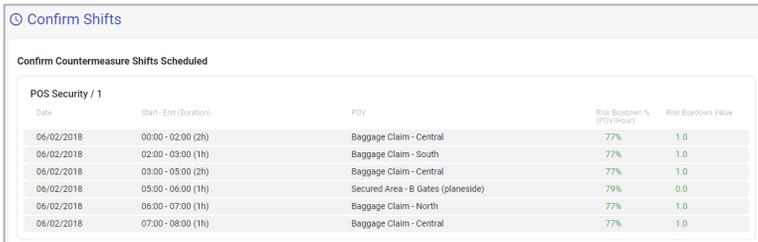
12. When all available Countermeasures have been added, click “Get Schedule”



3.4.3 Confirm Schedule

When the Countermeasure shifts are submitted, ARAM uses its scoring model to determine the best location for each Countermeasure (for Flexible Assignments), or assigns the Countermeasure to the selected location (for Fixed Assignments). Once the best schedule has been determined, you can review ARAM's selections and choose to confirm the schedule or cancel the request and make new selections.

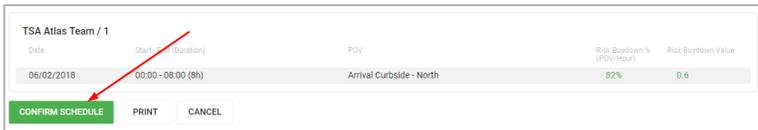
1. Review the proposed schedule



Confirm Countermeasure Shifts Scheduled

Date	Start - End (Duration)	POV	Risk Buydown % (POV/hour)	Risk Buydown Value
06/02/2018	00:00 - 02:00 (2h)	Baggage Claim - Central	77%	1.0
06/02/2018	02:00 - 03:00 (1h)	Baggage Claim - South	77%	1.0
06/02/2018	03:00 - 05:00 (2h)	Baggage Claim - Central	77%	1.0
06/02/2018	05:00 - 06:00 (1h)	Secured Area - B Gates (planeside)	79%	0.0
06/02/2018	06:00 - 07:00 (1h)	Baggage Claim - North	77%	1.0
06/02/2018	07:00 - 08:00 (1h)	Baggage Claim - Central	77%	1.0

2. Confirm the schedule

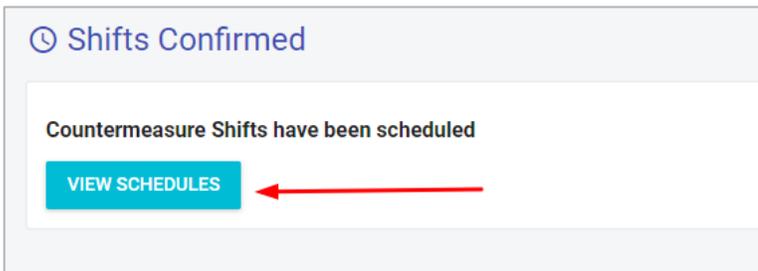


TSA Atlas Team / 1

Date	Start - End (Duration)	POV	Risk Buydown % (POV/hour)	Risk Buydown Value
06/02/2018	00:00 - 08:00 (8h)	Arrival Curbside - North	82%	0.6

CONFIRM SCHEDULE PRINT CANCEL

3. The Confirmation screen is shown, click "View Schedules" to return to the Schedule View



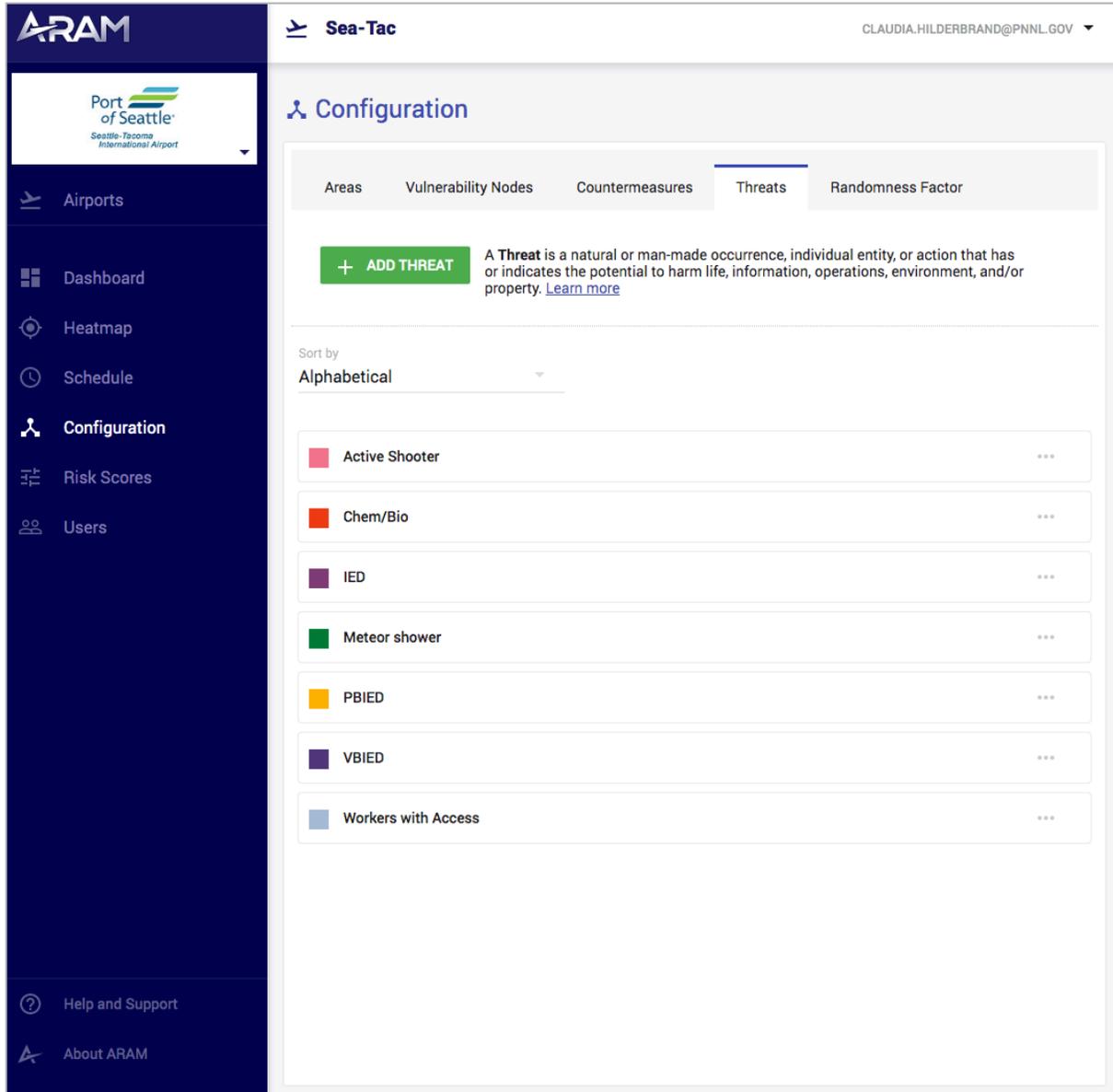
Shifts Confirmed

Countermeasure Shifts have been scheduled

VIEW SCHEDULES

3.5 Configuration

ARAM's **Configuration** allows you to define the flexible parameters that define risk at the airport. In the Configuration screen you can add, edit and remove Threats, Areas, Vulnerability Nodes, and Countermeasures. You can also adjust the level of randomness applied in the model too.



The Configuration screen gives you access to all of the parameters defined in ARAM.

3.5.1 Threats

A **Threat** is a natural or man-made occurrence, individual entity, or action that has or indicates the potential to harm life, information, operations, environment, and/or property.

In ARAM's configuration, you can add, edit and delete threats.

Configuration

Areas Vulnerability Nodes Countermeasures **Threats** Randomness Factor

+ ADD THREAT A **Threat** is a natural or man-made occurrence, individual entity, or action that has or indicates the potential to harm life, information, operations, environment, and/or property. [Learn more](#)

Sort by
Alphabetical

- Active Shooter
- Chem/Bio
- IED
- Meteor shower
- PBIED
- VBIED
- Workers with Access

3.5.1.1 Add a Threat

NOTE: Adding a threat requires new scores for all of the existing Areas, VNs and Countermeasures in the model. Make sure to review and edit the Risk Scores associated with your new Threat.

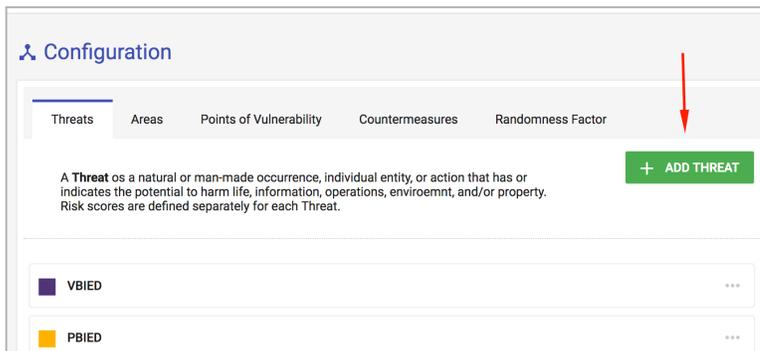
1. Select **Configuration** from the main navigation.



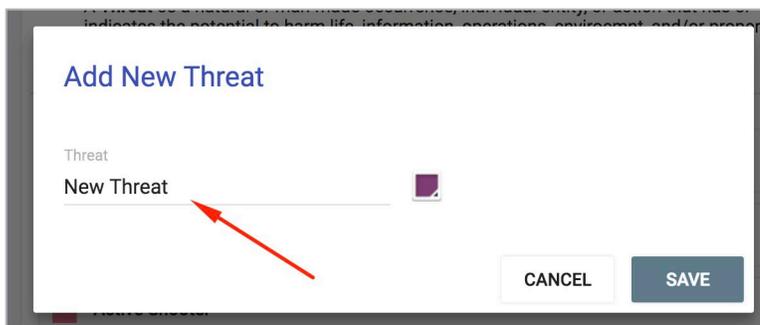
2. Select the **Threats** tab.



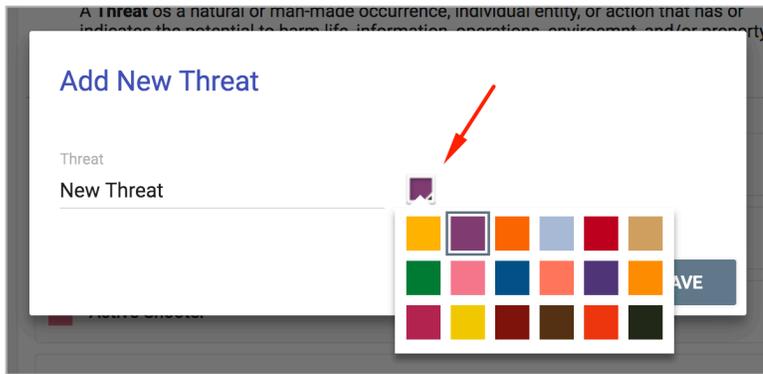
3. Press the **+ Add Threat** button.



4. Enter the name of the threat.



5. Select an associated color from the pallet dropdown or use the default that has already been selected.



6. Press **Save**.
7. Your new threat has been added to the top of the list.

3.5.1.2 Edit a Threat

NOTE: Editing the name of a threat has no effect on risk scores so you will not need to make any adjustments based on this change.

1. Select **Configuration** from the main navigation.



2. Select the **Threats** tab.



3. Hover your mouse on the threat that you would like to edit. Tools will appear on the right side. Click on the Edit Icon .



4. Edit the name of the threat in-line. Click **save** or choose cancel to disregard your edit.



5. If you save your edit it will be reflected in the list.

3.5.1.3 Delete a Threat

NOTE: Deleting a threat will permanently remove all risk scores associated with it. If you re-create the threat, you will have to rescore all of its parameters.

