US DOMESTIC CPDLC

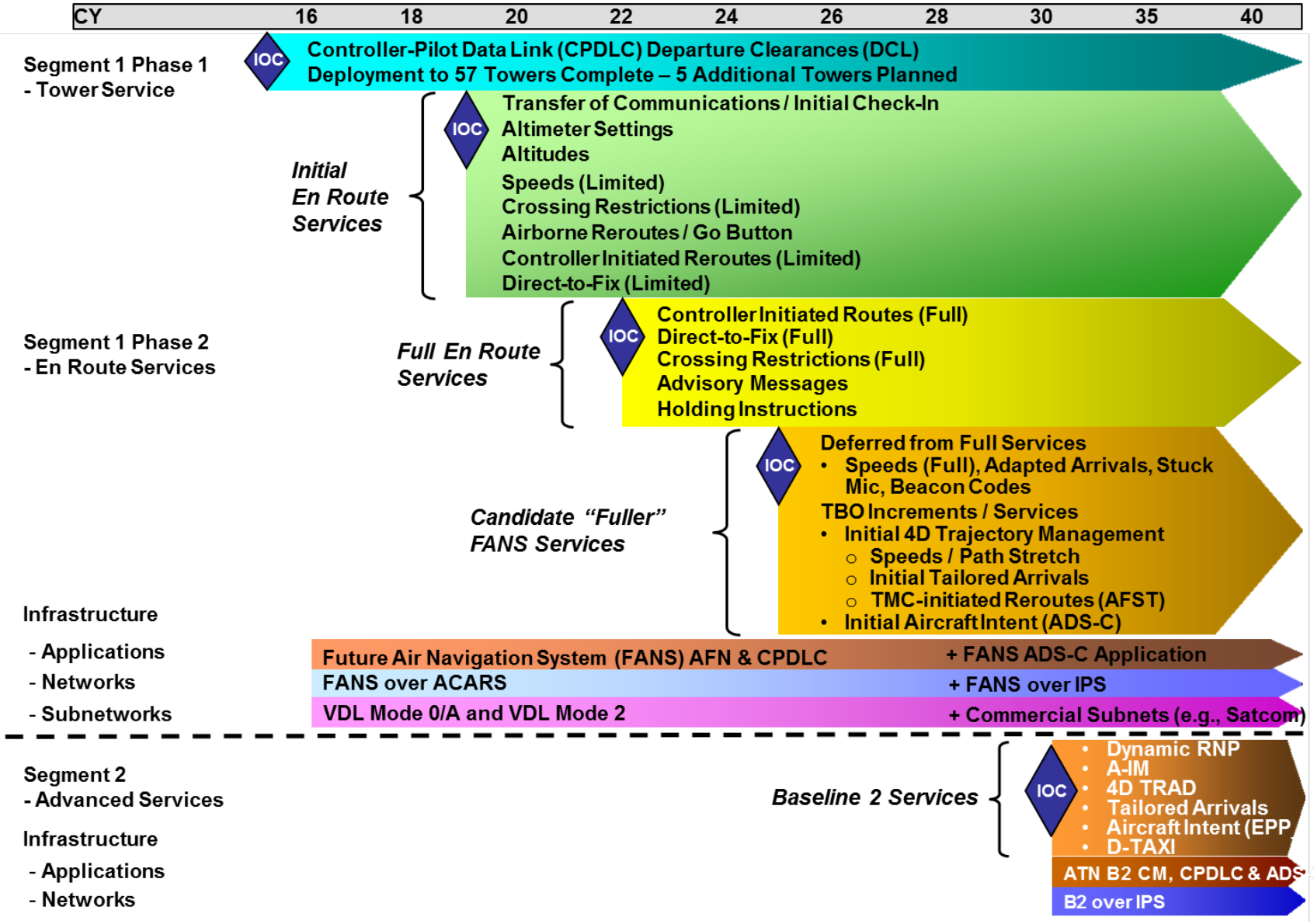
© Harris Corporation 2018

HARRIS® TECHNOLOGY TO CONNECT, INFORM AND PROTECT™

Data Communication overview

- Provides data communications services between pilots and air traffic controllers, supplementing existing voice communications capabilities
- Provides a data link between ground automation systems and flight deck avionics for air traffic control (ATC) clearances, instructions, traffic flow management, and flight crew requests
- Controllers will be able to deliver instructions with a push of a button and without the need to utilize voice frequencies
- Enables the transmission of complex instructions that can be quickly and correctly loaded into an aircraft's flight management system, upon acceptance by the pilot
- Enables NextGen Initiatives and Trajectory-Based Operations

