City and County of San Francisco

Committee on Information Technology

# Budget and Performance Subcommittee

03/15/24

# Agenda

- Call to Order by Chair
- Roll Call
- General Public Comment
- Department Updates and Announcements
- Approval of Meeting Minutes from March 8, 2024 (Action Item)
- FY 2024 - 2025 & FY 2025 - 2026 Budget Presentations
- Review the remaining schedule for Department presentations (March - April)
- Adjournment

# Item Number 3

## General Public Comment

Discussion

# Item Number 4

## Department Updates and Announcements

Discussion

# Item Number 5

## Approval of Minutes from March 8, 2024

Action item

# Item Number 6

## FY 2024 - 2025 & FY 2025 - 2026 Budget Presentations

Discussion

# Presentation Schedule

- Radio Project - Debt Financing (10:10AM - 10:30AM)
- Citizens Broadband Radio Service (CBRS) Private LTE Cellular (10:30AM -10:50AM)
- Network Hardware Lifecycle (10:50AM - 11:10AM)
- Dynamic Network Port Security (11:10AM - 11:30AM)

# CITY AND COUNTY OF SAN FRANCISCO
## Department of Emergency Management

# Public Safety and Public Service
# 800MHz Citywide Radio Replacement Project

Presentation to COIT Budget & Performance Subcommittee.
March 15, 2024

# COIT Radio Replacement Project Update 2024

- Project Accomplishments
- Project Financial Forecast
- Challenges & Solutions
- Radio Upgrade Agreement
- Questions?

# Project Accomplishments

## 2021

- Complete Field ATP: run over 150 Acceptance Tests when the system was installed.
- Migration to the new P25 Radio System and Dispatch Center consoles.

## 2022

- Migration of >11K radio system users to the new P25 800MHz Radio System, including SFPD, Fire, Sheriff, DPW, and DPH.
- Upgrade the 911 Logger system for digital radio communications.
- Upgrade Radio System Security.

## 2023

- Deployment of Push-to-talk app during APEC.
- Decommission of Legacy Radio System.
- The Radio System Maintenance Cycle begins.
- Maintenance and Upgrade Cycle until June 2035.

## 2024

- Q2, Logging Recorder Update, System Refresh.
- Q3, Radio System Major Upgrade, including changes to the infrastructure hardware and Dispatch Center Radio Consoles.

# Project Financial Forecast

| | FY24-25 | FY25-26 | FY26-27 |
|---|---|---|---|
| Debt Service Payment | $3.7M | $3.7M | $1.8M |
| Insurance Premium | $150K | $150K | $150K |
| Bank & Dept. Fees | $50K | $50K | |
| Total Project Funding – COIT REQUEST | $3.9M | $3.9M | $1.95M |

# Challenges & Solutions

## Audio challenges for Fire, Police, and Dispatch

- Re-Tuned all portable radios for Police and Fire
- Moved SFFD to Direct Operations and deployed in-vehicle repeaters (DVRS)
- Fine-tuned audio settings
  - Headsets and emergency tones for dispatchers
  - Audio profiles for Fire and Police portable units
- Developed SOPs with SFPD around radio use and purchased new speaker mics
  - Adding in-building coverage systems (BDA/DAS) to 4 police facilities

# Radio Upgrade Agreement

- General Fund (built into DEM's base budget) for Portable Radio Replacements for all City Departments
- DEM has signed MOUs with all City departments that use the Radio System to purchase new radios and accessories within the program (MTA, DPW, DPH, SFO, REC, LIB, DBI, PRT, and PUC)
- DEM has completed two shipments for FY22 - 23, and FY23- 24 within the RUA program for over $3M value.

# Questions?

Isaac Potter
Principal Network Engineer, AIR

# Citizens Broadband Radio Service (CBRS) Private LTE Cellular Update

# Project Overview

**Citizens Broadband Radio Service (CBRS)** is a new spectrum-sharing approach that makes 150MHz of the high-speed 3.5GHz band available for private LTE.

A robust technology, CBRS gives enterprise facilities the fast uninterrupted connectivity for airport operations, airlines and tenants where physical infrastructure cannot be extended with the opportunity for revenue recovery.

# Background

The US government approved CBRS for public use which was originally dedicated to NAVY communications in the open sea.

