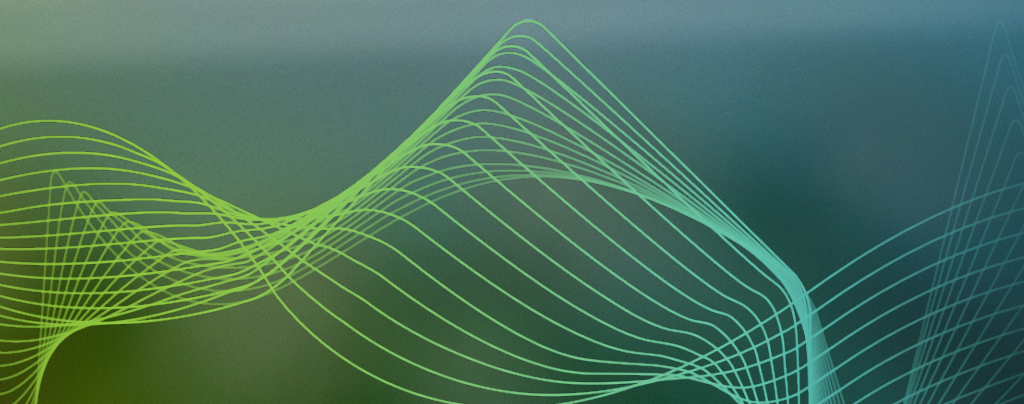




WHAT DOES THIS MEAN FOR MY BUSINESS?

August 18, 2020



COMCAST 
TECHNOLOGY SOLUTIONS

CONNECTS

AGENDA

- Overview
- Project Timeline
- Alternate Timeline
- Terrestrial Distribution
- Q & A

C-BAND SPECTRUM REALLOCATION REVIEW

WHAT?

- **FCC order:** Reallocates 2/3 of C-band spectrum to 5G carriers
- **Timeline:** Activities beginning 2020 through 2023
- **Funding:** Auction by FCC will fund the technology updates needed to upgrade/move video services to new locations etc.

WHAT DOES THIS MEAN FOR MY SYSTEM(S) – AKA EARTH STATION(S)?

- **Verification/review:** Confirm earth station registration and assess requirements
- **Communication:** Receive details from satellite operators and programmers
- **Planning:** Determine timeline and activities

HOW ARE WE EVOLVING?

- **Technology:** Moving to Harmonic solution and new satellite location
- **Timeline:** Planning in 2020, migrations in 2021

BENEFITS

- **Reduce risk: Keep your video business whole**
- **Strengthen your business: More efficient, reduced hardware & additional flexibility**
- **Future proof through digital transformation: Enhancements and new technologies**
- **Transition seamlessly: Single phase migration**
- **Ongoing partnership: No unexpected expenses & includes technical support**

HOT TOPICS



Lump sum

- Eligibility
- What is / in not included



Registered vs. non-registered

- Earth stations registration
- FCC database



Survey

- Did not receive or received the wrong one
- Deadline



Equipment requirements

- How will SES or CTS know what I need?
- Who will manage the installation?



Timeline

- Milestones
- How will I know what to do and when?



Costs

- SES responsibilities
- Out of pocket expenses

HOW WILL THIS WORK?

Affiliate Status	Reimbursement Option	Affiliate Information/Survey	IRD	Antenna	Filters	Additional Equipment	Transition Coordination
Registered	SES Plan	Conducted by SES with Superior	Purchased by SES	Purchased by SES	Purchased by SES	Purchased by SES	Coordinated with SES/Harmonic/CTS
Registered	Lump Sum	Conducted by SES with Superior	IRDs will be supplied by SES	Purchase directly with reimbursement	Purchase directly with reimbursement	Purchase directly with reimbursement	Coordinated with relocation coordinator CTS/Harmonic
System Registered/ 105W Not registered	SES Plan	Conducted by SES with Superior	TBD	TBD	Purchased by SES	TBD	TBD
System Registered/ 105W Not registered	Lump Sum	Conducted by SES with Superior	TBD	Purchase directly with reimbursement	Purchase directly with reimbursement	Purchase directly with reimbursement	Coordinated with relocation coordinator CTS/Harmonic
Not Registered	N/A	Conducted by CTS	Purchase directly; Not eligible for reimbursement	Purchase directly; Not eligible for reimbursement	Purchase directly; Not eligible for reimbursement	Purchase directly; Not eligible for reimbursement	Coordinated with CTS/Harmonic



