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NAS Performance Data in Near Real Time

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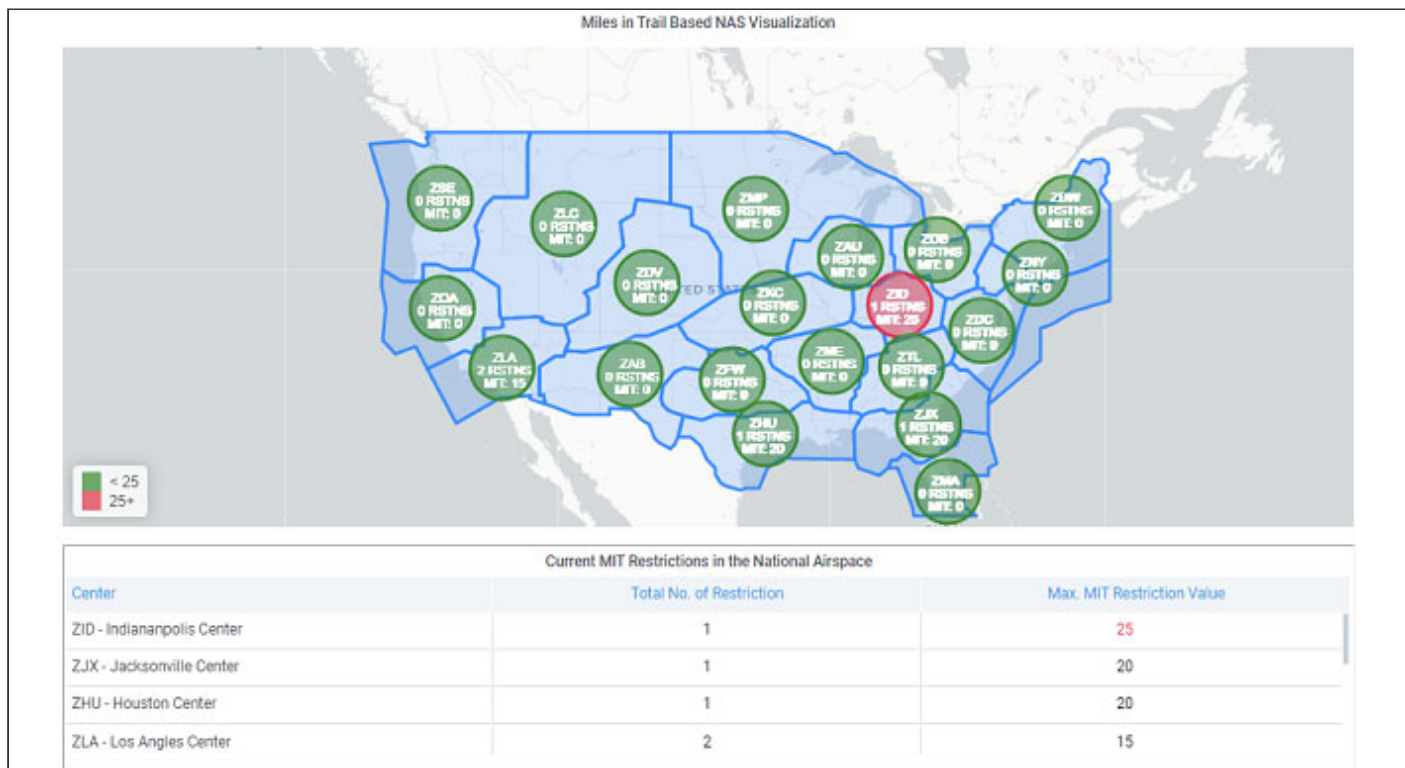
**Hosted this week by System Operations Services**

System Operations Services' Office of Performance Analysis developed and launched a first-of-its-kind decision-support dashboard providing air traffic managers, traffic management officers, strategic planners and other stakeholders with national airspace system performance metrics in near real time.

To assess performance, the Command Center and air traffic facilities throughout the NAS have relied on post-operational reports delivered the next day through two reporting platforms, the Aviation System Performance Metrics (<https://aspm.faa.gov/>), or ASPM, and the Operations Network. Such reporting tools are not designed to monitor performance metrics during the day of operation in the NAS.