1. Select **Configuration** from the main navigation.



2. Select the **Threats** tab.



3. Hover your mouse on the threat that you would like to delete. Tools will appear on the right side. Click on the Delete Icon .



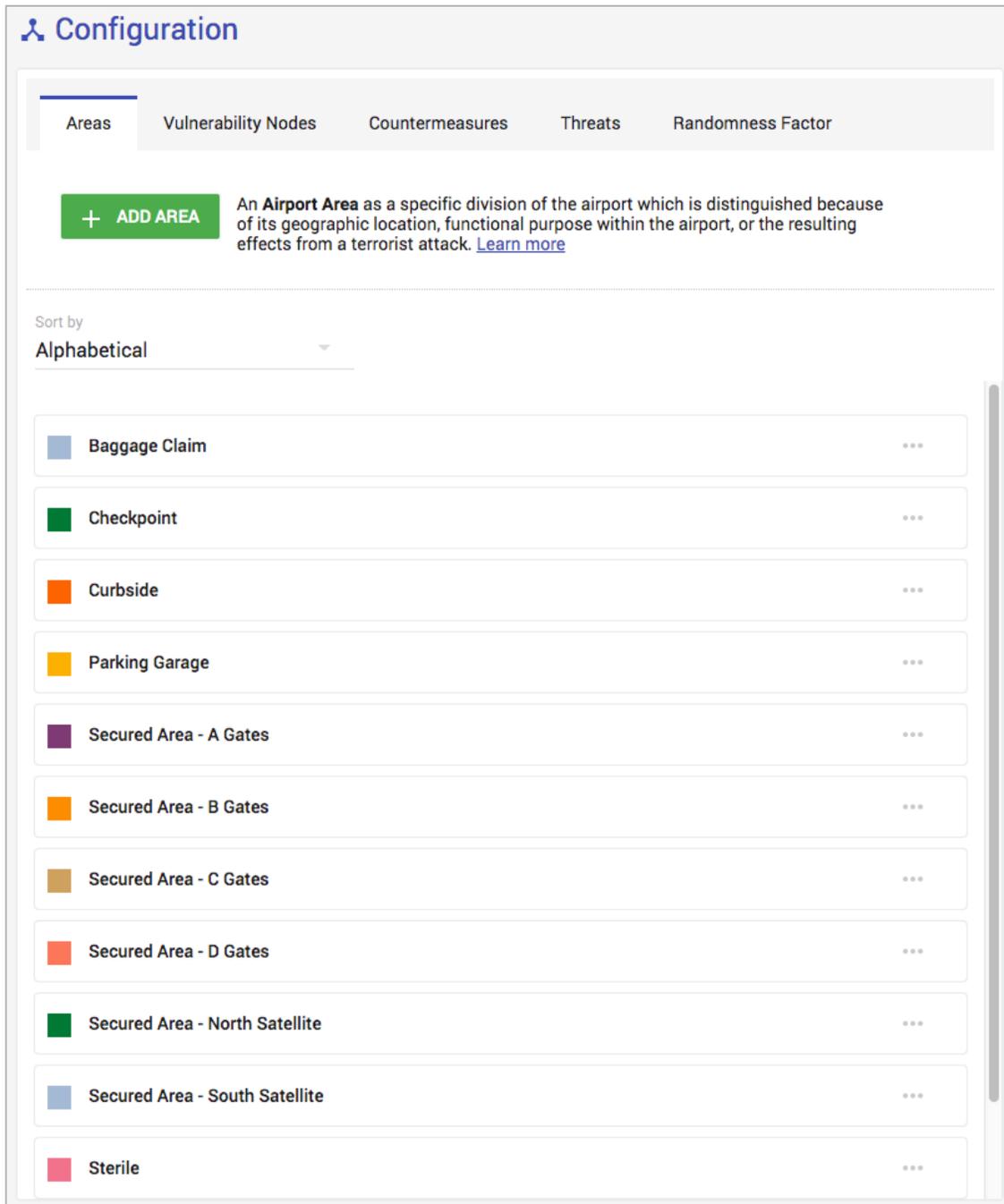
4. To finish deleting the threat, click **delete** or choose cancel to disregard.



5. Your deleted threat will no longer appear in the list.

3.5.2 Areas

An **Area** is a specific division of the airport which is distinguished because of its geographic location, functional purpose in the airport, or the resulting effects from a Threat. In ARAM's configuration, you can add, edit and delete Areas.



The Areas tab shows a list of all of the Areas defined in ARAM.

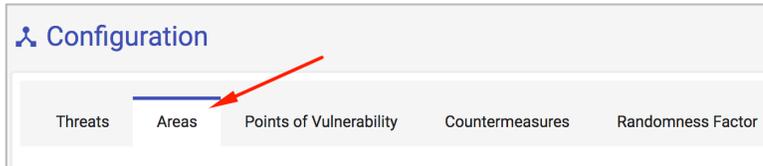
3.5.2.1 Add an Area

NOTE: Adding an area requires new scores for all of the existing Threats in the model. Make sure to review and edit the Risk Scores associated with your new Area.

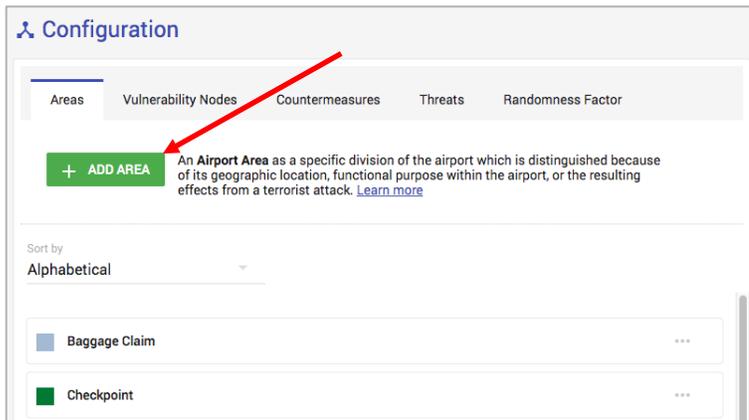
1. Select **Configuration** from the main navigation.



2. Select the **Areas** tab.



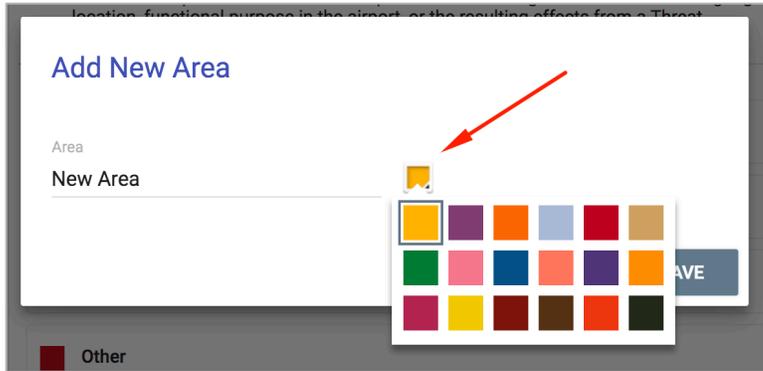
3. Press the **+ Add Area** button.



4. Enter the name of the area.



5. Select an associated color from the pallet dropdown or use the default that has already been selected.



6. Press **Save**.
7. Your new area should appear at the top of the list.

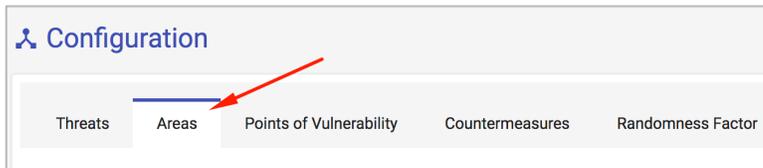
3.5.2.2 Edit an Area

NOTE: Editing the name of an area has no effect on risk scores so you will not need to make any adjustments based on this change.

1. Select **Configuration** from the main navigation.



2. Select the **Areas** tab.



3. Hover your mouse on the area that you would like to edit. Tools will appear on the right side. Click on the Edit Icon .



4. Edit the name of the area in-line. Click **save** or choose cancel to disregard your edit.



5. If you save your edit it will be reflected in the list.

3.5.2.3 Delete an Area

NOTE: Deleting an area will permanently remove all risk scores associated with it. If you re-create the area, you will have to rescore all of its parameters.

1. Select **Configuration** from the main navigation.



2. Select the **Areas** tab.



3. Hover your mouse on the area that you would like to delete. Tools will appear on the right side. Click on the Delete Icon .



4. To finish deleting the area, click **delete** or choose cancel to disregard.



5. Your deleted area will no longer appear in the list.

3.5.3 Vulnerability Nodes (VNs)

A **Vulnerability Nodes (VNs)** are specific locations at which a given Threat can be introduced against an Area. VNs can affect multiple areas, so you must select each area that is vulnerable to threats because of the VN. In ARAM's configuration, you can add, edit and delete VNs. You can also assign which Areas are affected by the VN.

Configuration

Areas | **Vulnerability Nodes** | Countermeasures | Threats | Randomness Factor

+ ADD VN A **Vulnerability Node (VN)** is defined as a specific location at which a given [threat](#) can be introduced against an [area](#). A VN may provide access to one or multiple areas (e.g., catering services introduces a potential path to multiple secure areas). It is designated by its physical vulnerabilities and is sized to be effectively patrolled by a single countermeasure unit. [Learn more](#)

VNs may affect multiple areas. Select all of the areas that are accesible to each VN.

Sort by
Alphabetical

Arrival Curbside

Areas accessible by this VN

- Baggage Claim
- Checkpoint
- Curbside
- Parking Garage
- Secured Area - A Gates
- Secured Area - B Gates
- Secured Area - C Gates
- Secured Area - D Gates
- Secured Area - North Satellite
- Secured Area - South Satellite
- Sterile
- Ticket Counter

Arrival Curbside

Baggage Claim

Cargo

Catering

Checked Baggage Zone

Departure Curbside

Departure Gates - A Concourse

Departure Gates - B Concourse

Departure Gates - C Concourse

Departure Gates - D Concourse

Departure Gates - North Satellite

Departure Gates - South Satellite

The Vulnerability Nodes tab displays a list of all of the VNs defined in ARAM.

3.5.3.1 Add a VN

NOTE: Adding a VN requires new scores for all of the existing Threats in the model. Make sure to review and edit the Risk Scores associated with your new VN.

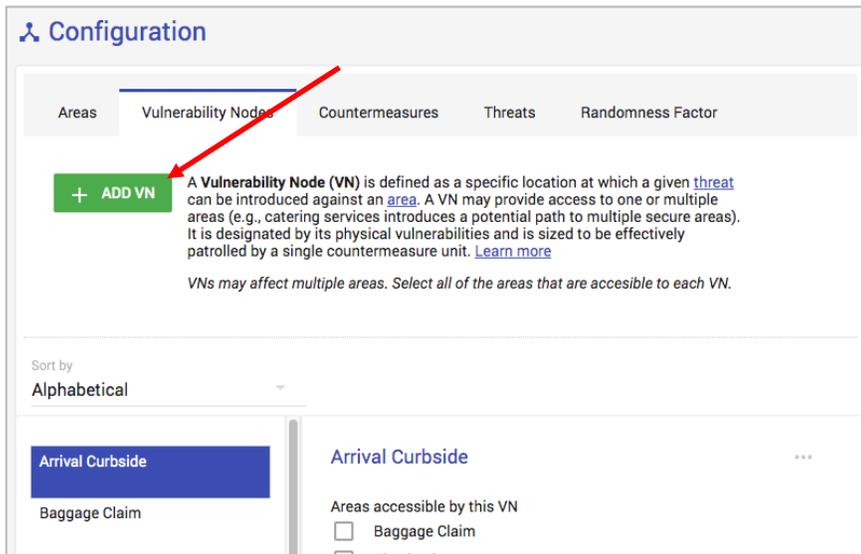
1. Select **Configuration** from the main navigation.



