

North America

Mobile Video: *The Continuing Challenge for Mobile Operators*

Market Study
Third Quarter, 2017





North America Mobile Video: *The Continuing Challenge for Mobile Operators*

A Market Study

Published: Third Quarter, 2017

Version: 1.0

Report Number: 3Q2017-02

iGR
12400 W. Hwy 71
Suite 350 PMB 341
Austin TX 78738

Table of Contents

Abstract	1
Executive Summary	3
Figure A: Total Mobile Video and Non-Video Traffic (TB/month), 2016-2021, North America	3
Methodology.....	5
Mobile Video Landscape	6
What Mobile Operators Currently do with Video.....	6
Encrypted Video Traffic.....	7
Unencrypted Video Traffic	7
Mobile operator strategies	8
Overview: Video and Compression	10
Compression standards	10
Compression categories.....	11
Compression techniques.....	11
Table 1: Sample Bitrates using H.264	13
HEVC	13
VP9.....	14
4K.....	15
Types of Streaming – Adaptive Bitrate	16
ABR ping pong	18
DASH.....	18
Transmuxing.....	19
HTML5.....	19
Additional Strategies to Improve Mobile Video	20
Unicast, Broadcast and LTE-Broadcast	20
Figure 1: Unicast versus Broadcast & Multicast	20
Broadcast versus Multicast	22
Multi-access Edge Computing	22
Video Compression Beyond Codecs	22
Video Optimization Workflow	23
Figure 2: Simplistic Video Optimization Workflow for an OTT Video Service	24
Benefits of Video Optimization	24
Mobile Operator Video Initiatives	26
Verizon go90	26
Figure 3: Verizon go90.....	26
T-Mobile Binge On	27
AT&T and DirecTV	28
AT&T and Time Warner	29

Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2017 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.

FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682.

AT&T Stream Saver.....	29
Content Provider and Mobile Operator Relationship	29
Net Neutrality	31
North America Mobile Video Forecast	33
Mobile Data Forecast.....	33
Table 2: North America Connections, Population, and Penetration, 2016-2021 (000s)	33
Table 3: Total Mobile Data Traffic (TB/month), 2016-2021	34
Figure 4: Total Mobile Data Traffic (TB/month), 2016-2021	34
Mobile Video Forecast.....	34
Table 4: Mobile Video and Non-Video Traffic per connection (MB/month), 2016-2021.....	35
Figure 5: Mobile Video and Non-Video Traffic per connection (MB/month), 2016-2021	35
Table 5: Total Mobile Video and Non-Video Traffic (TB/month), 2016-2021	36
Figure 6: Total Mobile Video and Non-Video Traffic (TB/month), 2016-2021	36
Table 6: Mobile Video and Non-Video Traffic (Percent), 2016-2021	36
Figure 7: Mobile Video and Non-Video Traffic (Percent), 2016-2021	37
Movie Streaming and ‘Other’ Mobile Video Forecast.....	37
Table 7: Movie Streaming and Other Video Usage per connection (MB/month), 2016-2021	38
Figure 8: Streaming and Other Mobile Video Usage per connection (MB/month), 2016-2021	38
Table 8: Movie Streaming and Other Video Traffic (TB/month), 2016-2021	39
Figure 9: Movie Streaming and Other Video Traffic (TB/month), 2016-2021	39
Table 9: Movie Streaming and Other Video Traffic (Percent), 2016-2021	40
Figure 10: Movie Streaming and Other Video Traffic (Percent), 2016-2021	40
Encrypted and Unencrypted Mobile Video Forecast.....	40
Table 10: Encrypted and Unencrypted Video Traffic (TB/month), 2016-2021.....	41
Figure 11: Encrypted and Unencrypted Video Traffic (TB/month), 2016-2021	42
Table 11: Encrypted and Unencrypted Video Traffic (Percent), 2016-2021.....	42
Figure 12: Encrypted and Unencrypted Video Traffic (Percent), 2016-2021	43
Table 12: Encrypted Video and Total Mobile Data Traffic, 2016-2021	43
Figure 13: Encrypted Video and Total Mobile Data Traffic, 2016-2021	44
Content Providers’ Mobile Video Apps	45
CBS All Access	45
Disney Channel	45
Disney Movies Anywhere	45
Google Play	45
HBO	46
Hulu	46
iTunes.....	46
Netflix	47
Showtime	47
Vudu.....	47
Social Media Providers’ Mobile Video Functionality	49
Facebook	49

Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal quoting individual sentences and paragraphs for use in your company’s internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2017 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.

FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682.

Instagram	49
Snapchat	49
Twitter	50
Video Company Profiles	51
A2Zlogix	51
Akamai	52
Allot Communications	56
Altair Semiconductor (Sony)	58
Beamr.....	60
Citrix.....	62
Ericsson	65
EuclidiQ.....	70
Expway.....	74
Flash Networks.....	77
Huawei.....	79
Media Excel	82
MobiTV	86
Nokia Networks.....	88
Ooyala.....	91
Qualcomm.....	93
Quickplay Media (AT&T).....	97
Qwilt	99
Samsung Electronics	101
Sequans Communications.....	103
Ustream (IBM Cloud Video Services).....	106
Vantrix	107
Wowza Media Systems.....	110
Definitions	113
General	113
Device Types.....	113
Services	114
Network Technology.....	115
About iGR.....	119
Disclaimer	119

Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2017 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.

FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682.

Abstract

The amount of mobile video passing over the mobile network is continuing to increase, as consumers watch more streaming movies and increasingly adopt other OTT services, such as Snapchat and WhatsApp, which allow users to embed videos in their messages. Mobile operators are thus being motivated to update their mobile network with densification and other strategies, so that they can continue to deliver a positive video experience to their subscribers.

Because of the increasing importance of video, during the last two years, several U.S. mobile operators have made acquisitions or entered into partnership agreements with content providers. By doing so, they hope to find new revenue sources to help cover the added investment necessary to guarantee a high performance level of mobile video in their current LTE and future 5G networks.

This market study provides a five-year forecast for mobile video traffic in North America. The mobile video forecast is then split into movie streaming video and 'other' video, as well as encrypted and unencrypted video. Further, this study provides detailed information about video compression and streaming techniques used to deliver video content to consumers on the mobile network and additional strategies available to the mobile operator. The study also provides updates on U.S. mobile operators' recent initiatives regarding mobile video.

Key questions addressed in this report include:

- What is *iGR*'s five-year forecast for mobile video?
- How much mobile video traffic is generated by streaming movies? And other types of video, such as chats and embedded videos in social and news media?
- What is the difference between encrypted and unencrypted mobile video traffic and how much mobile video is expected to be encrypted throughout the forecast?
- What strategies are U.S. mobile operators using with respect to mobile video?
- What are video compression, codecs, and video containers?
- What is Adaptive Bitrate Streaming?
- What is LTE Broadcast and why is it important to mobile video?
- What is Multi-access Edge Computing (MEC) and why is it important to mobile video?

Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2017 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.

FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682.

- How does Net Neutrality affect mobile operators?

Who should read this report?

- Mobile operators
- Device OEMs
- Mobile infrastructure vendors
- Mobile backhaul services and solutions providers
- Content providers and distributors
- Financial analysts and investors.

Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2017 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.

FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682.