

**EXECUTIVE OVERVIEW**

# CLOUD COMPUTING: IAAS, PAAS AND ENABLING TECHNOLOGIES Report I, 2010

## 451 MARKET MONITOR

*Market Sizing and Forecasts*

the **451** group

JANUARY 2010

## REPORT SNAPSHOT

**SERVICE** Market Monitor: Cloud Computing  
**TITLE** IaaS, PaaS and Enabling Technologies, Report I, 2010  
**LEAD ANALYSTS** Greg Zwakman, Research Manager - Quantitative Services  
Dan Kusnetzky, Vice President,  
Research Operations - The 451 Group

### CONTRIBUTING ANALYSTS

#### *From The 451 Group*

John Abbott, Founder/Chief Analyst  
William Fellows, Founder/Principal Analyst  
Henry Baltazar, Storage Analyst  
Dennis Callaghan, Senior Analyst - Enterprise Software  
Rachel Chalmers, Research Director  
- Infrastructure Management  
Simon Robinson, Research Director - Storage

#### *From Tier1 Research*

Dan Golding, Vice President & Research Director  
Antonio Piraino, Research Director  
- Hosting & Cloud Computing  
Aleetalynn Schenesky-Stronge, Senior Equity Analyst

**RELEASE DATE** December 2009

**LENGTH** 36 pages

## ABOUT MARKET MONITOR

The **Market Monitor** product line is a market-sizing research service from The 451 Group and Tier1 Research, offering five-year, bottom-up market size, share and growth forecasts for key segments of the enterprise technology marketplace.

### Current Offerings Include:

#### **MARKET MONITOR: VIRTUALIZATION SOFTWARE**

100+ vendors in 14 market segments

#### **MARKET MONITOR: CLOUD COMPUTING**

200+ vendors in 17 market segments

## ABOUT MARKET MONITOR: CLOUD COMPUTING

**Market Monitor: Cloud Computing** is a quantitative research service from The 451 Group and Tier1 Research that provides a five-year forecast of the size, growth and market share for the rapidly evolving cloud computing marketplace. The Monitor uses a bottom-up approach to track and project revenues for more than 200 vendors operating in 17 segments of the marketplace.

### Core Components of the Service:

**Market Overview Reports** – *Twice-yearly* long-form reports showing overall market size and growth for the 17 segments covered in the service.

**Segment Focus Snapshots** – Focused monthly insight reports providing more granular detail and market-share data for one or more of the market segments.

**Forecasts** – Five-year market-size and growth projections for all market segments and companies.

**Access to Data** – Excel spreadsheets providing data contained within reports.

**‘Spot’ Access to Analysts** – Unlimited quick inquiry by email or phone to Market Monitor analysts.

**In-Depth Access to Analysts** – Structured consultation with Market Monitor analysts.

# TABLE OF CONTENTS

<b>SECTION 1: EXECUTIVE SUMMARY</b>	<b>1</b>
1.1 METHODOLOGY . . . . .	1
1.2 SCOPE OF ANALYSIS . . . . .	2
<i>Figure 1: Market Taxonomy</i> . . . . .	2
1.3 KEY POINTS . . . . .	3
1.4 EXPANSION OF THE CLOUD MODEL . . . . .	4
<b>SECTION 2: FUNCTIONALITY VS. REVENUE TAXONOMY</b>	<b>5</b>
<i>Figure 2: The Four Pillars of Cloud Computing</i> . . . . .	5
2.1 CLOUD HONORABLE MENTION – VIRTUALIZATION . . . . .	6
<i>Figure 3: Virtualization Market-Sizing Taxonomy</i> . . . . .	7
<i>Figure 4: Aggregate Virtualization Software Revenue</i> . . . . .	8
<i>Figure 5: Virtualization Sector Revenue Details</i> . . . . .	8
2.2 IAAS, PAAS AND CLOUD-ENABLING TECHNOLOGY REVENUE . . . . .	9
<i>Figure 6: Aggregate IaaS, PaaS and Cloud-Enabling Technology Revenue</i> . . . . .	9
<b>SECTION 3: SUBSECTOR ANALYSIS</b>	<b>10</b>
<i>Figure 7: Estimated 2009 Revenue Breakdown by Subsector</i> . . . . .	10
<i>Figure 8: Estimated Revenue and Growth by Subsector</i> . . . . .	11
<i>Figure 9: Estimated 2013 Revenue Breakdown by Subsector</i> . . . . .	11
<b>SECTION 4: CLOUD PLATFORMS – IAAS AND PAAS</b>	<b>12</b>
<i>Figure 10: Aggregate IaaS and PaaS Revenue</i> . . . . .	12
<i>Figure 11: 2009 IaaS/PaaS Revenue Mix</i> . . . . .	13
4.1 IAAS . . . . .	13
<i>Figure 12: IaaS Vendors</i> . . . . .	14
<i>Figure 13: IaaS Revenue</i> . . . . .	14
4.2 PAAS . . . . .	15
<i>Figure 14: PaaS Vendors</i> . . . . .	15
<i>Figure 15: PaaS Revenue</i> . . . . .	16

