



Welcome to

MLB

NETWORK





Tab Butler

MLB Network

Sr. Director Media Management & Post Production

Hitting It Out Of The Park:



MLB Network Facts



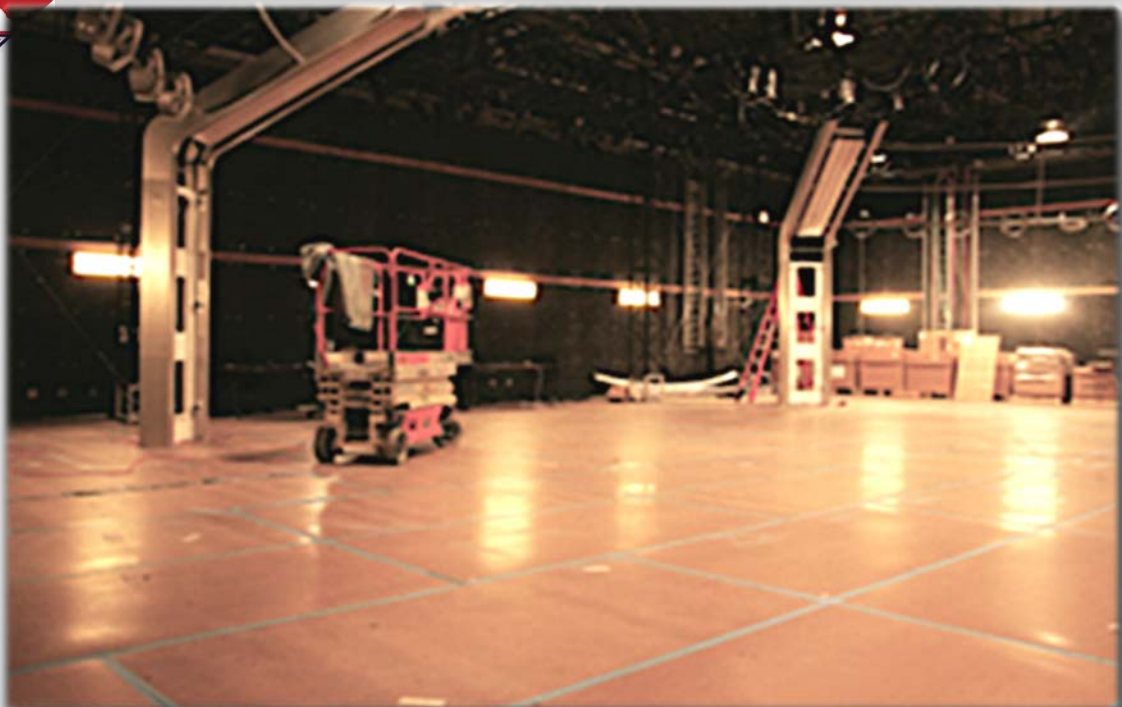
- ✓ Largest debut in cable TV history by nearly 2X
- ✓ 50 Million Households Launch – January 2009
- ✓ 65 Million Households – September 2011
- ✓ Over 70 Million Households – July 2013
- ✓ Production of NHL Network – Oct 2015
- ✓ Consolidating MLB Production – March 2019

NHL Network Move



- ✓ August 2015: BAM purchases NHL streaming rights
- ✓ September 2015: Edit systems and feed acquisition completed
- ✓ October 2015: Live NHL Network programming originates from NJ
- ✓ February 2016: Dedicated control room (PC-3) completed
- ✓ March 2016: Dedicated GFX control rom (GCR-3) completed.
- ✓ May 2016 Dedicated studio “The Rink” debuts





MLB Network Studio 3





MLB Network Studio 42



Studio K



MLB Network



NHL Network

MLB Network Studio 21



MLB Network Studio 21

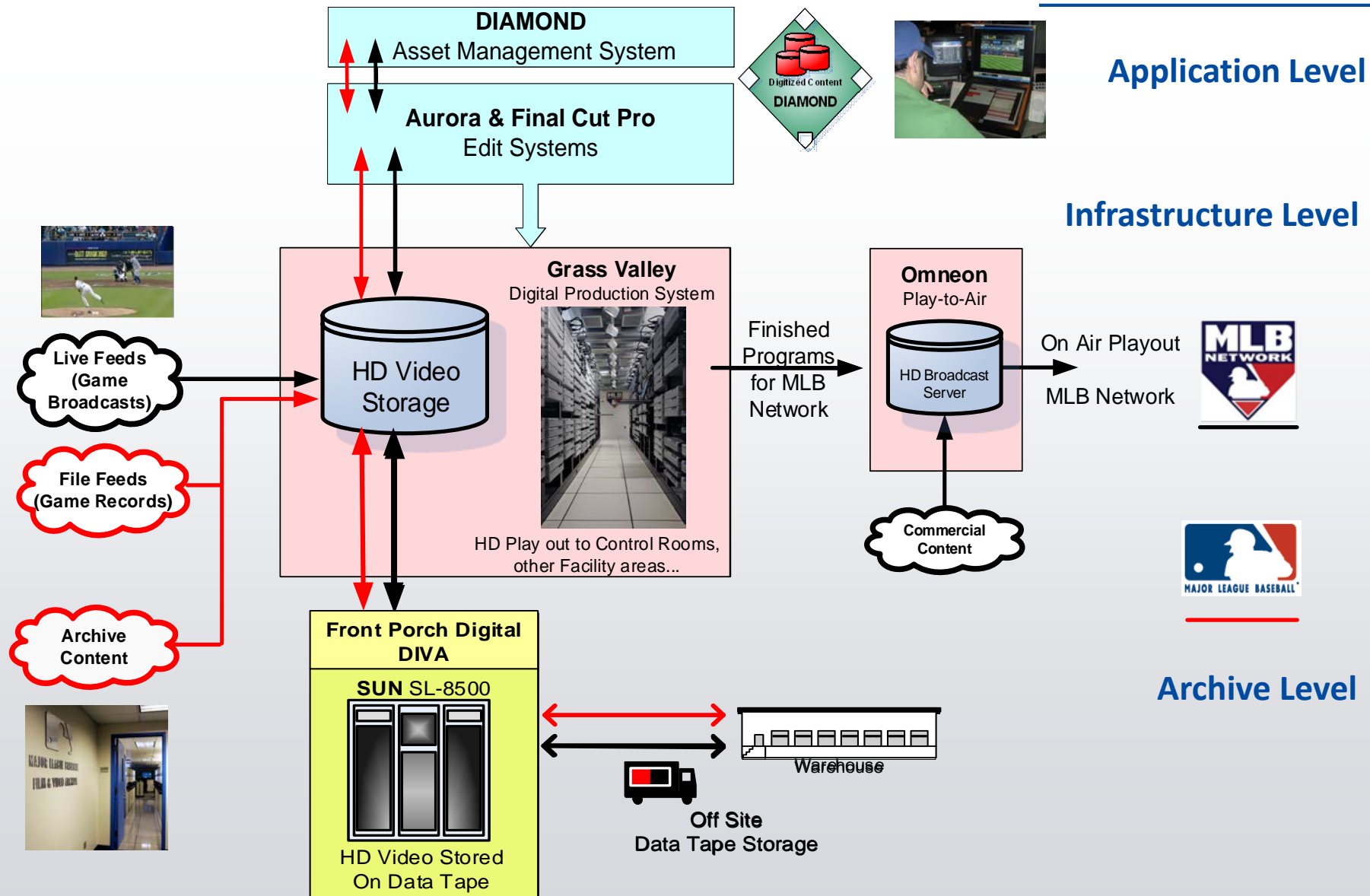


NHL Network – The Rink



2008 PRODUCTION SYSTEM – THE WORKFLOW

The Architecture



MLB Network - 2013

The Vision...