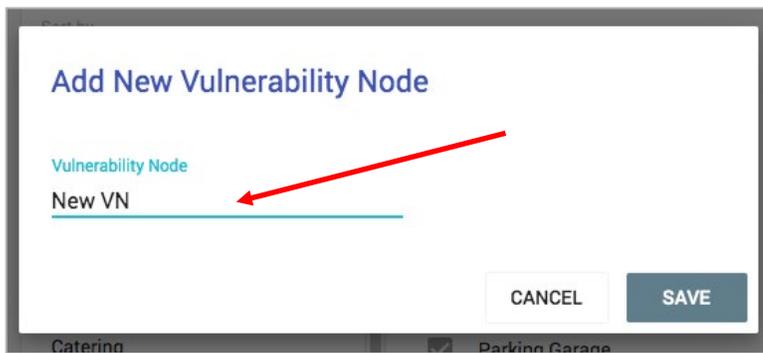
2. Select the **Vulnerability Node** tab.



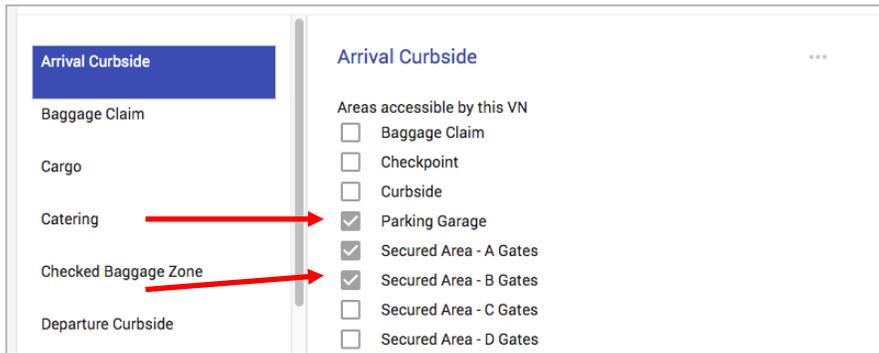
3. Press the **+ Add VN** button.



4. Enter the name of the Point of Vulnerability.



5. Press **Save**.
6. Your new VN should appear at the top of the list.
7. By default, new VNs have no areas assigned to them. Add the areas that are affected by the VN by selecting the checkbox next to each area.



3.5.3.2 Assign Areas to a VN

VNs can affect multiple areas, so you must select each area that is vulnerable to threats because of the VN.

NOTE: Adding or removing areas to/from a VN requires new scores for all of the existing Threats in the model. Make sure to review and edit the Risk Scores associated with your new VN.

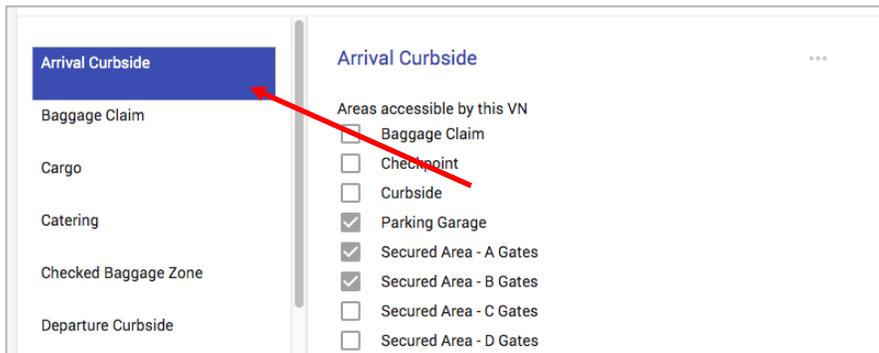
1. Select **Configuration** from the main navigation.



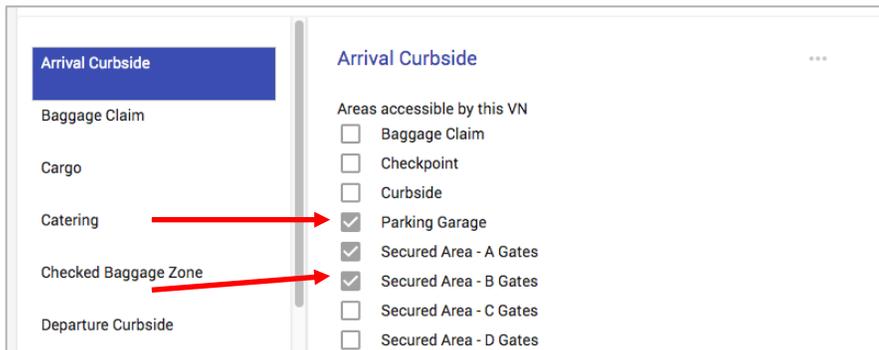
2. Select the **Vulnerability Nodes** tab.



3. Select the VN you want to assign/remove areas to/from.



4. To assign or remove areas to/from a VN, select the checkbox next to each area.



3.5.3.3 Edit a VN

NOTE: Editing the name of a VN has no effect on risk scores so you will not need to make any adjustments based on this change. However, if you assign/remove areas to/from a VN you will need to make the corresponding updates to the risk scores.

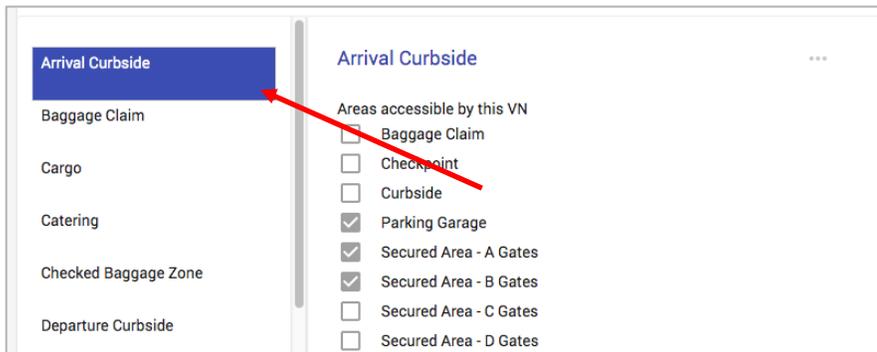
1. Select **Configuration** from the main navigation.



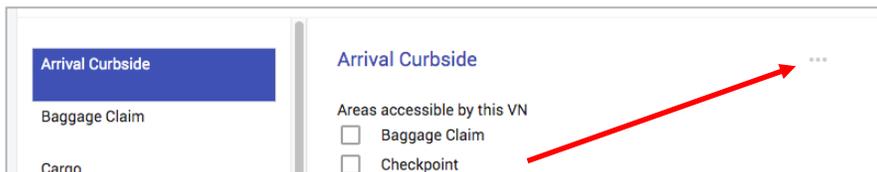
2. Select the **Vulnerability Nodes** tab.



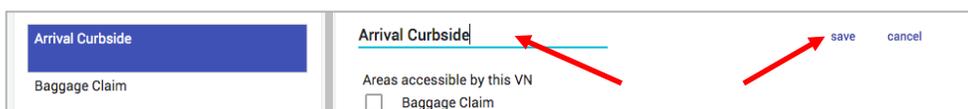
3. Select the VN you want to edit.



4. Hover your mouse on the menu icon **...** to the right of the VN title. Tools will appear on the right side. Click on the Edit Icon .



5. Edit the name of the VN in-line. Click **save** or choose cancel to disregard your edit.



6. If you save your edit it will be reflected in the list.

3.5.3.4 Delete a VN

NOTE: Deleting a VN will permanently remove all risk scores associated with it. If you re-create the VN, you will have to rescore all of its parameters.

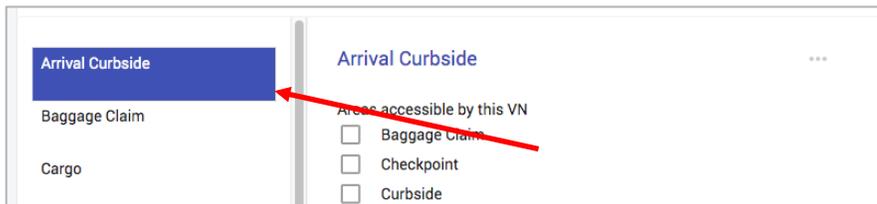
1. Select **Configuration** from the main navigation.



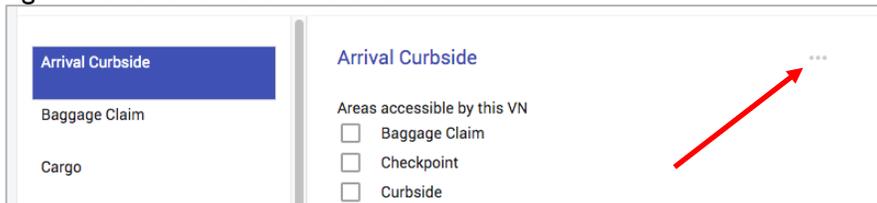
2. Select the **Vulnerability Nodes** tab.



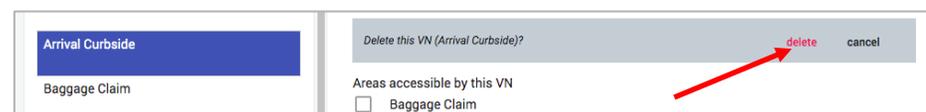
3. Select the VN you want to delete.



4. Hover your mouse on the menu icon **...** to the right of the VN title. Tools will appear on the right side. Click on the Delete Icon .



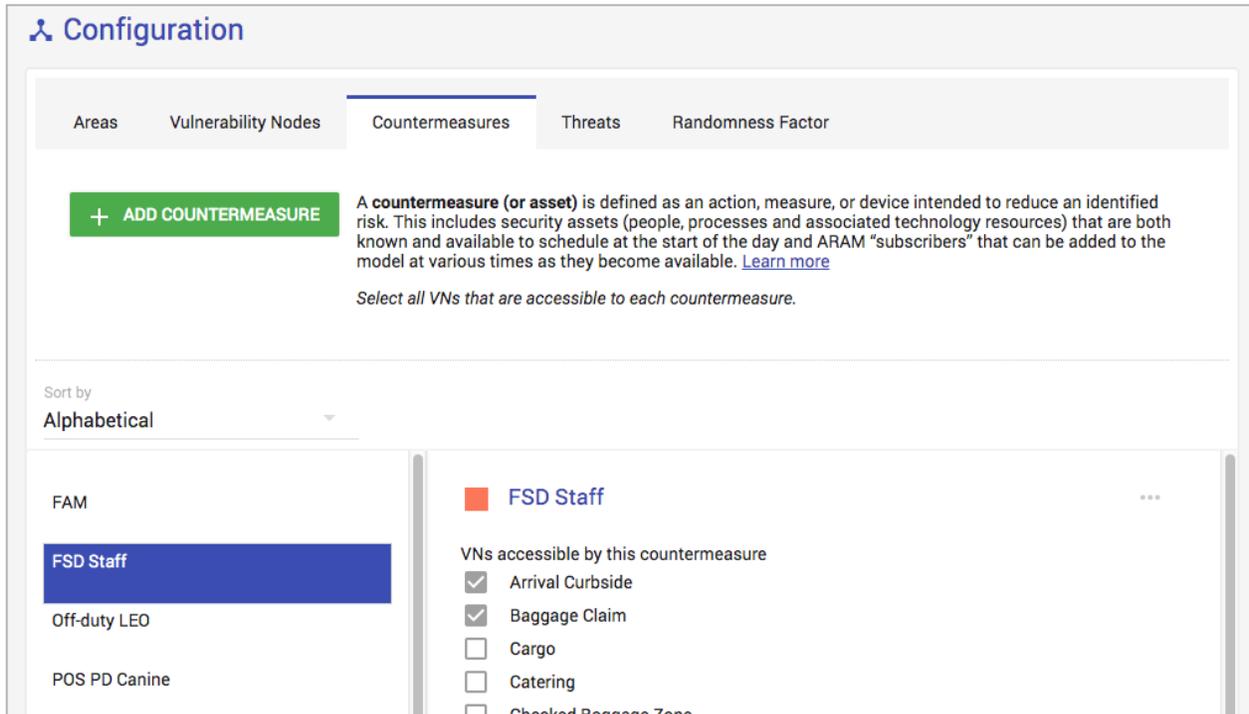
5. To finish deleting the VN, click **delete** or choose cancel to disregard.