PROJECT TIMELINE

PROJECT TIMELINE

3RD QUARTER 2020

- **Communication:** Site survey — Complete SES-HITS Survey for all systems by August 31, 2020
- **Authorization:** SES-11 transponder move: Systems with QHD 1 & 2 muxes (transponder 23 to 13)
 - Dual illumination 9/1/20-10/31/20 (60 days)
 - Affected systems need to retune IRDs during the dual illumination period
- **Equipment:** AMC-11 antennas shipped (if applicable)

4TH QUARTER 2020

- **Communication:** Respond to requests from SES regarding overall schedule & activities
- **Verification:** Respond to SES/Harmonic/HITS regarding system details and open questions
- **Equipment:** Begin receiving equipment, filters and AMC-11 antenna (if applicable)
- **Agreement:** 2021 Managed Satellite Distribution (HITS) renewal process begins

1ST QUARTER 2021

- **Communication:** Continue coordination with SES & Harmonic to complete transition activities
- **Authorization:** Activate new IRDs by contacting HITS (beginning 3/1/21)
- **Equipment:** Continue receiving & installing equipment and filters at earth stations
- **Agreement:** 2021 Managed Satellite Distribution (HITS) renewal complete with affiliates

2ND QUARTER 2021

- **Communication:** Continue coordination with SES & Harmonic to complete transition activities
- **Authorization:** Activate new IRDs by contacting Managed Satellite Distribution (HITS) (through May 2021)

ALTERNATE TIMELINE

1ST QUARTER 2021

2ND QUARTER 2021

3RD QUARTER 2021

Why have an alternate timeline?

- *COVID-19 delays*
- *Unexpected equipment shipment delays*

- **Communication:** Continue coordination with SES & Harmonic to complete transition activities
- **Authorization:** Activate new IRDs by contacting Managed Satellite Distribution (HITS) (beginning 3/1/21)
 - Transition existing muxes (CommScope equipment) to AMC-11 (QSD 1, QSD 2, QSD 3, QSD 4, QHD 9 and QHD 10 beginning March 2021)
- **Equipment:** Continue receiving & installing equipment and filters at earth stations
- **Agreement:** 2021 Managed Satellite Distribution (HITS) renewal complete with affiliates

