



# Intel IT Cloud 2012 and Beyond

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# Agenda

- Intel IT Details
- Cloud in the Industry
- Intel IT Cloud Maturity Model
- Our Results to Date
- Intel IT journey continued
- Recap and summary

# Intel IT's Focus



## **Business Intelligence**

Deliver real-time insight to drive decisions



## **Greater Security**

Protect to enable



## **Consumerization of IT**

Customized productivity with personal devices, seamless access



## **Agility with Clouds**

Support the increasing speed of the business

# What the Cloud Means to Intel IT

Delivering a *highly available* computing environment where secure *services and data* are delivered *on-demand to authenticated devices* and users utilizing *a shared, elastic infrastructure* that concurrently supports *multiple tenants*

## Attributes<sup>1</sup>

- On-demand self-service
- Broad network access
- Rapid elasticity
- Measured service
- Resource pooling
- Shared multiple tenants

## Service Models

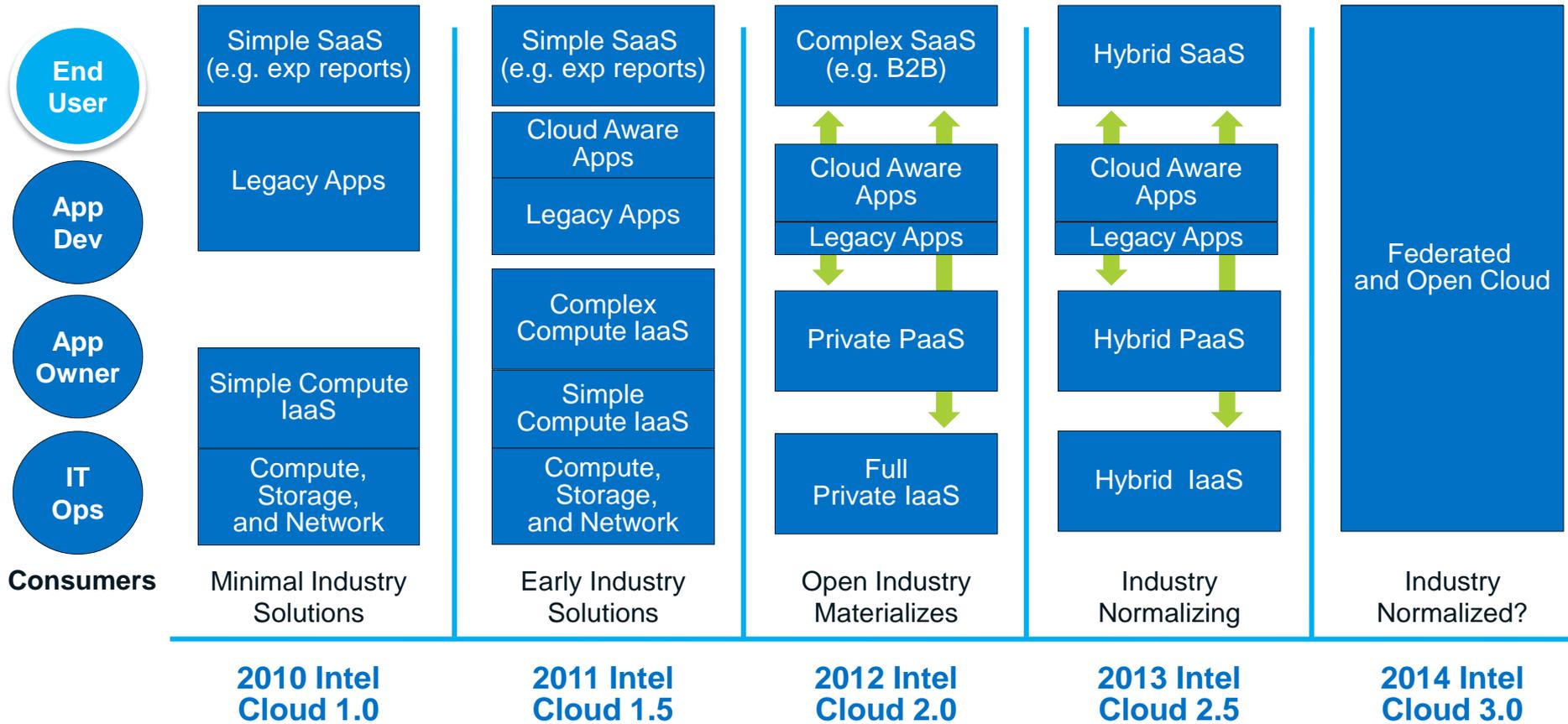
- Software as a Service: on-demand packaged sw
- Platform as a Service: on-demand sw development and hosting
- Infrastructure as a Service: on-demand compute infrastructure