**Expanding
to the Data Center**



MLB Network - 2013

Why Expanding...?



**Current Space and
Power Limitations**



MLB Network - 2018

Expanding Again...



**More People,
More Content,
More Outlets...**



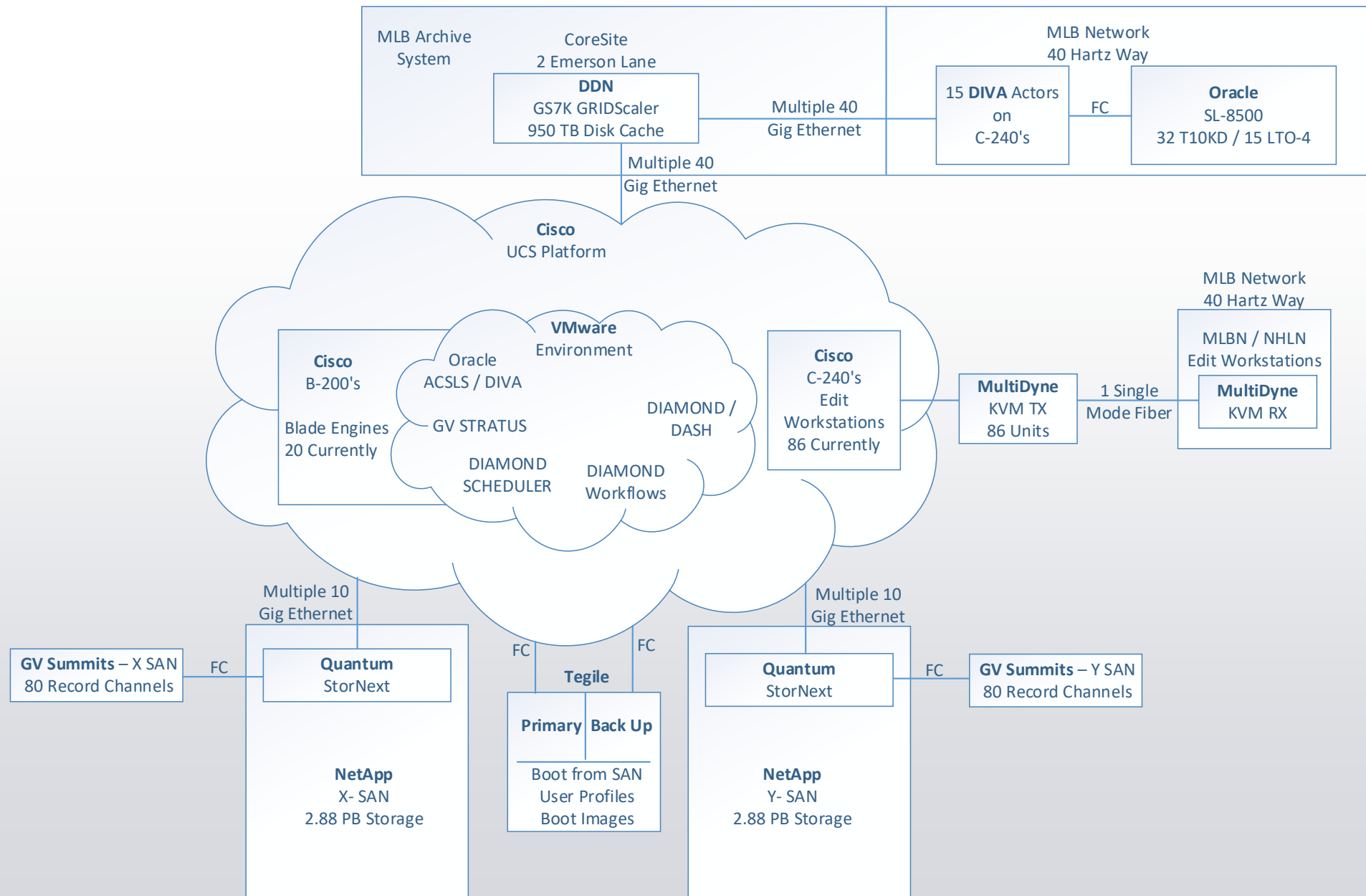
Off-site Data Center @ CoreSite



**28 Racks
Expanding to
37 Racks**



2014 PRODUCTION SYSTEM – THE WORKFLOW



MLB Network Video Archive Overview



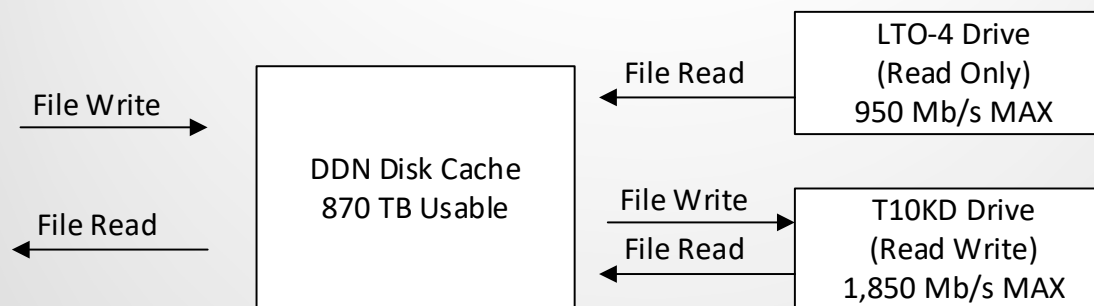
MLBN Production Expectations

- Content Requests are fulfilled within 5 - 10 minutes
- Content required is short in nature... (Walk off home run... Etc.)
- Collections of disparate content is built in DIAMOND and restored automatically and quickly, with Media Management inserting tapes in robot, if necessary.
- Show records and game records can be 125 GB to 300 GB at 50 Mb/s
- A 307 GB file, on LTO-4, took 2 Hours and 7 Minutes to Restore
- A PFR from the same file took 3 minutes to Restore
- Current Tape Stock in Library
 - 20,046 LTO-4 Tapes (16 PB)
 - 6,006 T10KD Tapes (51 PB)

