Network Overview – American’s Hubs

Average Daily Departures
6,700

DFW 763
ORD 444
CLT 629
PHL 429
DCA 263
MIA 335
LAX 168
PHX 275
LGA 142
JFK 98
Network Overview - PHL

**STRENGTHS**
- Largest AA Northeast hub
- Lowest cost NE international hub
- Great connectivity across Atlantic
- 20 peak season non-stops to Europe

**PHL STATS**

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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<tbody>
<tr>
<td>Employees</td>
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<tr>
<td>Average Daily Departures</td>
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<tr>
<td>Destinations</td>
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<tr>
<td>Intl. Destinations</td>
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<tr>
<td>Annual Cargo Pounds</td>
<td>111 Million</td>
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**CHALLENGES**
- Smaller local market than New York
- Highly dependent on flow traffic
  - 70% connecting traffic for intl.
  - 40% connecting traffic for domestic
- Airport Costs
- Airspace Congestion
Global Network Carrier

Consolidated Available Seat Miles

Combination will create three similarly sized, competitive global network carriers.

Source: Full Year 2012 Consolidated ASMs, as reported. Southwest and others also provide competition in the marketplace.
Another Outstanding Year

- Record profit of $6.3 billion*
- Record pretax margin of 15.3 percent*

Integration Has Gone Smoothly

- PSS cutover complete
- Ratified joint contracts with our pilots, flight attendants and customer service agents

Significant Investments in Operation, Product and Fleet

- Took delivery of 127 new aircraft and removed 143 aircraft from the fleet
- Now have the youngest fleet of the four largest carriers

Introducing New Revenue Opportunities

- AAdvantage® program changes
- Product Segmentation

Driving Long-Term Shareholder Value

- Repurchased 85.1 million shares for $3.6 billion
- Paid a total of $278 million in quarterly dividends

*Profit and pre-tax margin exclude net special charges. Please refer to the Company’s GAAP to Non-GAAP reconciliation in the appendix.
Further Integration Items, 2016 and Beyond…

- Aircraft and crews become interchangeable
- Requires extensive data migration, coding and testing

- Single seniority list for pilots
- Combined contracts for ramp and mechanic employees

- Entire fleet will be repainted by 2018
- New uniforms will provide a consistent look across the airline

- Consistent staffing policies across the network
- New HR tools eliminate duplication

- Currently separate labor groups and multiple systems
- Ultimately will have one labor group using a unified interface
Fleet Replacement Plan

- American is making significant investments in its fleet...

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Note: New aircraft deliveries by type. Regional inductions include aircraft owned by third party operators.
Fleet Replacement Plan

- … Resulting in one of the youngest and most fuel efficient fleets in the industry

Source: SEC Form 10-K and Ascend Fleets data base; projected data based on internal Industry fleet plan outlook estimates
American’s Positioning Within the U.S. Industry

Share of Total ASMs

| Global Hub-and-Spoke | American
|----------------------|-----------------
|                      | United Delta |
|                      | 26% 25% |
| Low Cost/Point-to-point | Southwest JetBlue |
|                      | 13% 4% |
| Niche                | Alaska Hawaiian Virgin America |
|                      | 3% 2% 1% |
| Ultra Low-Cost       | Frontier Spirit Allegiant |
|                      | 1% 1% 1% |

American is a global, hub-and-spoke carrier
- Largest asset: Network (ability to take customers where they want to go)
- Key to network: Hubs
- American’s network is as good or better than any in the world; essentially equal to United and Delta

Source: Dilo, T-100 database as of 1/14/2014
Hub & Spoke Network Model is Complex
World Class Global Network

- **Canada**
  - 9 Destinations
  - 30 Routes

- **Europe / Middle East**
  - 21 Destinations
  - 52 Routes

- **Asia/Pacific**
  - 5 Destinations
  - 8 Routes

- **Mexico**
  - 20 Destinations
  - 42 Routes

- **Central America**
  - 10 Destinations
  - 22 Routes

- **Caribbean**
  - 32 Destinations
  - 93 Routes

- **South America**
  - 21 Destinations
  - 34 Routes

---

US Airways

American Airlines
Robert W. Baker Operations Center
New Integrated Operations Center - DFW

- Two stories
- 149,000 Square Feet
- Nearly 1,500 Employees
- EF3 (165-185 mph)
What is the IOC?

