The Cloud Computing Scenario: Cloud — the Last 10 and the Next 10 Years

Arun Chandrasekaran
Twitter: @AnalystArun
We are moving from "cloud-maybe" to "cloud-first" to "cloud-only" — whether we like it or not!
Cloud’s Contribution in the Last 10 Years

**What Cloud Brought**

- Efficiency
- Availability
- Scale
- Choice
- Consistency
- Improvement
- Agility

**What Cloud Wrought**

- Modernization
- Risk
- Consumerization
- Opex Debate
- "Flip" to Digital
- Automation
- Self-Service
- Continuous Integration
- New Vendor Landscape
- Governance
- Citizen Behavior
- Layered Strategy
- DevOps
Growth in IT Spending on Public Cloud Services, 2013-2019

Billions of Dollars

---|---|---|---|---|---|---
59 | 69 | 79 | 90 | 105 | 119 | 134

Cloud Advertising
Cloud Business Process Services (BPaaS)
Cloud Application Services (SaaS)
Cloud Application Infrastructure Services (PaaS)
Cloud System Infrastructure Services (IaaS)
Cloud Management and Security Services
Assessing Where Users Are With Cloud Computing, 2017

- 2% Resisters
- 10% Adventurers
- 58% Mainstream
- 30% Pragmatists

Source: Gartner Inquiry Dashboard
Q14 Q14. What are the top three reasons for using or considering using public cloud services?
2017: Cloud Is the Modern Baseline for ...

Internet of Things Connectivity and Scale
Machine Learning
API Economy
Big Data
B2B Hubs
App Delivery
Social Interaction
Digital Media
BizApps "Flip" to Digital

Cloud

...
Best Practices

- There Is No Single Cloud Strategy
- Redesign, Not Redeploy
- One Workload at a Time
- Coordinate the Uncontrollable
- Focus on Outcomes
- Hybrid Cloud Works

- Build a layered strategy for each level of cloud capabilities
- Avoid "lift and shift" where possible
- Enterprisewide cloud migrations usually fail
- Become or use brokers as intermediaries
- The only "right" service is the one with business value
- Expect hybrid to be the norm for years
Cloud Computing … Has Evolved to a Cloud-First Assumption

- **SaaS** (Software as a Service)
- **PaaS** (Platform as a Service)
- **IaaS** (Infrastructure as a Service)
- **BPaaS** (Business Process as a Service)

### Top Private Cloud Initiative
- **35%** Integrate
- **15%** Aggregate
- **40%** Govern
- **10%** Customize

### Growth Rates
- **8%** CAGR
- **18%** CAGR
- **32%** CAGR

### Cloud-Washing Adoption
- **User**
- **Vendor**

### IT Emphasis
- **Tactical**
- **Strategic**

### Cloud First vs. Cloud Last

**Assumption**

- Cloud-First
- Cloud-Last
Primary Drivers Behind Cloud-First Strategies

Source: 2016 Gartner Cloud Survey
Cloud in the Mainstream — Cloud First and More
### The Value and Challenges in a Cloud Spectrum

<table>
<thead>
<tr>
<th>Value Proposition</th>
<th>Type 0: Cloud-Enabling</th>
<th>Type 1: Cloud-Inspired</th>
<th>Type 2: Pure-Cloud</th>
<th>Type 3: Cloud-Enhanced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value Proposition</strong></td>
<td>Supporting those who seek to deliver cloud services as a provider through homegrown implementation.</td>
<td>Supporting those who require a higher degree of control, touch, isolation, responsibility and customization while gaining virtualization, standardization and automation.</td>
<td>Supporting those who seek high agility, continuous integration/delivery, innovation, and hyperscale-provider-driven self-service without the need for ownership or control of underlying systems.</td>
<td>Supporting those who seek to deliver or consume new solutions using public cloud services as a de facto utility providing a low-cost mass availability and scalability mechanism.</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>Not at all cloud services and subject to technology obsolescence, lack of standard implementations and inclusion of traditional licensing shortcomings.</td>
<td>Often promoted as same as pure cloud, but with inability to provide for true hyperscale (millions of VMs), full self-service, ultrarapid provisioning and provider variety, and speed of innovation.</td>
<td>Higher cost of operating existing application systems without recoding and lower support than cloud inspired offerings for customization, high performance, transparency and enterprise-driven ownership and responsibility for success.</td>
<td>Focus shifts away from underlying cloud mechanisms and toward new models of business that are not well understood in all cases. Continued fear of cloud outages renders these solutions vulnerable to cloud failures in mass.</td>
</tr>
</tbody>
</table>
Cloud Is the Baseline

Cloud Blends Into the Background

Everything Else Is Built on It
Three Cloud Futures to Consider

1. **Pervasive "Event-Driven, Automatic-Response" Functions**
   By 2020, event-driven generic cloud services will automatically respond to 10% of data transformation requests.