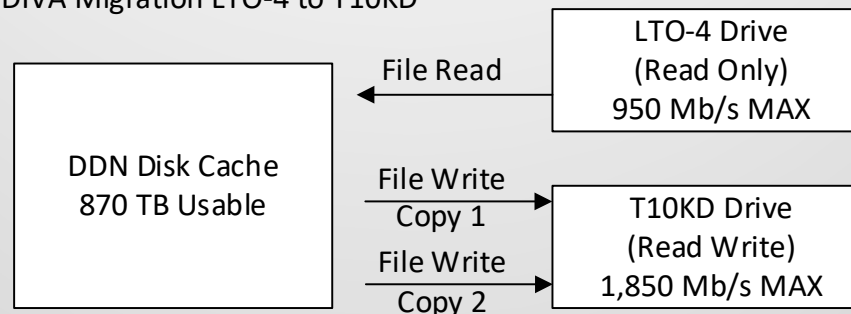
MLB Network Video Archive Overview



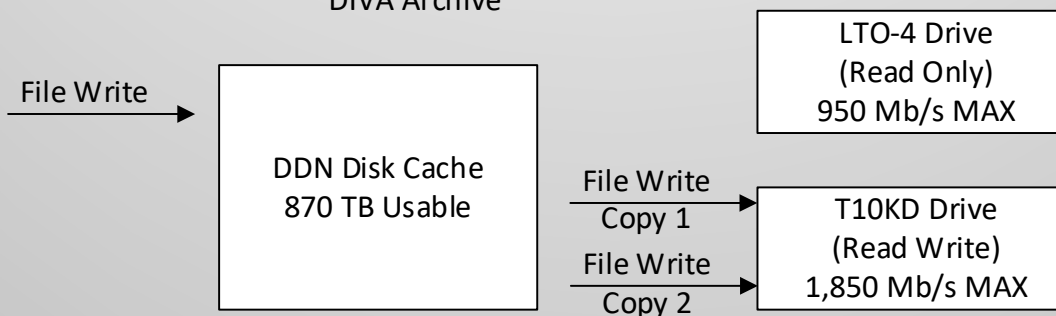
Oracle DIVA Architecture Workflows



DIVA Migration LTO-4 to T10KD



DIVA Archive



MLB Network Video Archive Overview

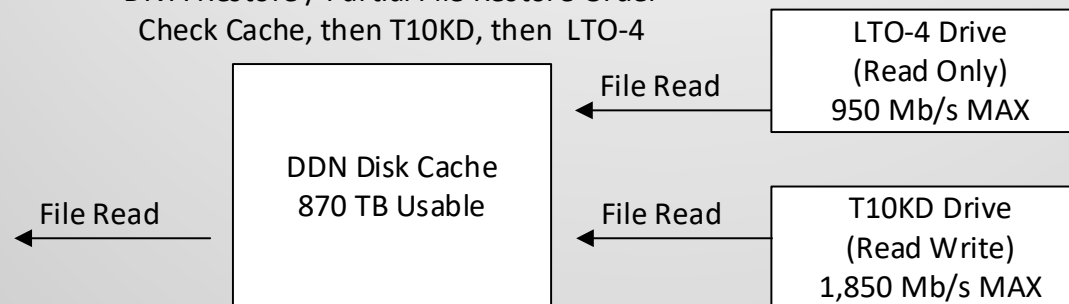


Oracle DIVA Restore Workflows

DIVA Restore / Partial File Restore
From DDN Disk Cache



DIVA Restore / Partial File Restore Order
Check Cache, then T10KD, then LTO-4



MLB Network Video Archive Overview



Oracle DIVA Migration Workflows LTO-4 to T10K-D

- January 2016 – Install 32 T10K-D Drives in SL-8500
- August 2016 - Started DIVA Migration to T10K-D Tape Format
 - 45,352 LTO-4 Tapes In Archive
 - 870 TB DDN NAS Disk Cache Key to Workflow
 - 12 LTO-4 Drives Dedicated 7x24x365 to Migration
 - 3 LTO-4 Drives Available for File Restores
 - 32 T10K-D Drives Available for All Writes, and Reads
- September 2018 – Migrated 25,306 Tapes and Counting – 20,000 to go....
- July 2020 – Expected Migration Completion

MLB Network Video Archive Overview

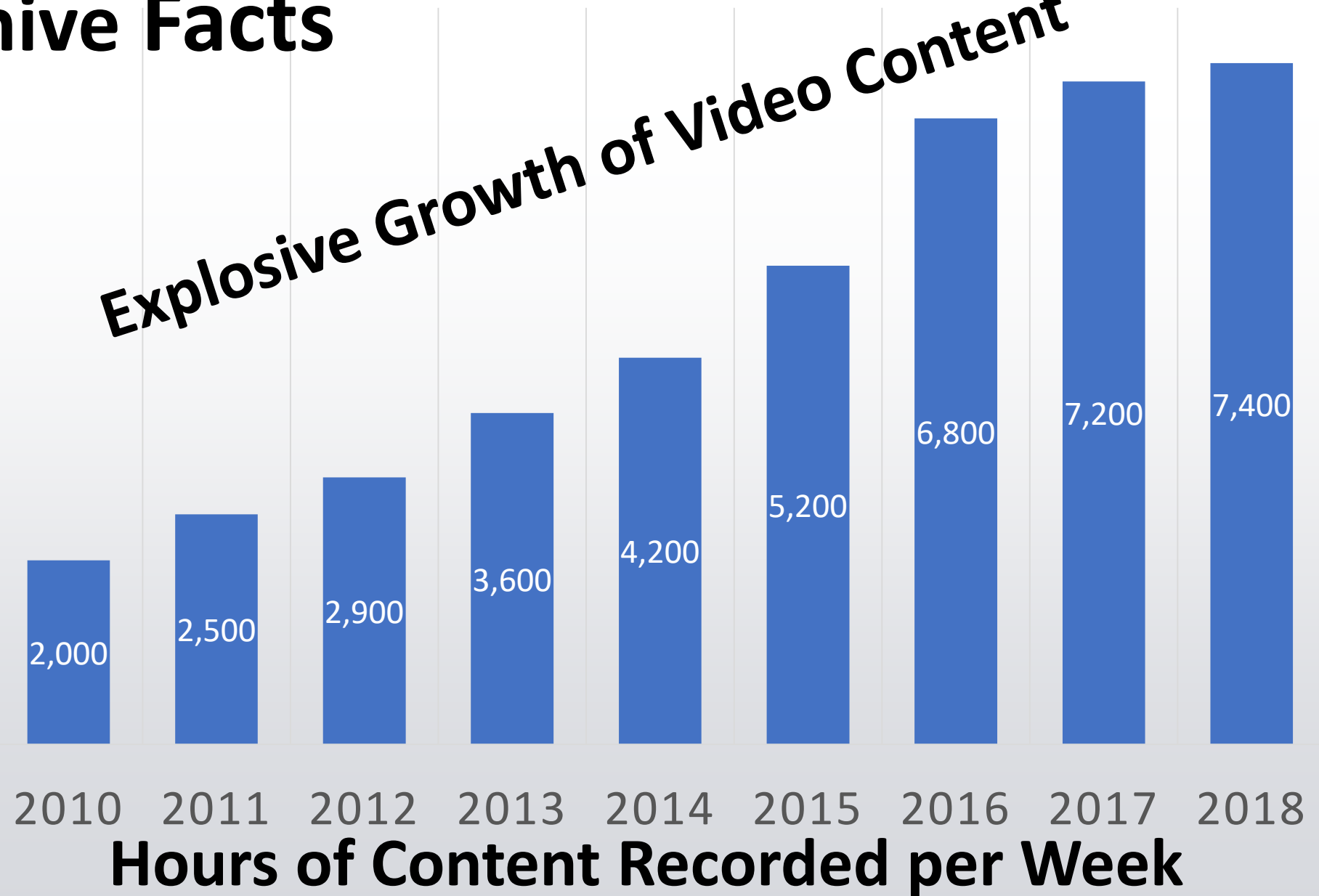


Oracle DIVA Migration Workflows T10K-D to LTO-9 / LTO-10

- 2020 – Existing Migration Completes
 - Anticipate Over 12,000 T10K-D Tapes In Archive
 - MLB Network, MLB Archives, **Plus** MLB Digital Content
- Current Growth of Library is 150,000 Hours per Year
- 2022 or 2023 – Next Migration Effort Begins
 - Technology Rollout will Drive Deployment Schedule
 - Dedicated Pool of 16-20 T10K-D Drives for Migration
- Migration Completion Target by 2026 or 2027