Data Comm services roadmap



CPDLC DCL deployment

Key Sites			
Site Name	Site ID	ARTCC ID	IOC
KS 1: Salt Lake City	SLC	ZLC	08/07/15
KS 2: Houston Intcl	IAH	ZHU	09/03/15
KS 3: Houston Hobby	HOU	ZHU	09/10/15

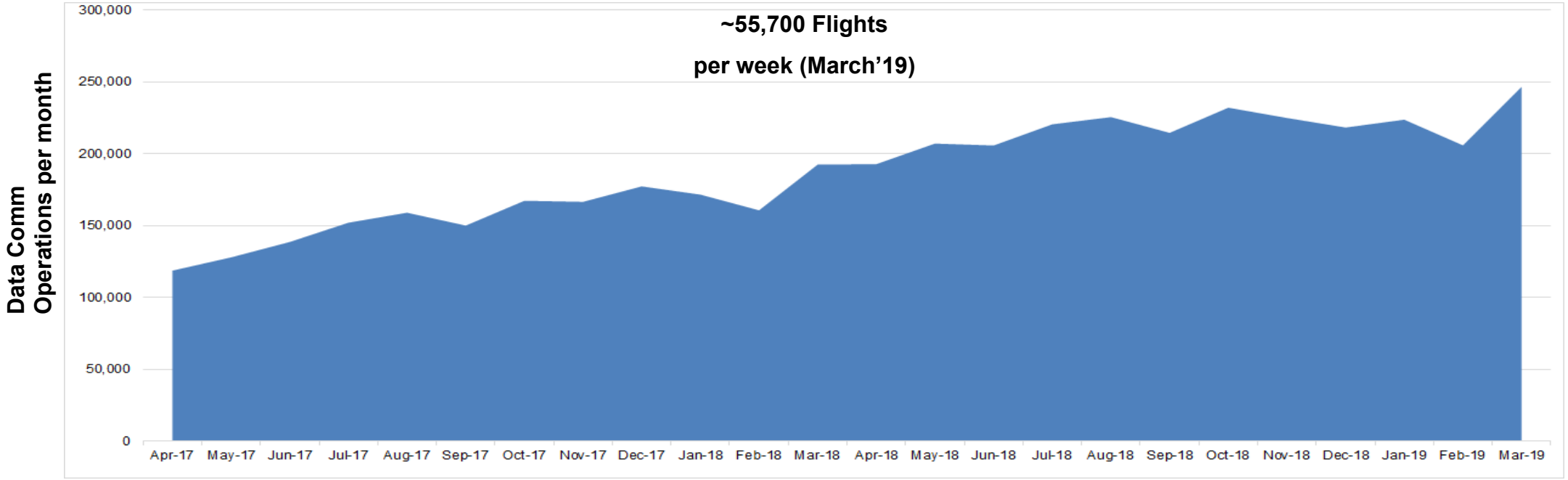
TDLS Sites Color Key	
Site Operational	
New PDC/CPDLC Tower	

Group A			
Site Name	Site ID	ARTCC ID	IOC
New Orleans	MSY	ZHU	01/21/16
Austin	AUS	ZHU	02/04/16
San Antonio	SAT	ZHU	02/19/16
Los Angeles	LAX	ZLA	03/10/16
Las Vegas	LAS	ZLA	03/25/16
San Diego	SAN	ZLA	04/07/16
John Wayne	SNA	ZLA	04/25/16
Burbank	BUR	ZLA	05/06/16
Ontario	ONT	ZLA	05/18/16
San Francisco	SFO	ZOA	06/08/16
Oakland	OAK	ZOA	06/23/16
San Jose	SJC	ZOA	07/06/16
Sacramento	SMF	ZOA	07/20/16
Phoenix	PHX	ZAB	08/10/16
Portland	PDX	ZSE	09/14/16
Seattle	SEA	ZSE	09/15/16
Albuquerque	ABQ	ZAB	09/21/16
Dallas Love	DAL	ZFW	10/10/16
Dallas FTW	DFW	ZFW	10/18/16
Reno	RNO	ZOA	02/27/18
Van Nuys (New TDLS)	VNY	ZLA	08/20/18