## Delivery Models

Public, Private, or Hybrid

<sup>1</sup>These attributes been adapted from National Institute of Standards and Technology, and reflects the key characteristics and business drivers for cloud computing within the Intel IT organization

# Intel and Industry Cloud Maturity



**By 2013 Hybrid applications are the norm enabling low latency, lowest cost, improved security, and seamless data sharing between services for end user productivity.**

1 Intel IT future state goals – subject to change – as of June 2011



# Intel's Cloud Journey

## Today



**Large  
Private Cloud**

**Limited  
Public Cloud**

- 74% Virtualized
- 80% of New Services in the Cloud
- Under 1 Hour to Deploy Infrastructure
- Small number of SaaS apps in usage

## Tomorrow



**Hybrid Cloud**

- Land Applications in Minutes
- Automation: Lower Cost with Less Resources
- Open Cloud for Bursting Capacity
- SaaS for non-differentiated apps

# What's Ahead for Cloud At Intel?



## 80% Effective Asset Utilization

- Pervasive virtualization (75%)
  - Enterprise app virtualization
  - Secure virtualization
- Larger pools in fewer data centers

## Velocity for Service Provisioning

- On-demand self-service the norm
- Innovative idea to production <day
- Provision VMs within minutes
- External Cloud for burst demand
- Automated sourcing decisions

