

SWIM Cloud Distribution Service

Presented to: ATIEC Participants

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WHAT IS SWIM?

System Wide Information Management (SWIM) is the information-sharing platform that allows members of the aviation community to access the specific information they need, in the way they need it, to facilitate an innovative and efficiently run National Airspace System (NAS).

What does SWIM provide for the Aviation community?

- SWIM offers a single point of access for real-time, relevant, and reliable aeronautical, flight, and weather information so users can respond faster and more accurately.
- SWIM provides the standards and policies to achieve interoperability across aviation systems.



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How much data gets passed through SWIM?

1.6 Trillion

Messages Per Day

568 Trillion

Messages Per Year

Estimated 4.3 TB

Data per Day



SWIM BENEFITS



Creates collaboration opportunities across borders.



Helps to reduce costs & increase agility, do more with less.



Drives innovation to create new and cutting edge tools and applications.



Facilitates an innovative and efficiently run airspace.



Increases efficiency with which FAA shares data and users obtain data.



Supports development and adoption of a global aviation language.



Provides enterprise-level capabilities.



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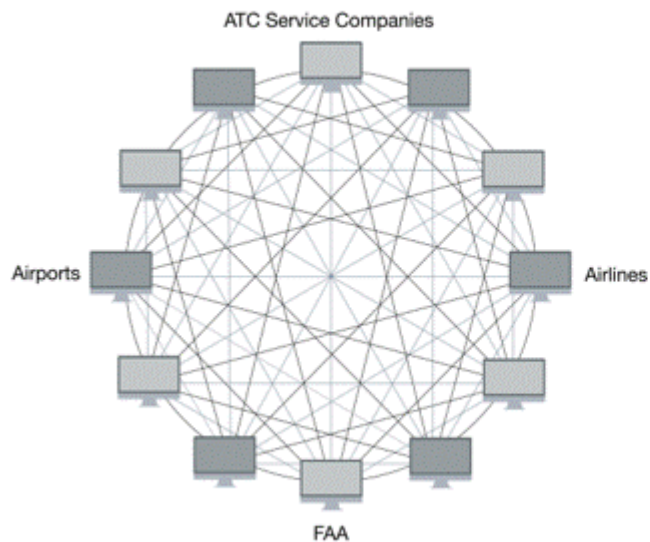
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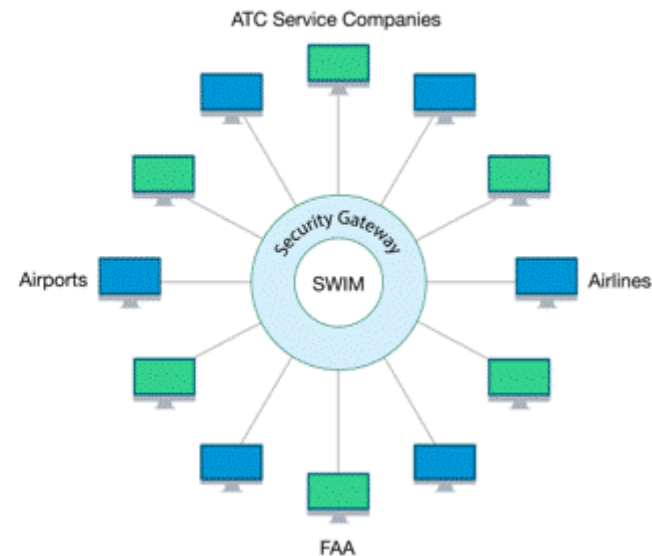
What was life like before SWIM?

In the past, the state of the art for connecting two systems required a **fixed network connection and custom, point-to-point, application-level data interfaces**. Current National Airspace System (NAS) operations depend upon these legacy information systems with some systems entirely unconnected.