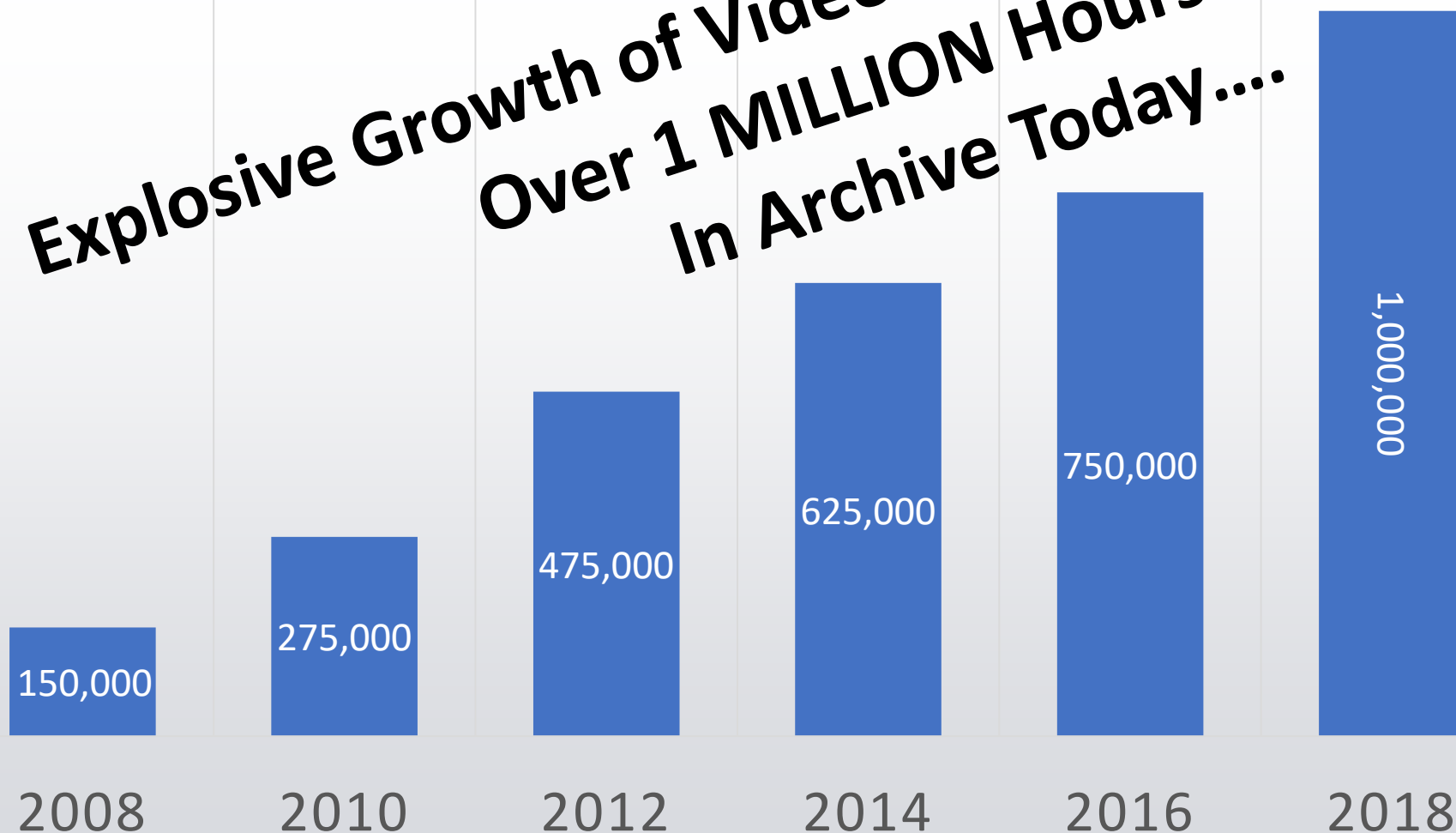
Video Archive Facts

Explosive Growth of Video Content



Video Archive Facts

**Explosive Growth of Video Content
Over 1 MILLION Hours
In Archive Today....**

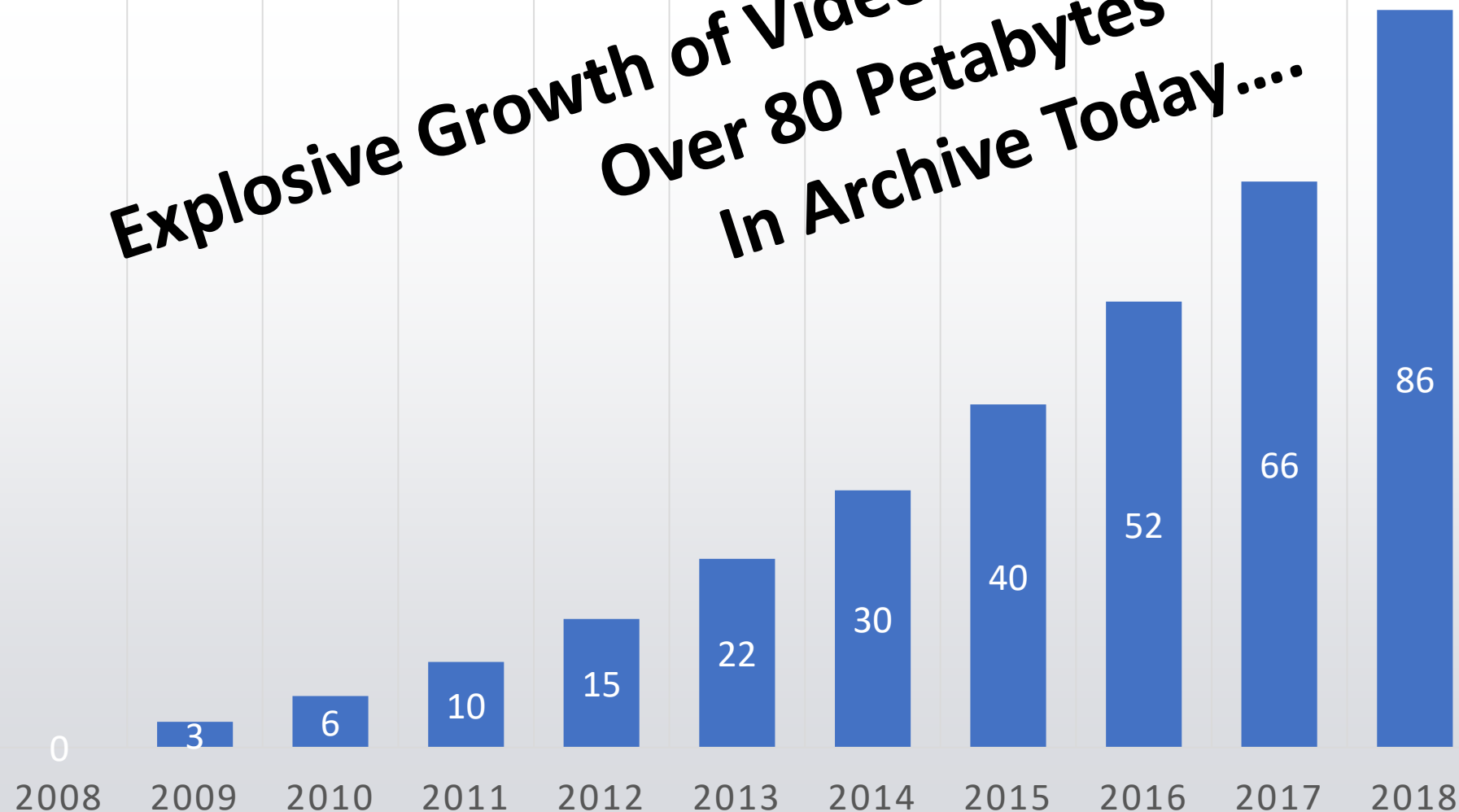


Content Growth Over the Years - in Hours



Video Archive Facts

**Explosive Growth of Video Content
Over 80 Petabytes
In Archive Today....**



Content in Petabytes Added Per Year



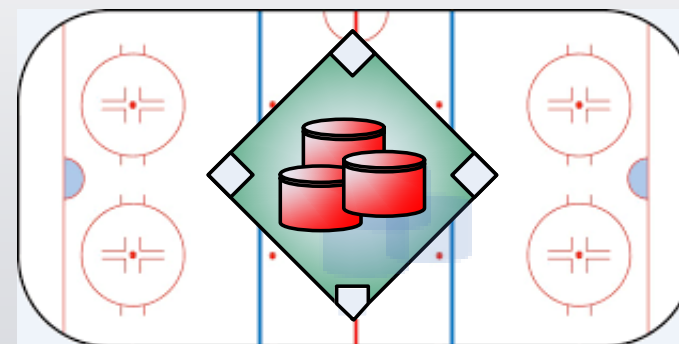


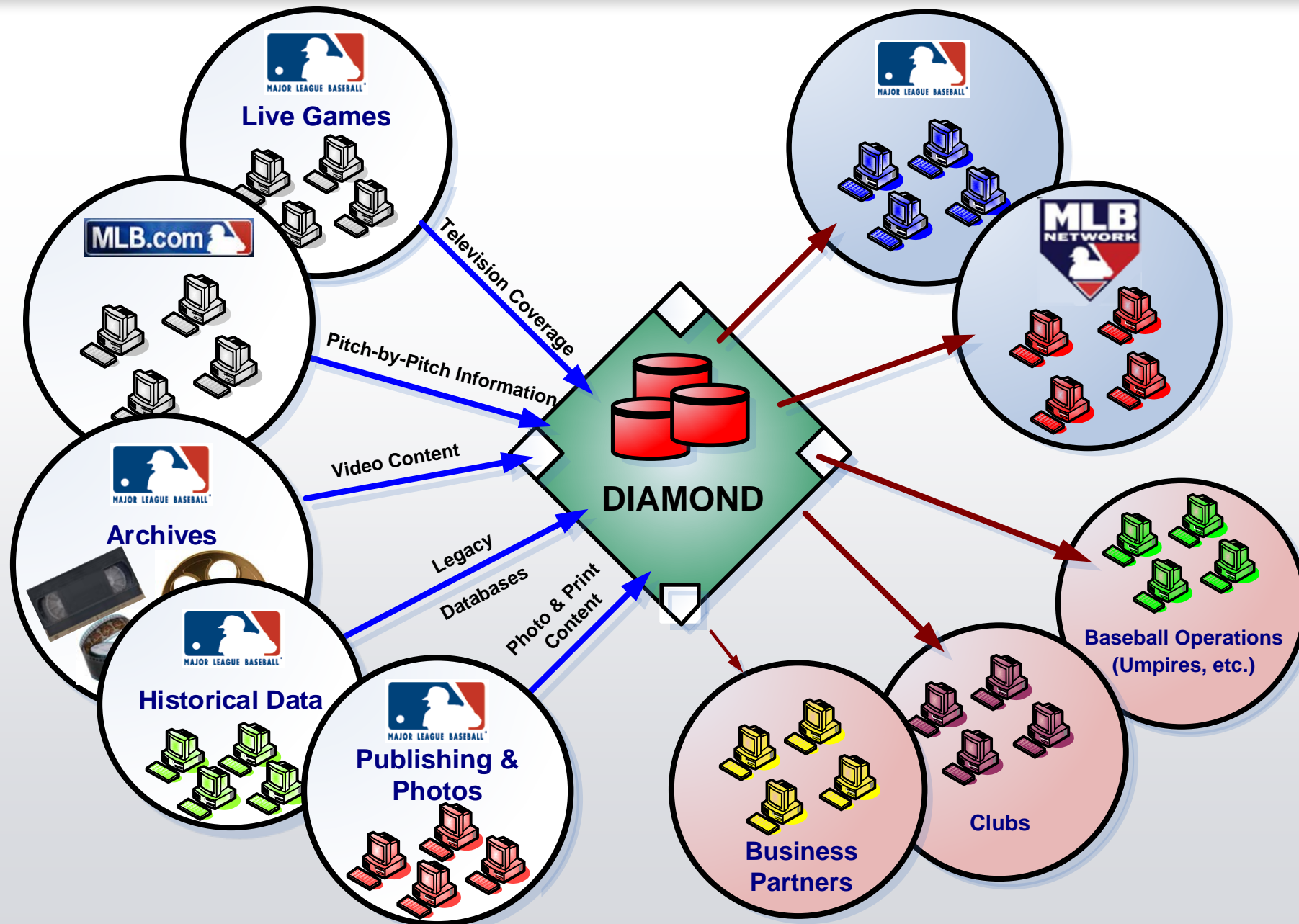
The DIAMOND Platform

As Deployed at MLB Network



DIAMOND ON ICE





DIAMOND System Components

- **DIAMOND Core Server**
 - **DIAMOND Logging**
 - **DIAMOND View**
-
- **DIAMOND Game Logging**
 - **DIAMOND Media Management**
 - **DIAMOND Adobe Premiere Plugin**
 - **DIAMOND DASH**

DIAMOND System Components

- **DIAMOND Core Server**
 - **DIAMOND Logging**
 - **DIAMOND View**
-
- **DIAMOND Scheduler**
 - **DIAMOND Archive – Integrated with Front Porch**
 - **DIAMOND Cutter (UFTP Engine)**
 - **DIAMOND Watcher (Automated File Movement)**
 - **DIAMOND In The Cloud Platform**

DIAMOND System Statistics

DIAMOND – MLB Baseball

- **Total Assets** **1,154,886**
- **Total Hours Logged (Approx.)** **1,021,000**
- **Total Individual Events** **11,890,077**
- **Total ‘People’ Identified** **18,990,935**
- **Total Categorizations** **47,975,012**