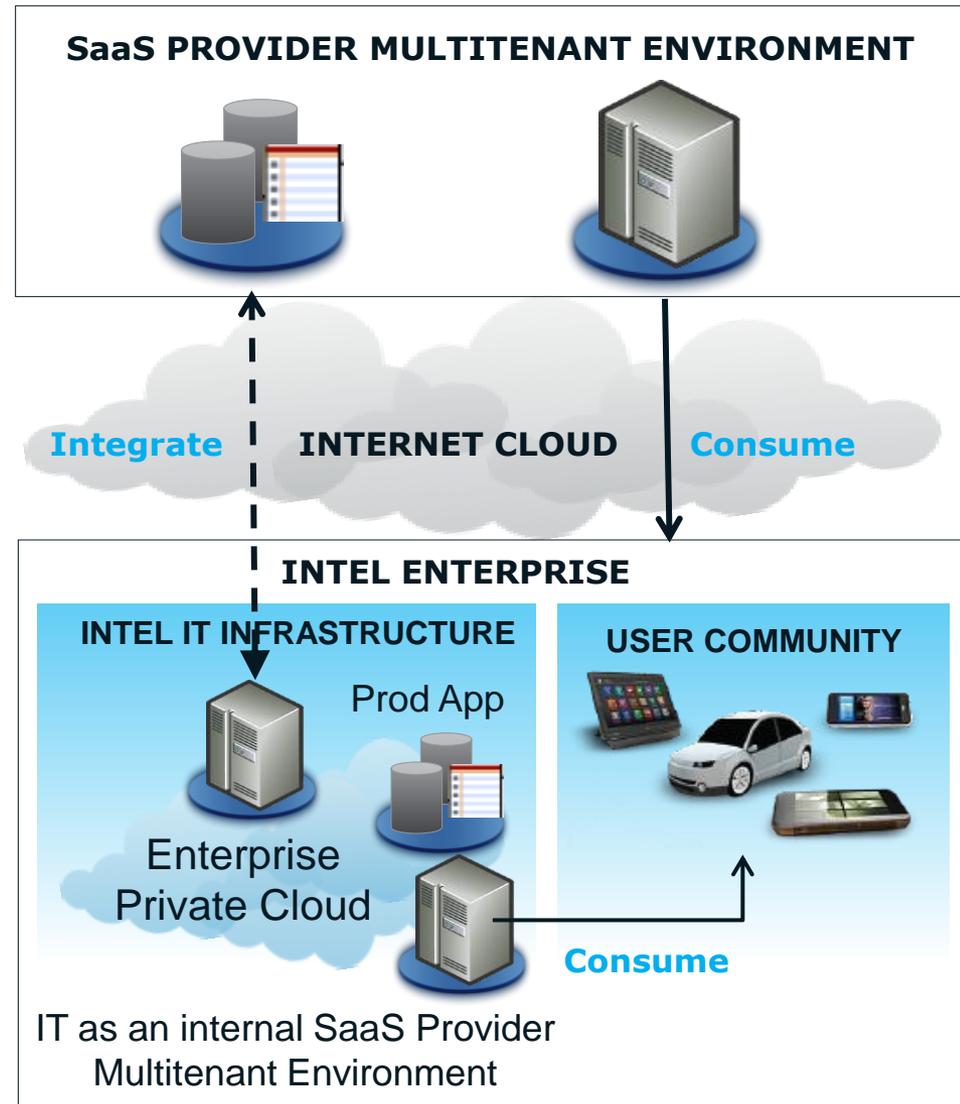
## Zero Business Impact

- Application design for failure
- Reduce MTTR
- Increase availability
- Automated, end-to-end service-managed Cloud

# **SaaS, PaaS, and IaaS details**

# Software as a Service (SaaS) for Intel IT

- Gartner: “software that's owned, delivered and managed remotely by one or more providers.”
- Public Cloud focus
- Should Intel deliver software internally in SaaS model?
  - On-demand, self service, metered, elastic, multi-tenant
  - Cost effective SW licensing
  - HTTP/HTTPS for all apps (no VPN) to enable BYO client devices



# Intel IT SaaS Examples

## HR & Employee Services

- Expense reports
- Health benefits
- Stock & retirement tools
- Talent management
- Travel tools
- Awards & employee purchase
- Timecard – US & geos
- Payroll – US & geos
- US leave
- Charity donations

## Evaluation

- CRM/SFA
- ERP B2B
- Social login & profile
- Office suite & email
- Infrastructure tools

## Finance

- Online banking
- Treasury
- Tax
- Contract Management

## Collaboration & Productivity

- CRM
- Web conferencing
- External social media
- Online virtual events
- Survey creation

## Special Purpose

- Crisis management
- Marketing apps
- Business exchange

# 2012 Key Focus Areas

- Aggressively move more non-differentiating apps to SaaS
- Streamline on-boarding via an enterprise services gateway
- Get more value from apps by supporting a variety of client devices across the “compute continuum”

