

Cloud Backup: Market Strategies and Forecasts, Worldwide, 2018-2024

Table of Contents

Cloud Backup: Executive Summary

The study is designed to give a comprehensive overview of the Cloud Backup market segment. Research represents a selection from the mountains of data available of the most relevant and cogent market materials, with selections made by the most senior analysts. Commentary on every aspect of the market from independent analysts creates an independent perspective in the evaluation of the market. In this manner the study presents a comprehensive overview of what is going on in this market, assisting managers with designing market strategies likely to succeed.

Abstract: Cloud Back-up Markets Grow as The Enterprise Moves from Data Center to Cloud	1
Cloud Back-up Executive Summary	15
Cloud Back-up Market Forecasts, SMB and Smart Devices	15
1. Cloud Back-up: Market Description and Market Dynamics	17
1.1 Cloud Back-up	17
1.2 High-Performance Switches Implement Software Defined Data Center	19
2. Cloud Back-up Market Shares and Forecasts	20
2.1 Cloud Back-up Market Driving Forces	20
2.1.1 Value of Cloud Back-Up Companies Is the Customer Base That Can be Converted to Cloud	22
2.2 Cloud Back-up Market Shares	22
2.3 Cloud Back-up Market Forecasts	27

2.3.1	Cloud Back-up Market Segments Analysis CSP, MSP, and Telco, 2012-2017	31
2.4	Cloud Back-up Pricing	34
2.5	Cloud Back-up and Storage for Private, Public, and Hybrid Market Sectors	36
2.5.1	Private Cloud	40
2.5.2	Public Cloud	41
2.5.3	Hybrid Cloud	41
2.5.4	Social Media Always on Data Centers	41
2.6	Cloud Back-up Regional Market Segments	42
3.	Cloud Back-up Product Description	47
3.1	Amazon	47
3.1.1	Amazon Business	47
3.1.2	Amazon Competition	47
3.1.3	Amazon Description	48
3.1.4	Amazon Fault Tolerance and Redundancy Solutions	53
3.2	Goldman Sachs Open Compute Project	53
3.3	Robust, Quality Cloud Computing	55
3.4	Networking Performance	61
3.4.1	Scalable Infrastructure Data Management Component Application Segments	63
3.4.2	Internet Has Grown by a Factor of 100 Over The Past 10 Years	65
3.4.3	Realigning Data Center Cost Structures	66
3.4.4	IT Relies On Replacing Virtual Machine: VM Virtualization	67
3.4.5	Microservices	69
3.4.6	Microservices Features	70
3.4.7	Microservices Modules	72
3.4.8	Difficulties with Virtual Machines	73

3.4.9 Hypervisor a Difficulty	74
3.4.10 Virtual Machines Use Bare Metal, Containers Use Orchestration	
Software	76
3.4.11 Bare Metal an Inefficient Use of Compute Resource	77
3.4.12 Bare Metal Less Efficient	77
3.4.13 Industry Uses Robots Because Manual Labor Is Slow And Error Prone	
	78
3.4.14 IT processes Replace Manual Labor	79
3.4.15 Mega Data Center Orchestration Software	80
4 Cloud Back-up Research and Technology	81
4.1 Enterprise IT Control Centers	81
4.2 Open Compute Project (OCP)	83
4.2.1 Microsoft Investment in Open Compute	85
4.2.2 Microsoft Leverages Open Compute Project to Bring Benefit to	
Enterprise Customers	86
4.3 Open Source Foundation	86
4.3.1 OSPF Neighbor Relationship Over Layer 3 MPLS VPN	87
4.4 Dynamic Systems	90
4.4.1 Robust, Enterprise-Quality Fault Tolerance	90
4.5 Cache / Queue	92
4.6 Multicast	94
4.7 Performance Optimization	95
4.8 Fault Tolerance	96
4.8.1 Gateways	97
4.8.2 Promise Of Web Services	97
5 Cloud Back-up Company Profiles	99
5.1 Acronis International GmbH	99