**SECTION 5: ENABLING TECHNOLOGIES** **17**

- Figure 16: Cloud-Enabling Technology Revenue* . . . . . 17
- Figure 17: Cloud-Enabling Technology Revenue Breakdown* . . . . . 17
- 5.1 CLOUD STORAGE . . . . . 18
  - Figure 18: Aggregate Cloud Storage Revenue* . . . . . 19
  - Figure 19: 2009 Cloud Storage Revenue Breakdown* . . . . . 20
    - 5.1.1 Stand-Alone Cloud Storage . . . . . 20
      - Figure 20: Stand-Alone Cloud Storage Vendors.* . . . . . 21
      - Figure 21: Stand-Alone Cloud Storage Revenue* . . . . . 21
    - 5.1.2 PaaS-Attached Storage . . . . . 21
      - Figure 22: PaaS Storage Vendors* . . . . . 22
      - Figure 23: PaaS Storage Revenue* . . . . . 22
    - 5.1.3 Adjacent Cloud Storage Markets. . . . . 22
      - Figure 24: Online Backup Revenue* . . . . . 23
- 5.2 MANAGEMENT . . . . . 24
  - Figure 25: Cloud Management Revenue* . . . . . 25
  - Figure 26: Cloud Management Revenue Breakdown 2009* . . . . . 25
    - 5.2.1 Monitoring . . . . . 26
      - Figure 27: Cloud Monitoring Vendors* . . . . . 26
      - Figure 28: Cloud Monitoring Revenue* . . . . . 26
    - 5.2.2 Consoles . . . . . 27
      - Figure 29: Cloud Console Vendors* . . . . . 27
      - Figure 30: Cloud Console Revenue* . . . . . 27
    - 5.2.3 On-Ramps . . . . . 28
      - Figure 31: Cloud On-Ramp Vendors* . . . . . 28
      - Figure 32: Cloud On-Ramp Revenue* . . . . . 28
    - 5.2.4 Analytics . . . . . 29
      - Figure 33: Cloud Analytics Vendors* . . . . . 29
      - Figure 34: Cloud Analytics Revenue* . . . . . 29
- 5.3 AUTOMATION . . . . . 30
  - Figure 35: Cloud Automation Revenue* . . . . . 30
  - Figure 36: Cloud Automation 2009 Revenue Breakdown* . . . . . 31
    - 5.3.1 Lifecycle Management . . . . . 31

<i>Figure 37: Lifecycle Management Vendors</i>	. . . . .	.31
<i>Figure 38: Lifecycle Management Revenue</i>	. . . . .	.31
5.3.2 Provisioning	. . . . .	.32
<i>Figure 39: Provisioning Vendors</i>	. . . . .	.32
<i>Figure 40: Provisioning Revenue</i>	. . . . .	.32
5.3.4 Orchestration	. . . . .	.33
<i>Figure 41: Orchestration Vendors</i>	. . . . .	.33
<i>Figure 42: Orchestration Revenue</i>	. . . . .	.33
5.3.5 Billing	. . . . .	.34
<i>Figure 43: Billing Vendors</i>	. . . . .	.34
<i>Figure 44: Billing Revenue</i>	. . . . .	.34
5.3.6 Other Automation	. . . . .	.35
<i>Figure 45: Other Automation Vendors</i>	. . . . .	.35
<i>Figure 46: Other Automation Revenue</i>	. . . . .	.35