## Presentation

Menu and navigation

User controls

Display and rendering

Reporting

## Security

Identity and federation

Entitlement

Encryption

Regulatory controls

Authentication and single sign-on

Authorization and role-based access control

## Application

User profile

Metadata services

Messaging

Notification and subscription

Metadata execution engine

Workflow

Exception handling

Orchestration

Data synchronization

## Operations

Monitoring and alerting

Backup and restore

Provisioning

Configuration and customization

Performance and availability

Metering and indicators

## Infrastructure

Database

Storage

Compute

Networking and Communications

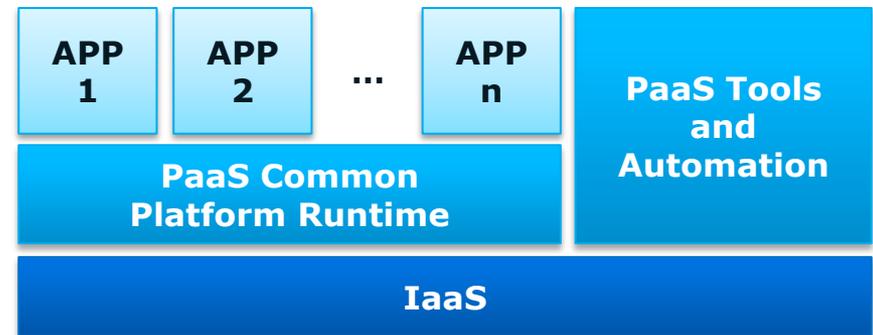
# What is Platform as a Service (PaaS)?

**Developers code their app & deploy into production without IT assistance**

- Cloud tooling: self-service, on-demand, multi-tenant, metered
- Pre-provisioned common platform of abstracted middleware & infrastructure

## Facilitates creation of cloud-ready applications

- Platform provides runtime container, elastic scaling and high availability
- Maximize resource sharing via multi-tenancy and reusable web services



## Intel App Development Lifecycle



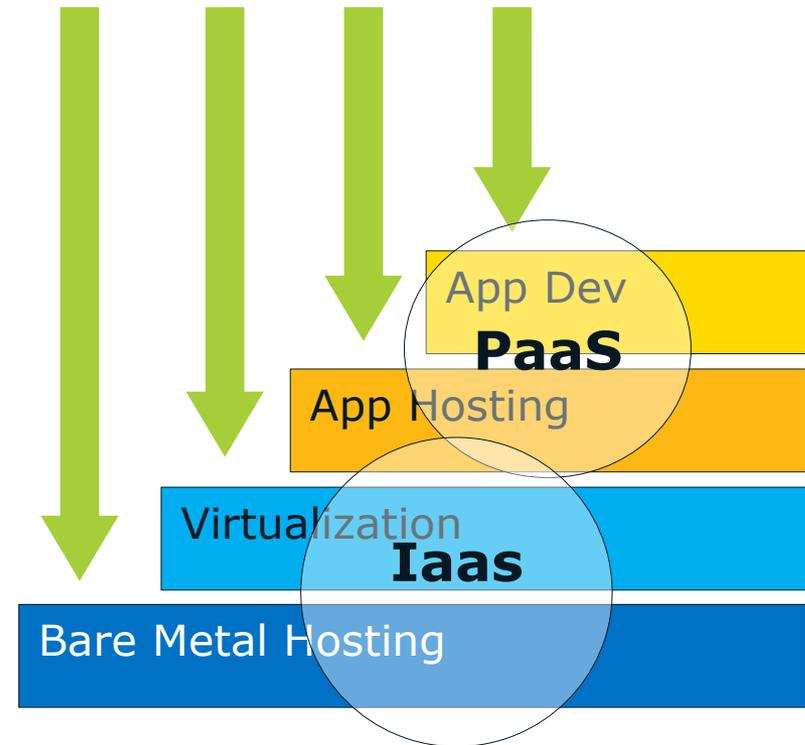
**From innovative idea to production service in less than a day**

# Value Proposition

Allow Intel businesses to evolve more quickly through improved TTM of custom apps

- **Agility** - On-demand, self service development and hosting approach
- **Efficiency** - Standardization & automation of platform components and business processes
- **Extensibility** - Extend model to developers who write and host apps on Intel's behalf

Meet the range of enterprise needs



**PaaS is next natural step in the evolution of our Private Cloud**

# Intel IT PaaS Approach



## Development

- **Now** – Cloud design patterns (mobile, hybrid, mash-up), web services
- **Future** – On demand developer environment with IDE, source code



## Path to Production

- **Now** – Business process, Promote/Demote through dev, test, prod
- **Future** – Validation/testing framework