6. Your deleted VN will no longer appear in the list.

3.5.4 Countermeasures

A **Countermeasure** is an action, measure, or device (including people and technology resources) that can reduce the risk of a given Threat at a VN. Countermeasures can be effective threat deterrents at multiple VNs, so you must select each VN that the Countermeasure has access to. In ARAM's configuration, you can add, edit and delete Countermeasures. You can also assign which VNs are accessed by the Countermeasure.



The Countermeasures tab displays a list of all of the countermeasures defined in ARAM.

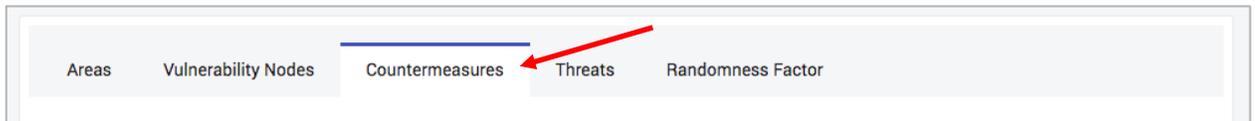
3.5.4.1 Add a Countermeasure

NOTE: Adding a Countermeasure requires new scores for all of the existing Threats in the model. Make sure to review and edit the Risk Scores associated with your new Countermeasure.

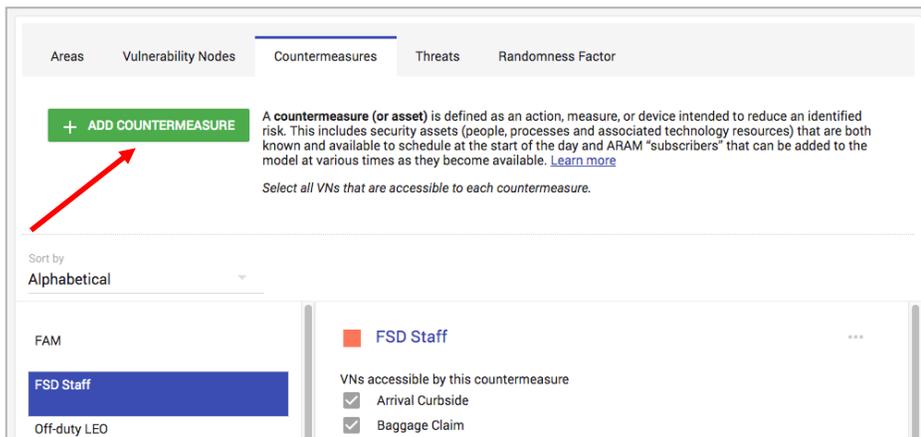
1. Select **Configuration** from the main navigation.



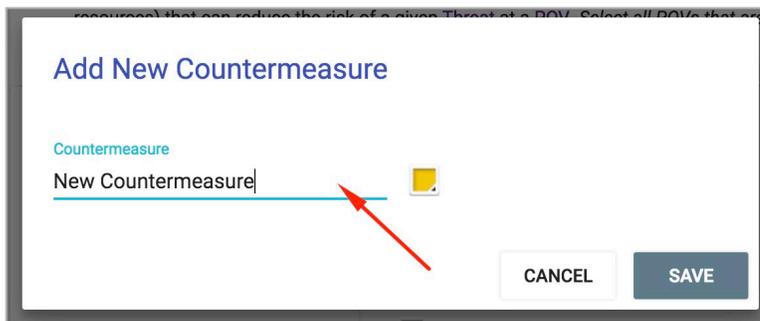
2. Select the **Countermeasures** tab.



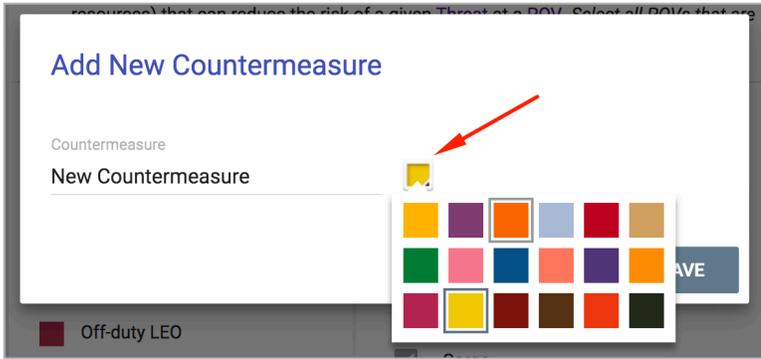
3. Press the **+ Add Countermeasure** button.



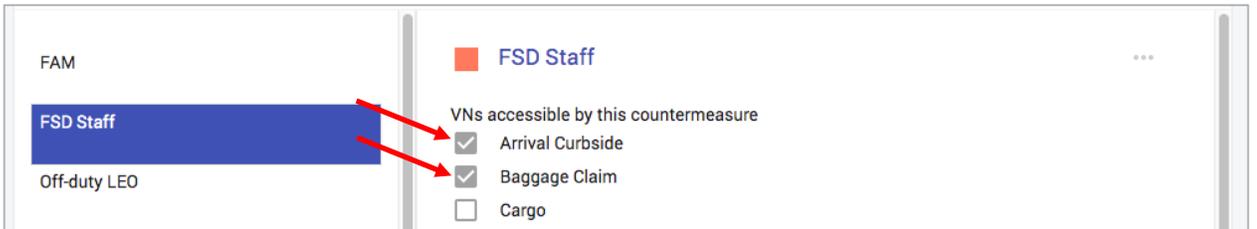
4. Enter the name of the area.



5. Select an associated color from the pallet dropdown or use the default that has already been selected.



6. Press **Save**.
7. Your new Countermeasure should appear at the top of the list.
8. By default, new Countermeasures have all VNs assigned to them. Remove the areas the VNs that are not accessible to the Countermeasure by selecting the checkbox next to each area.



3.5.4.2 Assign VNs to a countermeasure

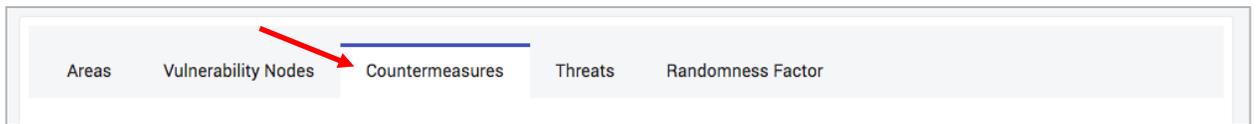
Countermeasures can deter threats at multiple VNs, so you must select each VN that a Countermeasure has access to.

NOTE: Adding or removing VNs to/from a Countermeasure has no effect on risk scores so you will NOT need to make any adjustments based on this change.

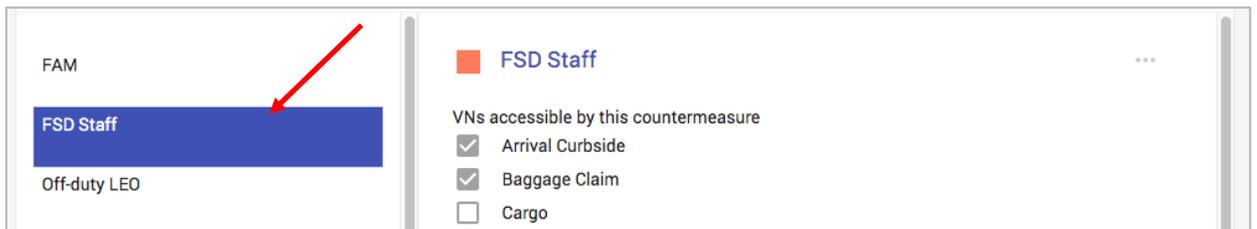
1. Select **Configuration** from the main navigation.



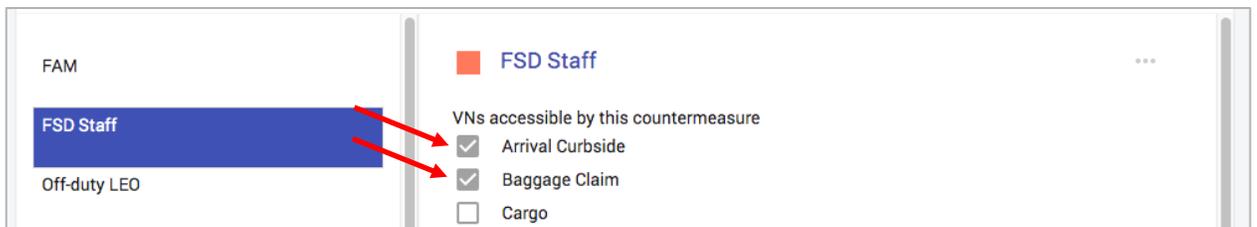
2. Select the **Countermeasures** tab.



3. Select the Countermeasure you want to assign/remove POVs to/from.



4. To assign or remove POVS to/from a Countermeasure, select the checkbox next to each area.



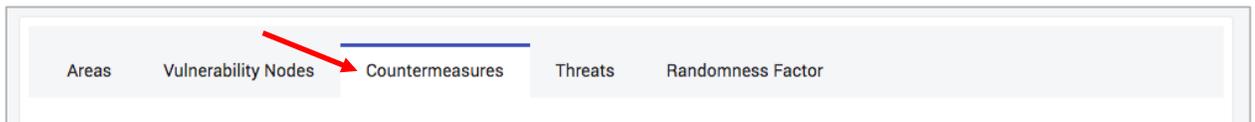
3.5.4.3 Edit a Countermeasure

NOTE: Editing the name of a Countermeasure and adding or removing POVs to/from a Countermeasure has no effect on risk scores so you will not need to make any adjustments based on this change.

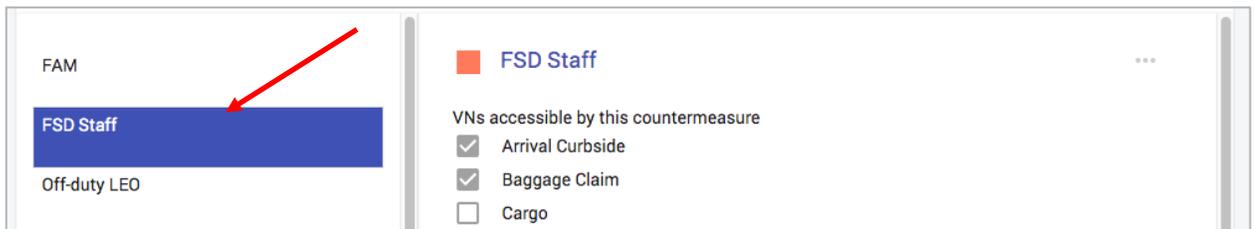
1. Select **Configuration** from the main navigation.



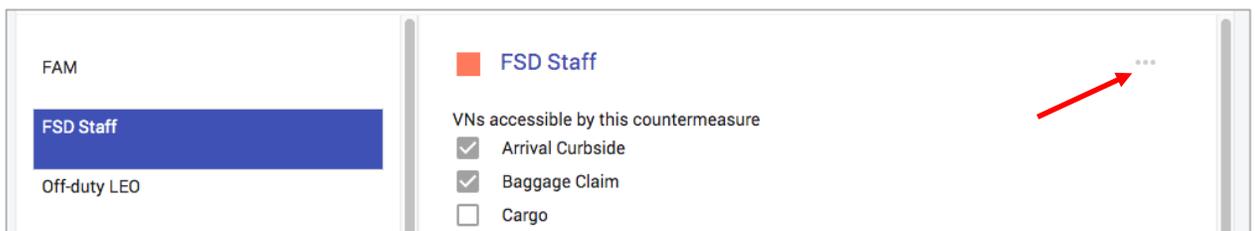
2. Select the **Countermeasures** tab.