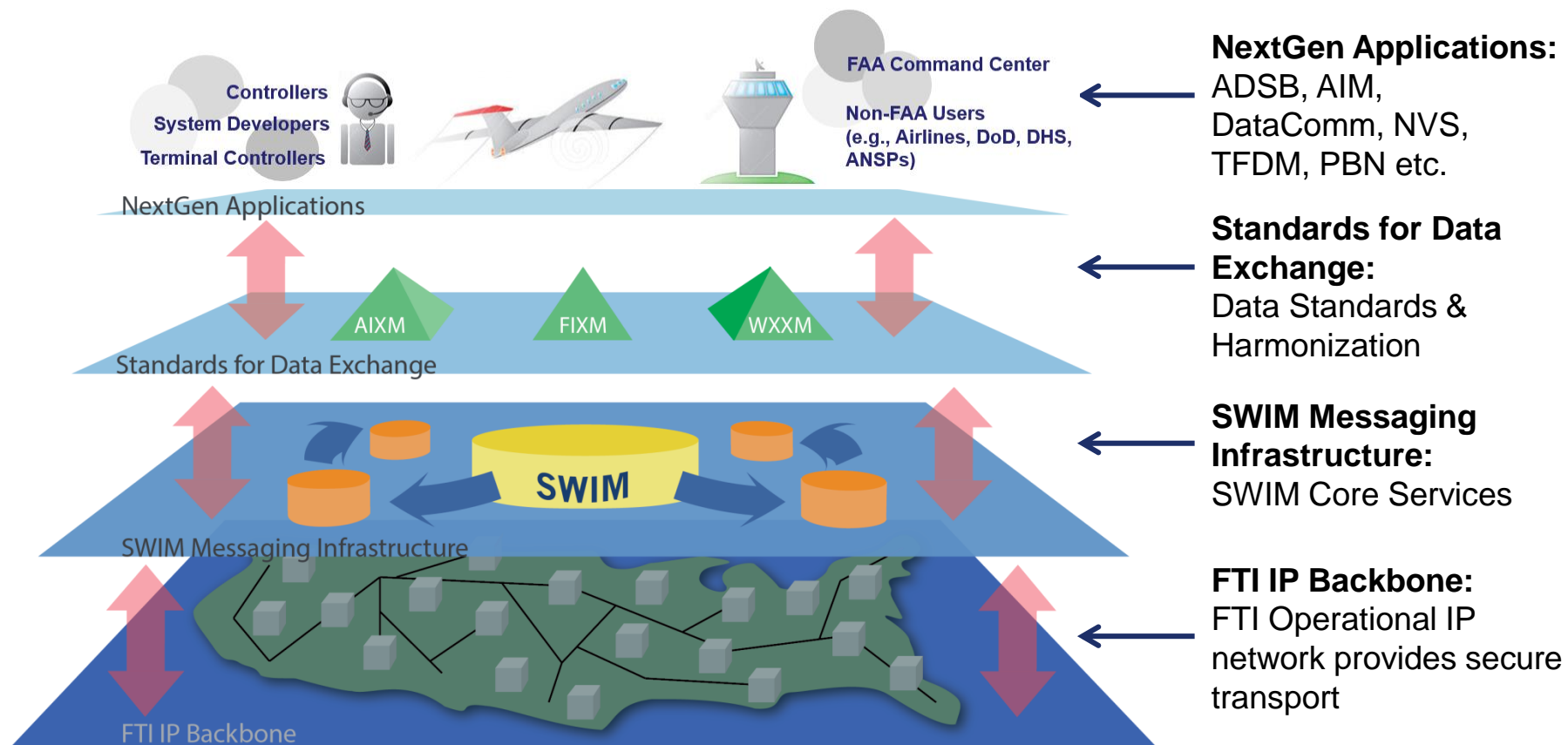
Before SWIM



After SWIM



SWIM is Built on Engineering Principles and Infrastructure



SWIM Services by Phases of Flight

Departure

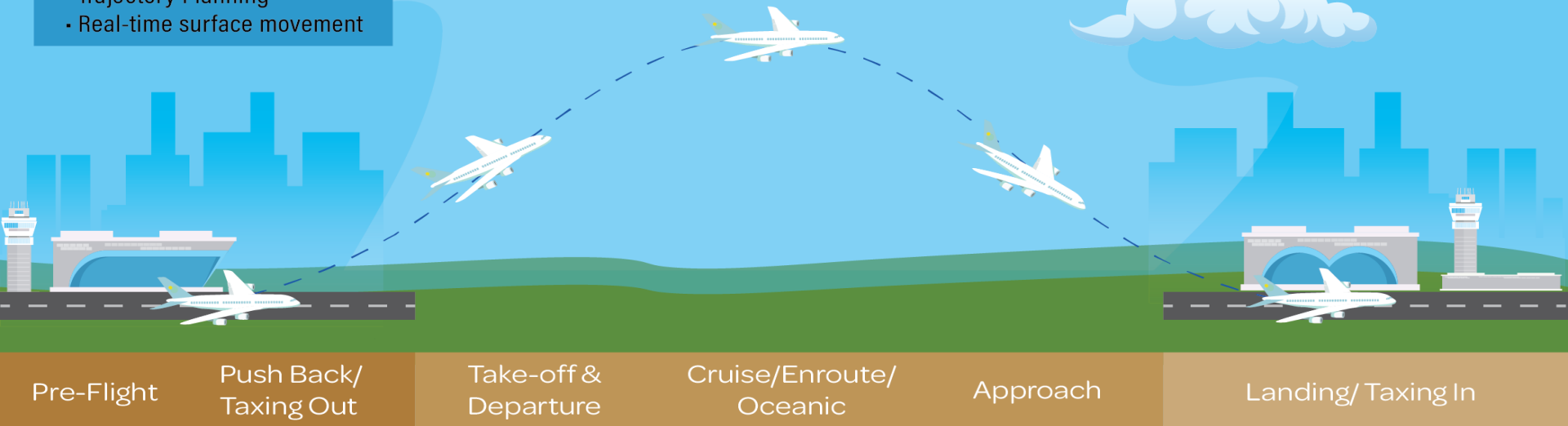
- Pre-Departure Flight-Planning
- Current and forecast weather information
- NOTAMS
- Flight Restrictions
- Flow Information
- Trajectory Planning
- Real-time surface movement

En-Route

- Flight re-route information
- Current and forecast weather information
- Updates to NOTAMS
- Flight restrictions changes
- Flow information changes

Arrival

- Arrival metering information
- Real-time surface movement
- Airport surface movement
- Current weather information



System Wide Information Management

STDDS FNS SFDPS ITWS WMSCR

TBFM TFMS SFDPS FNS

STDDS SFDPS ITWS

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SWIM Data Sets



Weather Data

- **Integrated Terminal Weather Service (ITWS):** Provides specialized weather products in the terminal area
- **SWIM Terminal Data Distribution System (STDDS):** Provides Runway Visual Range data (RVR) including visual runway range, trend information and runway edge lighting
- **Common Support Services- Weather (CSS Wx):** the single provider of weather data, products, and imagery within the National Airspace System (NAS)
- **Weather Message Switching Center Replacement (WMSCR):** Provides National Weather Service (NWS) textual aviation weather products, altimeter data, and Pilot Reports (PIREPs)