Group B			
Site Name	Site ID	ARTCC ID	IOC
Louisville	SDF	ZID	02/10/16
Indianapolis	IND	ZID	03/07/16
Memphis	MEM	ZME	03/25/16
Nashville	BNA	ZME	04/13/16
Denver	DEN	ZDV	05/03/16
Atlanta	ATL	ZTL	05/19/16
Charlotte	CLT	ZTL	06/02/16
Orlando	MCO	ZJX	06/30/16
Miami	MIA	ZMA	07/29/16
Ft Lauderdale	FLL	ZMA	08/12/16
Tampa	TPA	ZMA	08/29/16
St Louis	STL	ZKC	09/29/16
Kansas City	MCI	ZKC	10/11/16
Minn-St Paul	MSP	ZMP	11/03/16
San Juan	SJU	ZMA	12/09/16
Columbus	CMH	ZID	04/10/18
Fort Myers (New TDLS)	RSW	ZMA	04/25/18
Charleston (New TDLS)	CHS	ZJX	05/09/18

Group C			
Site Name	Site ID	ARTCC ID	IOC
Newark	EWR	ZNY	02/12/16
J F Kennedy	JFK	ZNY	02/25/16
La Guardia	LGA	ZNY	03/14/16
Teterboro	TEB	ZNY	03/24/16
Westchester	HPN	ZNY	04/12/16
Philadelphia	PHL	ZNY	04/22/16
Boston	BOS	ZBW	05/13/16
Bradley	BDL	ZBW	06/10/16
Detroit	DTW	ZOB	06/30/16
Cleveland	CLE	ZOB	07/13/16
Pittsburgh	PIT	ZOB	07/29/16
Balt/Wash	BWI	ZDC	08/16/16
Dulles	IAD	ZDC	08/30/16
Reagan	DCA	ZDC	09/14/16
Chicago Midway	MDW	ZAU	10/19/16
Chicago O'Hare	ORD	ZAU	10/28/16
Raleigh/Durham	RDU	ZDC	11/02/16
Milwaukee	MKE	ZAU	12/08/16
Andrews	ADW	ZDC	11/08/17
Buffalo	BUF	ZOB	05/21/18

CPDLC DCL Operational Summary



13 US Mainline Air Carriers

American Airlines · United · FedEx · jetBlue · Atlas Air Worldwide · Southwest · Delta · Hawaiian Airlines · Polar Air Cargo · Alaska · Kalitta Air · Southern Air · UPS

53 International Air Carriers

Meridiana · China Airlines · ANA · Air France · Hong Kong Airlines 香港航空 · UIA · TAM · LOT · 上海航空公司 Shanghai Airlines · 海南航空 Hainan Airlines · AirBridgeCargo · Aeromexico · Air New Zealand · LATAM Airlines · Air India · Air Tahiti Nui · Royal Jordanian · Asiana Airlines · CargoLogicAir · Austrian · cargolux Italia · JAL · norwegian · British Airways · brussels airlines · Qantas · Emirates · Etihad Airways · LAN Cargo · Aeroflot · Alitalia · EVA Air 長榮航空 · Singapore Airlines · cargolux · ASL Airlines · Open Skies · Aerolíneas Argentinas · Finnair · Iberia · Korean Air · SAS · Cathay Pacific · swissair · Qatar Airways · LATAM Cargo · KLM · Cal Cargo Airlines · Lufthansa Cargo