This project will implement a private **Long-Term Evolution (LTE),** a wireless broadband communication solution to encompass the entire airport by strategically placing cellular antennas on the side or on top of current buildings to reach areas that have never been connected to the SFO campus.

Private LTE allows SFO to use the same technology as cellular carriers like Verizon and AT&T. This would be SFO owned outdoor cellular solution.

# High-Level Project Plan

| Quarter/FY | Dates of Key Milestones | FY24 Q2 | FY24 Q3 | FY24 Q4 | FY25 Q1 | FY25 Q2 | FY25 Q3 | FY25 Q4 | FY26 | FY27 | FY28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phase #1 Select location to test technology** | | | | | | | | | | | |
| Construction for site#1 | Feb 25 | | | | | | | | | | |
| Network connectivity | Mar 25 | | | | | | | | | | |
| **Phase #2 Testing** | | | | | | | | | | | |
| Site 1 test uses cases with various vendors | Jun 25 | | | | | | | | | | |
| Publish results of Site 1 test | Aug 25 | | | | | | | | | | |
| **Phase #3 Expansion: SFO LTE analysis for future expansion** | FY 28 | | | | | | | | | | |
| | | | | | | | | | | | |

# Project Risk Management Plan

| | |
|---|---|
| Potential Risk #1: Total cost of ownership for new technology | We need to understand all components involved to determine total cost of ownership. This goes beyond ITT current service offerings. We will need to analyze staffing levels to support this solution. |
| Potential Risk #2: Physical LTE pole installation, wiring and network connectivity | We need to get accurate physical infrastructure cost to completely understand total cost of ownership and potential impact on timeline. To mitigate we will have a Private LTE study performed to give SFO multiple options to reduce constructions cost. |
| Potential Risk #3: Delayed deployment of private LTE provides West Coast airports a competitive advantage | We need to test this solution to support SFO digital transformation and future services. This can also be a revenue generating opportunity as a wireless provider to airlines and tenants as well as SFO Operations. |
| Consequences of Not Funding | Reliance on siloed wireless carriers with limited-service deployments to critical areas of the airport. Limits connectivity portfolio Continue to incur high costs of legacy infrastructure |
| Alternate Plans | This provides an alternative mode of data transport. |

# Project Update

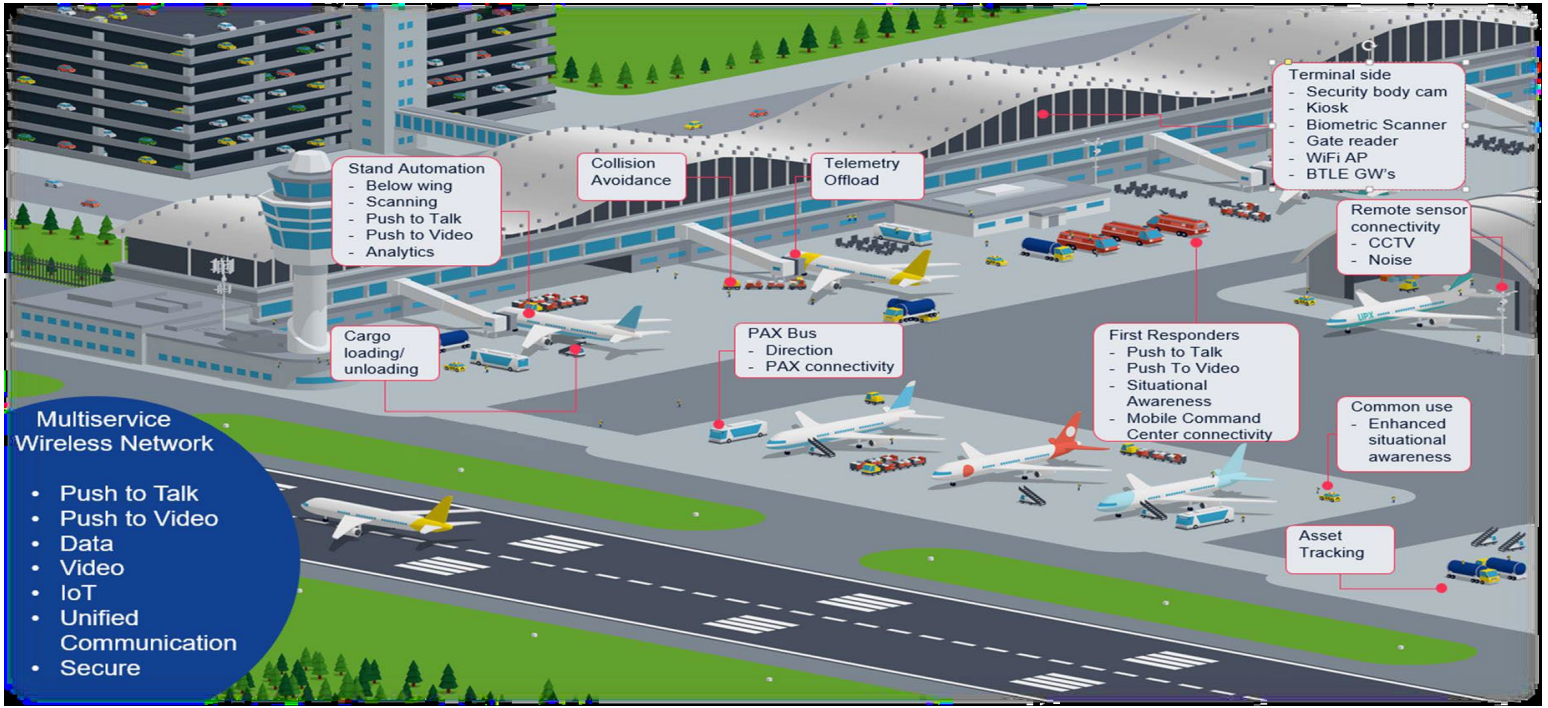
| Total Project Cost | Total COIT Funding To Date | Total Other GF Funding | Total NGF Funding | Total NGF + GF Funding | Total Spent | Remaining Balance |
|---|---|---|---|---|---|---|
| $1.5M | - | - | $1.5M | - | $0 | $1.5M |