Flight and Flow Data

- **Traffic Flow Management System (TFMS):** Provides flight data and flow information
- **SWIM Terminal Data Distribution Systems (STDDS):** Collects and publishes flight data from 150+ airports and 100+ TRACONS; Provides Flight Plan, Tower Departure Clearance data, and DATIS data.
- **Time Based Flow Management (TBFM):** Provides Aircraft, Airport Configuration and Metering Status
- **SWIM Flight Data Publication Service (SFDPS):** Provides flight plan and flight plan updates to clients for filed and active flight plans
- **Terminal Flight Data Management (TFDM):** Decision Support Tools for Airport and Terminal Airspace



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SWIM Data Sets



AERONAUTICAL

Aeronautical Information

- **Aeronautical Information Management (AIM) Federal NOTAMS Distribution System:** Provides notification and status via digital Notices to Airmen (NOTAM)
- **AIM Special Activity Airspace status and updates**
- **AIM Modernization Segment Two:** Modernizes the ingestion, integration, management, maintenance, and distribution of AI by establishing the Aeronautical Common Services (ACS) and a one-stop-shop portal

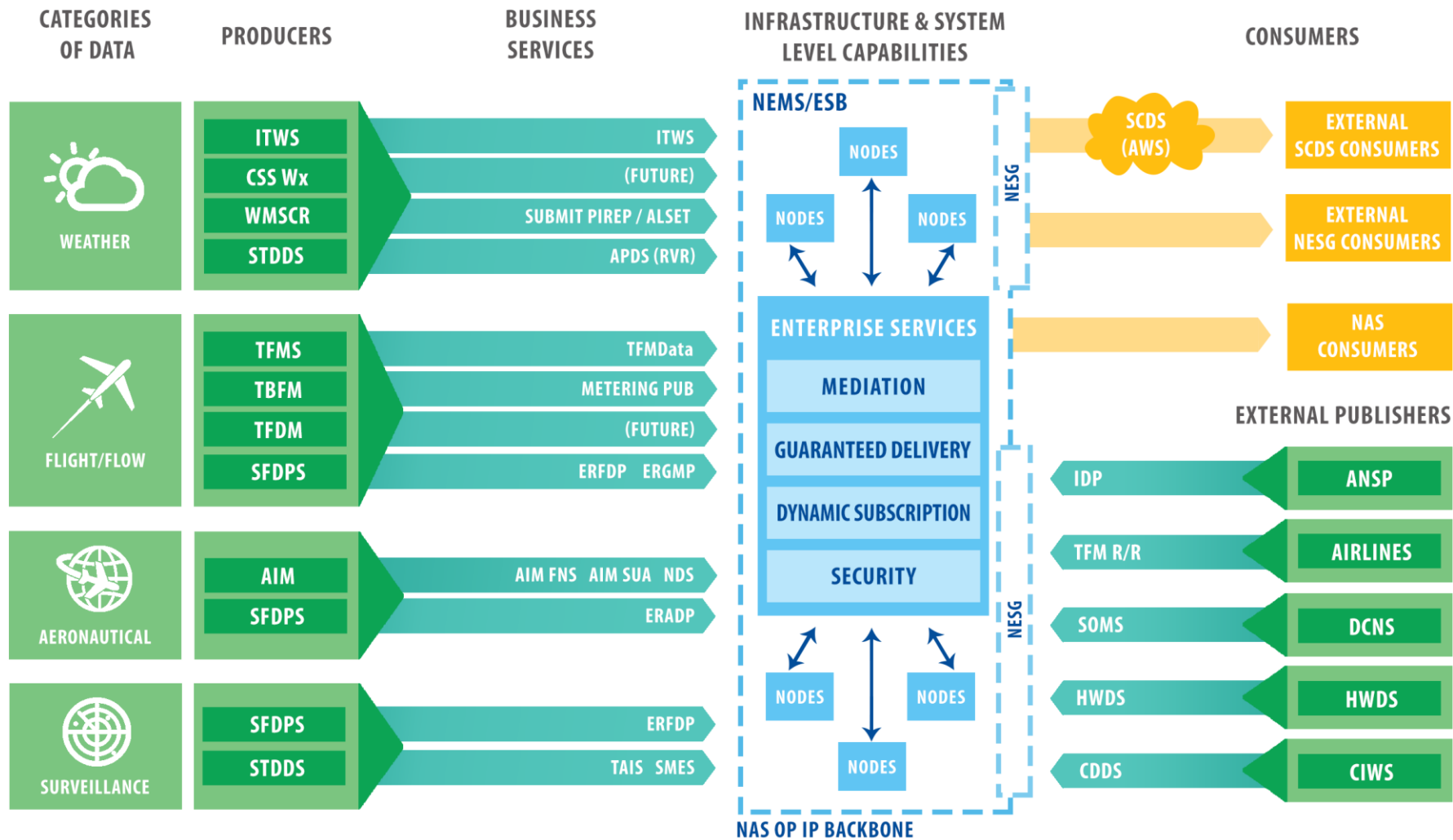


SURVEILLANCE

Surveillance

- **SWIM Terminal Data Distribution System (STDDS):** Collects and publishes track data from over 200 airports and 100 Terminal Radar Approach Control Facilities (TRACON) including terminal and surface tracks and surface movement events.
- **SWIM Flight Data Publication Service (SFDPS):** Collects and publishes track data from 20 Air Route Traffic Control Centers (ARTCC) covering the lower 48 continental states.

SWIM Business Service



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Who is Using SWIM Today?