5.2	Alphabet / Google	99
5.2.1	Google Switches Provide Scale-Out: Server And Storage Expansion	100
5.2.2	Google Uses Switches and Routers Deployed in Fabrics	101
5.2.3	Google Mega Data Center Multipathing	102
5.2.4	Google Mega Data Center Multipathing: Routing Destinations	103
5.2.5	Google Clos Topology Network Capacity Scalability	104
5.3	Apple	106
5.3.1	Apple Technology For Self-Driving Cars	106
5.3.2	Apple Artificial Intelligence (AI) Technology	107
5.4	Asigra	107
5.4.1	Asigra Revenue	107
5.5	AWS / Amazon	108
5.5.1	AWS	112
5.6	Barracuda Networks	112
5.6.1	Barracuda Q3 Total Revenue Grew To \$94.7 Million	113
5.6.2	Definitive Agreement To Be Acquired By Leading Private Equity	
	Investment Firm Thoma Bravo, LLC	113
5.6.3	Barracuda Networks Third Quarter 2018 Revenue	113
5.7	Carbonite	114
5.7.1	Carbonite SMB Target Markets	116
5.7.2	Carbonite Offerings	117
5.8	Code42 Software	119
5.9	Datto / Autotask	119
5.9.1	Datto Acquisition by Vista Equity Partners	120
5.9.2	Autotask	121
5.9.3	Datto Hardware-Based On-Site And Offsite Backup, Disaster Recovery	
	And Business Continuity Services	122

5.9.4 Datto / Autotask	123
5.10 Druva Software Leverages AWS	123
5.10.1 Druva 2017 Growth	125
5.10.2 Druva	128
5.11 Efolder	129
5.4 Facebook Pods	131
5.4.1 Facebook Sample Pod: Unit of Network	131
5.5 IBM	133
5.6 Intel	134
5.6.1 Intel Premier Computer Chip Maker	135
5.6.2 Intel Buys Mobileye	136
5.12 Iron Mountain	138
5.13 Microsoft	142
5.13.1 Microsoft .Net Dynamically Defines Reusable Modules	147
5.13.2 Microsoft Combines Managed Modules into Assemblies	148
5.15.3 Microsoft Architecture Dynamic Modular Processing	148
5.15.4 Microsoft Builds Azure Cloud Data Centers in Canada	150
5.15.5 Microsoft Dublin Cloud 2.0 mega data center	151
5.15.6 Microsoft Data Center Largest in U.S.	152
5.15.7 Microsoft Crafts Homegrown Linux For Azure Switches	153
5.15.8 Microsoft Azure Cloud Switch	155
5.15.9 Microsoft Azure CTO Cloud Building	157
5.15.10 Microsoft Cloud 2.0 Mega Data Center Multi-Tenant Containers	158
5.15.11 Microsoft Managed Clustering and Container Management: Docker and Mesos	160
5.15.12 Kubernetes From Google or Mesos	161
5.15.13 Microsoft Second Generation Open Cloud Servers	161

5.15.14 Azure Active Directory	161
5.15.15 Microsoft Azure Stack Platform Brings The Suite Of Azure Services To The Corporate Datacenter	163
5.15.16 Hardware Foundation For Microsoft Azure Stack	170
5.16 Veeam Software	176
6 Summary and Conclusions	180
6.15 State-Of-The-Art Global Infrastructure	180
WinterGreen Research,	181
WinterGreen Research Methodology	181
WinterGreen Research Process	183
Market Research Study	183
WinterGreen Research Global Market Intelligence Company	184