58 Aircraft Types

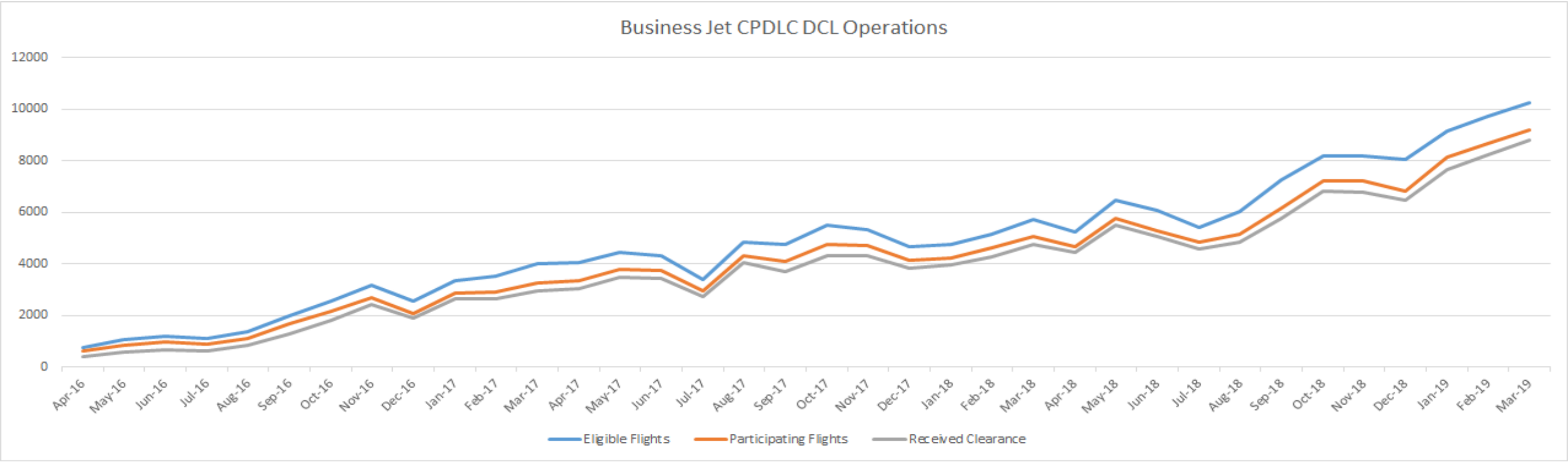
Boeing · Airbus · Bombardier · Gulfstream · Learjet · Dassault Falcon · Embraer

Business Jet Operators

CJG Chicago Jet Group · Executive Jet Management · ExecuJet Aviation Group · Executive Flite Ways · Priester Aviation · abelag · Sundt Air · Flexjet · Kaiser Air · Air Alsie · Stream Travel · Reynolds Jet · Jetlinx · Flightstar · Pentastar · Jet Aviation · NetJets · Sun Air Jets · Solairus Aviation · Gazprom Avia

Business aviation CPDLC DCL metrics

Feb 2016 - Mar 2019 Business Aviation Totals	
Eligible	173,877
Participating	151,113
Received Clearance	139,627



8,787 Flights Received Clearance this Month

Data Comm Tower Benefits 2018

Improve re-routing around weather and congestion

Throughput/Efficiency

531,000+ minutes of reduced delay

Reduce Communication time between controllers & pilots

Controller Pilot/Efficiency

641,000+ minutes of communication time saved

Increase flexibility and accommodation of user requests

Environmental

4.7M kgs of CO_2 emissions prevented

Enable NextGen Initiatives & Trajectory-Based Operations

Safety

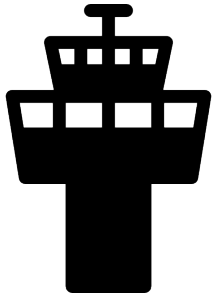
33,800+ readback errors avoided

Data Comm by the numbers

13 US Air Carriers
(Part 121)

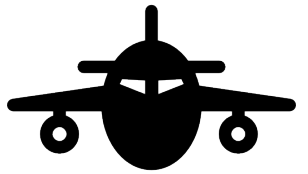
53 Non-US Air Carriers
(Part 129)

1,600+ Business Aviation Operators
(Parts 91, 91K, 135)