*Funding relates to hardware and services. Infrastructure and installation not included.*

# CBRS Private LTE Benefits

| Airport | Airlines | Tenants | Passengers |
|---|---|---|---|
| Runway traffic monitoring and management | Ramp connectivity | Public safety, TSA and first-responder connectivity | Self-service and assisted check-in and bag drop |
| Critical communications | Aircraft connectivity | Emergency management | Boarding |
| Parking management, dynamic pricing and payments | Telemetry data from aircraft | Ground transportation | Passenger mobile app |
| Body cameras | Flight operations and scheduling system | Concession staff connectivity and operations | Flight, gate and baggage information display systems |
| Vehicle tracking | Passenger management and customer service | Concessions' customer service and POS | Paging and public address system |
| Baggage tracking | Stand automation | Self-serve kiosks | Customer relationships |
| Environment, safety and asset management | Staff connectivity | Digital signage | Train and buses for terminal transportation |
| Staff voice, data and video connectivity | Asset management | | Biometrics |
| Video surveillance | | | Security control |
| Passenger flow | | | Border control |
| Cargo management | | | |

# CBRS Use Cases for Airports



# CBRS Use Cases for Airports

# CBRS Use Cases for Airports

## Airside Use Cases

A private wireless network solves for multiple airside use cases.

**Below wing coverage**
At gate connectivity for improved operational continuity

**Asset tracking**
Real-time access to asset location and coordination

**Cargo**
Continuous sensor connectivity of cargo transportation and storage

**Tarmac vehicles**
Reliable real-time data on arriving/departing aircraft

**Situational Awareness**
Real-time high-def video with on prem storage and AI via MEC, more deployment options, reduce costs

**Security**
Passengers and operations are on separate and isolated networks

**Ground crew access**
Reliable and mobile voice communication for ground crews, PTT / VTT

**Improved efficiencies**
Reduce airplane turnaround time. Connect planes for data offload

# Links to CBRS “Band 48”


“Airport 5G Update: Leveraging CBRS for Smart Operations.” Airports Council International - North America, 9 June 2023, www.airportscouncil.org/2023/06/09/airport-5g-update-leveraging-cbrs-for-smart-operations/ .