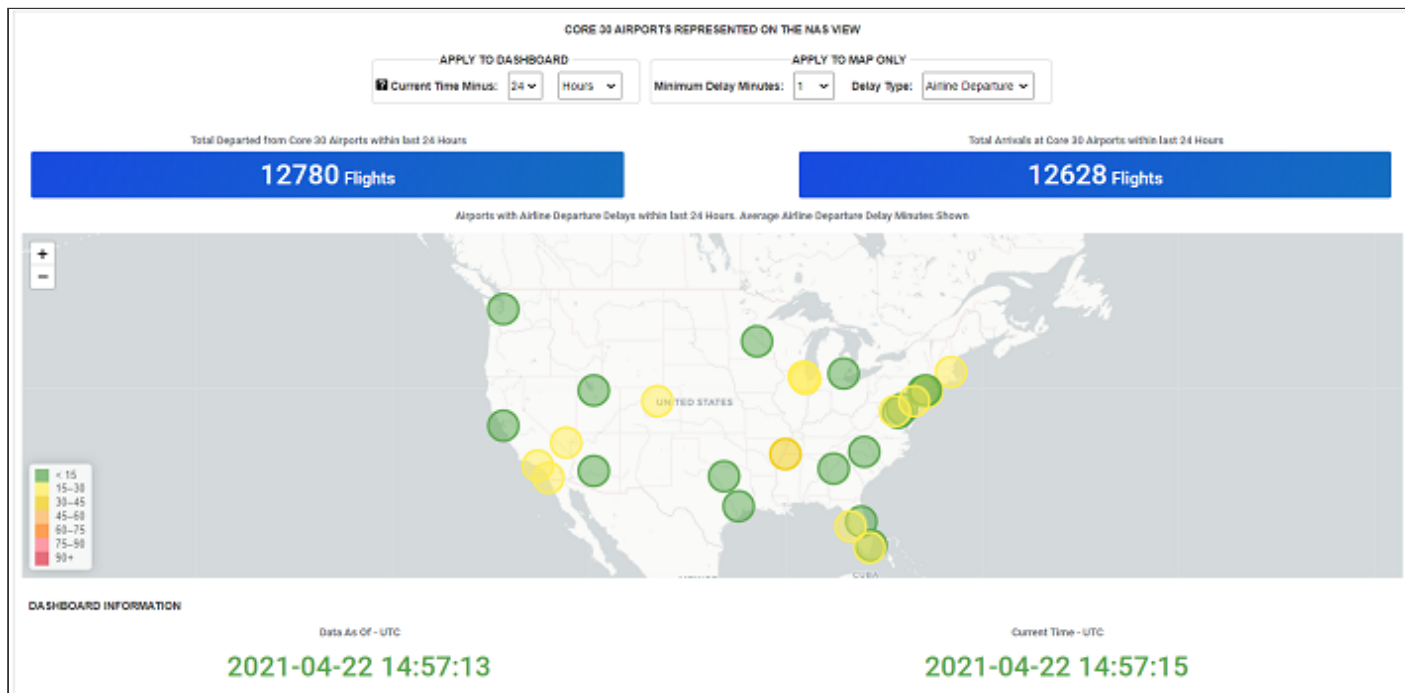
Launched April 1, the Near-Real Time Performance Metrics Dashboard solves that problem by transforming live, streaming data from the System Wide Information Management (https://www.faa.gov/air_traffic/technology/swim/), system, or SWIM, into actionable, near-real-time performance metrics. For most data points on the dashboard, information is displayed within seconds of being received.

The dashboard utilizes the data analytics and visualization capabilities of Grafana and the NAS Data Warehouse capability to fuse flight data from SWIM sources, including the Traffic Flow Management System (https://www.faa.gov/about/office_org/headquarters_offices/ang/offices/tc/library/Storyboard/detailedwebpages/tfms.html), the Flight Data Publication Service (https://www.faa.gov/air_traffic/technology/swim/sfdps/#:~:text=SFDPs%20Overview,%2C%20research%2C%20and%20other%20activities.) and the Terminal Data Distribution System (https://www.faa.gov/air_traffic/technology/swim/stds/#:~:text=SWIM%20Terminal%20Data%20Dis



Traffic Management Initiative view

tribution%20System%20(STDDS)%20converts%20legacy%20terminal%20data,Enterprise%20Mesaging%20Service%20(NEMS).)— covering all altitudes of the NAS. The dashboard generate metrics as they relate to arrival and departure delays, surface activity and demand at airports across the country.



