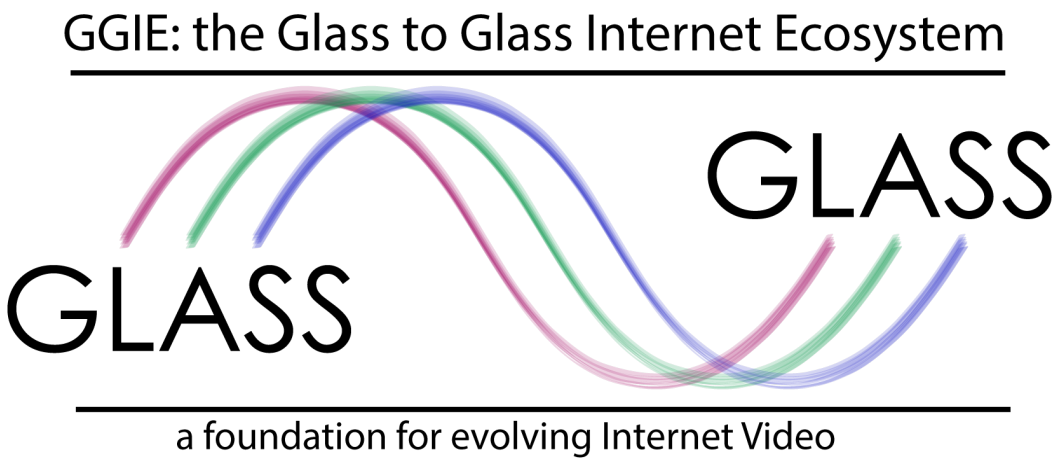


GGIE::Leveraging IPv6 Glass to Glass

Glenn Deen
NBCUniversal
(Glenn.Deen@NBCUNI.COM)

March 23, 2017

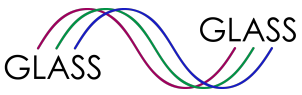
What is GGIE::Glass to Glass?

Scope: Internet video from the camera lens to the viewer's screen

Primary Goal: Enable video streaming to scale on the Network

Secondary Goal: Be backwards compatible with existing video streaming

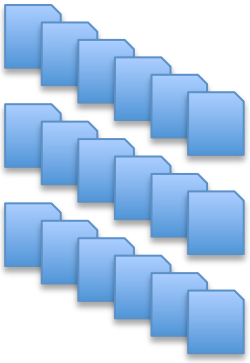
This Talk's Focus: Content Distribution



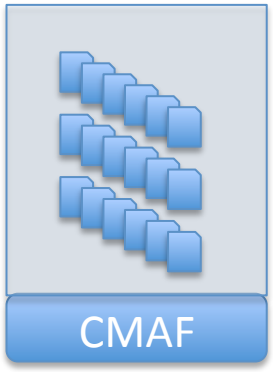
Film's Evolution to File to Packaged Media

Film

File



Segments



Packaged Segments

GLASS GLASS

Evolution: Name to URL to Manifests

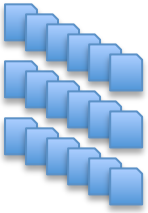
Film

Referenced As

Title “Minions”

File

URL http://s1.example.com/Minions.mov & byte offset



Segments

DASH Manifest & URLs http://s1.example.com/minions_199

Packaged Segments

Multi-modal: DASH Manifest or HLS MU8 Playlist or ….

