

***MEC: U.S. Enterprise
Spending on the New
Small Cell Market,
2017-2026***

Market Study
Fourth Quarter, 2017





MEC: U.S. Enterprise Spending on the New Small Cell Market, 2017-2026

A Market Study

Published Fourth Quarter, 2017
Version 2.0
Report Number: 4Q2017-01

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

Table of Contents

Abstract	1
Executive Summary	3
Figure A: Enterprise Spending per year on MEC, 2017-2026 (in millions).....	3
Methodology	5
What is 5G?	6
Potential 5G Use Cases	6
Latency	8
Figure 1: Wired Broadband Weighted Median Latency, Reported by FCC in 2016.....	8
5G Timeline	9
Figure 2: Timeline for IMT-2020 (5G)	9
Potential Requirements of 5G	10
Spectrum Needs	13
Challenges Along the Road to 5G	13
What will the first 5G networks look like?	14
What is Multi-Access Edge Computing (MEC)?	15
Figure 3: The Network without MEC	15
Figure 4: The Network with MEC	16
MEC Building Blocks	16
Figure 5: MEC Server Building Blocks	17
Figure 6: MEC Reference Architecture	18
Other Edge Standards	19
Potential Use Cases for MEC	21
Intelligent video acceleration service	21
Figure 7: Intelligent video acceleration service.....	21
Video stream analysis	21
Augmented reality (AR)	21
Assistance for intensive computation	22
Enterprise deployments	22
Connected vehicles (CV)	22
Figure 8: Connected vehicles (CV).....	23
IoT gateway	23
Figure 9: IoT Gateway.....	23
What is required for MEC?	24
Why MEC?	24
What is network latency?	24
Figure 10: How Latency Adds Up.....	26
Getting to sub-5 ms latency in 5G	26
Pros & Cons of MEC	27

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.

Benefits of MEC	27
Cons of MEC	27
Commercial Buildings in the U.S.	29
Table 1: Commercial Buildings in the U.S.	29
Table 2: Commercial Buildings in the U.S.	30
Figure 11: Commercial Buildings in the U.S.	32
Table 3: Commercial Buildings in the U.S.	32
Figure 12: Buildings in the U.S.	33
Table 4: Number of Floors per Commercial Building	34
Figure 13: Number of Floors per Commercial Building	34
Forecast: Enterprise Spending on MEC	35
Methodology and Assumptions	35
MEC Spending Forecast	37
Table 5: Enterprise Spending on MEC, 2017-2026 (\$M)	37
Figure 14: Enterprise Spending on MEC, 2017-2026 (in millions)	37
MEC Vendor Profiles.....	38
Applied Computer Solutions (ACS)	38
ADVA Optical Networking.....	39
Allied Telesis.....	41
Altiostar	42
Aricent	43
Artesyn Embedded Technologies	44
Athonet	45
Amazon Web Services (AWS)	46
CPLANE NETWORKS	47
Dell.....	48
ECI Telecom	49
HPE.....	50
Huawei	52
Iguazio.....	54
Intel.....	55
InterDigital	57
Juniper Networks	59
Mavenir.....	61
MECSware	63
NEC	64
Nokia Networks.....	66
Quortus	69
Saguna Networks.....	72
SpiderCloud Wireless (Corning).....	74
Telenity	76
Vasona Networks	77
ZTE Corporation.....	80
Definitions	83

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.

Definitions Table	83
About <i>iGR</i>.....	105
Disclaimer	105

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

Multi-access edge computing (MEC) emerged on the wireless industry stage several years ago. It has the potential to be as disruptive a technology as anything that is being discussed today – 5G New Radio, NFV/SDN, C-RAN, etc. In fact, MEC is quite likely to help realize the promise of 5G.

Simply put, MEC marries a radio with a data center. Today, that radio is LTE, but it could also be Wi-Fi, 5G New Radio or some combination of them all. The server component is a secure, virtualized platform which network owners can “open up” to third parties – content providers, application developers, etc.

In so doing, the network owner allows content to be placed at the “edge” – i.e., very close to the end consumer of that content. That content can be anything – streaming video, augmented reality, location-based services, connected vehicle, Internet of Things (IoT) applications.

By putting content and applications at the edge, the network owner can realize operational and cost efficiencies while introducing new services, reducing network latency and, ultimately, improving the end consumer’s quality of experience.

In this report, *iGR* models enterprise spending on MEC-based solutions for the U.S. market.

Key questions addressed in this market study include:

- What is MEC?
- How does MEC work?
- How does MEC relate to other edge computing initiatives, such as OpenFog, CORD Project, Open Edge Computing (OEC), Open Compute, and EdgeX Foundry?
- What can be done with MEC?
- What are some of the perceived benefits and issues related to MEC?
- What are some of the perceived negatives and issues related to indoor small cells?
- What are the key drivers for implementing MEC?
- How much enterprise spending is likely to occur on MEC-based solutions?