National Airspace System view

The dashboard enables users to gauge NAS performance at a system level to identify emerging issues and drill down further at a facility level to assess actual performance across several performance metrics by phase of flight:

- Airport departure delay – the difference between the actual taxi-out time (gate out to wheels off the runway) and a historical baseline taxi-out time;
- Airline departure delay – the difference between the actual wheels-off time and the flight operator’s (i.e., airline) planned wheels-off;
- Airborne delay – the difference between the actual wheels-on landing and an FAA-modeled estimated time of arrival;
- Taxi-in delay – the difference between the actual taxi-in time (wheels-on to gate in) and a historical baseline taxi-in time;
- Surface activity – plots of current and projected departure and arrival demand versus called rates by 15-minute bin; and
- Miles-in-trail restrictions – the number of restrictions by center and maximum miles-in-trail values.

The dashboard’s two-hour surface demand forecast against called-rate capacity allows air traffic management decision-makers to monitor how quickly delays accrue on the surface. The dashboard captures that data in near real time, giving decision-makers the foresight they need to make strategic adjustments.

“With this info, we can assess how well we’re performing against an operational plan during the day of operation,” said Bryan Baszczewski, manager of System Data and Infrastructure, who oversaw the development and deployment of the web-based tool. “Our system collects data from various sources, integrates that data at the flight level and derives performance metrics in real time.”



Facility view

“Because it’s using this streaming data, we’re seeing things pop up in the tool quicker than some of the other tools that exist today which supports performance analysis during the day of operations,” said Greg Schaefer, program manager of the NAS Data Warehouse and ASPM, who led the implementation of the dashboard.

The dashboard team – comprising the visualization, validation and verification, and implementation sub-teams – worked efficiently in a virtual environment to achieve the April 1 activation of the dashboard after starting the development in September 2020.

While in the early stages of deployment, the team is already receiving positive feedback from users. “Users are saying that the data we are displaying does match with other sources, so not only are we quicker, but we are consistent, which is good because that builds confidence in the tool,” said Macy Rentz, an operations research analyst who led the validation and verification of the dashboard.

Derek Robinson, program manager of Strategic Programs, led the visualization team and worked closely with users to understand their needs and requirements. Robinson gathered those details from users to ensure the platform is user-friendly and well-organized so the user can filter and access data easily.

“In looking at issues as they occur in the NAS, users can start making decisions to head off a problem and get ahead of issues before they become a big problem,” Robinson said. “Also, the way the team built the dashboard is in a modular way, so as other needs arise, it could have more capabilities and features that could benefit the user.”

This is the first release of the NRT Performance Metrics Dashboard, with many more features and improvements planned. The dashboard is available in the Office of Performance Analysis’ Traffic Management Efficiency toolbox – a portal designed to consolidate multiple air traffic management efficiency and analytic dashboards developed by the Office of Performance Analysis into a one-stop shop.

This toolbox provides links to over 30 dashboards and informational sites used by air traffic managers, traffic management officers and other stakeholders in support of planning, review and decision-making.

Please visit the [NRT Metrics Dashboard \(https://tools.aspm.faa.gov/dashboard/NAS_View.html?\)](https://tools.aspm.faa.gov/dashboard/NAS_View.html?) under the “[Day of Operations Tools and Dashboards \(https://tableau.faa.gov/t/_AJRGPerfAnalysis/views/TMEfficiencyToolBox/DayofOpsToolsandDashboards?%3Aembed=y#1aspm\)](https://tableau.faa.gov/t/_AJRGPerfAnalysis/views/TMEfficiencyToolBox/DayofOpsToolsandDashboards?%3Aembed=y#1aspm)” using your Google Chrome browser.

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