DIAMOND System Statistics

DIAMOND ON ICE – NHL Hockey

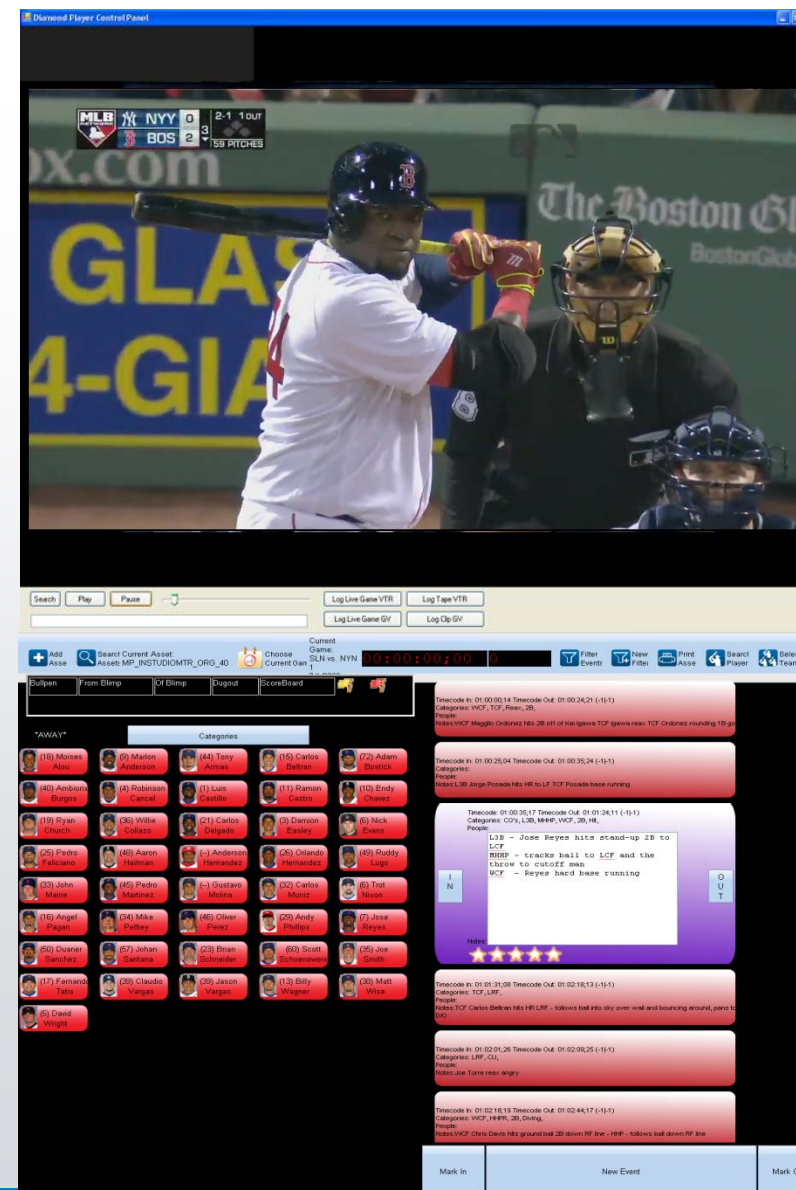
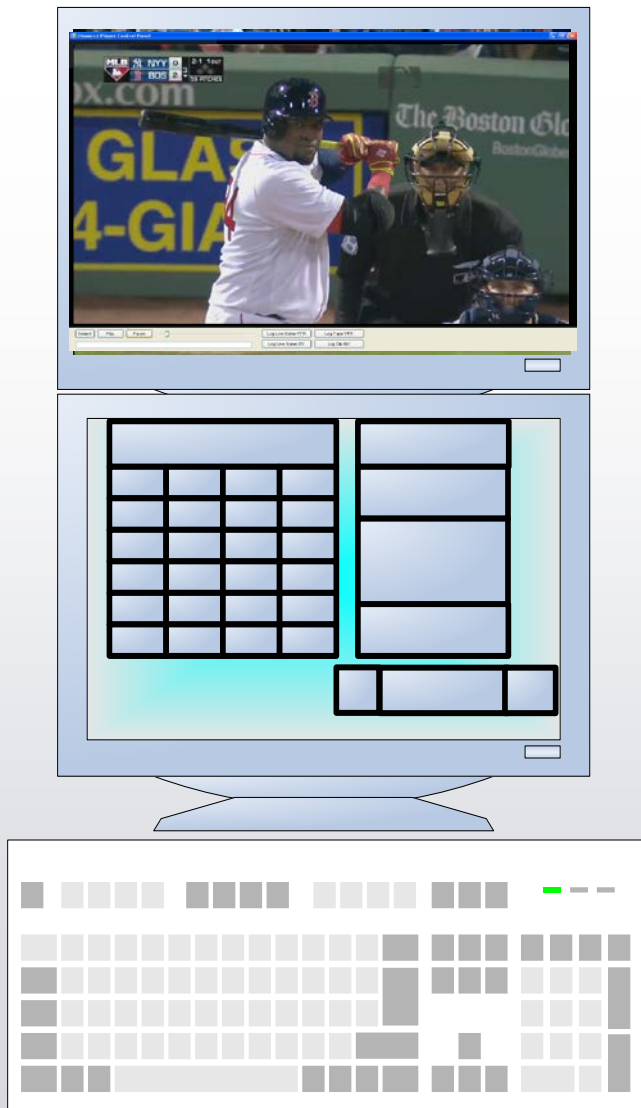
- **Total Assets** **217,753**
- **Total Hours Logged (Approx.)** **150,000**
- **Total Individual Events** **1,910,135**
- **Total 'People' Identified** **3,232,102**
- **Total Categorizations** **8,769,996**

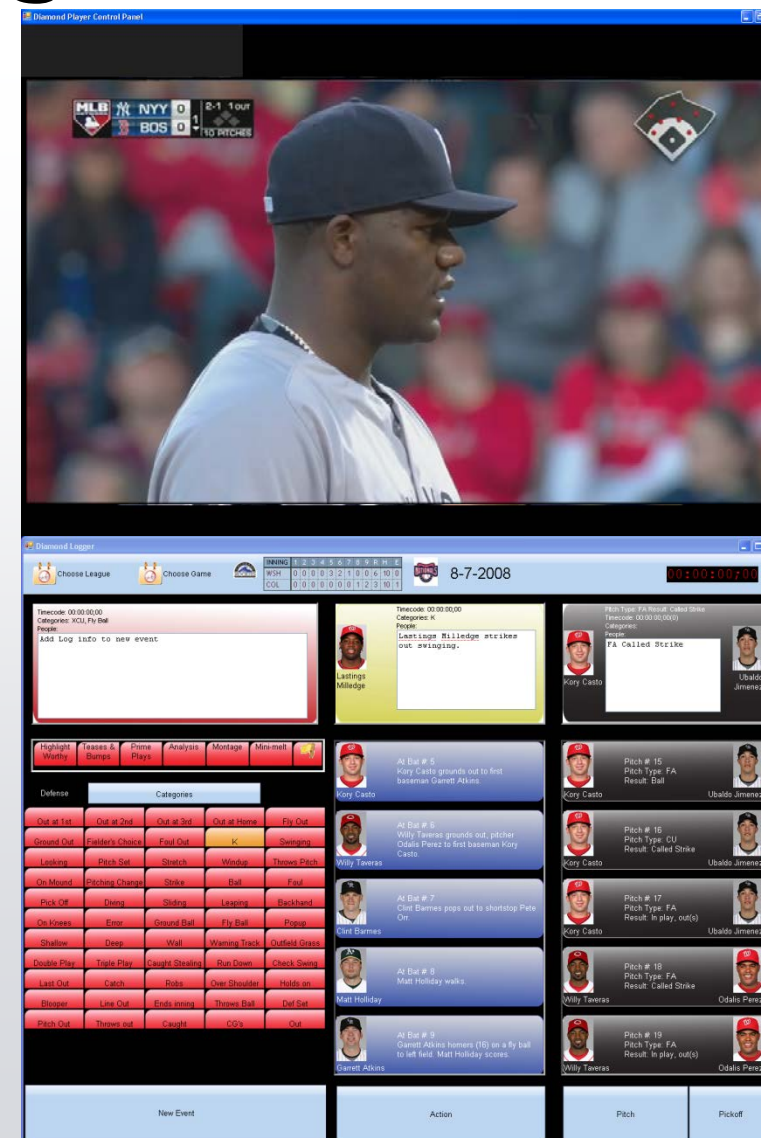
DIAMOND System Components



Twenty DIAMOND Logger Workstations

DIAMOND Logger Interface





DIAMOND Premiere Interface – Basic Game View

The screenshot displays the Adobe Premiere Pro CC 2014 interface with the Diamond Premiere interface loaded. The main video preview window shows a baseball game between the New York Yankees (NYM) and the Chicago Cubs (CHC). The score is 6-1 in the 6th inning, with the Yankees leading the series 3-0. The pitcher is Trevor Cahill, and the batter is Wilmer Flores. The timeline shows the current timecode as 00:00:00. The multi-track editor shows various tracks including V1, V2, V3, A1, A2, A3, A4, A5, A6, A7, A8, A9, and A10. The log window on the left displays a list of events and comments, including pitching changes and game action.