- Nerve Center
- Day-to-Day, Minute-to-Minute coordination
- Equivalent to NASA’s Mission Control
IOC Command Center

- Manage Events
- Teleconference System
- Satellite TV
- Secure Communications
Why an IOC?

• Centralized unit to coordinate and monitor operations to ensure business requirements are met on a system wide basis
• Safety
• Customer Service (Schedule Dependability)
• Communications (Operational Information)
• Operating Policies
• Operational Efficiencies
• Federal Aviation regulations require “Operational Control” – IOC fulfills that role

• Airlines conduct operational control by making decisions and performing actions that are necessary to operate flights safely and in compliance with regulations

• Provides a centralized point of contact for all safety of flight and customer relations concerns
What is the IOC?
Flight Management
Flight Management

- **Dispatch creates flight plans and flight releases for all flights**
  - Route of flight
  - Fuel Requirements
  - Maximum Payload
  - Calculates Weight and Balance Limitations

- **Monitors and updates flight progress**
  - Route changes
  - ATC Conditions
  - Changing weather conditions including weather hazards

- **Flight planning system optimizes for “least cost”**
  - Cost of fuel
  - Cost of time
  - Cost of being late
AA Flight Dispatch

- Monitors a flight’s operating environment from origin to destination.
- Updates and provides en route and destination weather to the pilot.
- Advises down line stations of a flight delay
- Coordinates and implements plans to handle off Irregular Operations (IROPS) in AA system.
Dispatch

- Jointly responsible with Captain for safety of flight operations
- Ensures we have a serviceable aircraft, crew, and fuel load
- Determines route of flight and issues the dispatch release / flight plan
Dispatch Automation

- Fusion (Monitors flights and weather on a map)
- Dispatch Auto/flight Monitor (Flight following tool)
- Diversion Tracker (Diversion Recovery Tool)
- Taxi Alert Monitor (Monitors 3hr tarmac delays)
- Operations Performance Tools (TO/LDG Wt. Corrections)
Surface Movement
Operations Coordinators

- Coordinates changes to aircraft routing
- Primary contact for changes to assignment of flight crews to specific flights
- Coordinates extra flying operations
- Manages Irregular Operations (IROPS) and diversions
TAPS (Turbulence Auto PIREP System)
ATC at the IOC
Air Traffic Systems – ATC Coordinators

- Interface with ATCSCC (FAA command center)
- Interface with Air Route Traffic Control Centers
- Coordinates ATC-Airline operating interdependencies
- Hub and major airport ATC issues

Traffic Situation Display TSD-C
Command Center (ATCSCC)

Conducts national planning telecons every 2 hours

Ad Hoc telecons as needed: GDP, GS, Route issues, AFP (airspace flow program) etc

Security events / issues / VIP TFRs

Conducts post event reviews of specific events as requested by FAA management or industry
CDM – Collaborative Decision Making

• Industry, academia, ATC, NBAA, US Military and NAVCANADA participants

• Provide input on daily tactical decision making (FAA has final decision authority)

• Joint workgroups to set goals for further ATM developments in technology and procedures
### National Programs

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Reported GPS Anomalies...
DFW East Playbook
DFW EAST 1

Impacted Flow: DFW SEEVR AND KLNDR STARS AND DAL HIBIL AND REDDN STARS

Facilities Included: ZFW/ZHU/ZJX/ZMA/ZTL/ZME/ZKC/ZMP/ZAU/ZID/ZOB/ZDG/ZNY/ZBW/CZY

Instructions: REROUTE ANY AIRBORNE TRAFFIC AND INTERNAL DEPARTURES DESTINED THE DFW TERMINAL AREA VIA THE FOLLOWING ROUTES.