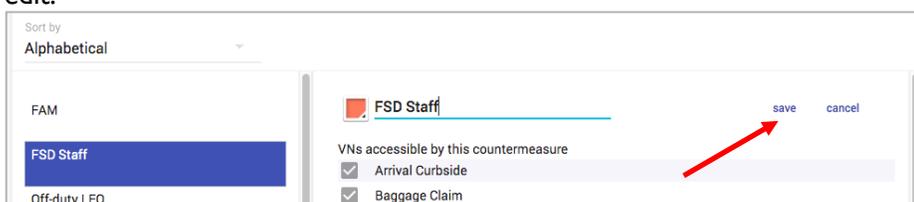
3. Select the Countermeasure you want to edit.



4. Hover your mouse on the menu icon ... to the right of the Countermeasure title. Tools will appear on the right side. Click on the Edit icon .



5. Edit the name of the Countermeasure in-line. Click **save** or choose cancel to disregard your edit.



6. If you save your edit it will be reflected in the list.

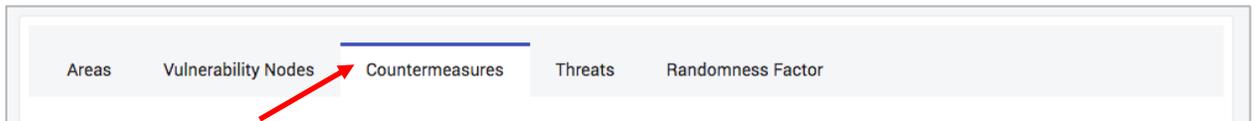
3.5.4.4 Delete a Countermeasure

NOTE: Deleting a Countermeasure will permanently remove all risk scores associated with it. If you re-create the Countermeasure, you will have to rescore all of its parameters.

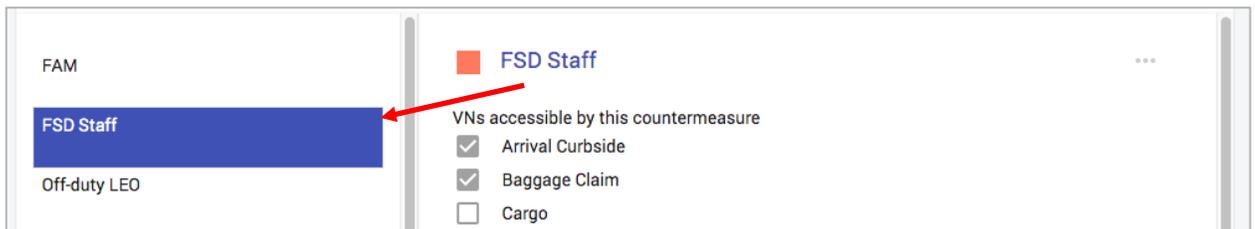
1. Select **Configuration** from the main navigation.



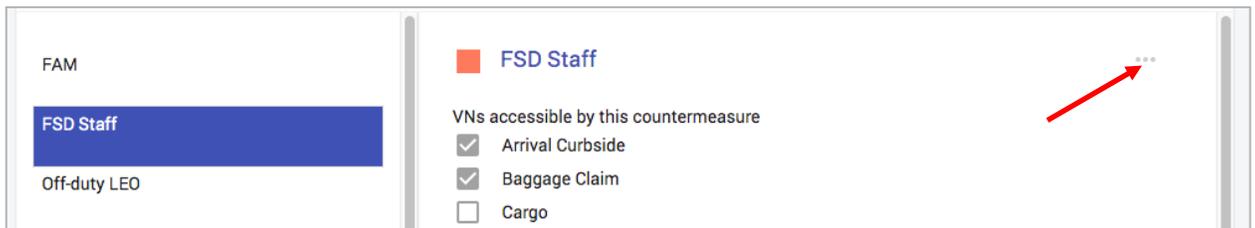
2. Select the **Countermeasures** tab.



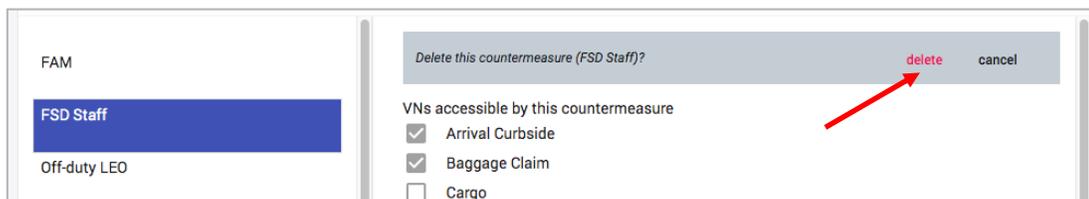
3. Select the Countermeasure you want to delete.



4. Hover your mouse on the menu icon **...** to the right of the Countermeasure title. Tools will appear on the right side. Click on the Delete icon .



5. To finish deleting the area, click **delete** or choose cancel to disregard.



6. Your deleted VN will no longer appear in the list.

3.5.5 Adjusting Randomness in Assignments

The **Randomness Factor** sets the amount of random assignments that are produced for scheduling. A higher factor will create schedules that are less optimized, but more unpredictable by adversaries.

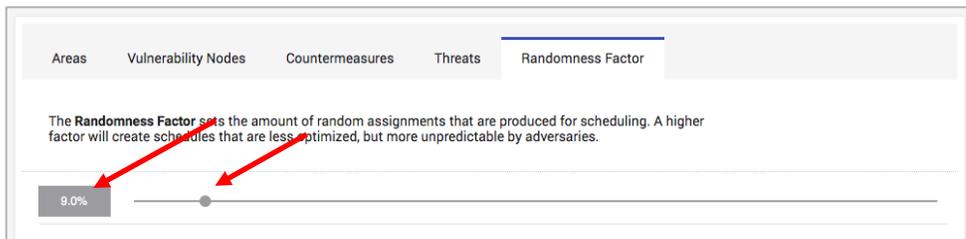
1. Select **Configuration** from the main navigation.



2. Select the **Randomness Factor** tab.



3. By default, the randomness factor is set to 9%. To change the value, click on the percentage and type in the new value, or move the slider component left and right to adjust.



3.6 Risk Scores

ARAM's **Risk Scores** allow you to apply weights to the flexible parameters in its configuration. In the Risk Scores screen you can define scores for each Threat, based on:

- **Area/VN Scores**
 - **Threat Score**, or the likelihood of occurrence of a given Threat at each Area.
 - **Consequence** of a Threat to each Area.
 - **Vulnerability** to the Threat at each VN.
- **Countermeasure Scores**
 - **Effectiveness** of each Countermeasure against the Threat.
 - **Deterrence** of each Countermeasure provides against the Threat.

The screenshot shows the ARAM Risk Scores configuration interface. The left sidebar contains navigation options: Airports, Dashboard, Heatmap, Schedule, Configuration, Risk Scores (selected), and Users. The main content area is titled 'Risk Scores' and shows the configuration for 'Active Shooter'. It includes a 'SAVE CHANGES' button and a table of risk scores for various areas.

Area/VN Risk	AREA/VN RISK			COUNTERMEASURE EFFECTIVENESS	
	Threat Score	Consequence	Vulnerability	Detect & Prevent	Deterrence
<i>Threat of Active Shooter to Area</i>					
Baggage Claim	1.1				
Checkpoint	3.0				
Curbside	2.0				
Parking Garage	1.4				
Secured Area - A Gates	1.3				
Secured Area - B Gates	3.8				
Secured Area - C Gates	2.9				
Secured Area - D Gates	1.0				
Secured Area - North Satellite	1.0				
Secured Area - South Satellite	1.0				
Sterile	1.0				
Ticket Counter	3.0				

The Configuration screen gives you access to all of the parameters defined in ARAM.

3.6.1 Risk Scores by Threat

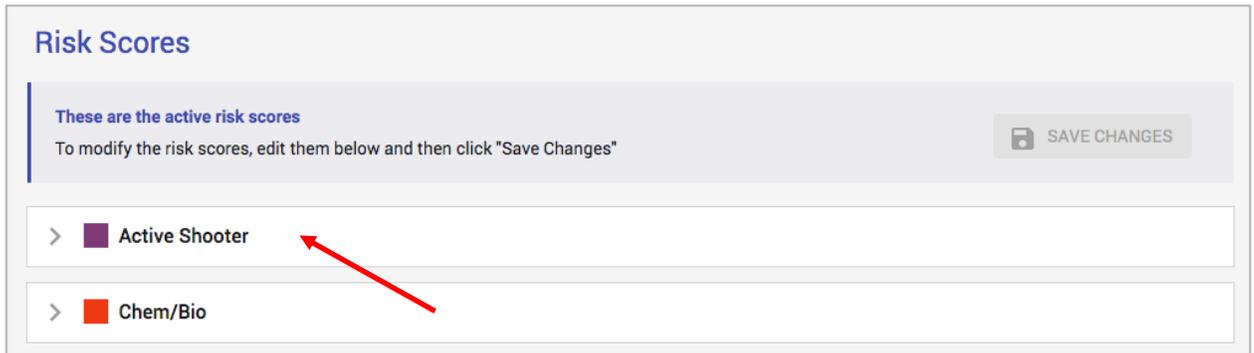
The main Risk Score screen displays a list of Threats (as defined in the Configuration) that scores can be applied to.

To view and edit the scores for a given threat:

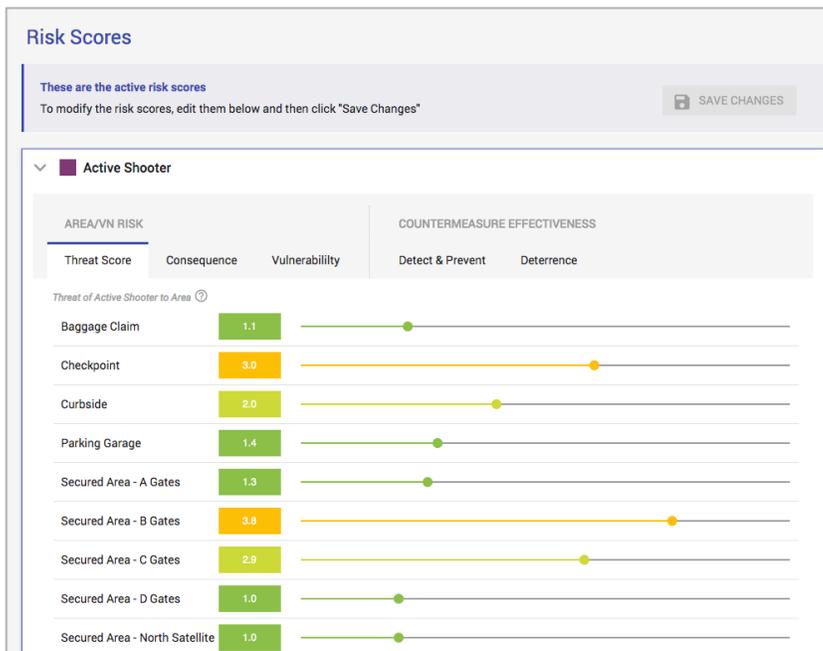
1. Select **Risk Scores** from the main navigation.



2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.



3. This reveals a set of tabs that each contain scores corresponding to their titles. By default, the Threat Score tab is selected.



4. To compact your view, you can re-collapse the set of scores for a Threat by clicking anywhere on the title of the card.