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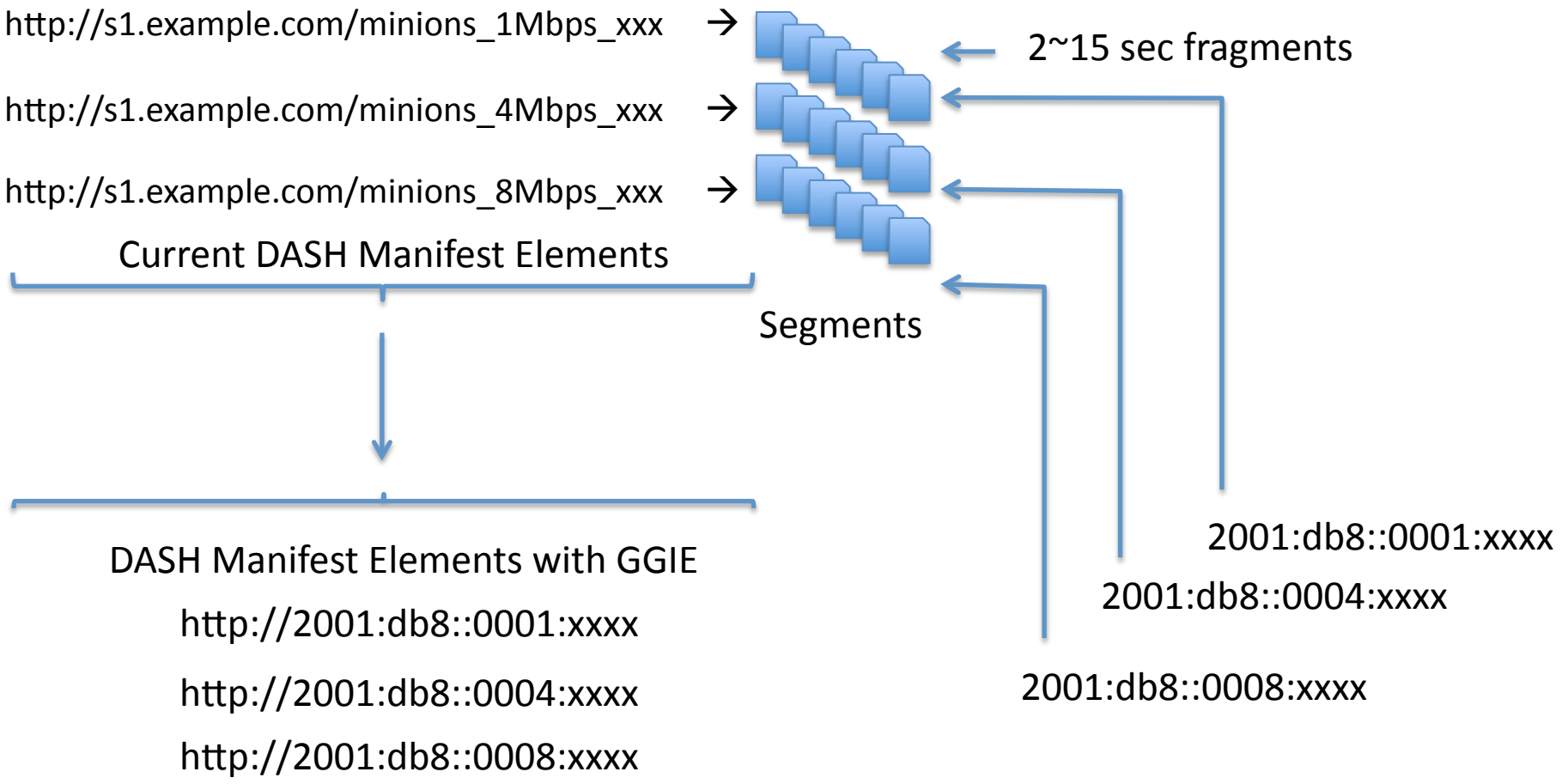
Referencing Media Segments by IPv6