Who should read this report?

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.

- Mobile operators
- Infrastructure OEMs
- Computing infrastructure OEMs
- Small cell product and solution vendors
- Backhaul service providers and equipment OEMs
- 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.

**MEC: *Western
European Enterprise
Spending on the New
Small Cell Market,
2017-2026***

Market Study
Fourth Quarter, 2017





MEC: Western European Enterprise Spending on the New Small Cell Market, 2017- 2026

A Market Study

Published Fourth Quarter, 2017
Version 1.0
Report Number: 4Q2017-04

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

Table of Contents

Abstract	1
Executive Summary	3
Figure A: Western European Enterprise Spending per year on MEC, 2017-2026 (in millions)	3
Methodology	5
What is 5G?	6
Potential 5G Use Cases	6
Latency	8
Figure 1: Wired Broadband Weighted Median Latency, Reported by FCC in 2016.....	8
5G Timeline	9
Figure 2: Timeline for IMT-2020 (5G)	9
Potential Requirements of 5G	10
Spectrum Needs	13
Challenges Along the Road to 5G	13
What will the first 5G networks look like?	14
What is Multi-Access Edge Computing (MEC)?	15
Figure 3: The Network without MEC	15
Figure 4: The Network with MEC	16
MEC Building Blocks	16
Figure 5: MEC Server Building Blocks	17
Figure 6: MEC Reference Architecture	18
Other Edge Standards	19
Potential Use Cases for MEC	21
Intelligent video acceleration service	21
Figure 7: Intelligent video acceleration service.....	21
Video stream analysis	21
Augmented reality (AR)	21
Assistance for intensive computation	22
Enterprise deployments	22
Connected vehicles (CV)	22
Figure 8: Connected vehicles (CV).....	23
IoT gateway	23
Figure 9: IoT Gateway.....	23
What is required for MEC?	24
Why MEC?	24
What is network latency?	24
Figure 10: How Latency Adds Up.....	26
Getting to sub-5 ms latency in 5G	26
Pros & Cons of MEC	27

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.

Benefits of MEC	27
Cons of MEC	27
Forecast: Western European Enterprise Spending on MEC.....	29
Methodology and Assumptions	29
MEC Spending Forecast	30
Table 1: Western European Enterprise Spending on MEC, 2017-2026 (\$M)	31
Figure 11: Western European Enterprise Spending on MEC, 2017-2026 (in millions)	31
MEC Vendor Profiles.....	32
Applied Computer Solutions (ACS).....	32
ADVA Optical Networking.....	33
Allied Telesis.....	35
AltioStar	36
Aricent	37
Artesyn Embedded Technologies	38
Athonet	39
Amazon Web Services (AWS).....	40
CPLANE NETWORKS.....	41
Dell.....	42
ECI Telecom	43
HPE.....	44
Huawei	46
Iguazio.....	48
Intel.....	49
InterDigital	51
Juniper Networks	53
Mavenir.....	55
MECSware	57
NEC	58
Nokia Networks.....	60
Quortus	63
Saguna Networks.....	66
SpiderCloud Wireless (Corning).....	68
Telenity	70
Vasona Networks	71
ZTE Corporation.....	74
Definitions	77
Definitions Table	77
About iGR.....	99
Disclaimer	99

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

Multi-access edge computing (MEC) emerged on the wireless industry stage several years ago. It has the potential to be as disruptive a technology as anything that is being discussed today – 5G New Radio, NFV/SDN, C-RAN, etc. In fact, MEC is quite likely to help realize the promise of 5G.

Simply put, MEC marries a radio with a data center. Today, that radio is LTE, but it could also be Wi-Fi, 5G New Radio or some combination of them all. The server component is a secure, virtualized platform which network owners can “open up” to third parties – content providers, application developers, etc.

In so doing, the network owner allows content to be placed at the “edge” – i.e., very close to the end consumer of that content. That content can be anything – streaming video, augmented reality, location-based services, connected vehicle, Internet of Things (IoT) applications.

By putting content and applications at the edge, the network owner can realize operational and cost efficiencies while introducing new services, reducing network latency and, ultimately, improving the end consumer’s quality of experience.

In this report, *iGR* models enterprise spending on MEC-based solutions for the Western Europe market.

Key questions addressed in this market study include:

- What is MEC?
- How does MEC work?
- How does MEC relate to other edge computing initiatives, such as OpenFog, CORD Project, Open Edge Computing (OEC), Open Compute, and EdgeX Foundry?
- What can be done with MEC?
- What are some of the perceived benefits and issues related to MEC?
- What are some of the perceived negatives and issues related to indoor small cells?
- What are the key drivers for implementing MEC?
- How much enterprise spending is likely to occur on MEC-based solutions?

Who should read this report?

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.

- Mobile operators
- Infrastructure OEMs
- Small cell product and solution vendors
- Backhaul service providers and equipment OEMs
- 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.