Project: MMDemo
Media Browser: Info Effects Markers Diamond Dash
History: Search Search Result: Media Browser Asset Search Collections Collection Search Result: Collection
Log:
 22:07:16:23 Pitching Change: Trevor Cahill replaces Clayton Richard, batting 8th, replacing Austin Jackson.
 22:07:30:19 Clayton Richard, Austin Jackson, Trevor Cahill Pitching Change, B6
 00:00:13:26
 22:08:32:02 Wilmer Flores triples (1) on a line drive to center fielder Dexter Fowler. Analysis on judging when the best time is to dive for a ball and when to try to block it and stay standing up and K. Schwarber is still learning that. Radio Analysis on K. Schwarber possibly "losing the ball in the light", as he aimlessly dives into the grass. K. Schwarber was aligned deep in left field, with the wind blowing out, as he is unable to get any leather on the ball.
 22:09:55:04 Dexter Fowler, [P] Trevor Cahill, [B] Wilmer Flores, Kyle Schwarber H1B, TCF, LF, Slo-mo, 3B, Line Drive, CF, Deep, Off Wall, Warning Track, Replay, Analysis, Highlight_Worthy, Defense Fundamentals, Player, LF, T6, Player Mentality, Stand Up
 00:01:23:02 See this in 20151021NYM-CHC-NDPOST
 See this in 20151021NYM-CHC-NDPOST
 See this in 20151021NYM-CHC-NDPOST
 See this in 20151021NYM-CHC-NDPOST
 22:10:46:09 Kirk Neuwenhuis grounds out sharply to first baseman Anthony Rizzo. Analysis on A. Rizzo making a nice play at first with the ball being hit extremely hard. Radio Analysis on A. Rizzo providing the Cubs defense, with "a run-saving play", as he backhands a hard hit ball from K. Neuwenhuis. A. Rizzo has been consistently impressive, defensively, all season long, "He's been doing it all year, with the leather."
 22:11:27:28 [P] Trevor Cahill, [B] Kirk Neuwenhuis, Anthony Rizzo Ground Out, Backhanded, LRF, Slo-mo, 1st, Out at 1st, Replay, Analysis, Defense Fundamentals, Player, Great Performance, T6, Player Mentality, Unassisted, Catch / No Catch, 1st Base Ump, Umpire Event, Fair/Foul
 00:00:41:17
 22:11:28:17 Coaching visit to mound for C. Bosio to talk things over with his infielders.
 22:12:12:01 David Ross, Trevor Cahill, Anthony Rizzo, Starlin Castro, Chris Bosio, Javier Baez, Kris Bryant Mound Conference, Manager/Coach, T6
 00:00:43:12
 22:12:34:03 Curtis Granderson grounds out, shortstop Javier Baez to first baseman Anthony Rizzo. S. Castro gets up slowly after the play. Radio Analysis on the miscommunication between S. Castro and J. Baez, as they collide fielding a well-hit ground ball. J. Baez is able to make the play, as the ball was hit to the glove-side. S. Castro appears to have injured his elbow, but will remain in the game.
 22:13:36:11 [B] Curtis Granderson, [P] Trevor Cahill, Anthony Rizzo, Starlin Castro, Javier Baez LHP, HHP, Ground Out, H1B, Slo-mo, S6, Out at 1st, Replay, Analysis, Defense Fundamentals, Player, Team, REAX, T6, Pain, Force Play, 1st Base Ump, Umpire Event, X-Mo, Injury Analysis, Pull-Hitter Shift
 00:01:02:08

DIAMOND Premiere Interface – Search

The screenshot displays the Adobe Premiere Pro CC 2014 interface with the DIAMOND search interface integrated into the workflow. The top timeline shows two video clips: a close-up of a pitcher (04:07:36:03) and a wide shot of a baseball game (00:00:00:00). The left sidebar contains search filters for Asset, Event, and People. The central search results area shows a list of assets, including '20151021NYM-CHC-NDHTN' and '20150912BOS-TBR-HDHTN.mov'. The right sidebar shows a list of assets with columns for Name, Type, and Date.

Search Interface Components:

- Workflow Shortcuts:** Asset, Event, People
- Asset Search:**
 - Asset Name: 20151021NYM-CHC-NDHTN
 - Date From: [Dropdown]
 - Date To: [Dropdown]
 - Games Only: [Checkbox]
 - Postgames Only: [Checkbox]
 - Official Events: [Checkbox]
 - Team 1: [Dropdown]
 - Team 2: [Dropdown]
 - Home: [Checkbox]
 - Away: [Checkbox]
- Event Search:**
 - Event Text: [Text Field]
 - Tags 1: [Dropdown]
 - Tags 2: [Dropdown]
 - All: [Radio Button]
 - Any: [Radio Button]
 - None: [Radio Button]
- People Search:**
 - People: [Text Field]
 - All: [Radio Button]
 - Any: [Radio Button]
 - None: [Radio Button]
- Search Results:**
 - Asset Search
 - Event Search
 - Photo Search
 - Clear
- Asset List (Right Sidebar):**

Name	Type	Date
V3	[Icon]	
V2	[Icon]	
V1	[Icon]	
A1	[Icon]	
A2	[Icon]	
A3	[Icon]	
A4	[Icon]	
A5	[Icon]	
A6	[Icon]	
A7	[Icon]	
A8	[Icon]	
A9	[Icon]	
A10	[Icon]	

DIAMOND Premiere Interface – ENPS Integration

The screenshot displays the Adobe Premiere Pro CC 2014 interface with the following components:

- Project Panel:** Shows a list of stories under the 'Dash' tab. The stories are:

Order	Story	MOS ID	MOS Status
12	Yo Cueto good with KC (LONG) -VBox	MLBN92QZ	STAND BY
13			
14	Yo Cueto good with KC 2-VBox	MLBN92R0	READY
15	Yo Cueto good W/CS Gm 2-VBox	MLBN92R1	READY
16	Yo Cueto bad ALCS Gm 3-VBox	MLBN92R2	READY
17	Yo Cueto good ALDS Gm 5-VBox	MLBN92R3	READY
18			
19			
20			
- Source Monitor:** Displays a video clip of a baseball pitcher (number 27) in a white uniform. The clip has a duration of 00:01:23:00.
- Program Monitor:** Displays a live broadcast of a baseball game between the New York Yankees (NYM) and the Chicago Cubs (CHC). The score is 6-1 in the 3rd inning. The pitcher is Trevor Cahill and the batter is Wilmer Flores. The clip has a duration of 00:05:38:24.
- Timeline:** Shows a multi-track timeline with video (V1-V3) and audio (A1-A10) tracks. The video track contains two clips: '20151021NYM-CHC-NDHTN...' and '20150912BOS-TBR-HDHTN.mov [V]'. The timeline has a duration of 00:04:16:16.
- Taskbar:** Shows the Windows taskbar with various open applications including Adobe Premiere Pro, Developer Tools, and MySQL Workbench.

