FAA NEXTGEN DATA COMM

TOWER SERVICE: CPDLC DCL
NEW OPERATOR INTRODUCTION
Agenda

- Data Comm Basics
- Benefits of Data Comm
- Departure Clearance Explanation
- Operator Steps to Participation
- Data Comm Operator Documentation
- Airport Tower Rollout Schedule
Voice communication frequencies between pilots and air traffic control (ATC) are becoming increasingly congested and will not be able to accommodate the projected increase in air traffic demand. Use of data communications (Data Comm) to supplement some routine voice communications will increase efficiency, capacity, and safety.

Data Comm Overview

- Provides data communications between the cockpit and controllers to supplement voice communications
- Air traffic control (ATC) clearances, instructions, traffic flow management, flight crew requests and reports
- Provides direct link between ground automation and flight deck avionics
- Transformational program critical to the success of NextGen operations
- Provides infrastructure supporting other NextGen programs and operational improvements
- Enables efficiencies not possible using current voice system
Program Services Roadmap

Segment 1 Phase 1 - Tower Service

Segment 1 Phase 2 - En Route Services

Avionics

Ground System

Segment 2 - Advanced Services

Controller-Pilot Data Link (CPDLC) Departure Clearances (DCL)

Initial En Route Services

Transfer of Communications
Initial Check-In
Altimeter Settings
Altitudes
Speeds (Limited)
Crossing Restrictions (Limited)
Airborne Reroutes / Go Button
Controller Initiated Reroutes (Limited)
Direct-to-Fix (Limited)

Full En Route Services

Controller Initiated Routes (Full)
Direct-to-Fix (Full)
Crossing Restrictions (Full)
Advisory Messages
Holding Instructions
Speeds (Full)
Stuck Microphone
Tailored Arrivals
Beacon Codes

FANS 1/A over VDL-2 transitioning to ATN

Future Air Navigation System (FANS)

Aeronautical Telecommunications Network (ATN)

4D Trajectories
Dynamic RNP
Adv Flt Int Mgt with ATC winds
D-TAXI

To be Baseline
FY2016

Baselined
May 2012

Baseline
October 2014

CY 14 16 18 20 22 24 26 28 30
Benefits of Data Comm

- Reduce communication time between controllers & pilots
- Improve re-routing around weather and congestion
- Increase flexibility and accommodation of user requests
- Enable NextGen Initiatives & Trajectory-Based Operations

Throughput/Efficiency
- Delay
- Fuel Burn

Controller Pilot/Efficiency
- Communication Time
- Controller Workload

Environmental
- Emissions (CO₂)

Safety
- Read/hear back errors
- Loss of Comm events
Departure Clearance

CPDLC DCL

- Cleared as filed
  - Flight Crew logs into airport at any time (Session established when next step occurs)
  - As Clearance Delivery approves flight plan, a session will be established and the clearance is sent directly to flight deck
  - For operators with a Flight Operations Center (FOC), dispatch copy of clearance and pilot response is sent to FOC.

- Revisions to clearance
  - Revised clearances are sent directly to flight deck.
  - Able to be loaded by crew.
  - For operators with an FOC, dispatch copy of all revisions and pilot responses are also sent to FOC.

Pre-departure Clearance (PDC)

- Flight cleared as filed
  - PDC is delivered to operator via service provider (e.g., ARINC/SITA)
  - If operator has an FOC, then FOC may be responsible for getting the clearance to the flight deck

- Revisions to clearance
  - Prior to P-30, PDC is not sent and clearance is delivered via voice.
  - After P-30, PDC is cancelled and new clearance is delivered via voice.
Current DCL Operation

Normal Push-DCL Operations

- Pilot Logon
- Controller Processes DCL
- TDLS Sends DCL
- Pilot Receives, Reviews, Accepts & Loads DCL
- Clearance Revisions?
  - Yes
  - Controller Processes Revision
  - TDLS Sends DCL
  - Pilot Receives, Reviews, Accepts & Loads DCL
  - Yes
  - Aircraft Departs
  - Session Termination
  - No
  - Pilot Acks Clearance

