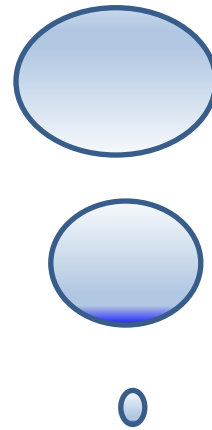


**WinterGreen Research, INC.**



**IBM and Red Hat:  
Market Shares, Strategies, and Forecasts,  
Worldwide, 2019 to 2025**



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**Lexington, Massachusetts**

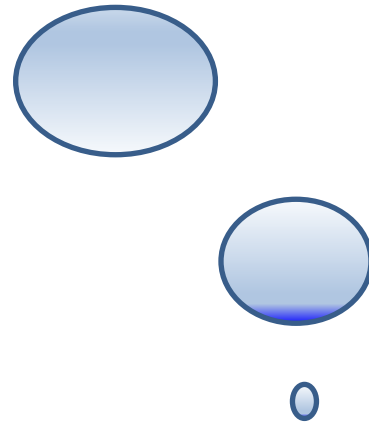
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**CHECK OUT THESE KEY TOPICS**

**IBM and Red Hat Markets: Disruptive Technology that Expands IBM Cloud Services Market Opportunity**

|                                                                                                                                                                        |                                                                                                                                                                                                                                                 |                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IBM</b><br>Red Hat<br>Open Systems<br>Virtualization<br>Cloud<br>Docker<br>APIs<br>Multiple programming languages<br>Available adapters<br>Microservices technology | <b>Development focus</b><br>Transporting information<br>Microservices adapters<br>• Visibility into headers<br>Transport identification<br>Message aspects<br>Edge<br>Systems Integration<br>Mission Critical Messaging<br>Base For Integration | <b>Base For Application</b><br>Connectivity<br>5G<br>Network Densification<br>Broadband Traffic<br>Distributed business<br>Enterprise<br>End-To-End Integrated APIs<br>Solution Signal |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**IBM and Red Hat Cloud Services Market Opportunities:**

Worldwide cloud services markets are poised to achieve continuing growth as IBM and Red Hat respond to the newer technologies from AWS, Google, and Microsoft that provide significant competitive advantages in the cloud markets. The AWS, Google, and Microsoft mega data centers use orchestration of leverage node to node data access. The mega data centers let developers go from any node to any node in a 100,000 x 100,001 grid, providing significant systems integration not available in the typical IBM and other cloud symmetries.

The quality and the customization available from IBM and Red Hat are significant market growth drivers. Standardization of the installation process is a key efficiency tool.

IBM and Red Hat markets encompass virtualization, cloud, edge, and functional splits. 5G requires increasing sophistication from data center operators to manage all the AI data coming from smart devices. The challenge is to bring together a growing number of smart devices, cameras, and sensors and 5G radio access technologies depend on having strong cloud computing capabilities. A range of connectivity services are needed. Associated APIs are needed in each device to manage connectivity to a number of customer segments housed in the cloud.

|                                                       |           |                       |      |
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**Figure 1. IBM and Red Hat Market Shares, Dollars, Worldwide, 2018**

| In Millions of Dollars |           |           |           |
|------------------------|-----------|-----------|-----------|
|                        | MM\$      | % \$      | Units     |
|                        | 2017      | 2017      | 2017      |
|                        | 2016      | 2016      | 2016      |
| Company 1              | XX        | XX        | XX        |
| Company 2              | XX        | XX        | XX        |
| Company 3              | XX        | XX        | XX        |
| Company 4              | XX        | XX        | XX        |
| Company 5              | XX        | XX        | XX        |
| Company 6              | XX        | XX        | XX        |
| Company 7              | XX        | XX        | XX        |
| Company 8              | XX        | XX        | XX        |
| Company 9              | XX        | XX        | XX        |
| Company 10             | XX        | XX        | XX        |
| Company 11             | XX        | XX        | XX        |
| Company 12             | XX        | XX        | XX        |
| Company 13             | XX        | XX        | XX        |
| Company 14             | XX        | XX        | XX        |
| <b>Total (MM\$)</b>    | <b>XX</b> | <b>XX</b> | <b>XX</b> |

Source: WinterGreen Research, Inc.

# WinterGreen Research, Inc.

## Server and PC Operating Systems Market Shares, Dollars, Worldwide, 2018

In Millions of Dollars

|           | MM\$<br>2018 |    | %<br>2018 | %<br>Desktop<br>2018 | %<br>Server | %<br>Mainframe |
|-----------|--------------|----|-----------|----------------------|-------------|----------------|
| Company 1 | XX           | XX | XX        | XX                   | XX          | XX             |
| Company 2 | XX           | XX | XX        | XX                   | XX          | XX             |
| Company 3 | XX           | XX | XX        | XX                   | XX          | XX             |
| Company 4 | XX           | XX | XX        | XX                   | XX          | XX             |
| Company 5 | XX           | XX | XX        | XX                   | XX          | XX             |
| Other     | XX           | XX | XX        | XX                   | XX          | XX             |
| Total     | XX           | XX | XX        | XX                   | XX          | XX             |

Source: WinterGreen Research, Inc.