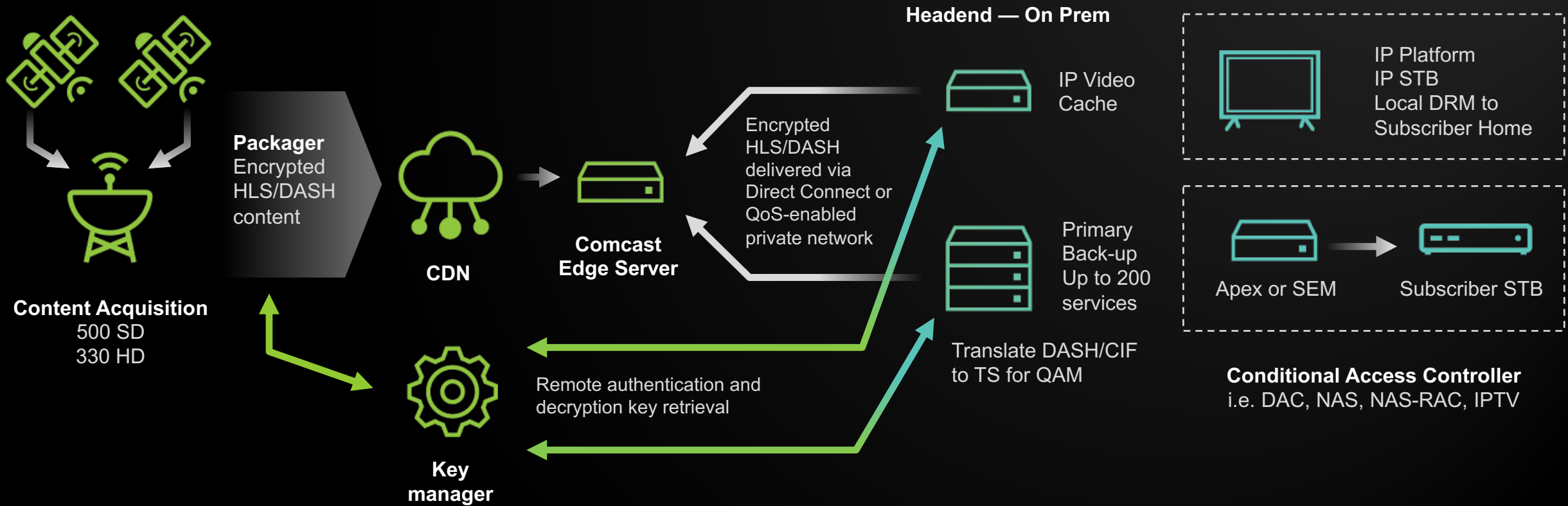
- **Communication:** Continue coordination with SES to complete transition activities
- **Authorization:** Activate new IRDs by contacting Managed Satellite Distribution (HITS)

- **Communication:** Continue coordination with SES to complete transition activities
- **Authorization:** Activate new IRDs by contacting Managed Satellite Distribution (HITS) (ending no later than Sept 2021)

TERRESTRIAL DISTRIBUTION

The background features a complex network of glowing lines and dots in shades of green and blue. The lines are thin and interconnected, creating a mesh-like structure that flows across the frame. The dots are small and bright, serving as nodes in the network. The overall effect is a sense of dynamic energy and connectivity, typical of a digital or data visualization theme.

MANAGED TERRESTRIAL DISTRIBUTION



MANAGED TERRESTRIAL DISTRIBUTION



- Extend video transport from QAM-based to IP-based
- Expand video distribution to satellite and terrestrial
- Increased channel offerings
- Path to IP video solutions
- Low entry expense

- Turn-key solution
- Minimal hardware
- Low cost connectivity
- Comcast video reliability

- **Reduce headend costs:**
Less equipment and maintenance in headend
- **Improve customer experience:**
 - Increases services to available for customers
 - Transition to MPEG-4 services
- **Strengthen your business through digital transformation:**
Path to IP platform

- Local ad insertion
- Customizable multiplex

SUMMARY

The background features a complex, abstract digital network. It consists of numerous glowing nodes connected by thin lines, creating a mesh-like structure. The color palette is primarily blue and green, with some yellow highlights. The overall effect is that of a dynamic, interconnected system, possibly representing data flow or a neural network. The nodes and lines are more densely packed on the right side of the image, fading towards the left.

NEXT STEPS

CTS COMMUNICATION 2020

- Review SES or Managed Satellite Distribution (HITS) survey received
- Complete information for each earth station

AFFILIATE RESPONSE 2020

- Return survey for each earth station to SES or Managed Satellite Distribution (HITS)
- **DUE AUGUST 31, 2020**

PLANNING 2020

- Coordinate activities with all entities (SES, Harmonic & CTS)
- Determine plans for internal personnel

EXECUTION 2021

- Finalize earth station updates
 - New antennas
 - Filters
- IRD and other equipment installations

QUESTIONS?