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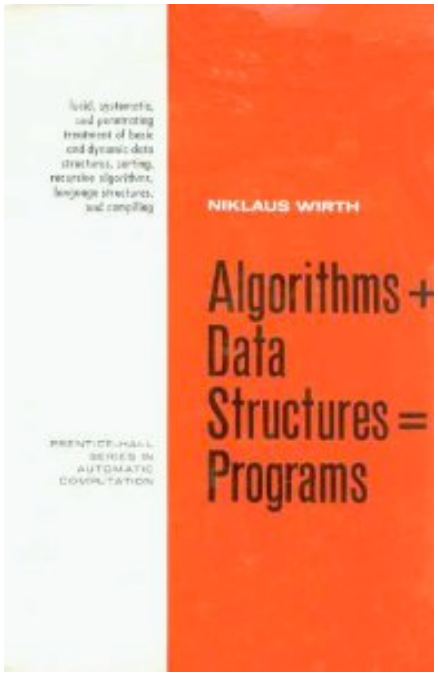
A little Inspiration from the past



The network is the computer

John Gage, Sun Microsystems

…Employee 21

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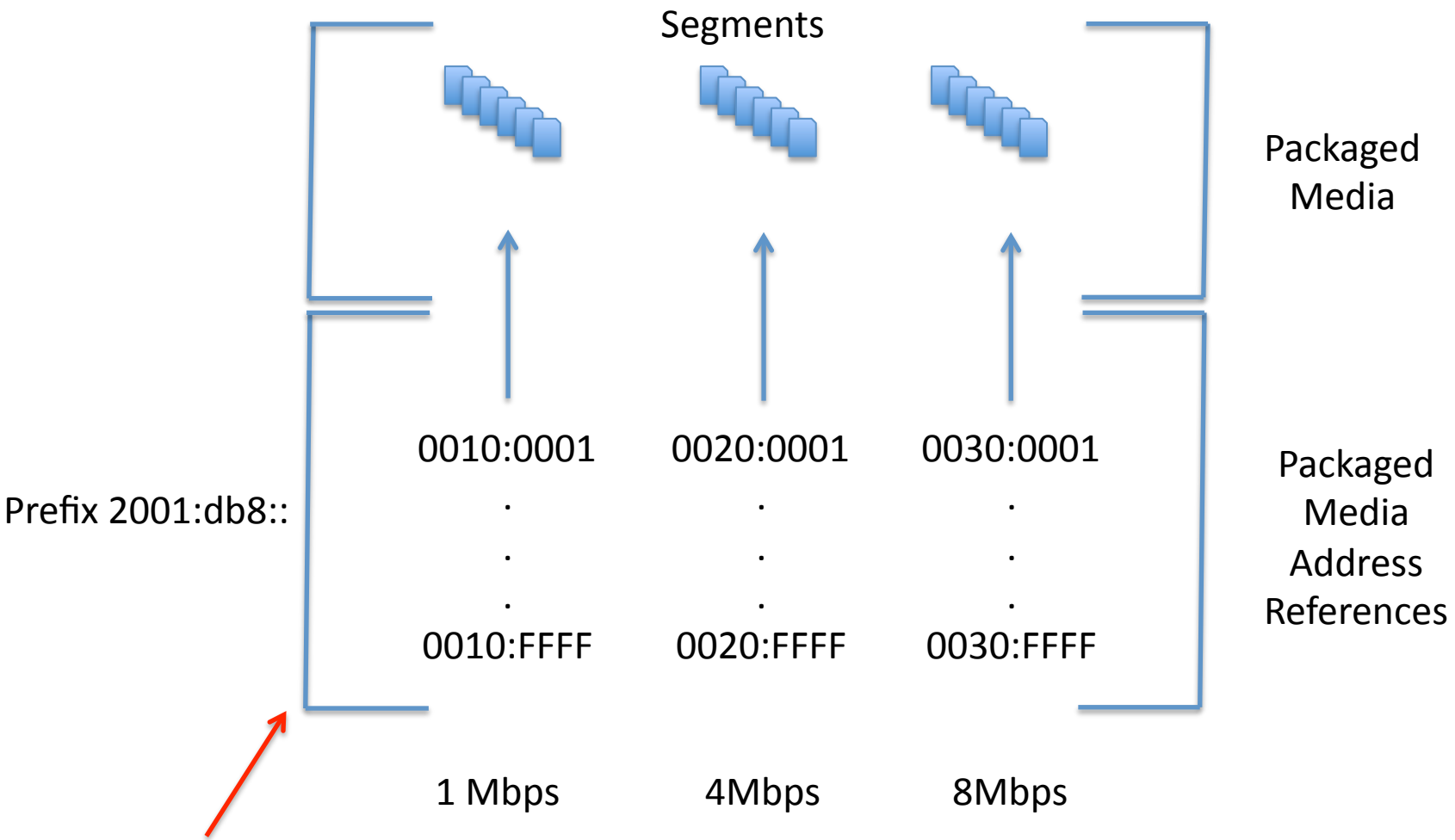
Packaging IPv6 Segment References