# WinterGreen Research, Inc.

## Linux Operating System Development Platforms Market Shares, Shipment Dollars, Worldwide, 2018

In Millions of Dollars

In Thousands of Units Shipped

|                                    | MM\$<br>2018 | MM\$ %<br>2018 | Domains<br>2018 | %<br>2018<br>Domains |
|------------------------------------|--------------|----------------|-----------------|----------------------|
| Company 1                          | XX           | XX             | XX              | XX                   |
| Company 2                          | XX           | XX             | XX              | XX                   |
| Company 3                          | XX           | XX             | XX              | XX                   |
| Company 4                          | XX           | XX             | XX              | XX                   |
| Company 5                          | XX           | XX             | XX              | XX                   |
| Other                              | XX           | XX             | XX              | XX                   |
| Total Linux Distros (000)          |              |                | XX              | XX                   |
| Total MM\$                         |              | XX             | XX              |                      |
| Note: 818 Billion domains          |              |                |                 |                      |
| Source: WinterGreen Research, Inc. |              |                |                 |                      |

# WinterGreen Research, Inc.

## Application Server Market Shares, Units and Dollars, Worldwide, 2018

In Millions of Dollars  
in % of Units

|                        | MM\$      | %         |
|------------------------|-----------|-----------|
|                        | 2018      | 2018      |
| Company 1              | XX        | XX        |
| Company 2              | XX        | XX        |
| Company 3              | XX        | XX        |
| Company 4              | XX        | XX        |
| Company 5              | XX        | XX        |
| Other                  | XX        | XX        |
| <b>Total</b>           | <b>XX</b> | <b>XX</b> |
| Java Based (MM\$)      | XX        |           |
| Java Units in Millions | XX        |           |
| JEE Based (MM\$)       | XX        |           |
| JEE Units in Millions  | XX        |           |

Source: WinterGreen Research, Inc.

# WinterGreen Research, Inc.

## Event-Driven Middleware Market Shares, Dollars, Worldwide, 2018

In Millions of Dollars

|              | MM\$<br>2018 | %<br>2018 |
|--------------|--------------|-----------|
| Company 1    | XX           | XX        |
| Company 2    | XX           | XX        |
| Company 3    | XX           | XX        |
| Company 4    | XX           | XX        |
| Company 5    | XX           | XX        |
| Company 6    | XX           | XX        |
| Company 7    | XX           | XX        |
| Other        | XX           | XX        |
| <b>Total</b> | <b>XX</b>    |           |

Source: WinterGreen Research, Inc.



# WinterGreen Research, Inc.

## IBM and Red Hat Market Segments, Dollars, Worldwide, 2012 to 2018, 2018-2024

Dollars and Percent, Worldwide, 2017 - 2024 and 2012 to 2017

In Percent

In Millions of Dollars

|                     | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---------------------|------|------|------|------|------|------|------|------|
| <b>Small</b>        |      |      |      |      |      |      |      |      |
| % of Total Market   | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| % Growth            | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| <b>Mid Range</b>    |      |      |      |      |      |      |      |      |
| % of Total Market   | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| % Growth            | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| <b>Large</b>        |      |      |      |      |      |      |      |      |
| % of Total Market   | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| % Growth            | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| <b>Total (MM\$)</b> | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |
| % Growth            | XX   | XX   | XX   | XX   | XX   | XX   | XX   | XX   |

Source: WinterGreen Research, Inc.

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## Mission Critical Messaging Market Units and Dollars, Worldwide, 2019-2025

In Number of Units  
In Millions of Dollars

|                              | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------------------------------|------|------|------|------|------|------|------|------|
| <b>Total</b>                 |      |      |      |      |      |      |      |      |
| Middleware Messaging (MM\$)  | xx   | xx   | xx   | xx   | xx   | xx   | xx   | xx   |
| % Growth                     | xx   | xx   | xx   | xx   | xx   | xx   | xx   | xx   |
| Middleware Messaging (Units) | xx   | xx   | xx   | xx   | xx   | xx   | xx   | xx   |
| % Growth                     | xx   | xx   | xx   | xx   | xx   | xx   | xx   | xx   |

Source: WinterGreen Research, Inc.

## IBM and Red Hat End Users, Community / Government, Enterprise, Dollars, Worldwide, 2018 - 2024 and 2012 to 2018

i

### Small Cells End Users, Community / Government, Enterprise, Dollars, Worldwide, 2018 - 2024 and 2012 to 2017

In Millions of Dollars

|                        | 2017<br>2017 | 2018<br>2016 | 2019<br>2015 | 2020<br>2014 | 2021<br>2013 | 2022<br>2012 | 2023 | 2024 |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|------|------|
| Enterprise             | xx           | xx           | xx           | xx           | xx           | xx           | xx   | xx   |
| Community / Government | xx           | xx           | xx           | xx           | xx           | xx           | xx   | xx   |
| End Users              | xx           | xx           | xx           | xx           | xx           | xx           | xx   | xx   |
| <b>Total (MM\$)</b>    | xx           | xx           | xx           | xx           | xx           | xx           | xx   | xx   |

Source: WinterGreen Research, Inc.

