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**

<table>
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<tr>
<th>CY</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
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</thead>
</table>

**Segment 1 Phase 1**
- Tower Service
  - Baseline May 2012

**Segment 1 Phase 2**
- En Route Services
  - 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)
    - Baseline October 2014
    - To be Baseline FY2016

**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
  - IOC

**Avionics**

**Ground System**

**Segment 2**
- Advanced Services
  - Future Air Navigation System (FANS)
  - Aeronautical Telecommunications Network (ATN)
  - FANS 1/A over VDL-2 transitioning to ATN
  - IOC
  - 4D Trajectories
  - Dynamic RNP
  - Adv Flt Int Mgt with ATC winds
  - D-TAXI

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CPDLC DCL New Operator Introduction | 4
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

Controller Processes DCL

+ Pilot Logon

Controller Processes Revision

TDLS Sends DCL

Pilot Receives, Reviews, Accepts & Loads DCL

Clearance Revisions?

Yes

No

Aircraft Departs

Session Termination

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 Requests DCL after accepting initial clearance

TDLS Sends Full Route Clearance

Pilot Logon/Controller processes DCL
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.
  • Currently available as SLC, IAH, and HOU. Rolling out to 53 additional US sites in 2016
Data Comm Operator Documents

**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.
CPDLC DCL Crew Job Aid

Tablet & Print versions available
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.
## S1P1 Tower Service Implementation Waterfall

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<th>Key Sites</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
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<tr>
<td>Site Name</td>
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### TDLS Sites Color Key
- CPDLC DCL Site
- Site Operational

- 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

## KTEB

<table>
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<th>Event</th>
<th>Dates</th>
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<td>DFV Dry Run</td>
<td>14-Mar WJHTC, 15-Mar UPS / WJHTC, 16-Mar WJHTC</td>
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<td>File &amp; Fly</td>
<td>17-Mar, 25-Mar</td>
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## KHPN

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</tr>
<tr>
<td>File &amp; Fly</td>
<td>31-Mar, 8-Apr</td>
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</table>
For further information and documents on Data Comm please visit [http://dcis.harris.com/](http://dcis.harris.com/) or email [DCIT@Harris.com](mailto:DCIT@Harris.com)

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