181 Total Internal and External Consumers

*Updated as of May 21, 2019



Airlines (12)



Industry (115)



Airports, FAA Facilities,
& FAA Programs (37)



Academia &
Research (2)



Non FAA Government
Entities (15)

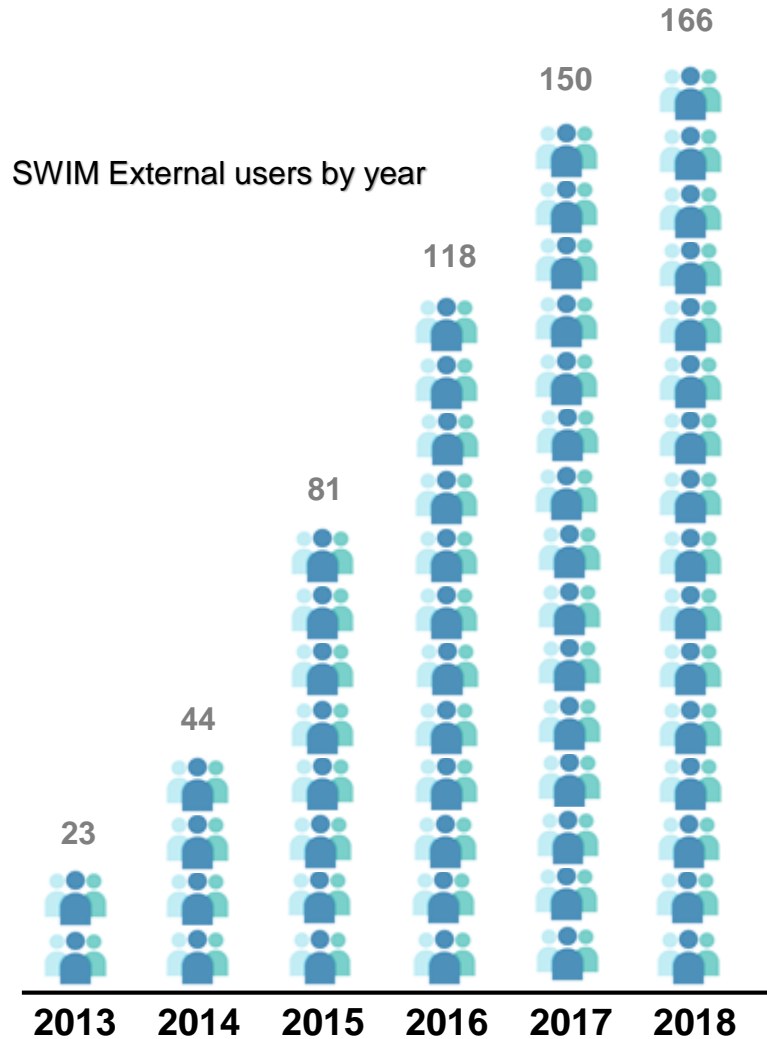


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Increase in External Customer Demand



*2018 number as of August 2018

Challenge: External Consumer Demand:

- 2013: Executive Order - Open Data Policy – 23 External Consumers
- 2016: FAA External Data Access initiative (EDAi)
- 2018: Currently 166 External consumers with 90 on-ramping activities in-progress
- Future producer programs will continue to draw in more interest

Impact:

- Growing number of external users straining gateway capacity
- 400+ consumer services, estimated at over 4.3 terabytes of data consumed per day

Solution:

- Move external non-aviation partners to a cloud solution



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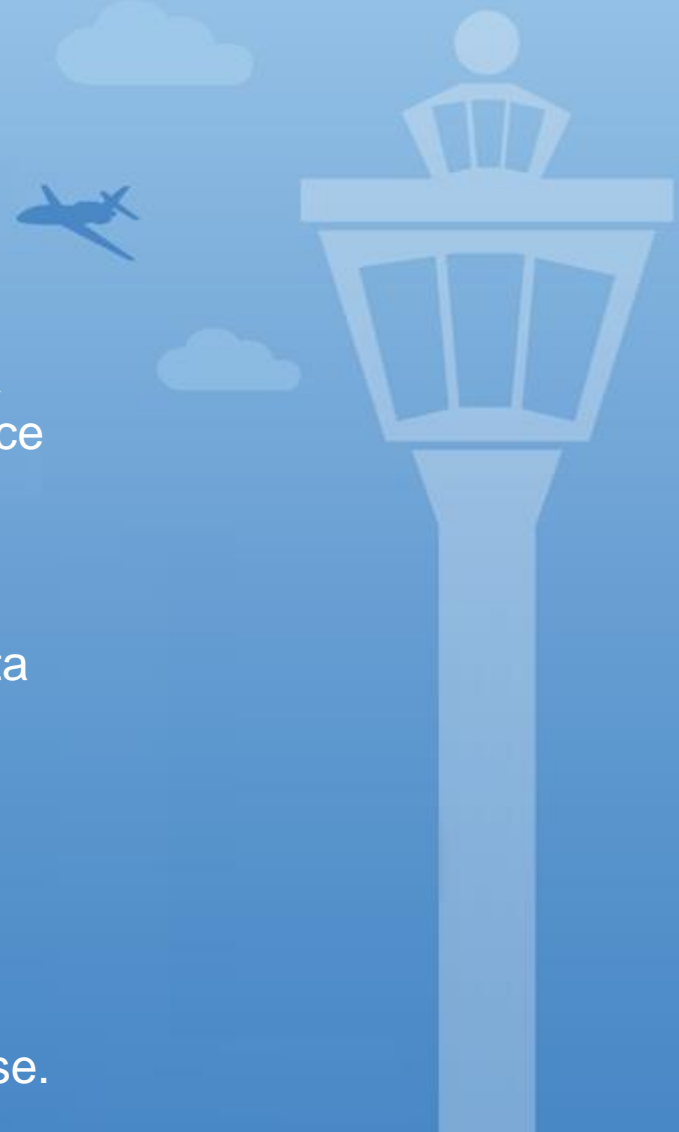


WHAT IS SCDS?