DIAMOND Scheduler



DIAMOND Scheduler

New Search Templates Timeline Setup Testing **Edit Event** ✕

Event info

Template: Standard Game

Event Name: 20140923BAL-NYY-1

Event Date: 9/23/2014

Event time: 19:05

Create Records from Template

Add Record

Update Event

Collapse/Expand All

Changes will not be saved until Update Event button is clicked

20140923BAL-NYY-1 - 20140923BAL-NYY-1-HDHTN - Delete

Record Type: Home Dirty HTN ☐ Crash Record Start Date: 9/23/2014 16:10

Record Name: 20140923BAL-NYY-1-HDHTN ☐ Open Ended End Date: 9/23/2014 16:20

Duration: 0:10

Channel: XMC01-1 Router Source: RX001 ☐ Send to cloud

Destination: X-DEFAULT Target Location: Primary Games ☒ Create Proxy

Archive Rule: Days: 0

Cleanup Rule: Days: 0

20140923BAL-NYY-1 - 20140923BAL-NYY-1 - Delete

Record Type: ☐ Crash Record Start Date: 9/23/2014 19:05

Record Name: 20140923BAL-NYY-1 ☐ Open Ended End Date: 9/23/2014 19:05

Duration: 0:00

Channel: Router Source: ☐ Send to cloud

Destination: Target Location: ☐ Create Proxy

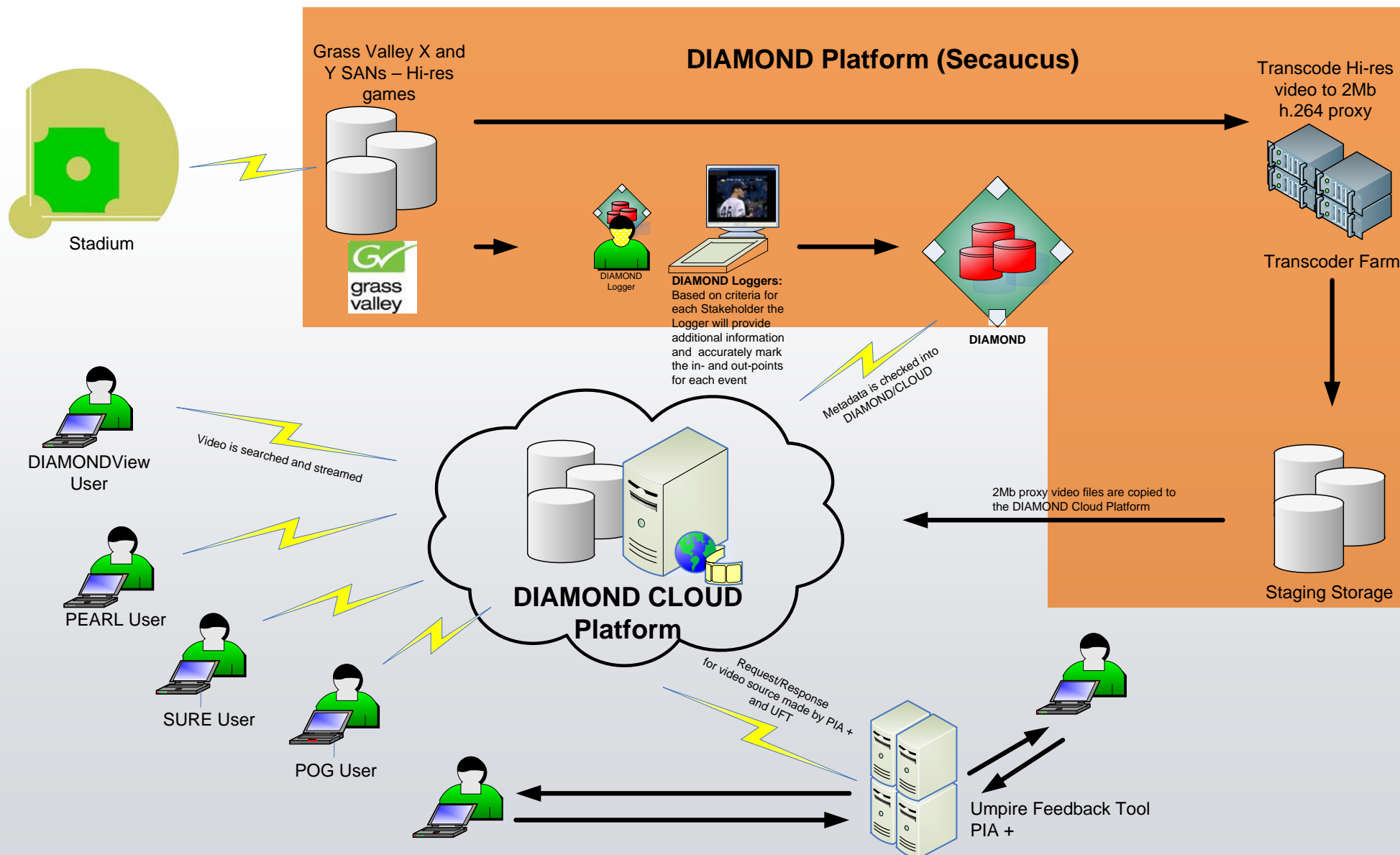
Archive Rule: Days: 0

Cleanup Rule: Days: 0

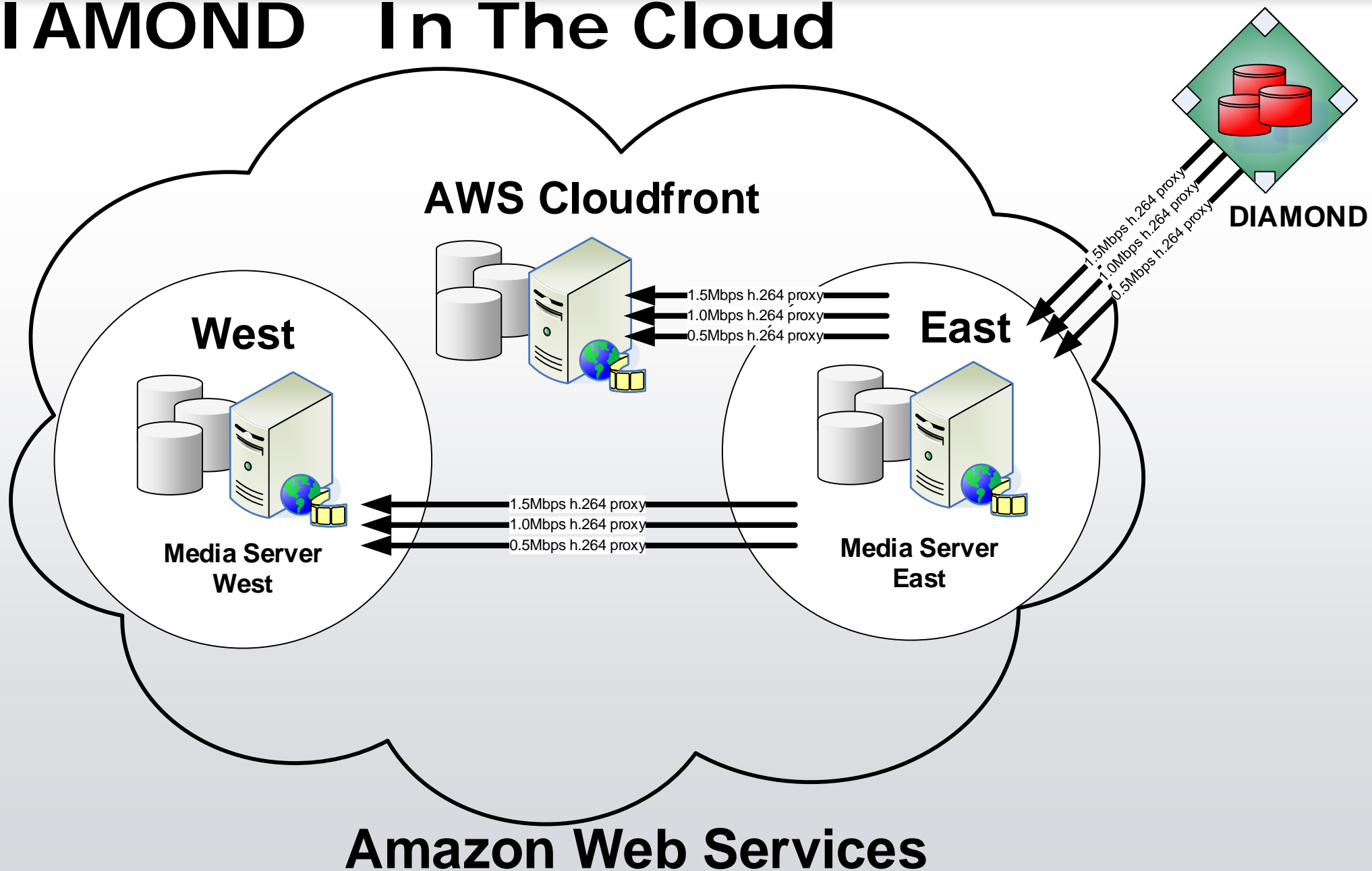
Automates Records of 160 GV Summit Channels

DIAMOND In The Cloud

DIAMOND In The Cloud



DIAMOND In The Cloud





THANK YOU !

Questions ?

The MLB Network