This a Media Encoding Network or MEN – A structured arrangement of references to segments

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GGIE::Core Elements

Media Identifier

Identifies the Work

Generically holds IDs from content systems
EIDR, AD-ID, YouTube, Facebook etc.

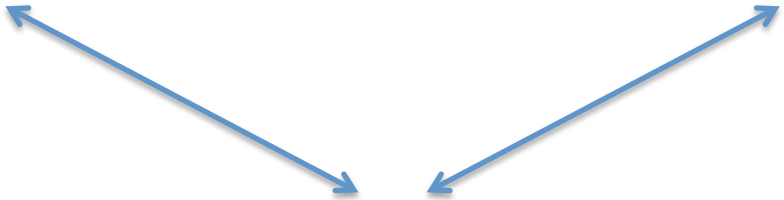
median:EIDR:10.5240%2F4381-3726-32B3-2E65-855B-X:example.com

Media Encoding Network(MEN)

References each Encode of the Work

IPv6 Address to Packaged Media assignment scheme

2001:db8::/64



MARS

Maps Media Identifiers
to/from
Media Encoding Networks

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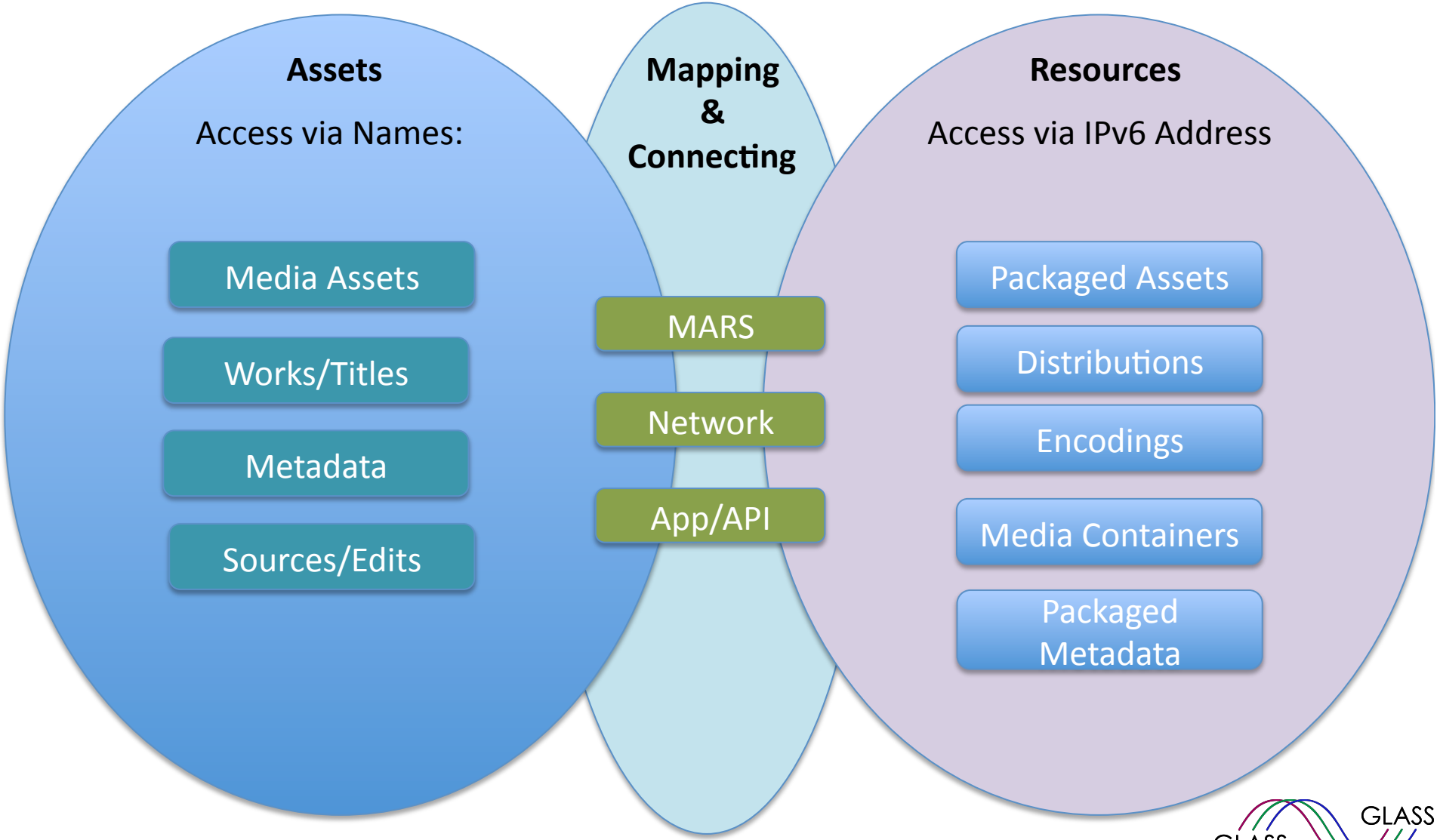
Connecting Assets & Resources