Abstract: Cloud Back-up Markets Grow as The Enterprise Moves from Data Center to Cloud	1
Figure 1. Cloud Back-up Market Forecasts, SMB and Smart Devices, Dollars, Worldwide, 2017-2024	15
Figure 2. Business-Driven Security Technologies And Trends	18
Figure 3. Cloud Computing Provides Business Continuity	21
Figure 4. Cloud Storage and Back-Up Market Shares, Dollars, Worldwide, 2016 and 2017 22	
Figure 5. Cloud Storage and Back-Up Market Shares, Small and Medium Business, SMB Dollars, Worldwide, 2016 and 2017	23
Figure 6. Cloud Storage and Back-Up Market Shares, Cloud Service Provider (CSP), Managed Service Providers (MSP), Telcom Services Provider (TELC) , SMB, Dollars, Worldwide, 2016 and 2017	25

Figure 7. Cloud Storage and Back-Up Market Shares, Private, Public, Hybrid, SMB, Dollars, Worldwide, 2016 and 2017	26
Figure 8. Cloud Datacenter, Co-Location, and Social Media Storage Revenue Market Shares, Dollars, Worldwide, 2016	27
Figure 9. Cloud Back-up Market Forecasts, SMB and Smart Devices, Dollars, Worldwide, 2017-2024	28
Figure 10. Cloud Back-up Markets, SMB and Smart Devices, Dollars, Worldwide, 2012-2017	29
Figure 11. Cloud Back-up Markets, SMB and Smart Devices, Dollars, Worldwide, 2012-2017	30
Figure 12. Cloud Back-up CSP, MSP, and Telco Market Segments, SMB and Smart Devices, Dollars, Worldwide, 2012-2017	31
Figure 13. Cloud Back-up CSP, MSP, and Telco Market Segments, SMB and Smart Devices, Percent, Worldwide, 2012-2017	32
Figure 14. Cloud Back-up CSP, MSP, and Telco Market Segments, SMB and Smart Devices, Dollars, Worldwide, 2017-2024	33
Figure 15. Cloud Back-up CSP, MSP, and Telco Market Segments, SMB and Smart Devices, Percent, Worldwide, 2017-2024	33
Figure 16. Microsoft Azure Backup	34
Figure 17. Google Cloud Back-up Pricing	36
Figure 18. Cloud Back-up Private, Public, Hybrid Market Segments, SMB and Smart Devices, Dollars, Worldwide, 2012-2017	37
Figure 19. Cloud Back-up Private, Public, Hybrid Market Segments, SMB and Smart Devices, Percent, Worldwide, 2012-2017	38
Figure 20. Cloud Back-up Private, Public, Hybrid Market Segments, SMB and Smart Devices, Dollars, Worldwide, 2017-2024	39
Figure 21. Cloud Back-up Private, Public, Hybrid Market Segments, SMB and Smart Devices, Percent, Worldwide, 2017-2024	40
Figure 22. Cloud Back-up Regional Market Segments, SMB, Dollars, Worldwide, 2012-2017	42
Figure 23. Cloud Back-up Regional Market Segments, SMB Dollars, Worldwide, 2017-2024	43

Figure 24. Cloud Back-up Regional Market Segments, SMB, Percent, Worldwide, 2012 - 2017	44
Figure 25. Cloud Back-up Regional Market Segments, SMB, Percent, Worldwide, 2017 - 2024	45
Figure 26. Cloud 2.0 Mega Data Center Regional Market Segments, Dollars, 2016, Image	46
Figure 27. Amazon Principal Competitive Factors In The AWS Business	48
Figure 28. Amazon Improving Customer Experience Functions	50
Figure 29. Amazon Ways To Achieve Efficiency In Technology For Operations	52
Figure 30. CERNE Cloud Architecture	55
Figure 31. Cern Cloud and Dev	56
Figure 32. CERN Use Cases	57
Figure 33. Cern Hardware Spectrum	58
Figure 34. Cern Operations Containers	59
Figure 35. Open Stack at Cern	60
Figure 36. Cern Open Space Containers on Clouds	60
Figure 37. HPC and Machine Learning Share Same Interconnect Needs Mellanox Positioned to Capture Significant Share	63
Figure 38. Mellanox End Markets	64
Figure 39. Switch Wired Scalable Infrastructure Market Trends	65
Figure 40. Mega Data Center Fabric Implementation	66
Figure 41. Orchestration Software Decreases Data Center Cost Structure	67
Figure 42. Files Bundled into a Container	68
Figure 43. Microservices: Suite Of Independently Deployable Service Modules with a Unique Process And Well-Defined, Lightweight Communication Portal: Mechanism To Serve A Business Goal	69
Figure 44. Microservices Distinct Features: Taxi Hailing Example	70
Figure 45. Microservices Market Segments	71
Figure 46. Microservices Modules	72
Figure 47. Hypervisor Virtualization Operating System Interface	73