“Celona Extends Zero Trust Security to Private 4G/5G Networks with Palo Alto Networks.” Www.celona.io, www.celona.io/resources/celona-extends-zero-trust-security-to-private-4g-5g-networks-with-palo-alto-networks .

“Citizens Broadband Radio Service (CBRS) for Airports.” Boingo Wireless, Inc., www.boingo.com/good-stuff/cbrs-for-airports-secure-reliable-connections-that-streamline-operations/ .

“Nokia: Nokia CBRS Executive Summary.” OneStore, onestore.nokia.com/asset/201026?_ga=2.145012656.505516730.1680699218-760558123.1680699046.

Isaac Potter
Principal Network Engineer, AIR

# Network Hardware Lifecycle Update

# Project Overview

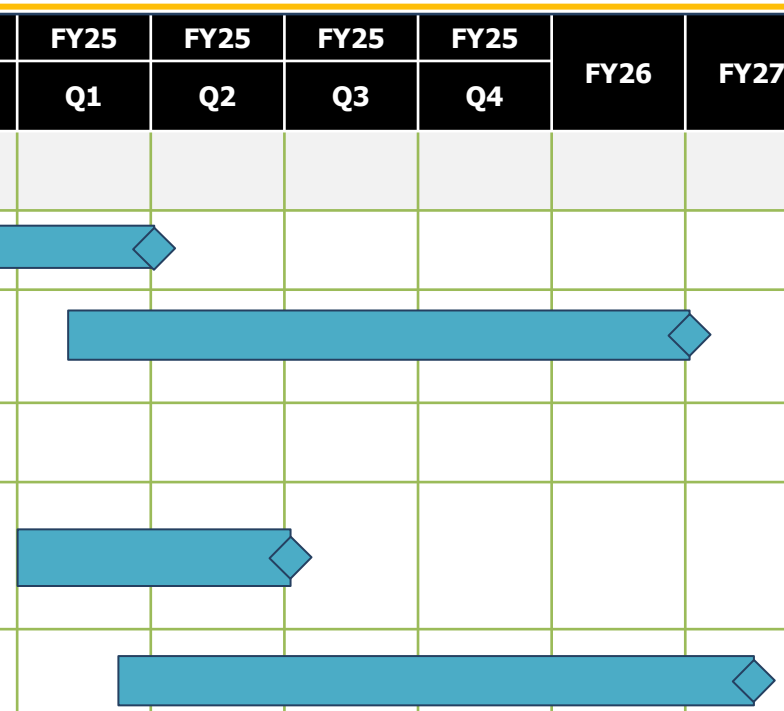
- We are embarking on our ongoing router and firewall refresh to address network hardware that is approaching End of Life and End of Support.
- SFO is currently leading the migration to transition legacy analog systems to digital IP solutions.

# Current Challenges

- The lifecycle for router and firewall products and features  currently span 7-10 years
- New technology is introduced every year that helps streamline monitoring and improve operations to become more efficient and secure, protecting SFO critical infrastructure.
- SFO ITT airport campus IP transport manager is responsible for deliver and maintaining all services that Local Exchange Carriers(LEC) could provide.
- Tenants, Airlines, Concessions and SFO departments are consistently requesting bandwidth upgrades.

# High-Level Project Plan

| Quarter/FY | Dates of Key Milestones | FY24 Q2 | FY24 Q3 | FY24 Q4 | FY25 Q1 | FY25 Q2 | FY25 Q3 | FY25 Q4 | FY26 | FY27 | FY28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phase#1 Internet Edge** | | | | | | | | | | | |
| Replace both INET edge Firewalls and Routers | March 2025 | | | | | | | | | | |
| Prioritize SFO network Routers based on future expansion projects | Feb 2027 | | | | | | | | | | |
| **Phase #2 Security Edge** | | | | | | | | | | | |
| Replace Secure LAN firewalls that support camera ns access controls systems | July 2025 | | | | | | | | | | |
| Prioritize SLAN Routers based on impact and criticality. | July 2027 | | | | | | | | | | |