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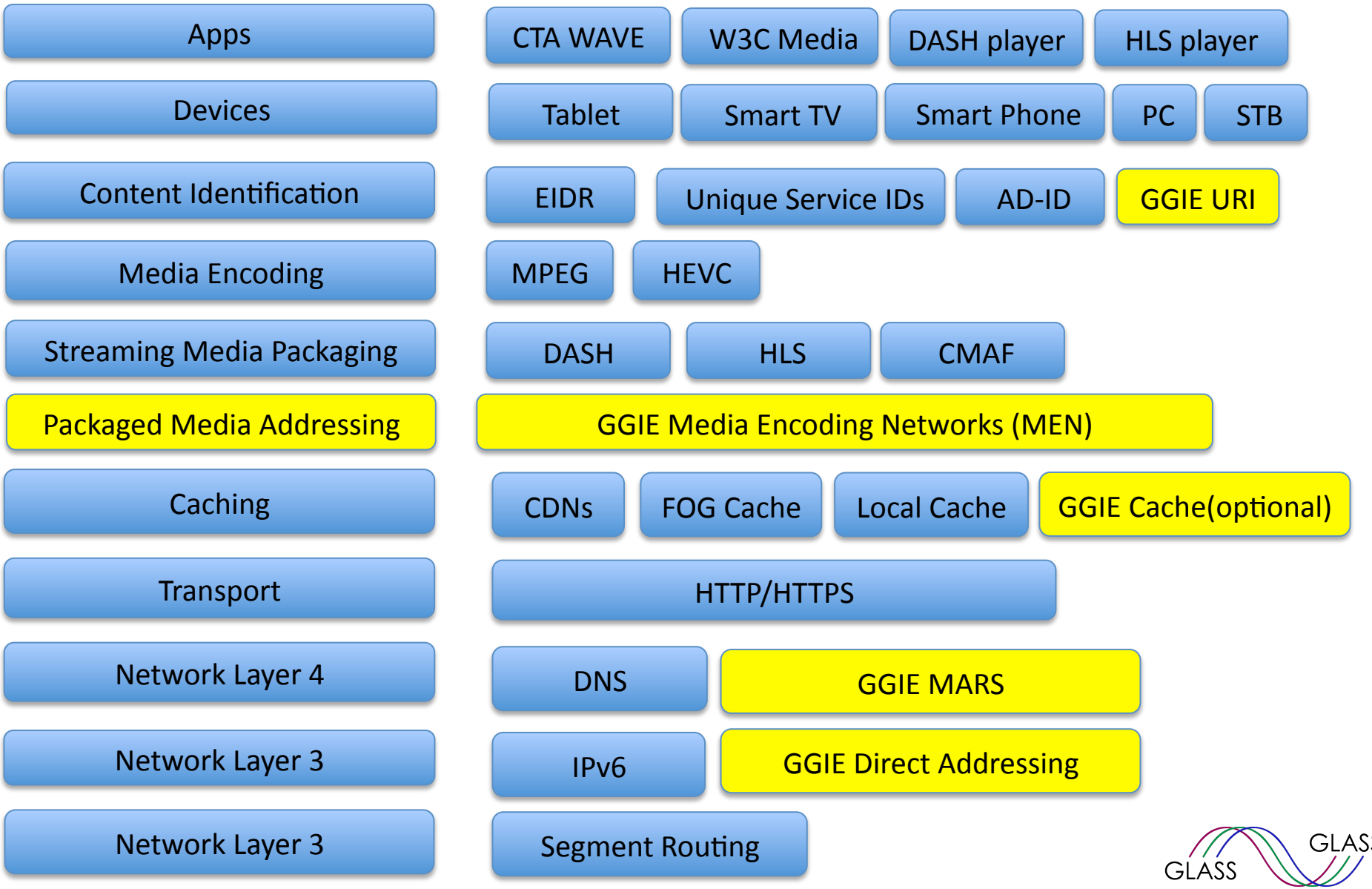
GGIE Video Media Model