## IBM and Red Hat Regional Segments Dollars, Worldwide, 2018 - 2024 and 2012 to 2018

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In Percent

In Millions of Dollars

|                                  | 2012<br>2018 | 2013<br>2019 | 2014<br>2020 | 2015<br>2021 | 2016<br>2022 | 2017<br>2023 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>US \$</b>                     | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>Europe \$</b>                 | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>China \$</b>                  | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>Japan \$</b>                  | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>South Korea</b>               | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>Taiwan \$</b>                 | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>ROW and Southeast Asia \$</b> | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>India \$</b>                  | XX           | XX           | XX           | XX           | XX           | XX           |
| % of Total Market                | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |
| <b>Total (MM\$)</b>              | XX           | XX           | XX           | XX           | XX           | XX           |
| % Growth                         | XX           | XX           | XX           | XX           | XX           | XX           |

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IBM, Red Hat, Open Systems, Virtualization, Cloud, Docker, APIs , Multiple programming languages, Available adapters, Microservices technology, Development focus, Transporting information, Microservices adapters , • Visibility into headers, Transport identification , Message aspects, Edge, Systems Integration , Mission Critical Messaging , Base For Integration , Base For Application Connectivity, 5G, Network Densification, Broadband Traffic, Distributed business, Enterprise, End-To-End Integrated APIs, Solution Signal, ,

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## **ABOUT THE COMPANY**

**WinterGreen Research**, research strategy relates to identifying market trends through reading and interviewing opinion leaders. By using analysis of published materials, interview material, private research, detailed research, social network materials, blogs, and electronic analytics, the market size, shares, and trends are identified. Analysis of the published materials and interviews permits WinterGreen Research senior analysts to learn a lot more about markets. Discovering, tracking, and thinking about market trends is a high priority at WinterGreen Research. As with all research, the value proposition for competitive analysis comes from intellectual input.

**WinterGreen Research**, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care, Software, Internet, Energy Generation, Energy Storage, Renewable energy, and advanced computer technology.

Industry reports focus on opportunities that expand existing markets or develop major new markets. The reports access new product and service positioning strategies, new and evolving technologies, and technological impact on products, services, and markets. Innovation that drives markets is explored. Market shares are provided. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

The studies provide primary analytical insight about the market participants. By publishing material relevant to the positioning of each company, readers can look at the basis for analysis. By providing descriptions of each major participant in the market, the reader is not dependent on analyst assumptions, the information backing the assumptions is provided, permitting readers to examine the basis for the conclusions.

WinterGreen Research is positioned to help customers facing challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust wintergreen research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

## About The Principal Authors

**Susan Eustis**, President, co-founder of WinterGreen Research, is a senior analyst. She has done research in communications, healthcare equipment, and computer markets and applications. She holds several patents in microcomputing and parallel processing. She has the original patents in electronic voting machines. She has new patent applications in format varying, multiprocessing, electronic voting, and oxygen management. She is the author of recent studies of the drone and robot marketing strategies, Internet equipment, biometrics, biomaterials, a study of Internet Equipment, Artificial Intelligence, IoT, Worldwide Telecommunications Equipment, Top Ten Telecommunications, Digital Loop Carrier, Web Hosting, Web Services, and Application Integration markets. Ms. Eustis is a graduate of Barnard College. Ms. Eustis was named Top Woman CEO in 2012 by Who's Who Worldwide. She was named Top Woman Market Research Analyst in 2012, 2013, 2014, 2015, and 2016. She has been twice featured on the cover of the Women of Distinction magazine. She was cited in a recent Time Magazine article and major media articles on Youth Sports market growth. Recently she has been quoted by Bloomberg, The Wall Street Journal, The London Times, The Los Angeles Times, and others on sports markets, blockchain, and cybercurrency.

**About the WinterGreen Research Team:** The WinterGreen Research Team is comprised of senior analysts that prepare the market research and analysis that is offered to the client and developed using an iterative process to achieve a final study. Typical projects include providing market/viability research. The team can look at how drones can be applied to critical infrastructures safety, including: type of market existing, Barriers, Forecast demand and competitors, SWOT and competitive advantages, Price Analysis, product design recommendations (marketing orientation).

Research is typically for many different regions or localities, for example EU countries including Spain, UK, Nordic, Germany, and France. Typical projects profile the United States and areas of Asia. It is common to three representative countries from South America, Brazil, Argentina, Chile, and Mexico. Representative countries from Asia APAC typically include Japan, China, India, and Australia.

Critical infrastructure safety, including: type of market existing, barriers to entry and to faithful execution of product provision, forecast of demand, market share, SWOT, competitive advantage of major competitors, identification of new technologies and new companies, price performance analysis, product design recommendations, and marketing considerations are typical topics covered.