Technology Trend Topic: IaaS, PaaS, SaaS Comparison

Overview

Visit the **Cloud Computing Tech Trend Fact Sheet** for background info

"When it comes to cloud computing, there are 3 types of "As-a-Service" Models: Infrastructure, Platform and Software. As one progresses from foundational "Infrastructure as a Service (IaaS)" to the intermediary "Platform as a Service (PaaS)" to the fully managed application-providing "Software as a Service (SaaS)," there are fewer customer responsibilities and increased management by Cloud Service Providers (CSP). The selection of a service model is determined by customer requirements and determines the balance of the shared responsibility model between customer and CSP." - Benjamin Todd

CLOUD COMPUTING SERVICE MODELS
In practice, many offerings no longer have such well-defined boundaries.
1). IaaS - vendors provide the infrastructure and hardware; IaaS provides access to servers and storage directly, outsourced through a "virtual data center" in the cloud.
2). PaaS - vendors provide a managed environment for a customer's application; PaaS provides a platform for software creation delivered via the web, allowing application design and creation, called middleware.
3). SaaS - vendors provide a fully managed application and customers need only supply their data; a majority of SaaS applications run directly through your web browser.
- **OMB's Cloud Smart Policy**

Market Trends

GSA's Market Research as a Service (M-RAS) Tool helps customer agencies navigate the complex three cloud computing service models. After filling out a short questionnaire detailing cloud requirements, the M-RAS Team will publish an RFI on an agency's behalf and then deliver collated RFI responses. GSA offers this value-added service at no cost to customer agencies. **- GSA's Cloud Information Center**

Federal IT leaders support the push to a multi-cloud strategy as a result of the single-vendor concern; multi-cloud answers questions about security, scalability and readiness for emerging technologies.
- Federal News Network

The XaaS (anything as a service) trend is one of a larger set of technology government CIOs should include in their strategic planning over the next 12 to 18 months. **- Gartner**

Prediction that SaaS solutions is the future of government technology to offer better, more flexible services. **- GovLoop**

IaaS spending will grow from $39.5 billion in 2019 to $63 billion through 2021. **- Gartner**

Use Cases/Applications

"The first thing to know is that there is no single "cloud." Moving to the cloud isn't as simple as unplugging existing servers and turning them over to a Cloud Service Provider (CSP). Your organization (e.g., the consumer) will need to evaluate your current and future technology needs, and then select the cloud solution that best meets your organization requirements to support your organization's mission." - GSA's Cloud Information Center

As new solutions are sought, SaaS solutions are increasingly implemented across numerous verticals in government, including administration, tax and finance, health and human services, community development and planning, and regulatory agencies **- Gartner**

Common Examples		
IaaS	**PaaS**	**SaaS**
DigitalOcean, Linode, Rackspace, Amazon Web Services (AWS), Cisco Metapod, Microsoft Azure, Google Compute Engine (GCE)	AWS Elastic Beanstalk, Windows Azure, Heroku, Force.com, Google App Engine, Apache Stratos, OpenShift	Email, Calendars, Office Tools, Google Apps, Dropbox, Salesforce, Concur, WebEx, GoToMeeting

Risks/Challenges/Myths

IaaS	PaaS	SaaS
Advantages		
Most flexible and scalable; resources can be purchased as-needed	Simple, cost-effective development and deployment of apps	Greatly reduces time and money spent on tedious tasks such as installing, managing, and upgrading software
Challenges		
Concerns over security and legacy systems operating in the cloud; additional training or resources may be required	Vendor lock-in; data security concerns; customization concerns impact runtime, legacy systems, and integration	Lack of control and customization impacts vendor lock-in, data security, features, integration and performance and downtime

What You Should Read NOW

1. GSA's Cloud Information Center (CIC)
2. OMB's Cloud Smart Policy

Assistant Commissioner Blog Posts:
3. Cloud Empowerment at USAID_Oct 2019
4. NOAA Forecast: Clear Skies for Cloud Migration_June 2019

Upcoming Technology Trends Topics

Zero Trust Architecture

Published Technology Trends Topics

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