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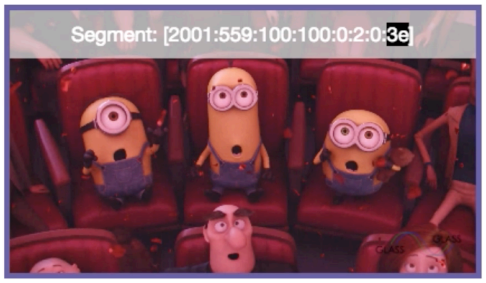
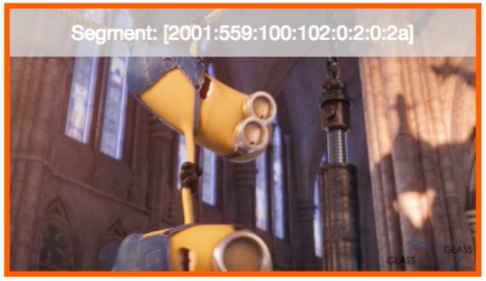
How about some running code?

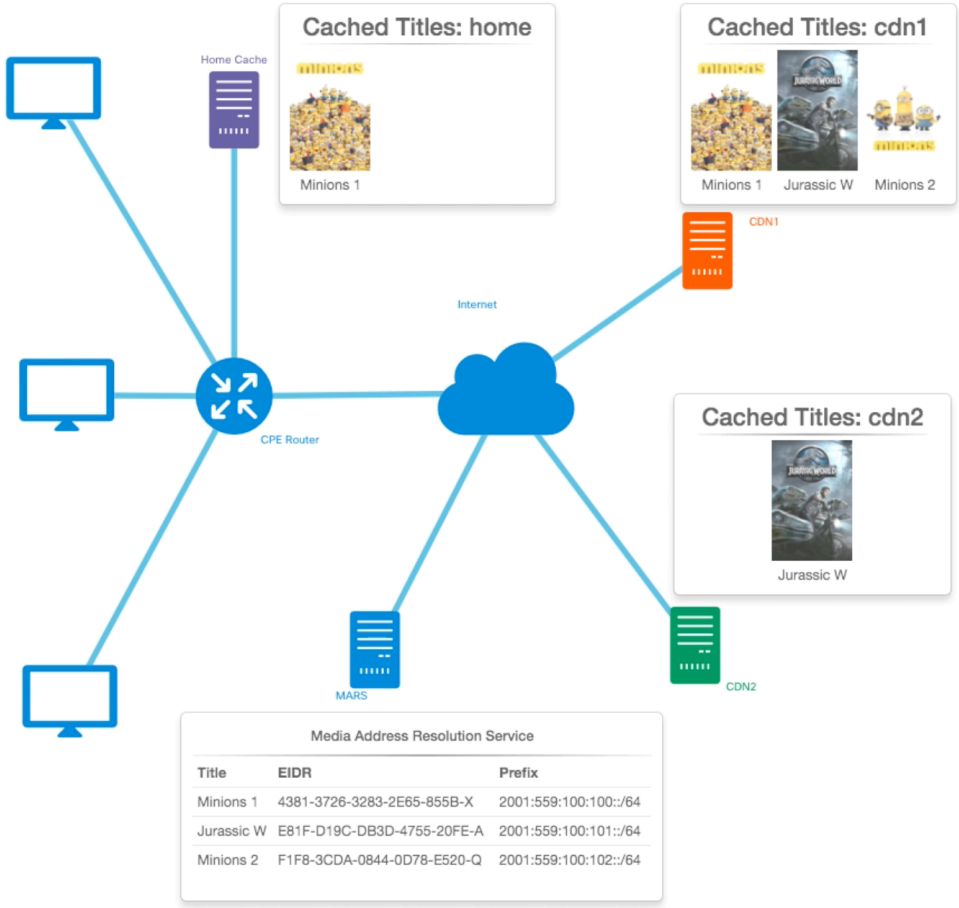


Title: Minions 1 (4381-3726-3283-2E65-855B-X)
Cache: home

Title: Minions 1 (4381-3726-3283-2E65-855B-X)
Cache: home



Title: Minions 2 (F1F8-3CDA-0844-0D78-E520-Q)
Cache: cdn1



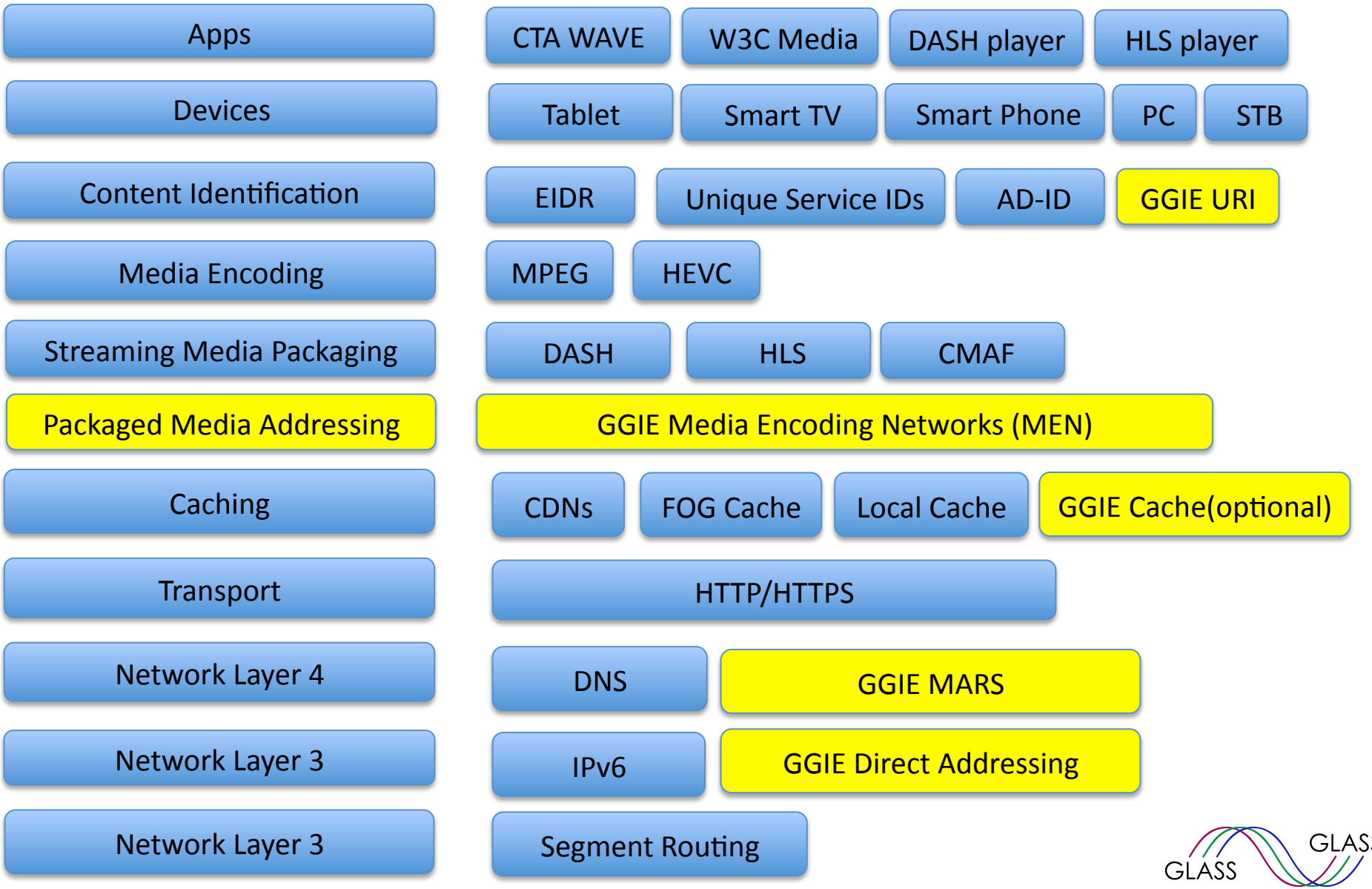