**SECTION 6: SUMMARY REVENUE ESTIMATES** **36**

<i>FIGURE 47: Subsector Revenue Summary</i>	. . . . .	.36
---	-----------	-----

**INDEX OF COMPANIES** **37**

## SECTION 1

### Executive Summary

This is the introductory report for The 451 Group's Market Monitor: Cloud Computing service, a series of market-sizing reports on the rapidly evolving cloud computing marketplace. The following analysis examines the revenue generated by cloud service providers and by technology vendors via cloud platforms – including platform-as-a-service (PaaS) and infrastructure-as-a-service (IaaS) offerings, as well as the enabling technologies needed to build and manage a public cloud environment.

This report provides the current aggregate market size and growth expectations through 2013 for the aforementioned cloud sectors, and serves as the foundation for our quantitative cloud computing coverage.

The cloud computing marketplace is in an embryonic state, with momentous events occurring regularly. As vendors continue to enter the mix to address an evolving set of requirements, we will be expanding the scope of our market-sizing model to include new segments and will be adding appropriate new entrants on a biannual basis.

Updated estimates for the aggregate market and each subsector will be released to subscribers of the 451 Market Monitor service on a quarterly basis. In addition, we will be publishing monthly subsector reports that provide a more granular analysis of trends impacting the subsector in question, along with vendor market-share details.

#### 1.1 METHODOLOGY

This report leverages our deep knowledge of and relationships within the cloud computing marketplace, resulting in a proprietary forecast of industry revenue based on bottom-up analysis of each vendor's current revenue and growth expectations.

Our cloud computing database tracks 175 vendors in the market, and segments revenue into 14 market subsectors. This market-sizing analysis represents an ongoing collaborative effort among 11 analysts within The 451 Group and Tier1 Research.

The information used to generate the estimates and conclusions in this report was gathered from the following sources.

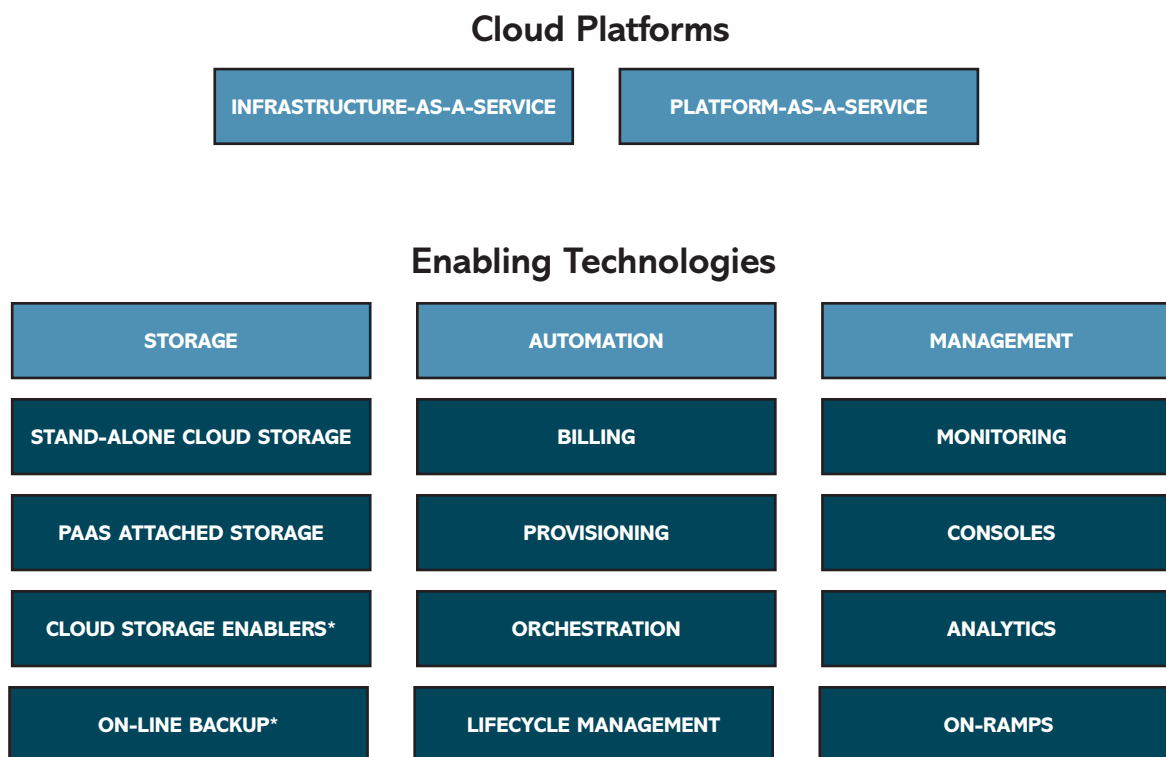
- **The 451 Group/Tier1 Research Analyst Team:** In aggregate, the 11 analysts involved with this project have 170 years of experience in the technology sector. Due to the nascent state of the cloud marketplace, the first-hand knowledge brought to bear by this team is the cornerstone of this analysis.
- **Vendor interviews:** We utilize information disseminated to analysts by vendors in the cloud computing market and companies adopting cloud technology.