SCDS is a publicly accessible cloud-based infrastructure dedicated to providing near real-time SWIM data to the public via Solace JMS messaging. This service includes access to the same public data that is currently offered via the NAS Enterprise Service Gateway (NESG) SWIM implementation.

SCDS provides data users (a.k.a. consumers) with a simplified, quick method of accessing FAA SWIM data in comparison to the more complex process of connecting to the NESG.

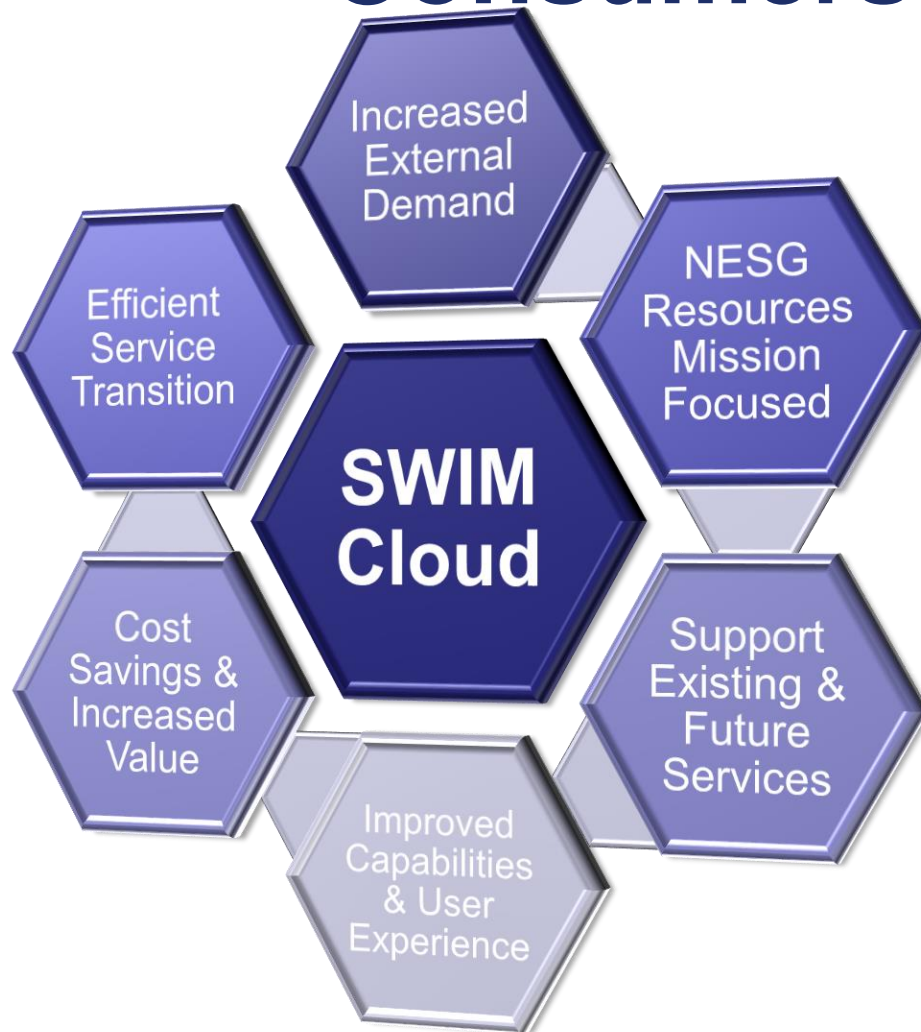
All product(s) provided by SCDS have been pre-approved for public release by the National Data Release Board (NDRB) and are intended for non-National Airspace System (NAS), non-Operational use.



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SWIM – SCDS Strategy: Driving Consumers to the Cloud



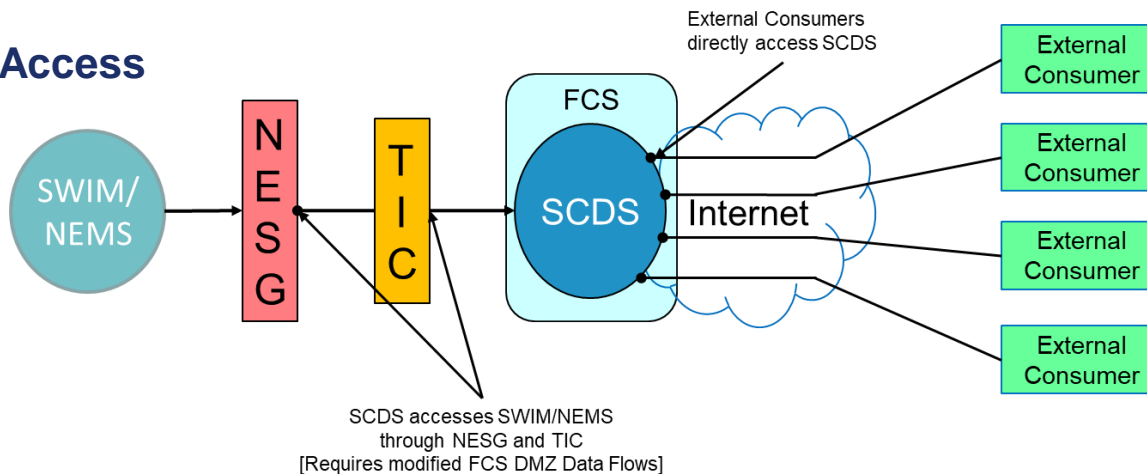
- Address increasing external demand, while reducing bandwidth/impact to NESG, NEMS, and TIC
- Limit NESG exposure to external users
- User “criticality” determines method of data access (NESG vs. SCDS)
- Improved user experience
- Lower cost for service delivery through automation
- Platform for growth in services
- Smooth transition for users