# Project Risk Management Plan

| | |
|---|---|
| Potential Risk #1: Hardware delivery | Your Plan to Prepare for/Mitigate this Risk<br>We Plan to work with vendor on lead times to create an overall project plan. We will also have a Project Manager assigned to help forecasting and schedule deployment |
| Potential Risk #2: Disruption to current Operations | Your Plan to Prepare for/Mitigate this Risk<br><br>Lab Testing, Communications to stake holders, and use of maintenance windows |
| Potential Risk #3: Staffing/Capacity for Implementation, Deployment, Training | Your Plan to Prepare for/Mitigate this Risk<br>To meet project timeline, we may need additional resources from either professional services or the vendors to help with pre migration tasks |
| Consequences of Not Funding | If the hardware doesn't get replaced in a timely manner the following could occur:<br>• It could jeopardize both security at the airport and passenger travel .<br>• It could introduce staffing support challenges .<br>• Unable to meet the demands to increase bandwidth on SFO campus |

# Project Update

| Total Project Cost | Total COIT Funding To Date | Total Other GF Funding | Total NGF Funding | Total NGF + GF Funding | Total Spent | Remaining Balance |
|---|---|---|---|---|---|---|
| $18M | - | - | $18M | - | $0 | $18M |

| Risks | |
|---|---|

Isaac Potter
Principal Network Engineer, AIR

# Dynamic Network Port Security Update

# Project Overview

The last two mandatory Controller's Office security audits identified that SFO needs to implement a **Network Endpoint Security solution**.

Dynamic end point security will allow the Airport to create specific endpoint security polices to meet the needs of the business and protect critical infrastructure.

# Project Goals

- Implement a **Network Access Control (NAC)-type solution** to protect and secure airport assets, including but not limited to endpoints. NAC restricts unauthorized users and devices from gaining access to a corporate or private network and ensures that only authenticated users and compliant, authorized devices can enter the network.
- SFO ITT will evaluate various security tools to protect SFO assets and to accomplish the goal through automation.

Source: https://www.gartner.com/reviews/market/network-access-control

# High-Level Project Plan

| Quarter/FY | Dates of Key Milestones | FY24 Q2 | FY24 Q3 | FY24 Q4 | FY25 Q1 | FY25 Q2 | FY25 Q3 | FY25 Q4 | FY26 | FY27 | FY28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **NAC implementation** | | | | | | | | | | | |
| Evaluate Vendor AI/ML capabilities | Feb 2025 | | | | | | | | | | |
| Implement a small NAC solution with security policies to test @SFO | May 2025 | | | | | | | | | | |
| Prioritize and create timeline to adopt for Critical Systems | August 2026 | | | | | | | | | | |

# Project Risk Management Plan

| | |
|---|---|
| Potential Risk #1: Automation doesn't implement NAC in a seamless manner | ITT will be review multiple vendors and evaluate the solutions they offer. |
| Potential Risk #2: Staffing/Capacity for Implementation, Deployment, Training | It could be determined that the amount of staff to tune the NAC policies requires too much staff to continue to tune and operate. |
| Consequences of Not Funding | If you have additional information, please expand on any consequences, including potential impacts to your operations, of not pursuing this project. (This was addressed in Question #17 of your application.) This is helpful for COIT to weigh against potential project risks.)<br><br>The SF Controller's Office has tasked SFO with deploying an end-point security solution to protect critical assets and prevent unauthorized access. Should the Airport not deploy an endpoint solution, it will continue to fail security audits leaving unauthorized access open to vulnerabilities. |
| Alternate Plans | Failure to fund will limit our ability to monitor and remediate unauthorized port access. This could have a impact to airport operations an event to a cyber breach . |