**SPECIAL NOTE:*** ROUTES FOR ORIGIN ZMA VIA MARCI MINOW ARE ADS-B EQUIPPED ROUTINGS ONLY***

### ROUTE

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Air Traffic Congestion – United States
The Challenges of the Northeast

66% of system delays:
- LAX: 7.38%
- ORD: 9.32%
- SFO: 8.94%
- JFK, PHL, LGA, EWR: 40.29%
- Other: 34.07%

37% of surface delays:
- LAX: 4.07%
- ORD: 6.30%
- SFO: 2.68%
- JFK, PHL, LGA, EWR: 24.36%
- Other: 62.59%

Source: OPSNET Delays Standard Report, ASPM77 2015
NE Airspace Constraints

Airspace Density and Severe Weather Impacts

New York is geographically disadvantaged from a traffic demand and airspace use perspective in general.

Airspace structure and traffic demand measured together equal airspace density.

Severe weather size, location, and orientation to major markets determine delay impact.

In a macro sense, airspace density and severe weather are two of the most important factors in determining this type of delay in the NAS.

Because of these factors in NY, severe weather impacts are disproportionate to any other market in the NAS.
The Swap Problem

• The airspace structure in the Northeast is the most dense in the world. PHL sits between the New York Metro and the DC Metos.

• Airways are “one way” in the Northeast, with most arrival routes dedicated to specific traffic flows. Initial departure routes are shared in New York. PHL initial departure routes are dedicated.

• When weather causes arrival traffic to deviate off route departure routes are immediately impacted and often closed as a result.
NY Center Swap Forecast Impact Map

***SWAP LIKELY INTO FRIDAY***

**ZNY CWSU SWAP FORECAST**

Forecast Updated: AUG 20, 2015 - 1330Z
Next Update: AUG 20, 2015 - 1730Z

Valid Time Period: AUG 20, 2015 - 1800Z-2200Z

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ROUTE IMPACTS

NONE
POSSIBLE
EXPECTED

TS Forecast Confidence Levels
Low (L) - <50%
High (H) - >50%

ZNY IN SWAP:

MULTIPLE LINES OF TS ARE EXPECTED TO DVLP THIS AFTN WITH NMRS W-BOUND IMPACTS THRU THE EVENING.
DISCUSSION: A CDFNT MOVES E TOWARD THE LOCAL AREA...WDLY SCT-SC TS ARE EXPD TO DVRP OUT AND OF IT LATE THIS MORNING/EARLY THIS AFTN THRU THE EVENING...SPCLY ACRS MUCH OF NY AND PA INTO THE VCNTRY OF PHL AND THE DC METROS.
## NATIONAL PROGRAMS

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## GROUND STOPS

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NEXTGEN: Where we are and where we’re going...
DCL - Overview

- **FANS – Future Air Navigation Systems**
- **CPDLC – Controller Pilot Datalink**
- **DCL – Departure Clearance**

The FAA's “NextGen” Air Traffic Control system will utilize FANS procedures throughout the US Domestic flight operations. The first phase incorporates the use of CPDLC during ground operations (in lieu of ACARS PDC and voice) to receive IFR route departure clearances (DCL).

- **DCL uses CPDLC** to insert the ATC-cleared routing directly into the FMC.

- **Do not confuse CPDLC DCL** with European DCL accessed through the ATS page. CPDLC DCL is only available in the US.

- **DCL is capable of supporting revised clearances** where PDC is not.

- **Future capabilities will include airborne clearances and messages.**
At this time, 56 airports are planned to support DCL capability.

JFK/LGA will be the first AA hub to support DCL.