SCDS – Messaging Service

Sustained success of SWIM has led to continued growth of SWIM community

- Cloud Based Infrastructure
- Service Management
- User Self Service
- Service Status
- Messaging Service
- Help Desk Support
- Security Controls
- SWIM Governance
- Future Service Enhancements and Growth

SCDS Access



SCDS Experience

Help Desk Support:
Dedicated Help Desk

Managed Failover:
Redundant connections and cloud technology, to create a reliable environment

Security Controls:
Utilizes TLS connection technology

SCDS

Self-service Provisioning: Ability to create connections in real time

Service Management: Fine-grained filtering ability

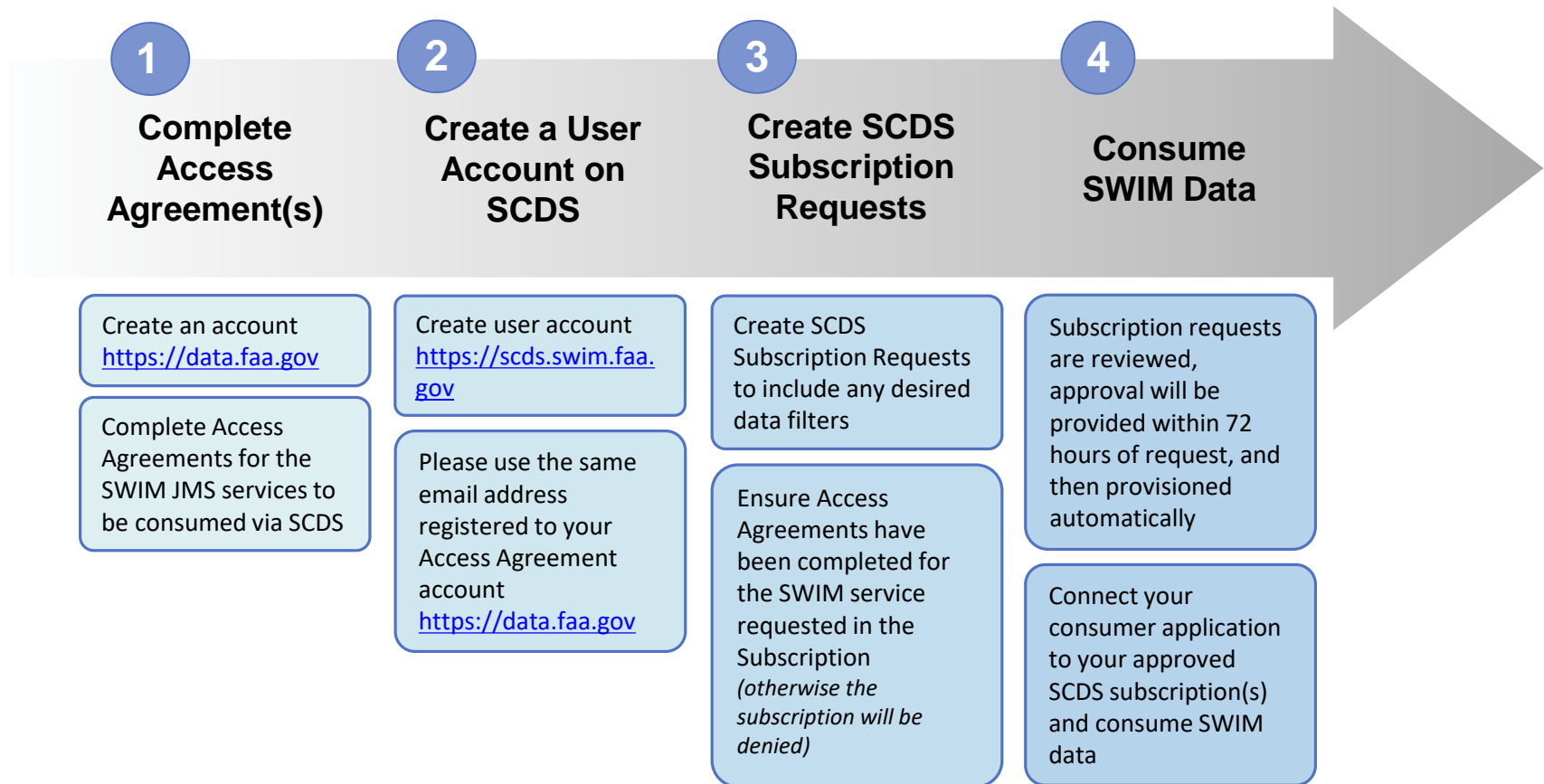
Subscription Level Metrics: Detailed view of message rates, bandwidth and other metrics