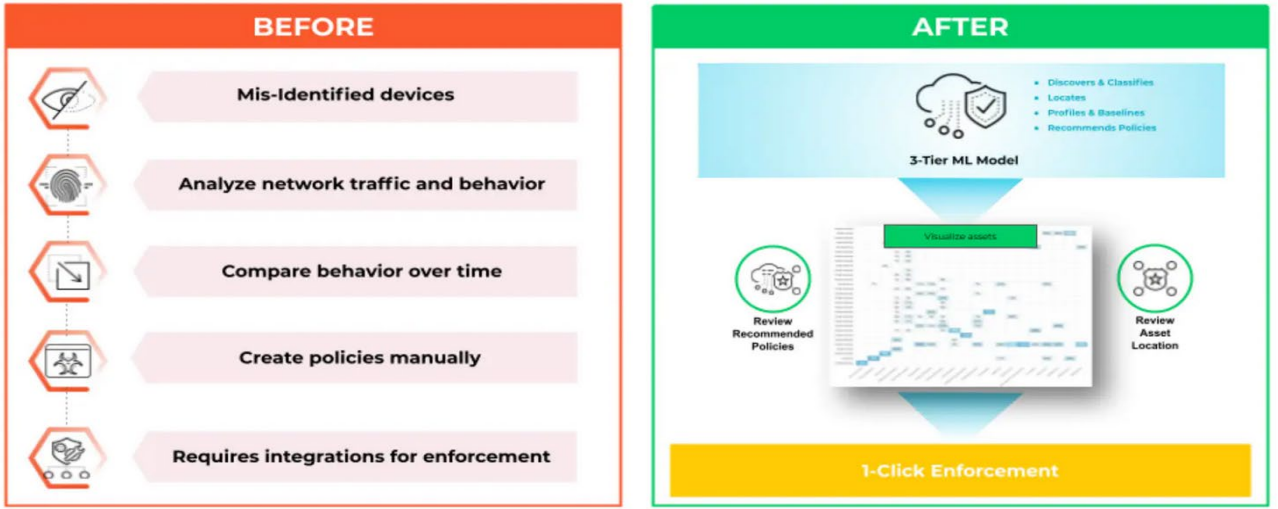
# Project Update

| Total Project Cost | Total COIT Funding To Date | Total Other GF Funding | Total NGF Funding | Total NGF + GF Funding | Total Spent | Remaining Balance |
|---|---|---|---|---|---|---|
| $1.04M | - | - | - | - | $0 | $1.04M |

| Risks | |
|---|---|

# Vendors that provide NAC solutions

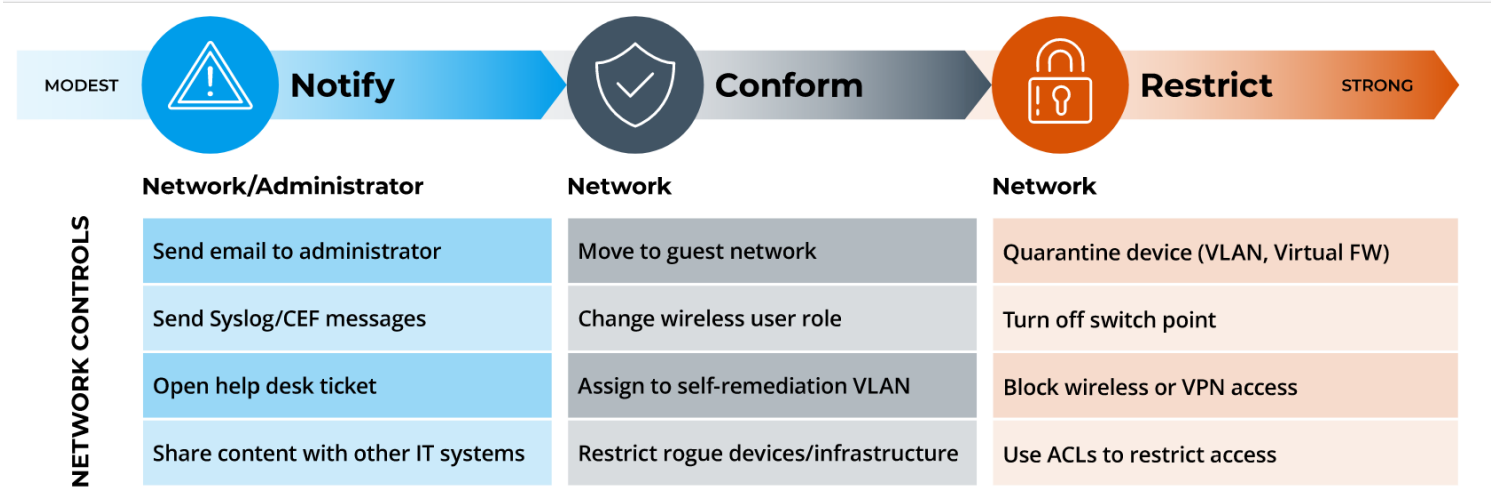
## Palo Alto Networks




Source: https://www.paloaltonetworks.com/cyberpedia/replacing-vpn-and-nac-with-ngfw-for-endpoints