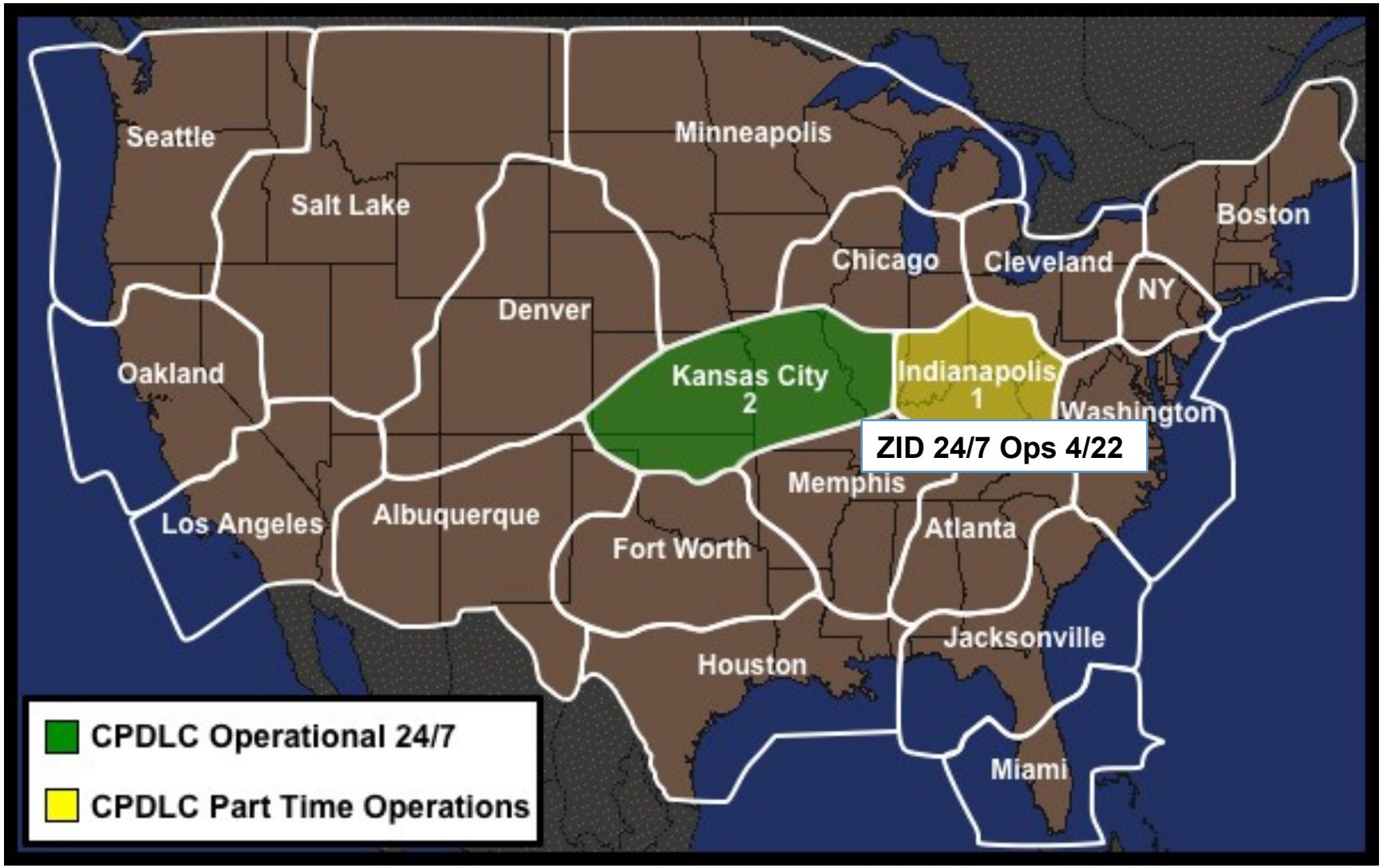
62 Airports

58 Aircraft Types



Over 5,900 Equipped Aircraft

Data Comm en route initial services deployment



Data Comm en route CPDLC operator check list

Operator Steps

Avionics Equipage

- ❑ FANS 1/A approved version
- ❑ VDL Mode 2 with Multi-Frequency

Procedures & Training

- ❑ Flight deck procedures & training
- ❑ Dispatch & maintenance procedures & training