Risk Scores

These are the active risk scores
To modify the risk scores, edit them below and then click "Save Changes"



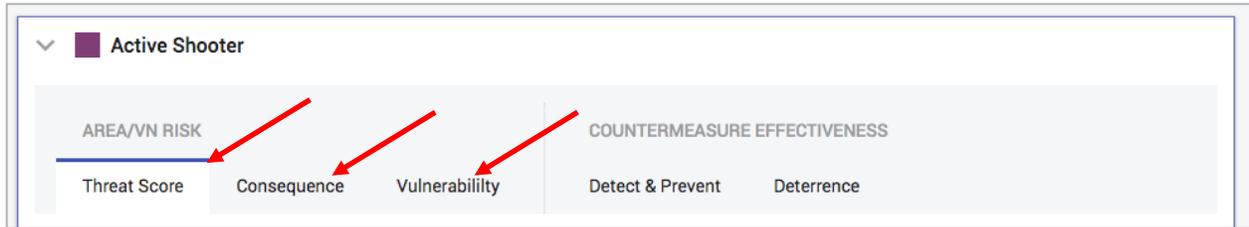
▼ **Active Shooter** 

AREA/VN RISK			COUNTERMEASURE EFFECTIVENESS	
Threat Score	Consequence	Vulnerability	Detect & Prevent	Deterrence

Threat of Active Shooter to Area ⓘ

3.6.2 Area/VN Scores

Area and VN Scores are functions of a how likely a Threat is to occur at a given Area (Threat Score), what the consequence to a given Area is in the event of a successfully carried out Threat (Consequence Score) and the vulnerability of a given VN to a Threat.



3.6.2.1 Threat Score

Threat scores range in value from zero to five (0-5) and are qualitatively determined by groups of subject matter experts using the table listed in Appendix I. A score of zero will remove the area from the optimization in that Threat.

To modify Threat scores in ARAM:

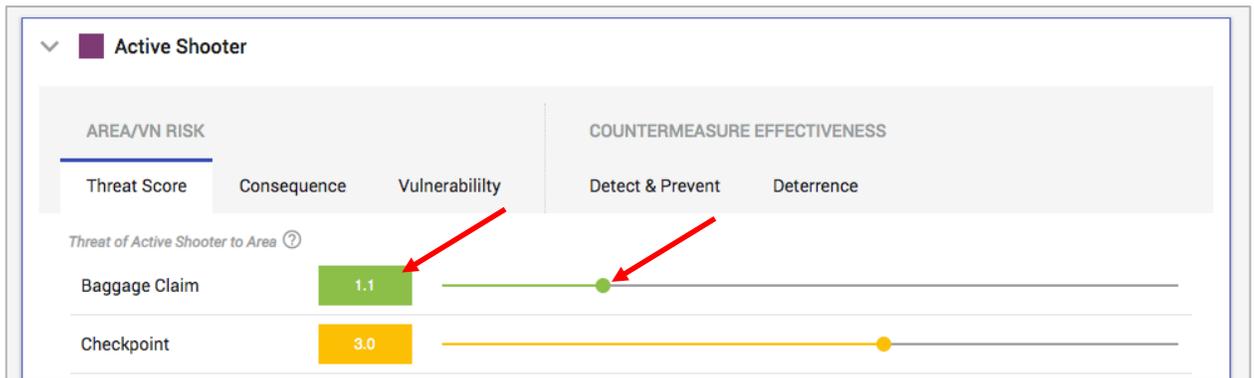
1. Select **Risk Scores** from the main navigation.



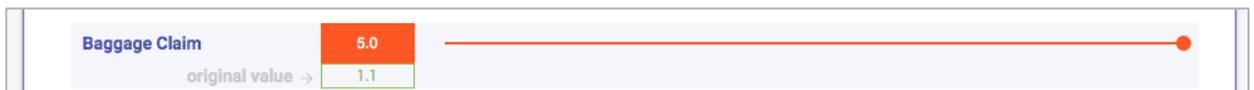
2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.



3. By default, the Threat Score tab is selected.



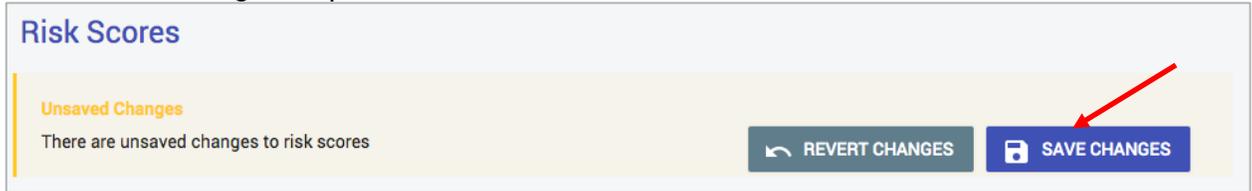
4. Each row represents an Area defined in ARAM's configuration. To change the threat score for each area, either manually enter the score in the colored box. You can also use the TAB key and the arrow keys to navigate between boxes.



Alternatively, you can move the slider component left and right to adjust.



Click on Save Changes to update for the next time a schedule is created.



3.6.2.2 Consequence Score

Consequence scores range in value from zero to five (0-5) and are qualitatively determined by groups of subject matter experts using the table listed in Appendix I. A score of zero will remove the area from the optimization for that Threat and Consequence type.

To modify Consequence scores in ARAM:

1. Select **Risk Scores** from the main navigation.



2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.



3. Select the **Consequence** tab.

AREA/VN RISK		COUNTERMEASURE EFFECTIVENESS					
Threat Score	Consequence	Vulnerability	Detect & Prevent	Deterrence			
Consequence of Active Shooter to Area							
	Economic Impact	Environmental Impact	National Defense	Symbolic Effect	Recoverability	Redundancy	test
Baggage Claim	3.0	1.0	1.0	1.0	1.0	1.0	1.0
Checkpoint	3.0	1.0	1.0	1.0	1.0	1.0	1.0
Curbside	2.0	1.0	1.0	1.0	1.0	1.0	1.0
Parking Garage	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Secured Area - A Gates	3.0	1.0	2.0	1.0	1.0	1.0	1.0
Secured Area - B Gates	3.0	1.0	2.0	1.0	1.0	1.0	1.0

4. Each row represents an Area defined in ARAM’s configuration. Each column represents a type of consequence. To change the consequence score for each area, enter the score in the colored box for each column. You can also use the TAB key and the Arrow keys to navigate between boxes.

Baggage Claim	5	1.0	1.0	1.0	1.0	1.0	1.0
original value →	3						

Click on save changes to update for the next time a schedule is created.

Risk Scores

Unsaved Changes
There are unsaved changes to risk scores

REVERT CHANGES SAVE CHANGES

3.6.2.3 Vulnerability Score

Vulnerability scores range in value from zero to five (0-5) and are qualitatively determined by groups of subject matter experts using the table listed in Appendix I. A score of zero will remove the VN from the optimization for that Threat and Vulnerability type.

To modify Vulnerability scores in ARAM:

1. Select **Risk Scores** from the main navigation.



2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.

Risk Scores

These are the active risk scores
To modify the risk scores, edit them below and then click "Save Changes"

SAVE CHANGES

- > Active Shooter
- > Chem/Bio

3. Select the **Vulnerability** tab.

Active Shooter

AREA/VN RISK COUNTERMEASURE EFFECTIVENESS

Threat Score Consequence **Vulnerability** Detect & Prevent Deterrence

Vulnerability of VN to Active Shooter ?

	Availability	Accessibility	Organic Security	Target Hardness
Arrival Curbside	5.0	5.0	3.0	5.0
Baggage Claim	5.0	5.0	3.0	5.0

4. Each row represents an VN defined in ARAM's configuration. Each column represents a measure of vulnerability. To change the vulnerability score for each VN, enter the score in the colored box for each column. You can also use the TAB key and the Arrow keys to navigate between boxes.

	Availability	Accessibility	Organic Security	Target Hardness
Arrival Curbside	1.0	5.0	3.0	5.0
original value →	5			

Click on Save Changes to update for the next time a schedule is created.

Risk Scores

Unsaved Changes
There are unsaved changes to risk scores



3.6.3 Countermeasure Scores

Countermeasure Scores are functions of a how effective a countermeasure is against a threat (Detect & Prevent Score), and how likely the presence of the Countermeasure is to deter the Threat (Deterrence Score).

Active Shooter

AREA/VN RISK			COUNTERMEASURE EFFECTIVENESS	
Threat Score	Consequence	Vulnerability	Detect & Prevent	Deterrence



3.6.3.1 Detect & Prevent Score

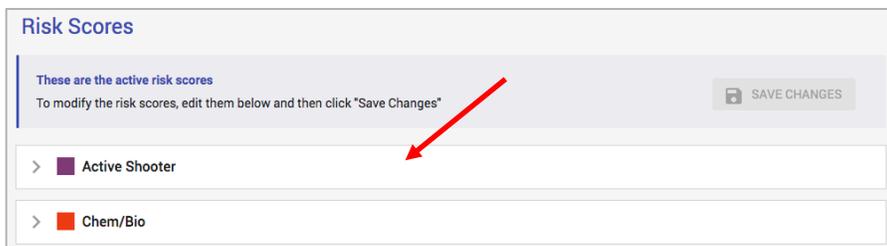
Detect & Prevent scores range in value from zero to ten (0-10) and are qualitatively determined by groups of subject matter experts using the table listed in Appendix I. A score of zero will remove the area from the optimization in the selected Threat.

To modify Detect & Prevent scores in ARAM:

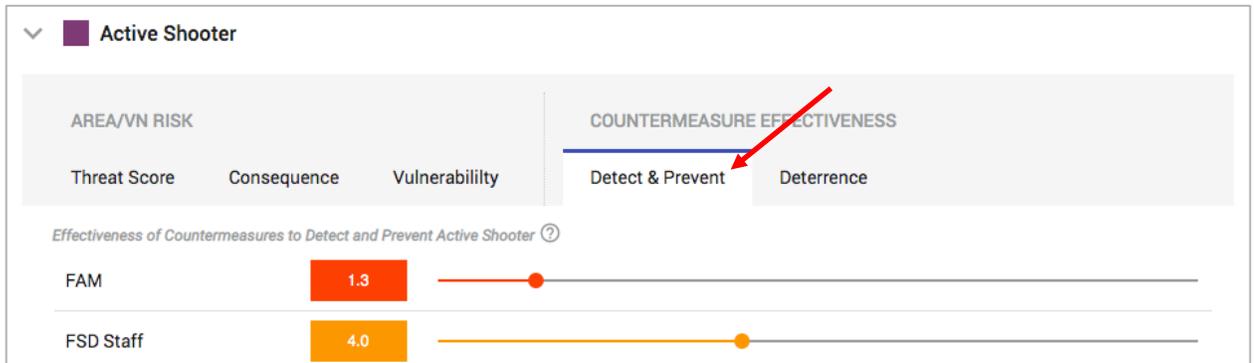
1. Select **Risk Scores** from the main navigation.



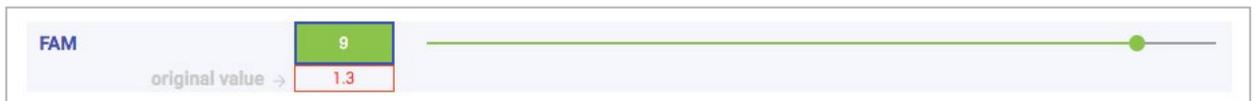
2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.



3. Select the **Detect & Prevent** tab.



4. Each row represents a Countermeasure in ARAM's configuration. To change the effectiveness score for each countermeasure, enter the score in the colored box. You can also use the TAB key and the Arrow keys to navigate between boxes.



Alternatively, you can move the slider component left and right to adjust.





Click on Save Changes to update for the next time a schedule is created.

Risk Scores

Unsaved Changes
There are unsaved changes to risk scores

[REVERT CHANGES](#) [SAVE CHANGES](#)

A screenshot of a software interface. At the top, the text "Risk Scores" is displayed in blue. Below it, a yellow banner contains the text "Unsaved Changes" in orange and "There are unsaved changes to risk scores" in black. At the bottom right of the banner are two buttons: "REVERT CHANGES" with a circular arrow icon and "SAVE CHANGES" with a floppy disk icon. A red arrow points from the top right towards the "SAVE CHANGES" button.

3.6.3.2 Deterrence Score

Detect & Prevent scores range in value from zero to ten (0-10) and are qualitatively determined by groups of subject matter experts using the table listed in Appendix I. A score of zero will remove the countermeasure from the optimization in the selected Threat.