ATIS will advise CPDLC DCL capability, later this will be added to the Jeppesen 10-9 page.

Once an airport is equipped, PDC will be disabled for CPDLC-equipped aircraft. If CPDLC is on an MEL, PDC will be available.

All AA widebody aircraft equipped with CPDLC are eligible.
- 757's without CPDLC will be identified with an SEL
- 737's are being equipped, SEL will be used to identify the aircraft authorized.
What is TFDM

TFDM is the surface management solution for NextGen. TFDM will provide an integrated tower flight data automation system, which will improve controllers’ common situational awareness to support the NextGen Concept of Operations. TFDM will improve efficiencies on the airport surface and terminal airspace by providing:

- **Electronic Flight Data**
  TFDM will provide an improved Electronic Flight Data (EFD) exchange and Electronic Flight Strips (EFS) in the tower to replace printed flight strips. This functionality will be integrated with Flight Plans for automatic updating.

- **Collaborative Decision Making for the Surface**
  TFDM will provide a departure scheduler with live data provided by Air Traffic systems/controllers and Flight Service Providers. The system will provide a departure metering capability, runway balancing and other surface management tools, improving surface traffic flow management.

- **Traffic Flow Management**
  TFDM will enhance the traffic flow management data integration with Time Based Flow Management (TBFM) and Traffic Flow Management System (TFMS) to enable airlines, controllers and airports to share and exchange real-time data. This will result in improved surface traffic management as well as improve the products produced by TFMS and TBFM.

- **Systems Consolidation**
  TFDM will replace multiple unsupportable systems in the National Airspace System through integration of their functionality into TFDM. This achieves technology modernization, improved data sharing and lower maintenance costs. The systems to be consolidated include ARMT, DSP, EFSTS, AEFS, and SMA.

Please note TFDM information in this briefing may be subject to change until the FAA’s Final Investment Decision is complete.
Surface Efficiency Benefits All Stakeholders

1. Electronic Flight Data (EFD) in the ATCT enables real time data sharing
2. Departure Metering provides predictability

- **Flight Operators**
  - Improved Predictability
  - Maintain Network Reliability
  - Less taxi time/out fuel burn
  - More timely delay information to customers

- **ATC**
  - Better information for tactical rerouting
  - Fewer unnecessary TMIs
  - Coordinated departure restriction management
  - Fewer unnecessary restrictions

- **Traveling Public**
  - Reduced Engine Noise
  - Improved community relations

- **Airport Operators**
  - Improved Predictability
  - Reduced CO2
  - Improved Predictability

**Critical NAS Constraint is the Airport**

- En Route
- Descent
- Climb
- En Route

- Less time in the airplane
- More completed connections
- More timely delay information
Airspace Technology Demonstration

https://youtu.be/u9_1-2C-9KA
RNAV and RNP procedures benefit airlines, employees and our customers through:

• **Increased safety**
  • Lateral and vertical flight guidance from and to every runway

• **Increased efficiency**
  • Reduced flight miles
  • Reduced flight time
  • Reduced fuel burn

• **Environmental benefits**
  • Reduced carbon emissions
  • Reduced noise

• This is a win – win – win situation
RNP procedures allow greater traffic flow into and out of an airport over RNAV procedures.

RNAV, with large lateral constraints, requires greater procedural separation.

RNP, with tighter lateral constraints, allows for less procedural separation.
RNP Benefits For Terrain Challenged

- RNP 0.15: width of path ~1800'
- Allows a direct approach to Rwvy 26
- Easier-to-maintain stable approach
- DA = 268' (250' above runway)
- Required visibility = 3000' (~0.5 mi)
Tailored Arrivals – Key Features

- Crew uses CPDLC to uplink arrival route and OPD profile
- Crew uses normal RNAV procedures to fly the TA
- ATC can monitor TA progress using radar or ADS-C
- Fully integrated CNS/ATM project is being used today
Tailored Arrivals Noise Benefits
Thank You