- **End users:** Another crucial component of our information-gathering process is interviews with end users. This firsthand, ‘in the trenches’ view of cloud computing products and services and vendor pricing provides extremely valuable insight. In addition, the findings from user surveys are incorporated in our assumptions.
- **Published data:** While scarce, cloud revenue data published by vendors has been incorporated in our analysis. Due to the dearth of published data, the vast majority of current estimates are set using information obtained through the methods listed above.

## 1.2 SCOPE OF ANALYSIS

This report focuses on cloud platforms (IaaS and PaaS) and enabling technologies (cloud storage, management and automation). Although it is often included as part of the underlying cloud infrastructure, we believe that storage represents an enabling technology for cloud computing, and it has been treated as such in our analysis. The cloud components and market subsectors examined in this report are illustrated in Figure 1.

**FIGURE 1: MARKET TAXONOMY**



\* Examined as adjacent cloud storage markets and not included in aggregate revenue estimates

## ABOUT THE 451 GROUP

The 451 Group is a technology analyst company. We publish market analysis focused on innovation in enterprise IT, and support our clients through a range of syndicated research and advisory services. Clients of the company — at vendor, investor, service-provider and end-user organizations — rely on 451 insights to do business better.

## ABOUT TIER1 RESEARCH

Tier1 Research covers consumer, enterprise and carrier IT services, particularly hosting, colocation, content delivery, Internet services, software-as-a-service and enterprise services. Tier1's focus is on the movement of services to the Internet — what they are, how they are delivered and where they are going.

© 2009 The 451 Group, Tier1 Research and/or its Affiliates. All Rights Reserved. Reproduction and distribution of this publication, in whole or in part, in any form without prior written permission is forbidden. The terms of use regarding distribution, both internally and externally, shall be governed by the terms laid out in your Service Agreement with The 451 Group, Tier1 Research and/or its Affiliates. The information contained herein has been obtained from sources believed to be reliable. The 451 Group and Tier1 Research disclaim all warranties as to the accuracy, completeness or adequacy of such information. Although The 451 Group and Tier1 Research may discuss legal issues related to the information technology business, The 451 Group and Tier1 Research do not provide legal advice or services and their research should not be construed or used as such. The 451 Group and Tier1 Research shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice.



### **New York**

20 West 37th Street, 6th Floor  
New York, NY 10018  
Phone: 212.505.3030  
Fax: 212.505.2630

### **San Francisco**

140 Geary Street, 9th Floor  
San Francisco, CA 94108  
Phone: 415.989.1555  
Fax: 415.989.1558

### **London**

37-41 Gower Street  
London, UK WC1E 6HH  
Phone: +44 (0)20.7299.7765  
Fax: +44 (0)20.7299.7799

### **Boston**

52 Broad Street, 2nd Floor  
Boston, MA 02109  
Phone: 617.261.0699  
Fax: 617.261.0688