To modify Deterrence scores in ARAM:

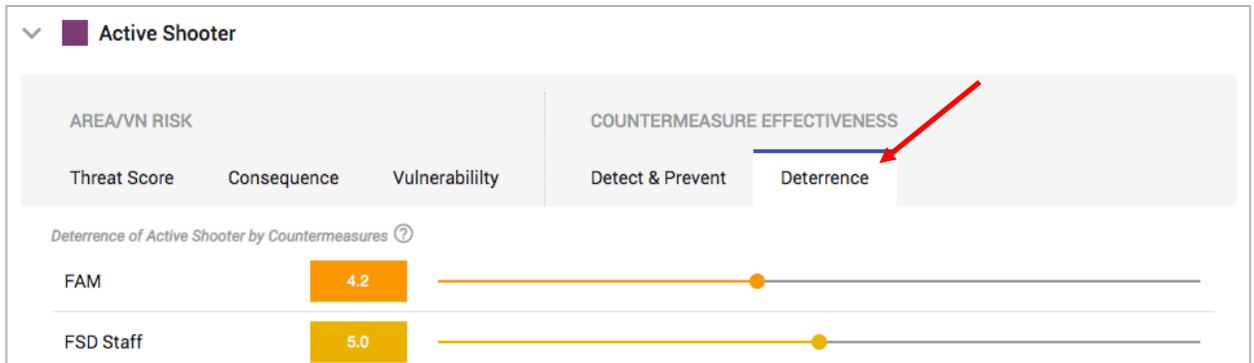
1. Select **Risk Scores** from the main navigation.



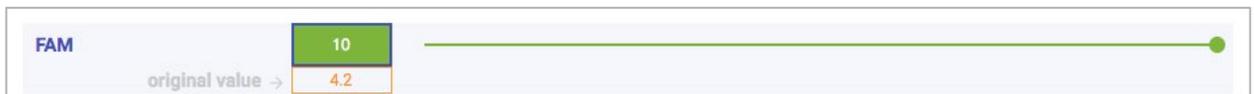
2. Expand the threat that you want to score by clicking anywhere on the card the threat is listed on.



3. Select the **Deterrence** tab.



5. Each row represents a Countermeasure in ARAM's configuration. To change the deterrence score for each countermeasure, enter the score in the colored box. You can also use the TAB key and the Arrow keys to navigate between boxes.



Alternatively, you can move the slider component left and right to adjust.





Click on Save Changes update for the next time a schedule is created.

Risk Scores

Unsaved Changes
There are unsaved changes to risk scores

[REVERT CHANGES](#) [SAVE CHANGES](#)

3.7 Users

The **Users** screen allows you to add, edit and remove users. You can assign a user to any of three roles: Administrators, Supervisors or Subscribers.

ARAM Spokane International Airport ADAMADMIN@FAKEMYINBOX.COM

GEG

- Airports
- Dashboard
- Heatmap
- Schedule
- Configuration
- Risk Scores
- Users**
- Help and Support
- About ARAM

Users

[+ ADD USER](#)

All Users | Airport Admins | Supervisors | Subscribers

User Name	Full Name	User Type	Countermeasure Type	Contact Email	Authorized Airports	
admin-test@fakemyinbox.com	Adam Theadmin	Airport Admin	--	admin-test@fakemyinbox.com	1	...
supervisor_test@fakemyinbox.com	Sherry Suptest	Supervisor	--	supervisor_test@fakemyinbox.com	1	...
test@testuser.com	Test User	Supervisor	--	test@testuser.com	1	...
subscriber-test@fakemyinbox.com	Sara Subscriber	Subscriber	--	subscriber-test@fakemyinbox.com	1	...
nancySub	Nancy O'Brien	Airport Admin	--	nancy.o'brien@pnnl.gov	2	...
na.ncy@nobrien.com	Nancy O'Brien	Airport Admin	--	na.ncy@nobrien.com	1	...
AdamAdmin@fakemyinbox.com	Adam Admin	Airport Admin	--	AdamAdmin@fakemyinbox.com	2	...

3.7.1 The Users List

The Users list is the default page in the Users screen. The tabs along the top allow you to sort users by role so you can easily see, for example, only Subscriber users, or all of the Administrators. By default, the **All Users** tab is selected, listing all of the users assigned in the system.

User Name	Full Name	User Type	Countermeasure Type	Contact Email	
jordan	Jordan Hendry	Admin	–	jordan.hendry@pnnl.gov	⋮
toddsSub	Todd Billow	Subscriber	–	toddbillow@gmail.com	⋮
nancy	Nancy O'Brien	Admin	–	nancy.obrien@pnnl.gov	⋮
nancySub	Nancy O'Brien	Subscriber	–	nancy.obrien@pnnl.gov	⋮
todd	Todd Billow	Admin	–	todd.billow@pnnl.gov	⋮
test	test Hendry	Admin	–	test.hendry@pnnl.gov	⋮

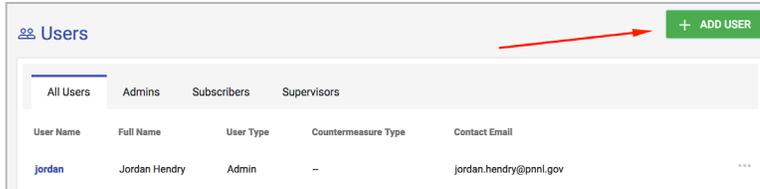
3.7.2 Add a User

To add a user to ARAM:

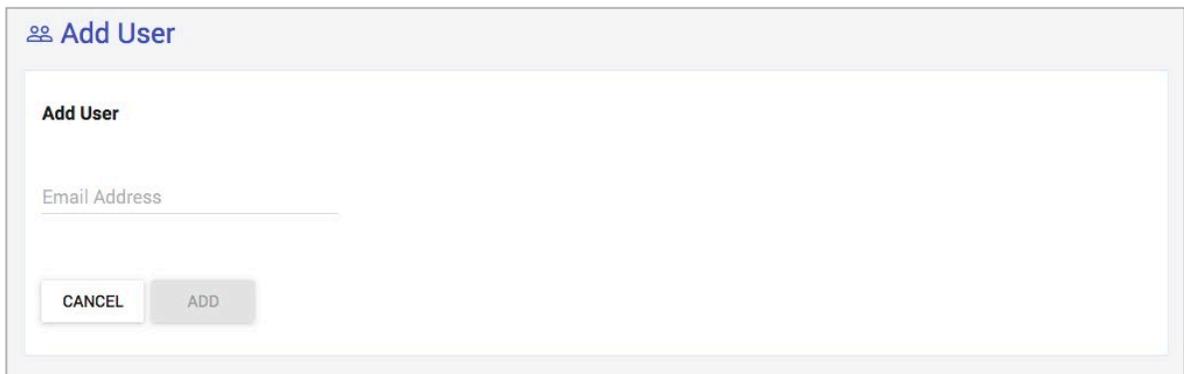
1. Select **Users** from the main navigation.



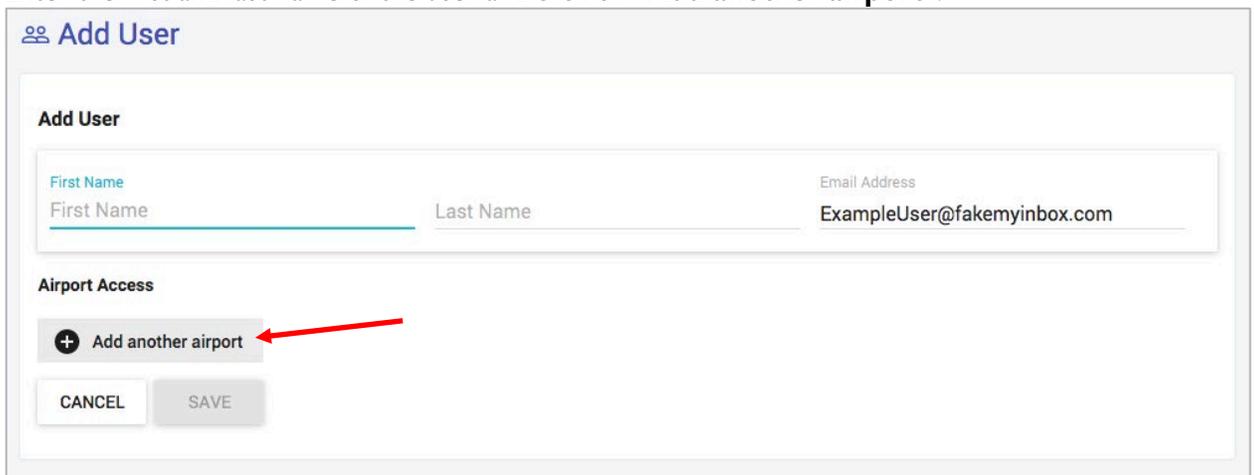
2. Press the **+ Add User** button



3. Enter the email address for the user you want to add.



4. Enter the first and last name of the user and click on **“Add another airport”**.



5. Select the airport, user type, and countermeasure access, then click **“Add”**

Airport Access

Airport: Spokane International Air... User Type: Supervisor Countermeasure Access: All

✓ ADD CANCEL

+ No additional airports available

CANCEL SAVE

6. Click **Save** to finish creating the user.

3.7.3 Edit a User

NOTE: Editing the username will change the login credentials for the edited user.

1. Select **Users** from the main navigation.



2. Hover your mouse on the menu icon ... to the right of the user you want to edit. Tools will appear on the right side. Click on the Edit icon .

User Name	Full Name	User Type	Countermeasure Type	Contact Email	
Jordan	Jordan Hendry	Admin	--	jordan.hendry@pnml.gov	Edit
toddsSub	Todd Billow	Subscriber	--	toddbillow@gmail.com	...

3. Edit the user's details in the pop-up form that appears. of the area in-line. Click **save** or choose cancel to disregard your edit.

Edit User

Edit User

First Name	Last Name	Email Address
<input type="text" value="Adam"/>	<input type="text" value="Theadmin"/>	<input type="text" value="admin-test@fakemyinbox.com"/>

Airport Access

Spokane International Airport	Airport Admin
-------------------------------	---------------

 Add another airport

4. If you save your edit it will be reflected in the list.

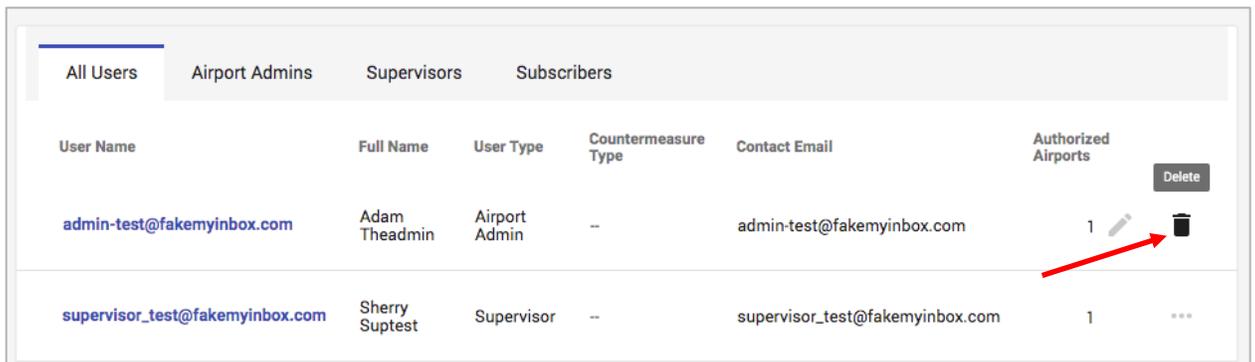
3.7.4 Delete a User

NOTE: Deleting a user will permanently revoke their access unless you recreate their account.

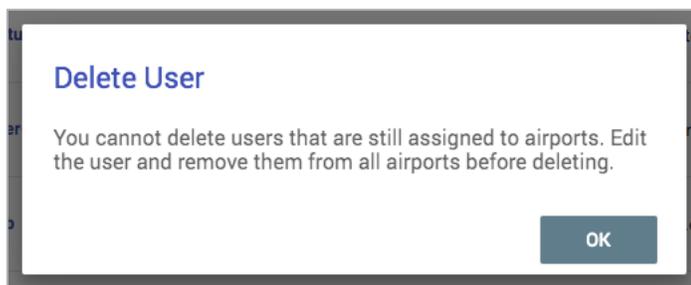
1. Select **Users** from the main navigation.