Operational Approval

- ❑ FAA authorization (OpSpec A056, A003, etc)
  - ❑ No OpSpec or LOA required for Part 91 operators for domestic CPDLC

File as Equipped, Logon and Participate

- ❑ Ensure file correct field 18 DAT/ Code
  - ❑ File 1FANS2PDC for DCL only
  - ❑ File 1FANSE2PDC for En Route
  - ❑ Additional filing information in NAS Data Comm Guide

Supporting Documentation

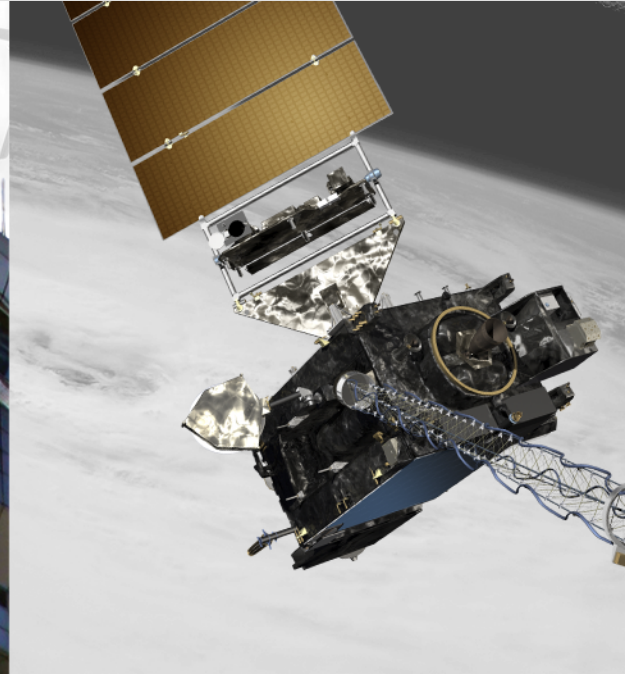
Procedures & Training

- Plain Language Pilot Handbook
- NAS Data Comm Guide
- Data Comm FAQ
- Data Comm End to End Document
- OEM CPDLC guidance