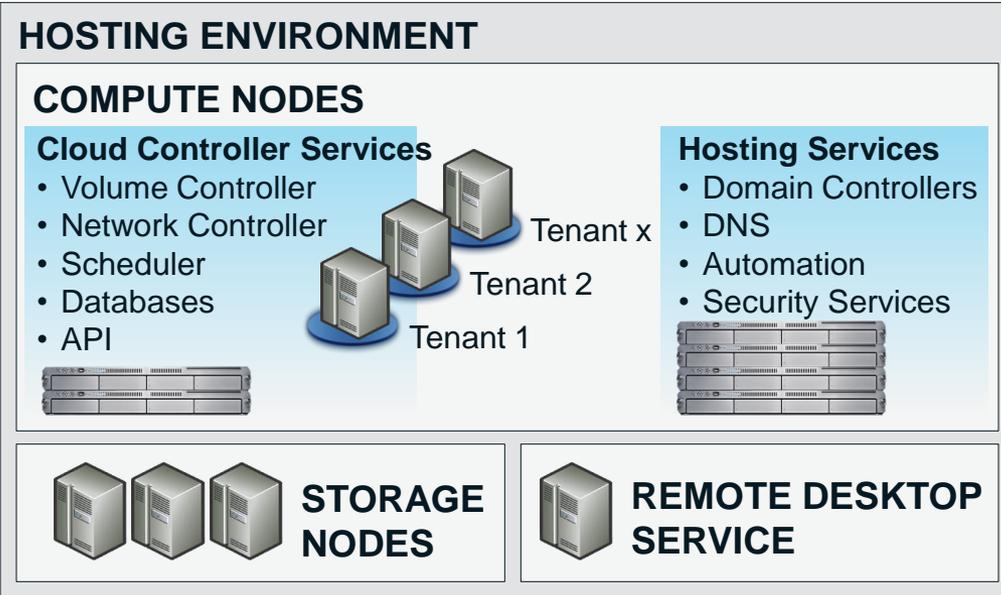


## Hosting

- **Now** – Self-service usage metrics/error logs, high availability, elastic scaling
- **Future** – Advanced platform configurations