Non-normal Push-DCL Operations Examples

- Pilot Logon/Controller processes DCL
- TDLS already uplinked a clearance, but not yet Pilot accepted.
- Pilot Requests DCL while Clearance is Pending
- TDLS Sends “Acknowledge Pending Clearance”
- Pilot Acks Clearance

- Pilot Logon/Controller processes DCL
- Pilot Requests DCL after accepting initial clearance
- TDLS Sends Full Route Clearance
Operator Steps to Participation

- Determine equipage
  - FANS 1/A and VDL Mode 2 or VDL Mode 0 (Plain Old ACARS) required
- Establish or Update OpSpec A056 for Part 121, 135, 91K or A003 for Part 129
  - Contact your FAA POI
  - Not required for Part 91 operators
- Optional: Submit entry into FAA subscriber database to receive dispatch copies
  - Generally coordinated through flight planning service provider
- File appropriate equipment code in field 10a of ICAO flight plan
  - J3 for FANS 1/A over VDL Mode 0
  - J4 for FANS 1/A over VDL Mode 2
- File desired DAT/ code in field 18 of ICAO flight plan
  - Recommend DAT/1FANSP2PDC for DCL flights
  - This establishes the desired hierarchy for receiving departure clearance (e.g. DCL, then PDC, then voice)
- Distribute flight crew materials
  - Updates to SOP and required training bulletins
- Begin use of the CPDLC DCL service.
  - Rolling out to 56 US sites in 2016
**CPDLC Departure Clearance End to End Description**

This document describes the Future Air Navigation System (FANS) 1/A Controller Pilot Data Link Communication (CPDLC) Departure Clearance (DCL) for the Data Comm system that is being deployed by the Federal Aviation Administration (FAA) in 2016, from an end-to-end view.

**CPDLC Demonstration Video**

*Teaser Video*

*Full Video*

**Ops Problem Reporting**

Directions on how to contact the Data Comm team regarding operational problems.

*Operational Problem Report Ticket*

Please use this ticket to report all issues
Flight Deck

**Flight Desk User Guide**

The Flight Desk User Guide will assist in bringing the flight crew up to speed on the Data Comm process within the cockpit.

**Flight Deck Brief PowerPoint**

PDC versus DCL overview presentation.
Tablet & Print versions available
Airport Tower Rollout 2016

Over the course of 2016 Data Comm will be launched at airport towers across the country for the first stage of implementation. This initial stage of service is referred to as Segment 1, Phase 1 (S1P1) Services.

**CPDLC DCL (S1P1) Services**

The Logon Service for aircraft to request Data Comm Services and DCL Service for delivering initial and revised departure clearances to aircraft prior to take-off will be implemented in S1P1. This service will be provided to aircraft equipped with FANS avionics.

Note that in S1P1, the current Pre-Departure Clearance (PDC) capability will be augmented to incorporate DCL service. The legacy PDC service will continue to provide current capabilities after Data Comm is implemented.

Enhancements of the DCL service over PDC are:
- DCL allows the Clearance Delivery (CD) Controller to dialog via A/G data communications directly with the pilot.
- DCL permits the CD Controller to issue revised DCLs as required
- DCL service includes the ability to request and receive information specifically for DCL flight gate information from the AOC. This capability will be used to assist with surface traffic management.
• Waterfall reflects **challenge** schedule dates (calendar year)
  – Baseline schedule Tower deployment dates are 2016-2019
• Waterfall validated by stakeholder community through the NIWG and aligned with operator plans for avionics equipage
• Tower Phase provides infrastructure for En Route Phase – Initial Services deployment 2018-2021
## TEB & HPN Test & Deployment Schedule

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Contact

For further information and documents on Data Comm please visit
http://dcis.harris.com/ or email DCIT@Harris.com

Chris Collings
chris.collings@harris.com

Chris Sutherland
csutherl@harris.com

Michael Earl
mearl@harris.com

Moranda Reilly
mReilly@cghtech.com