Operational Approval

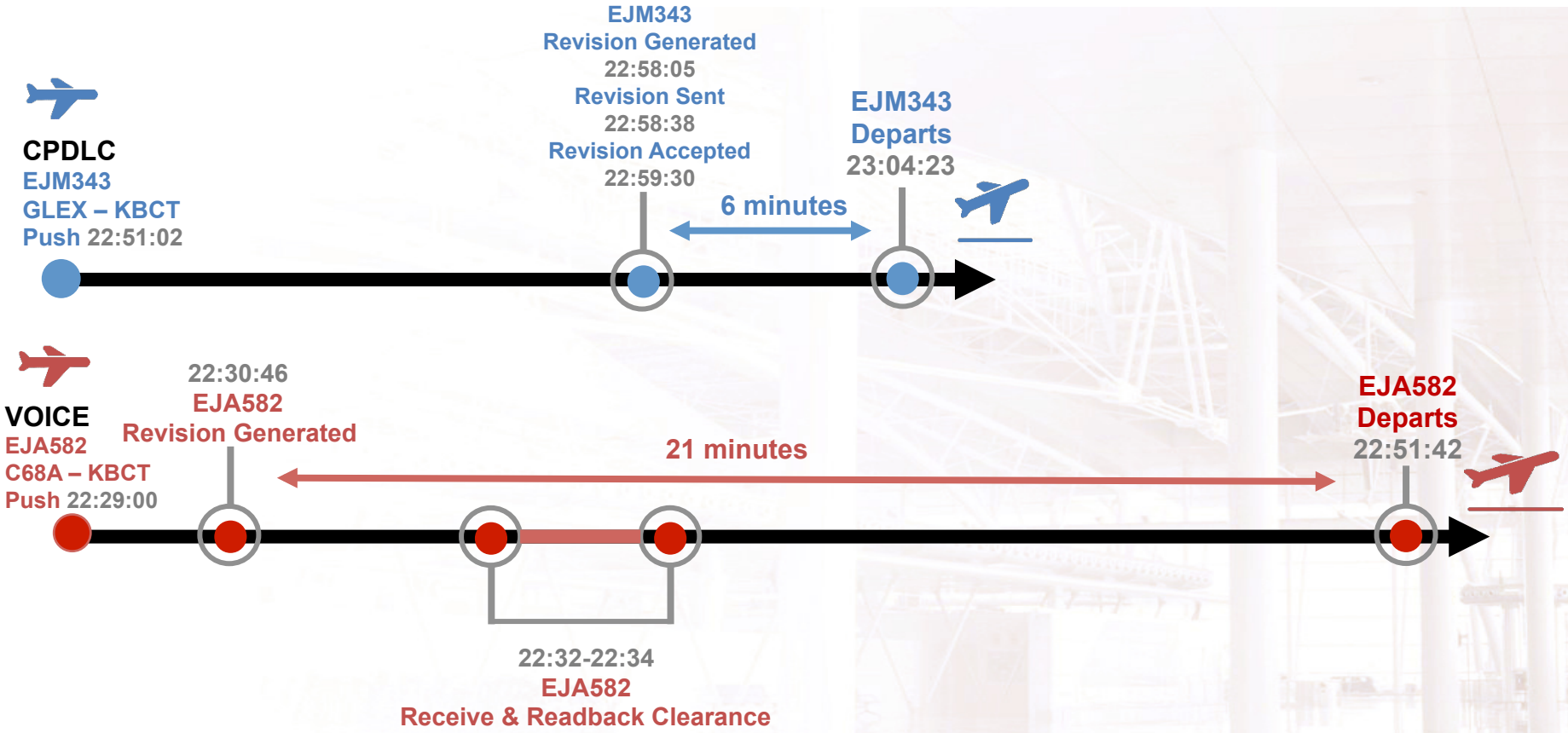
- AC 90-117 Data Comm
- Data Link Communication Compliance Guide

More information: Harris.com/DataComm



DATA COMM BENEFITS EVENTS

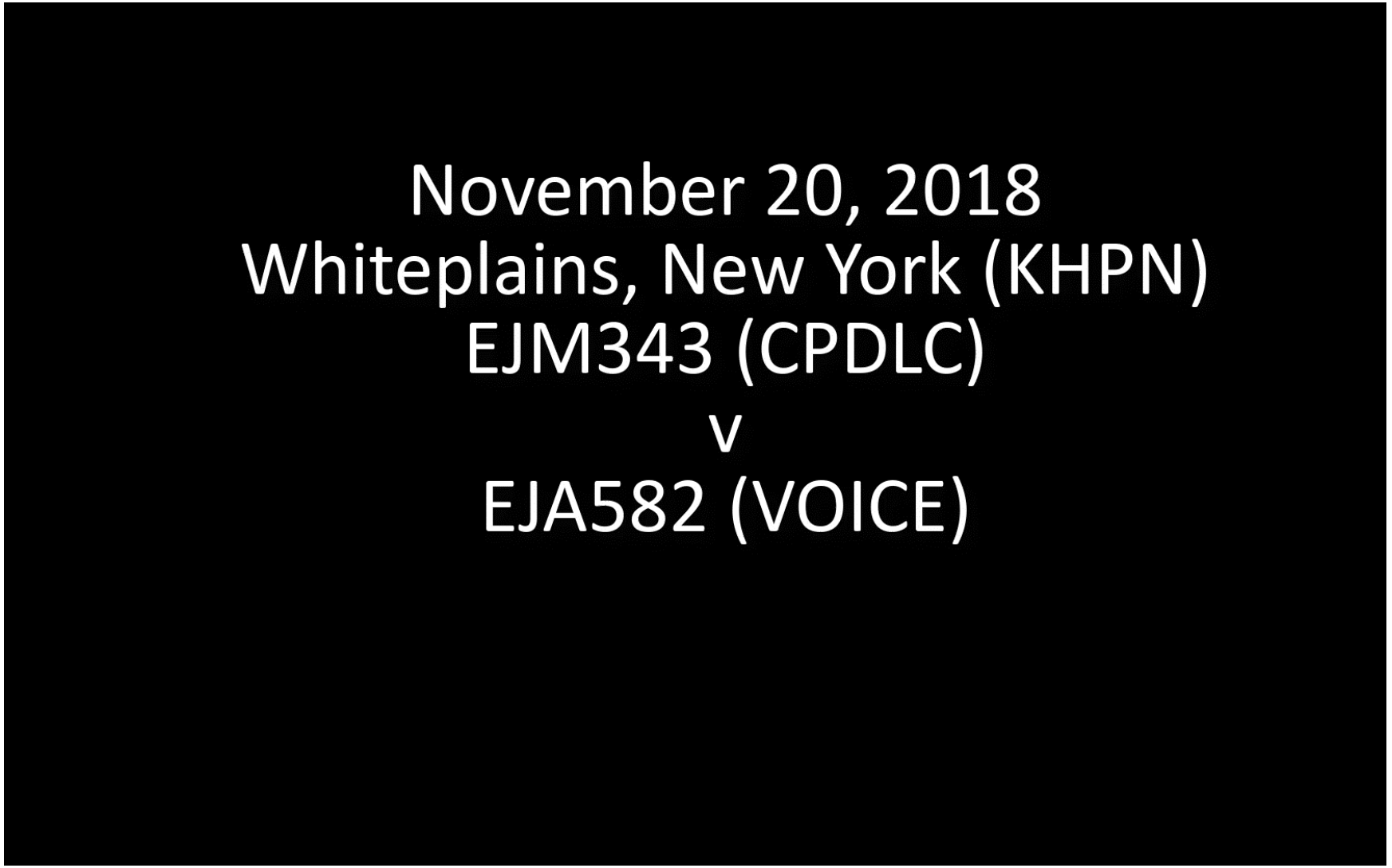
Data Comm Benefits Event – White Plains, New York (KHPN)
November 20, 2018