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SCDS On-Boarding Process

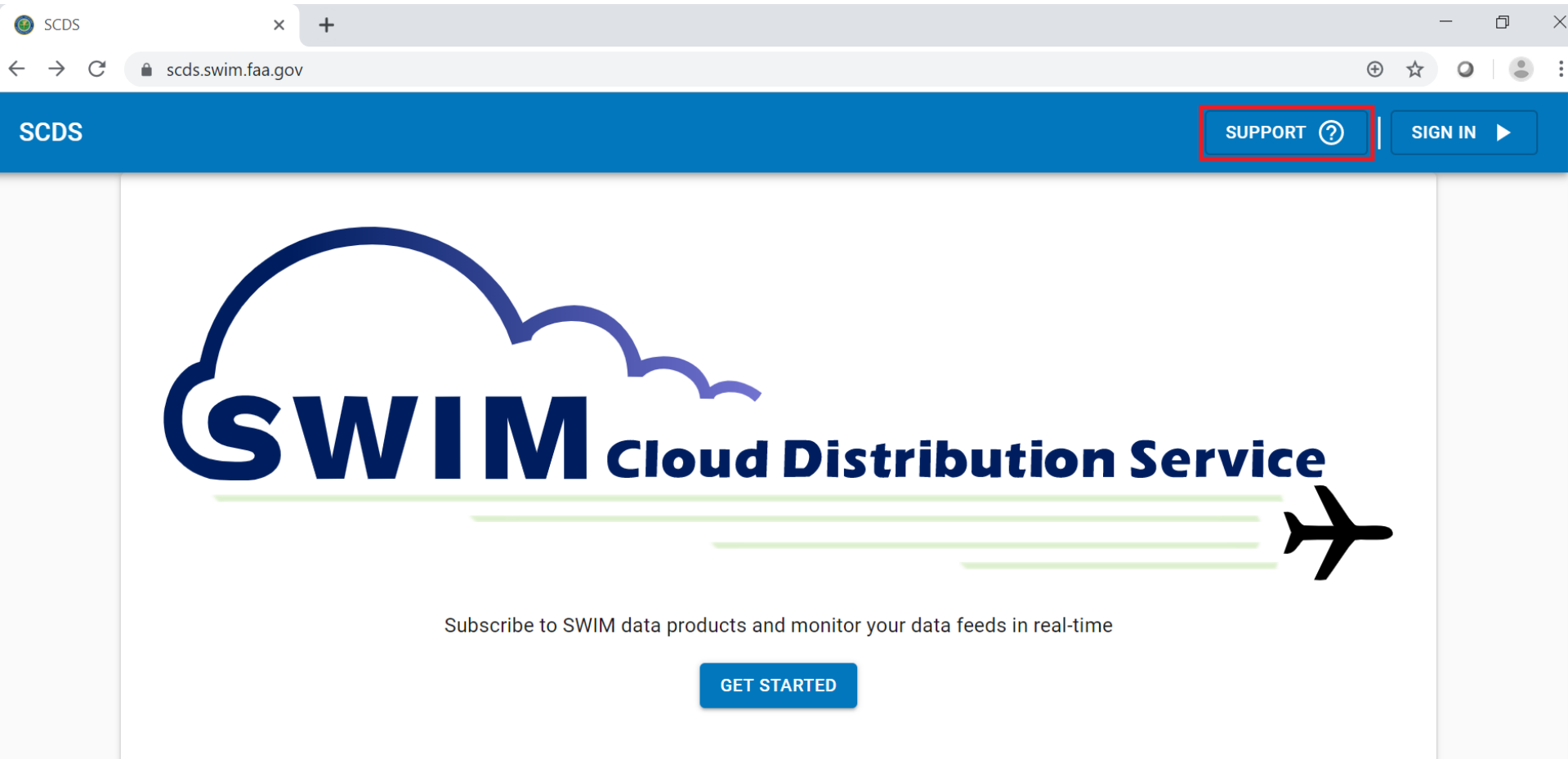


Consumer Services: NESG vs SCDS

CONSUMER SERVICES	NESG	SCDS	Notes
Data Request	✓	✓	SCDS expedites data request process
Data Access Approval	✓	✓	SCDS expedites data release process
Self Provisioning		✓	
No Service Acceptance Tests Required (L3, SA, etc.)		✓	SCDS does not require SAT
Sensitive Data Availability	✓		Sensitive data will not be shared via SCDS
Help Desk Resolution	✓	✓	Enterprise Control Center (ECC) provides 24/7/365 resolution
Web Services	✓		SCDS does not currently support web services
Sample Data Availability	✓	✓	NESG request is manual, SCDS is automated
Jumpstart Kit Availability	✓	✓	NESG available on request, SCDS is self-service
Data Metrics / Statistics		✓	
SWIM Service Status (self-service)		✓	
Client Data Compression	✓		Compression out of SCDS is not available at this time
Client Data Encryption (required)	VPN	SSL/TLS	

SCDS Website

scds.swim.faa.gov



The screenshot shows a web browser window with the address bar displaying "scds.swim.faa.gov". The page has a blue header with the "SCDS" logo on the left and two buttons on the right: "SUPPORT" with a question mark icon and "SIGN IN" with a right-pointing arrow. The main content area features a large logo for "SWIM Cloud Distribution Service". The "SWIM" part is in a large, bold, blue font, with a stylized blue cloud shape above it. To the right of "SWIM" is the text "Cloud Distribution Service" in a smaller, bold, blue font. Below this text are three horizontal green lines of increasing length, and a black silhouette of an airplane is positioned at the end of the longest line. Below the logo, the text "Subscribe to SWIM data products and monitor your data feeds in real-time" is centered. At the bottom center is a blue button with the text "GET STARTED".