2. **Virtually Free "Hypercomputer"**
   By 2022, over 30% of cloud IaaS and PaaS capabilities will be delivered for free.

3. **Quantum Platform**
   By 2026, 90% of all quantum computing processes will be delivered in the public cloud.
Within 10 Years, Certain Key Distinctions in Cloud Computing Will Practically Cease to Exist

Private vs. Public Cloud?
- Dedicated
- Virtual Private
- Reserved
- Local
- Innovation
- On-Premises
- Hosted
- Brokered

IaaS vs. PaaS vs. SaaS?
- Integrated
  - IaaS and PaaS
  - PaaS and SaaS
- aPaaS
- bpmPaaS
- iPaaS
- xPaaS
- Compute
- Storage
- PaaS Framework
- IaaS

Gartner
Be Prepared for Blurring of Roles, Decision Rights and Authority Around and Through the Cloud

- Consumer Technology
  - Social networking
  - Mobile systems and applications
  - Media players
- Operational Technology
  - HVAC control systems
  - Energy management systems
- Business Technology
  - Email
  - Workplace applications
  - Hosted services
  - BI
  - Business processes
  - Business applications
- "Traditional" IT
  - Back-office applications
  - Networking
  - Production information management

Cloud:
- Governance
- Performance
- Reliability
- Budget and asset management
<table>
<thead>
<tr>
<th>Cost</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Increasing</td>
</tr>
<tr>
<td>Minimal</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Pervasive</td>
<td>High</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Specialty</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>Minimal</td>
<td>Minimal</td>
<td>Minimal</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Sensitivity</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geography</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Increasing</td>
</tr>
<tr>
<td>Minimal</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Pervasive</td>
<td>High</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adoption</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Increasing</td>
</tr>
<tr>
<td>Minimal</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Pervasive</td>
<td>High</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hybrid</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Increasing</td>
</tr>
<tr>
<td>Minimal</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Pervasive</td>
<td>High</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
<th>IaaS</th>
<th>PaaS</th>
<th>SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Low/Free</td>
<td>Increasing</td>
</tr>
<tr>
<td>Minimal</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Pervasive</td>
<td>High</td>
</tr>
<tr>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
<td>Pervasive</td>
</tr>
<tr>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
<td>Utility</td>
</tr>
<tr>
<td>Normal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tactical</td>
<td>Strategic</td>
<td>Strategic</td>
<td>Strategic</td>
</tr>
</tbody>
</table>
Cloud Computing Is Now a Primary Option, Not Just a Secondary Possibility.

The Future of Cloud Computing Will Be an Exploitable Utility for All.
Government Opportunities - Shared Services 1.0, 2.0 and 3.0

1.0 – The Efficient SSO
Business Efficiencies, Quality, Service Excellence

2.0 – The Responsive SSO
Business Integration, Coordination, Harmonization

3.0 – The Adaptive SSO
New Intervention Support, Strategic Change

Business Value
Transform
Grow
Run

Functional IT
Enabling IT
Contributing IT
Differentiating IT
Transformational IT

Maturity
Opportunities for Next Generation of Shared Services

- Virtual Personal Assistants
- API Management
- Autonomous Robots & Drones
- AI
- Platforms
- Analytics
- Cloud
- Blockchain
- IoT
Build a Digital (technology) Platform and Connect to Other External Ecosystems

Gartner
Cloud services have become primary options for acquisition and deployment.

The movement to thinking cloud-first is leading to more cloud-ready designs when needed.

A visible cloud spectrum can help align cloud models with value for each customer.

Balance security concerns with privacy realities.

Seek cloud brokerages — or becoming one yourself. Few large enterprises will outsource brokerage completely.

Gartner
Action Plan for Shared Service CIO - Leader

Monday Morning:
- Review your governance arrangements and seek amendments if needed.
- Identify if you have all the necessary components to drive innovation.

Next 90 Days:
- Determine what opportunities your clients would consider priorities and agree plans.
- Establish your cloud management policy and conduct a review on SaaS use across client base.

Next 12 Months:
- Deliver platform based pilots on at least two different fronts introducing new technologies.
- Ensure your organization is seen as being the platform provider of the future.
Recommended Gartner Research

- **What CIOs Need to Know and Do to Exploit Cloud Computing**
  Donna Scott

- **2017 Planning Guide for Cloud Computing in Hybrid IT**
  Mindy Cancila and Others

- **Government Cloud Use Policy Template**
  Neville Cannon

- **Get Ready for the Inflection Point in U.S. Federal Government Cloud Adoption**
  Rick Holgate and Neville Cannon
Gartner Events On Demand
Let the learning continue all year!

Check out sessions you missed or watch your favorite sessions again.

Recapture all the "aha" moments for an entire year, on your own or with your team.

Visit GartnerEventsOnDemand.com