Benefits:

- CPDLC flight is able to save time on the ground by receiving his re-route via CPDLC-DCL.
- 15 minute time savings for CPDLC flight compared to voice flights

White plains, New York (KHPN) November 20, 2018



US Domestic CPDLC resources

For further information and documents on Data Comm please visit Harris.com/DataComm or email DCIT@Harris.com

Data Comm CPDLC Filing Options

DCL Only - DAT/**1FANS**

- Places priority on receiving a DCL Only

DCL & PDC - DAT/**1FANSP2PDC**

- DCL is the first priority at airports that support. PDC will remain available as the secondary priority, and be provided at departing airports that only support PDC.

DCL & En Route (no UM80 load issue) **-** DAT/**1FANSE2PDC**

- DCL is the first priority at airports that support, and allows for En Route CPDLC services. PDC will remain available as the secondary priority, and be provided at departing airports that only support PDC. (only to be used with aircraft that ***do not have*** *a UM80 load issue*)

DCL & En Route (UM80 load issue) **-** DAT/**1FANSER2PDC**

- DCL is the first priority at airports that support, and allows for En Route CPDLC services. PDC will remain available as the secondary priority, and be provided at departing airports that only support PDC. (only to be used with aircraft that ***have*** *a UM80 load issue*)

PDC & En Route (no UM80 load issue) **-** DAT/**1PDCFANSE**

- PDC is the first priority at airports that support (DCL will not be provided), and allows for En Route CPDLC services. (only to be used with aircraft that ***do not have*** *a UM80 load issue*)

PDC & En Route (UM80 load issue) **-** DAT/**1PDCFANSER**

- PDC is the first priority at airports that support (DCL will not be provided), and allows for En Route CPDLC services. (only to be used with aircraft that ***have*** *a UM80 load issue*)

En Route Only (no UM80 load issue) **-** DAT/**FANSE**

- Only En Route CPDLC service provided. No DCL or PDC. (only to be used with aircraft that ***do not have*** *a UM80 load issue*)

En Route Only (UM80 load issue) **-** DAT/**FANSER**

- Only En Route CPDLC service provided. No DCL or PDC. (only to be used with aircraft that ***have*** *a UM80 load issue*)

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.