Figure 48. Hypervisor Virtualization Operating System Interface	74
Figure 49. Virtual Machines Less Efficient Than Containers	75
Figure 50. Difference Between Virtual Machines and Containers	75
Figure 51. Bare Metal Management Replaced by Container Controllers	76
Figure 52. Containers vs. VMs	77
Figure 53. Industrial Robots Eliminate Manual Labor	78
Figure 54. Industry Uses Robots To Replace Manual Labor	78
Figure 55. Data Centers Need The Precision and Automation Similar to that Provided by Multi-Step Sequential Task Industrial Robots	79
Figure 56. Mega Data Center Orchestration Software	80
Figure 57. Multiple Pathways Open To Processing Nodes In The Cloud 2.0 Mega Data Center Functions	82
Figure 58. Layer 3 MPLS VPN Backbone	88
Figure 59. OSPF Network Types	89
Figure 60. Automatic Detection And Recovery From Network And System Failure	91
Figure 61. High Performance And Real-Time Message Throughput	95
Figure 62. Fault Tolerance Features	96
Figure 63. Google Traffic Generated by Data Center Servers	100
Figure 64. Google Mega Data Center Multipathing: Implementing Lots And Lots Of Paths Between Each Source And Destination	102
Figure 65. Google Mega Data Center Multipathing: Routing Destinations	104
Figure 66. Google Builds Own Network Switches And Software	104
Figure 67. Google Clos Topology Network Capacity Scalability	105
Figure 68. Amazon Sales and Regional Revenue	108
Figure 69. Amazon Sales by Country	111
Figure 70. Carbonite Revenue	114
Figure 71. Carbonite Key Infrastructure Competitive Strengths	115
Figure 72. Carbonite Key Architecture Competitive Strengths	115

Figure 73. Carbonite Suite Of Solutions:	117
Figure 74. Druva Software Functions	123
Figure 75. Facebook Automation of Cloud 2.0 Mega Data Center Process	132
Figure 76. Chinese Tech Giant Tencent Teams with Mellanox and IBM to Smash Big Data Analytics Record	133
Figure 77. Mobileye Provides Intel Access to the Automotive Market	137
Figure 78. Mobileye Intel Automotive Market Access Features	138
Figure 79. Images for Microsoft Dublin Cloud 2.0 Mega Data Center	143
Figure 80. Microsoft Azure Data Center	144
Figure 81. Microsoft Dublin Cloud 2.0 mega data center	146
Figure 82. Microsoft .Net Dynamic Definition of Reusable Modules	147
Figure 83. Microsoft .NET Compiling Source Code into Managed Assemblies	149
Figure 84. Microsoft Architecture Dynamic Modular Processing	150
Figure 85. Microsoft-Azure-Stack-Block-Diagram	165
Figure 86. Microsoft-Azure-Platform Stack-Services	167
Figure 87. Figure 175. Microsoft-Cloud Virtual Machine -Platform Stack-Services 168	
Figure 88. Microsoft-Azure-Core Management-Services	169
Figure 89. Microsoft Data Centers	174
Figure 90. Veeam backup for Microsoft Office 365 Functions	178