Traffic Flow Management

Your source for Business Aviation's pre-flight and in-flight services

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Flight Support Services

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Traffic Flow Management

The mission of traffic management is to balance air traffic demand with system capacity to ensure the maximum efficient utilization of the NAS.
TRAFFIC MANAGEMENT PERSONNEL ANALYZE DATA BETWEEN THE PRESENT AND SEVERAL HOURS IN ADVANCE TO DETERMINE A PLAN FOR MANAGING DEMAND WITH CAPACITY
Traffic Flow Management

Authority / Priority

- National Command Center (ATCSCC)
  - Resolves inter-facility issues
- Center
  - Coordinate with ATCSCC
- TRACON
  - Work through overlying center.
- Tower
  - Work through TRACON or directly with center
Traffic Flow Management

- The National Airspace System (NAS) handles ~ 60,000 flights a day.
- FAA integrates new technologies and techniques that enable ever more effective responses to changing conditions.
- Key FAA programs such as **Traffic Flow Management** and **Collaborative Decision Making** need automated systems that provide accurate and timely information for all airspace users. Such systems are the Host and the Enhanced Traffic Management System (ETMS).
The Host Computer System is a 40 year old system, which is the central component of the en route automation system. En route automation system outages at individual centers during peak travel times can create a ripple effect that results in long delays or cancellations. Limits of the Host Computer, its backup systems, and portions of the display system infrastructure, which includes:

- technical refresh of the radar position processor.
- limits on the number of flight plans that can be stored
- The number of radars that can be used
- Flexibility in airspace configuration.

The En Route Automation Modernization

En Route Automation Modernization (ERAM) Program replaces the Host Computer, its backup systems, and portions of the display system infrastructure, which includes the technical refresh of the radar position processor. The ERAM backup system simplifies system maintenance and eliminates the need for air traffic restrictions if there is a primary system failure. NOT YET IN SERVICE.

- FAA uses to:
  - track, predict, and plan air traffic flow;
  - analyze effects of ground delays; and
  - evaluate alternative routing strategies.

- ETMS integrates real-time flight and weather data from multiple sources, presenting information graphically, enabling more efficient, predictable, and equitable management of air traffic.

- ETMS facilitates a common air traffic situational awareness that makes possible collaborative decision making among FAA, NAS users.
HOST & ETMS

HOST

ETMS

- refresh of the radar position processor
- MATCH TRANSPONDER CODE WITH FLIGHT PLAN

- AIRLINE SCHEDULES (EARLY INTENT)
- GROUND DELAY/STOP QUERY
- AFP QUERY
- SECTOR LOAD QUERY
- SLOT COMPRESSION

KNOWN DEMAND IN NAS

EARLY INTENT & FPL

~ limit of three hours in advance filing
Sequencing programs
  - Departure
  - Enroute
  - Arrival
Miles in Trail
Minutes in Trail
Holding
LAADR
  - Capping
  - Tunneling
Ground Stops/ Delay

SWAP
  - CDRs
  - National Playbook
  - Preferred Routes
Flow Evaluation Area
Flow Constrained Area
Airspace Flow Program
National Route Program
STMP/GAAP
SEQUENCING

Used to achieve a specific interval between aircraft.

– Departure – for a constant flow over a common point (Multiple Airports)

– Enroute – Integration into the enroute stream (Playbook)

– Arrival – Fix crossing time (same airport)
MIT

• Miles in Trail (Merging or Departing)
  Used for separation at:
  • Airport
  • Fix
  • Altitude
  • Sector
  • Specific route
  Note – Facilities expected to provide justification.

• Minutes in Trail
  Used when in non-radar or transitioning to non-radar
  When additional spacing is needed to deviate around weather
LAADR

• Low Altitude Arrival / Departure Routing (LAADR)
  Used when severe constraints (FAA Advisories)
  Impact
    • Lower altitudes than requested
    • Short flight may be entire route
    • May be given higher altitude at given point
    • May applies to arrival as well
  – Capping - stay low until clear of area (Constraint is above)
  – Tunneling – descending prior to normal TOD (conflicting flows of traffic or holding)
Ground Delay/Stop

• Manage demand with capacity. Arrival “slots” assigned
  – Capacity has been reduced
  – Avoids extensive holding
  – Avoids diversions.

• Software program models demand vs. capacity (FSM)
  – Arrival “slots” assigned (Demand from ETMS)
  – “Pop-up” (Host Demand) based on last year activity. Algorithm built into FSM to consider Host demand. (66% higher Delay Assignment)
  – EDCT assigned and comply +/- 5 mins.(Wheels up).

  PDC???, En Route then cleared “go direct” ????

ORD, ATL, IAH, DFW, EWR, PHL, LGA, SFO, PHX & MSP
RANK IN TOP DELAYED AIRPORTS.
## Host Delay Assignment

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 Slots Available Based on Last Year GA traffic
SWAP

• Severe Weather Avoidance Plan (SWAP)
  – Used to formalize routes used to avoid thunderstorms
  – Each facility may develop own strategy
  – Facilities become part of overall operations plan.