*Developed under a Comcast Innovation Fund partnership with Prof. Gaurav Naik of Drexel University

NBCUniversal

Drexel UNIVERSITY

GLASS GLASS

GGIE Video Media Model



GLASS GLASS

More about GGIE

Contact: Glenn Deen – glenn.deen@nbcuni.com

IETF 98 in Chicago March 26-31 (that's next week)

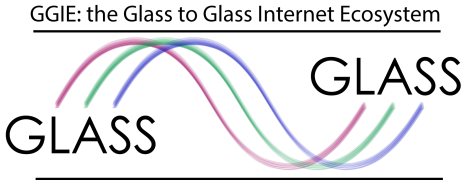
Monday 3/27 – Bar BoF on Internet Streaming

Thursday 3/30 – Bits-n-Bytes live Glass-Glass demo in the Comcast-NBCUniversal booth

Glass to Glass Internet Ecosystem Introduction

draft-deen-daigle-ggie

by: G.Deen, L.Daigle



Using Media Encoding Networks to address MPEG-DASH video

draft-deen-naik-ggie-men-mpeg-dash

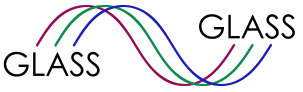
by: G.Deen, G.Naik, J.Brzozowski, L.Daigle, W.Rose, M.Townsley

GGIE Internet Video Use Cases

draft-rose-deen-ggie-use-cases

by: G.Deen, W.Rose

Glass to Glass Internet Ecosystem URI and S-NAPTR Use

draft-daigle-deen-ggie-uri-snaptr

by: L.Daigle, G.Deen,