# Vendors that provide NAC solutions

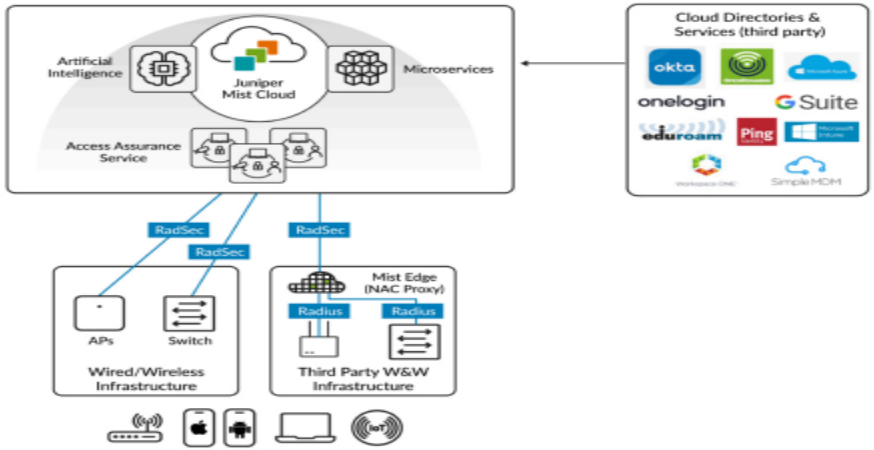
## Forescout




Source: https://www.forescout.com/solutions/network-access-control/

# Vendors that provide NAC solutions

## Juniper Mist AI Access Assurance




Source: https://www.juniper.net/us/en/products/cloud-services/access-assurance-datasheet.html

# Item Number 7

Review the remaining schedule for Department presentations (March - April)

Discussion

# Budget & Performance Presentation Calendar (10:00AM-12:00PM)

| Week of March 15 | | |
|---|---|---|
| | | |
| | **Infrastructure: Network/ Data Centers and Risk Management** | |
| | | |
| (10:10AM - 10:30AM) | DEM | *Radio Project - Financing |
| (10:30AM - 10:50AM) | AIR | Citizens Broadband Radio Service (CBRS) Private LTE Cellular |
| (10:50AM - 11:10AM) | AIR | Enterprise Infrastructure Information Management and Integration |
| (11:10AM - 11:30AM) | AIR | Network Hardware Lifecycle |
| (11:30AM-11:50AM) | AIR | Dynamic Network Port Security |
| | | |

| Week of March 22 | | |
|---|---|---|
| | | |
| | **Resource Management & Risk Management & Records Management** | |
| | | |
| (10:10AM - 10:30AM) | ADM | *Quality & accessibility funding for migration of City websites |
| (10:30AM - 10:50AM) | TIS | Disaster Recovery for Critical City Applications |
| (10:50AM - 11:10AM) | DHR | Disaster Service Worker Management System |
| (11:10AM - 11:30AM) | POL & DAT | Digital Evidence Management System (DEMS) |
| (11:30AM-11:50AM) | TTX | *Empty Homes Tax |
| | | |

# Budget & Performance Presentation Calendar (10:00AM-12:00PM)

| | | |
|---|---|---|
| **Week of March 29** | | |
| | | |
| | **Major IT Project** | |
| | | |
| (10:10AM - 10:30AM) | DEM | *Computer Aided Dispatch Replacement Project |
| (10:30AM - 10:50AM) | ASR | Property Assessment and Tax Systems Replacement |
| (10:50AM - 11:10AM) | TIS | *VOIP and LAN Modernization |
| (11:10AM - 11:30AM) | TTX | Business Tax Application |
| (11:30AM-11:50AM) | POL | NIBRS-Compliant RMS |
| | | |
| | | |
| **Week of April 5** | | |
| | | |
| | **Customer & Case Management** | |
| | | |
| (10:10AM - 10:30AM) | ADM | Digital building permit application platform (Phase 1 - PTS/Accela replacement) |
| (10:30AM - 10:50AM) | ADM | Permitting Database Replacement |
| (10:50 AM - 11:10AM) | SHF | *New Jail Management System |
| (11:30AM-11:50AM) | DAT | Electronic Subpoena Solution |
| | | |

# Adjournment