ATCSCC Advisory

ATCSCC ADVZY 003 DCC 12/09/2012 OPERATIONS PLAN
VALID 0100Z AMB LATER

TERMINAL CONSTRAINTS:
DEN/CONS/MDT/BOG
LGA-ILS RWY4 FLIGHTCRCK
ORD-RNAV/CIGS
MSP-SN

EN ROUTE CONSTRAINTS:
20V TURN/MTW WAV

1. ZDC
UNTIL 0300
-BWI GROUND STOP/DELAY PROGRAM POSSIBLE

2. ZKP
AFTER 1400
-MSP GROUND STOP/DELAY PROGRAM POSSIBLE

NEXT PLANNING TELCON: 1215Z
090129-091059
12/12/09 00:29 DCCOPS/nfs/ixttn95
Routes

PREFERRED ROUTES
• Normal Traffic Flows used by ATC
  – Increase efficiency and capacity

CODED DEPARTURE ROUTES
• Coded Air Traffic routes and refined coordination procedures
  – Used during SWAP or adverse impacts to NAS

NATIONAL PLAYBOOK ROUTES
• Collection of SWAP plans pre-validated and coordinated

Found in Route Management tool and FAA Operational Information System (OIS)
North American Route Program

NPR (AC 90-91G)

– Enables Flexible route above FL290.
– Departure – 200NM published routing
– 200NM - Arrival published routing
– Voluntary participation
– TMU Shall avoid making changes to route
– NRP in ATC remarks
– File at lest one fix in each center
WHAT’S HAPPENING IN THE NAS?

• Command Center **Advisories** are a result of the strategic planning telecomm and updated every two hours. **Most** TFM initiatives are found in the Advisory database at:
  
  http://www.fly.faa.gov/ois/

  https://apps.navcanada.ca/ois/

Other Helpful links.


http://tfmlearning.fly.faa.gov/customer.html
CDM TOOLS – Plug into ETMS

HOST

- refresh of the radar position processor
- MATCH TRANSPONDER CODE WITH FLIGHT PLAN

ETMS

- AIRLINE SCHEDULES (EARLY INTENT)
- GROUND DELAY/STOP QUERY
- AFP QUERY
- SECTOR LOAD QUERY
- SECTOR LOAD QUERY
- SLOT COMPRESSION
- KNOWN DEMAND IN NAS

~ limit of three hours in advance filing

EARLY INTENT & FPL
WHAT DO CDM TOOLS DO?

• Provide proprietary data sharing to create a common view of air traffic management

• Helps achieve TFM goals

• Make real-time traffic management decisions

• Provides unique updates
CDM TOOLS

- Fight Schedule Monitor (FSM), 1996
- Common Constraint Situation Display (CCSD), 1998
- Flow Evaluation Area (FEA) Flow Constrain Area (FCA), 2004
- GAAP, EDCT change, 2005
- Airspace Flow Program (AFP)
- Playbook/CDR improvements, 2006
- eSTMP Reservation, 2007
- Integrated Collaborative Rerouting (ICR), 2008
- Reroute Impact Assessment Tool (RRIA), 2010
- Execution of Flow Strategies (XFS), 2011
APPLYING CDM

Planning Telecomm

- ATCSCC
- TMU
- Aviation Wx Center
- AOC/FOC
- DoD

DoD
Collaborative Decision Making

Started in 1993, CDM is an operating paradigm where ATFM decisions are based on a shared, common view of the NAS and an awareness of the consequences these decisions may have on the system and its stakeholders. There are two central tenants to CDM; that **better information will lead to better decision-making**, and tools and procedures need to be in place to enable air navigation service providers and the flight operators to **more easily respond to changing conditions**.

- GDC Singed MOA in 2003
- Technical data Exchange to ETMS 2004 and Flight Sentinel™ started

http://cdm.fly.faa.gov/whatscdm.html
Flight Sentinel Pre-Flight

- Early Intent message sent to ETMS
  - Early Intent to Fly form completed (Trip info)
- Preliminary Flight Plan Computed
- NOTAM Initial Review (show stoppers)
- Weather and NAS Initiative Review
- File Flight Plan (Replace Early Intent with Flight Plan in ETMS)
- Flight Plan Package Sent to Crew
- Collaboration with Crews
Flight Sentinel In-Flight

- Radar and Datalink
- Continual Monitor of NAS Initiatives and NOTAM Check. Collaborate with Crews
- T-Storm Lines, Convective, AWOS push, DATIS push, Custom Considerations i.e. (White knuckler)
- FBO, Transportation, Customs, Operations, etc.
Flight Sentinel Post-Flight

On / In Reports
- If no “ON” physical call to confirm

Issues
- Collaborate with Crew
- Gather Data
- Advocate on behalf of customer with ATC.
Flight Sentinel – Concierge Flight Support

- Combines operations experts with real-time flight following
- Incorporates state-of-the-art flight management tools

- Key Benefits
  - Enhances flight safety
  - Monitors flights continuously to ensure timely arrival
  - Mitigates the impact of adverse weather and air traffic delays
  - Uplinks essential information to the aircraft during flight reducing pilot workload
  - Advises crews of air traffic delays and terminal congestion - rerouting when necessary
  - Optimizes routes as weather conditions change to ensure timely arrivals

*Flight Sentinel helps to reduce hassles in continental US air travel*
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