2. Hover your mouse on the menu icon ... to the right of the user you want to delete. Tools will appear on the right side. Click on the Delete Icon .



- 3.
4. To finish deleting the User, click **OK** or choose cancel to disregard.



5. The deleted user's access will be instantly revoked and removed from the user list.

4 Supervisor Interface

Any user assigned a Supervisor role can access the **Supervisor Interface** which allows full access to view and edit schedules of countermeasures for their assigned team. Supervisors are assigned access based on the countermeasures they are allowed to view. They can view full heatmap and dashboard info for their assigned countermeasures, as well as anonymized statistics for countermeasures that they don't have access to. They can create and view schedules for their assigned countermeasures.

ARAM Spokane International Airport SUSYSUPERVISOR@FAKEMYINBOX.COM

Risk Status as of 1513, 21 October 2019

Remaining Risk as Deployed: **36** (Medium Low)

Unmitigated Risk: **36**

Risk Buydown: **0**

Heatmap / Risk

Risk by Area

Area	Remaining Risk as Deployed	Unmitigated Risk
Baggage Claim	0	0
Cargo	19	0
Checkpoint	0	0
Curbside	15	0
Parking Garage	0	0
Secured Area - AB Gates	0	0
Secured Area - C Gates	0	0
Sterile	2	0

Countermeasure Deployment

Number Deployed: **0**

Hours Deployed: **0**

Countermeasure Type	Hours Deployed
FAM	(0)
FSD Staff	(0)
Off-duty LED	(0)
PD Patrol	(0)
STSO	(0)
Security	(0)
Shooter	(0)
Staff	(0)
TSA Atlas Team	(0)
TSA VIPR Team	(0)
TSI	(0)
TSS-E	(0)

Supervisors can create subscriber users for any of the countermeasure types they have access to. Supervisors are not able to modify airport risk scores or configuration.

Users + ADD USER

User Name	Full Name	User Type	Countermeasure Type	Contact Email	Authorized Airports
supervisor_test@fakemyinbox.com	Sherry Suptest	Supervisor	--	supervisor_test@fakemyinbox.com	1 ...
test@testuser.com	Test User	Supervisor	--	test@testuser.com	1 ...
subscriber-test@fakemyinbox.com	Sara Subscriber	Subscriber	--	subscriber-test@fakemyinbox.com	1 ...
SusySupervisor@fakemyinbox.com	Susy Supervisor	Supervisor	--	SusySupervisor@fakemyinbox.com	1 ...

5 Subscriber Interface

The screenshot displays the ARAM Subscriber Interface. The top left corner features the ARAM logo and the Port of Seattle logo. The top right corner shows the user's email address: SEBASHTIANSUBSCRIBER@FAKEMYINBOX.COM. The main content area is titled "Get an Assignment" and includes a date indicator: "Today is October 21, 2019". Below the title, there is a form with the following fields: "Agency/Type" (a dropdown menu), "Qty" (a numeric input field with the value "1"), "10/21/2019" (a date input field with a calendar icon), "Shift Start" (a time input field with the value "12:00 AM"), and "Shift End" (a time input field with the value "08:00 AM"). A "PREVIEW MY ASSIGNMENT" button is located below the form. The bottom left corner of the interface contains links for "Help and Support" and "About ARAM".

Any user assigned a subscriber role can access the **Subscriber Interface** which allows a user to get an assignment from ARAM for single or multiple countermeasures of a single type.

5.1 Get an assignment

At any time, a subscriber can log in and get an optimized assignment from ARAM.

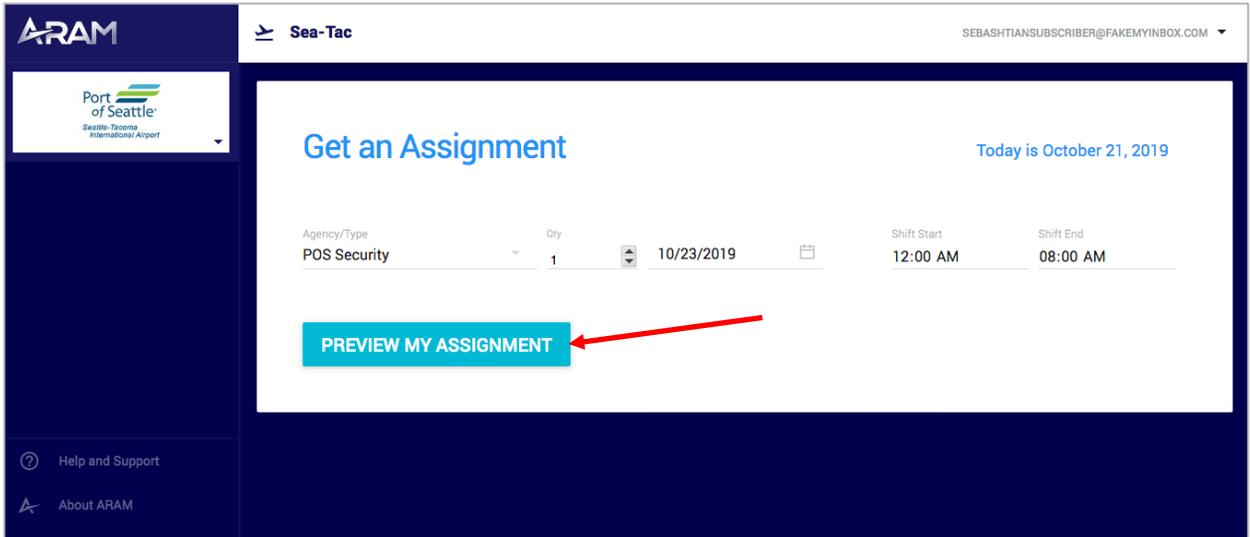
1. To begin, select a countermeasure type in the **Asset Type** dropdown, and select the number of assets available in the **Qty** field.

The screenshot shows the ARAM interface for 'Sea-Tac'. The user is logged in as SEBASHTIANSUBSCRIBER@FAKEMYINBOX.COM. The main heading is 'Get an Assignment' with the date 'Today is October 21, 2019'. The form fields are: Agency/Type: POS PD Canine, Qty: 1, Date: 10/21/2019, Shift Start: 12:00 AM, Shift End: 08:00 AM. A 'PREVIEW MY ASSIGNMENT' button is located below the form.

2. Select the date that the countermeasure is available (defaults to current date) and select the start and end time of their availability.

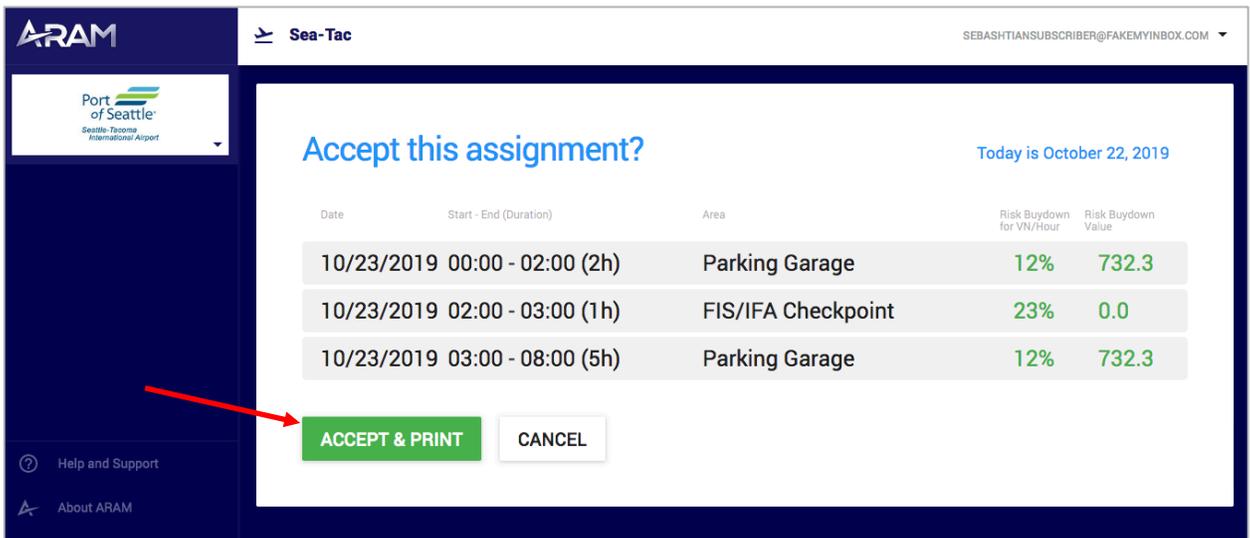
The screenshot shows the ARAM interface for 'Sea-Tac'. The user is logged in as SEBASHTIANSUBSCRIBER@FAKEMYINBOX.COM. The main heading is 'Get an Assignment' with the date 'Today is October 21, 2019'. The form fields are: Agency/Type: POS Security, Qty: 1, Date: 10/21/2019, Shift Start: 12:00 AM, Shift End: 08:00 AM. A calendar is open for October 2019, showing the 21st and 22nd. A 'PREVIEW MY ASSIGNMENT' button is located below the form.

3. When you are finished entering your details, click **Preview my assignment** to see the recommended assignment before accepting.



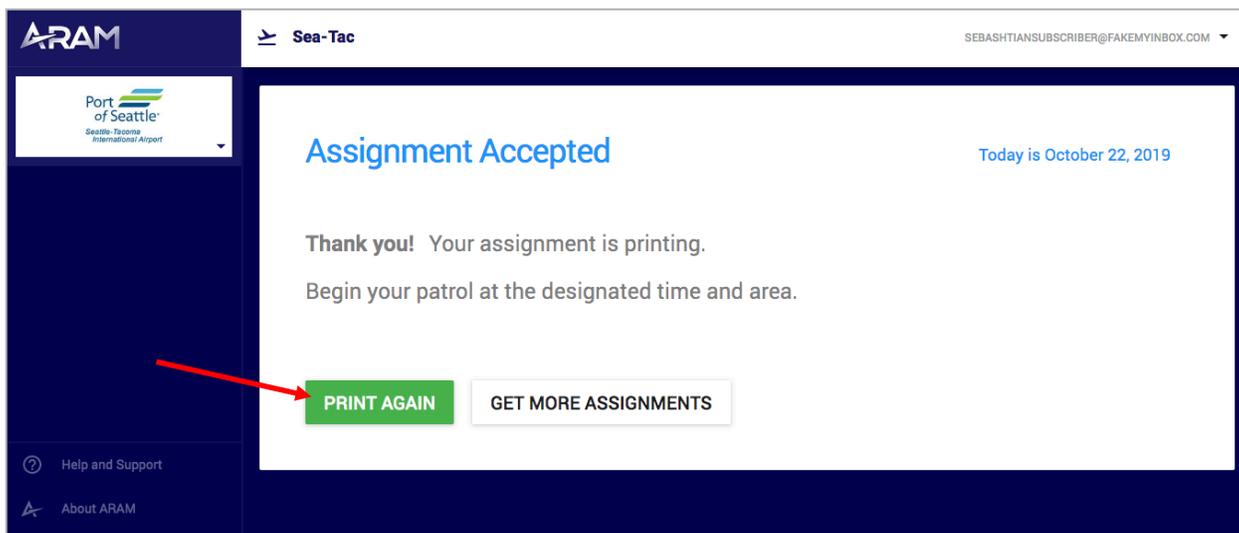
4. Review the recommended assignment. It outlines each location that are assigned and the associated risk buydown for that location and overall for the airport.

If you are satisfied with the assignment select **Accept & Print**. If you want to get a different schedule, press **Cancel**.



5. If you accepted the assignment, the schedule will be sent to your printer. If for some reason you were unable to print the assignment or need to print another, click **Print Again**.

If you would like to start the process over again to get additional assignments for other countermeasures, simply click **Get More Assignments**.





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