SCDS

SUPPORT ? SIGN IN ►

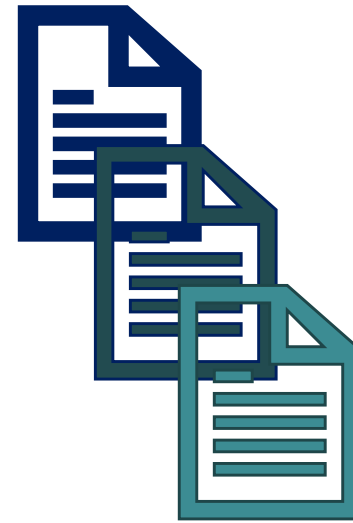
SWIM Cloud Distribution Service

Subscribe to SWIM data products and monitor your data feeds in real-time

GET STARTED

Available SCDS Documentation

- Refer to the SCDS Support page for additional information
 - FAQs
 - General
 - Data
 - Technical
 - Accessing SCDS
 - User Guide
 - Includes on-boarding process



SCDS Dashboard

Users

57

Users



20

Pending Subscriptions



12

Connected Users



128

Approved Subscriptions



System (last 24 hours)

99.04M

Ingress Messages

275.41M

Egress Messages

353.93GB

Ingress Data

1.76TB

Egress Data

Products



STDDS



up

679.44

msg/sec

5

Pending

33

Approved

12

Connected



ITWS



up

25.01

msg/sec

0

Pending

17

Approved

6

Connected



TFMS



up

20.83

msg/sec

12

Pending

22

Approved

12

Connected



TBFM



up

349.38

msg/sec

0

Pending

12

Approved

3

Connected



FDPS



up

69.11

msg/sec

1

Pending

25

Approved

8

Connected



AIM FNS



up

0.26

msg/sec

2

Pending

19

Approved

7

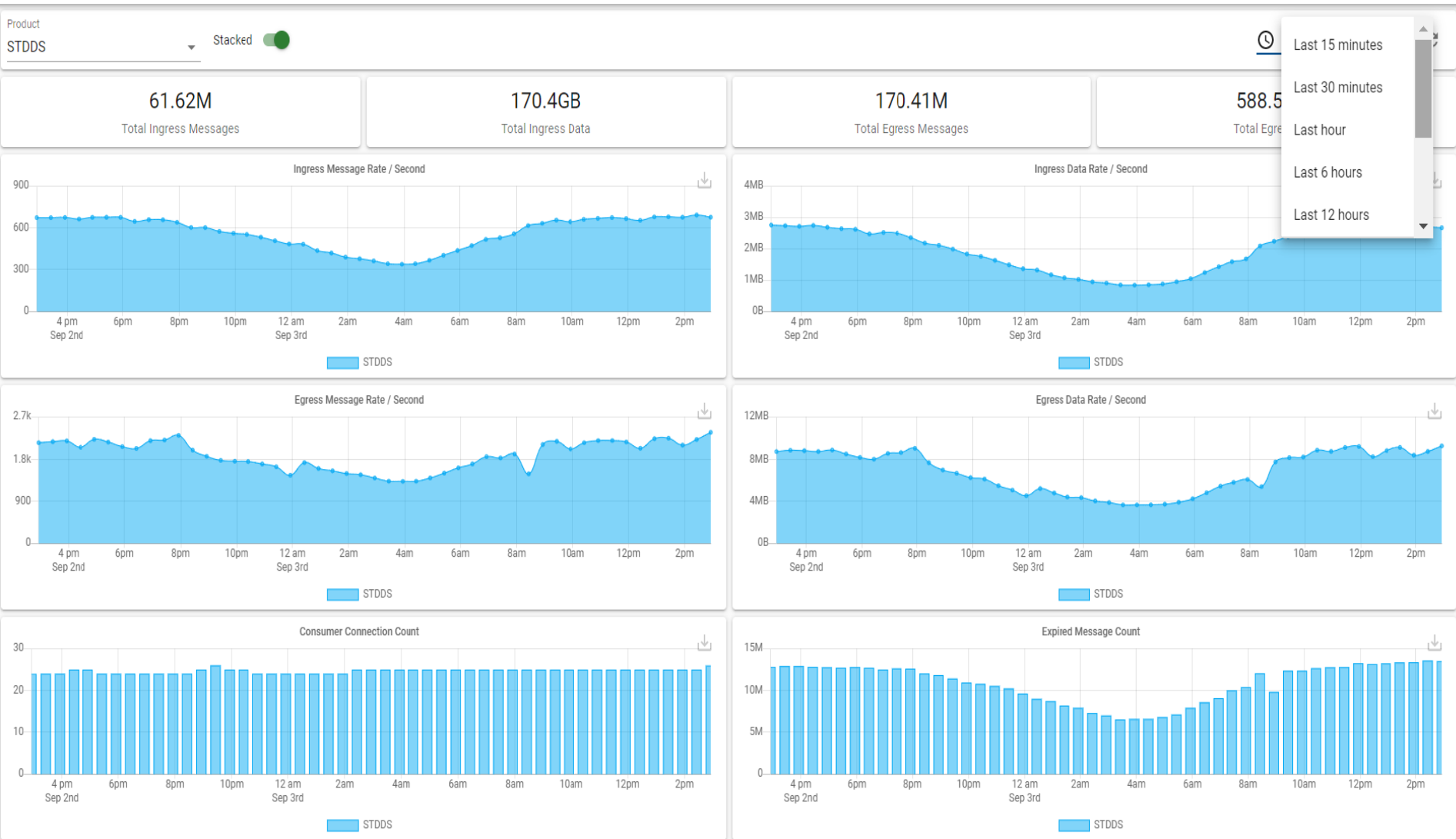
Connected



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SCDS Dashboard



SWIM Industry FAA Team (SWIFT)

Purpose:

- SWIM Industry FAA Team (SWIFT) is a joint government/industry initiative chartered to improving information exchange among aviation community stakeholders, using SWIM services

FAA/Government: FAA Co-Chair leadership

- Enable access to FAA information, delivered as business services, in forms appropriate for use by NAS stakeholders
- Provides information services that promote common situational awareness among participating stakeholders
- Distribute processed data to all government agencies and industry

•Industry partners: Industry Co-Chair leadership

- NAS stakeholders benefiting from NAS information sharing
- Participants having subject matter expertise in airline, airport or FAA operations, processes, procedures and related systems
- Members evaluated based on benefit provided to NAS, as a whole



Questions?



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