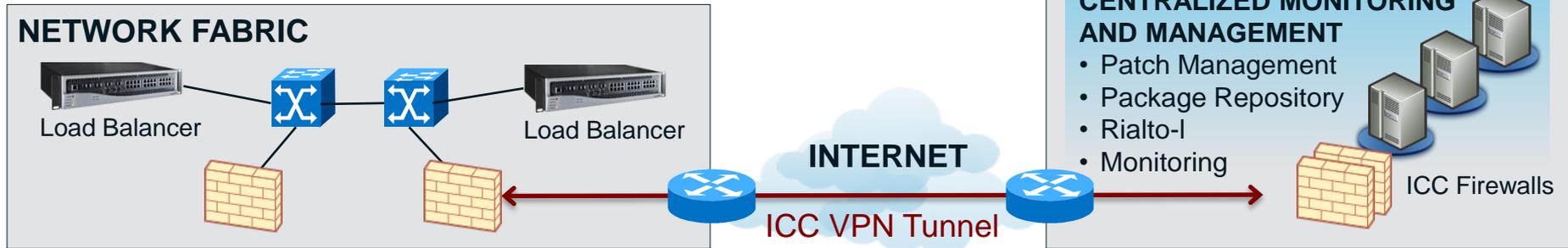
**PaaS Common Platform Runtime**

# Intel IT Open Cloud - Details



## Key Technologies

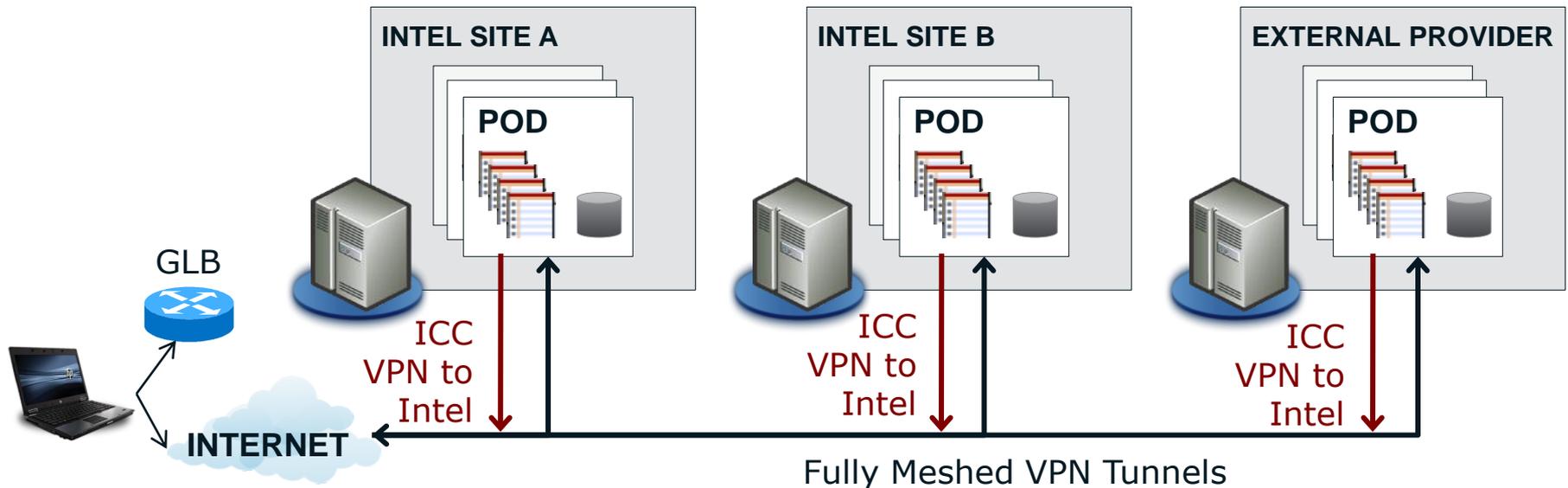
- **Cloud** – OpenStack Diablo+
  - **Monitoring** – Nagios
  - **Configuration** – Puppet
  - **Hosts** – Intel 5600 Blades
  - **Network** – 10GBe
  - **Storage** – Scale out on 2U Nehalem
- Integration with TAC and other operational capabilities



Running cutting edge Web Services,  
on a predominantly open source cloud.

# Intel IT Hybrid Cloud

Focus Area	Key Aspects
Technical	Active/Active App Design- SW Design for Failure
	Unified Monitoring/Manageability/Authentication
	IT Service broker handling cloud on-boarding internal and external
Operational	IT handling basic IaaS container levels externally, covering all IaaS internally
Business	Single contract with Intel IT funding and showback to BUs
	Liability/Indemnification at acceptable levels for associated risk



# Intel IT Private Cloud Re-Cap

- Align IT strategy to business needs
- Cloud transition is a multi-year journey
- Business benefit will generate value
- Utilize a combination of SaaS, PaaS, and IaaS to solve your business requirements



# Resources for You

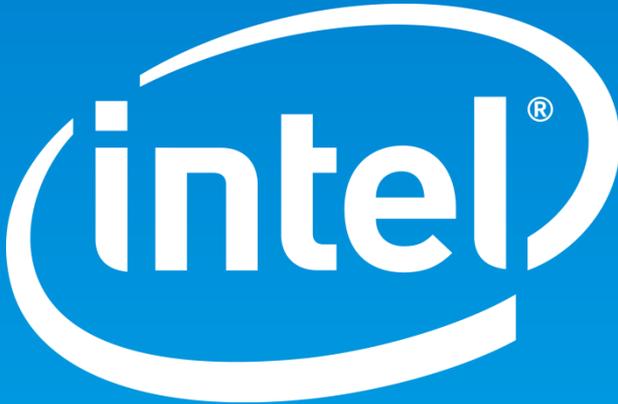
- Engage with ODCA
- Learn about usage models
- Use the RFP Tool
- [www.opendatacenteralliance.org](http://www.opendatacenteralliance.org)



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