

Service Oriented Architecture and Cloud Computing Concepts

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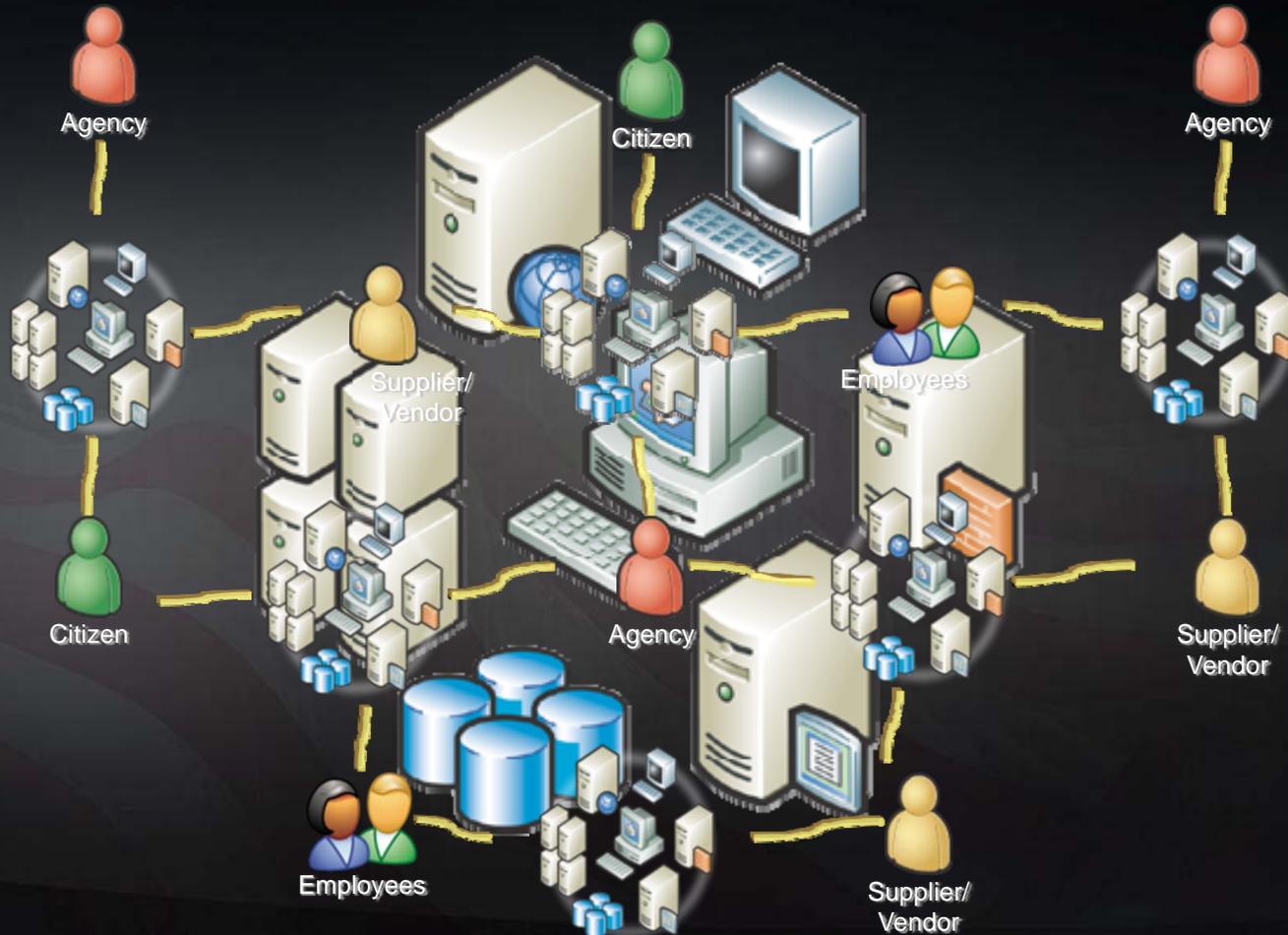
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Catalysts affecting change in Government IT



No Agency is an Island



Challenges facing IT

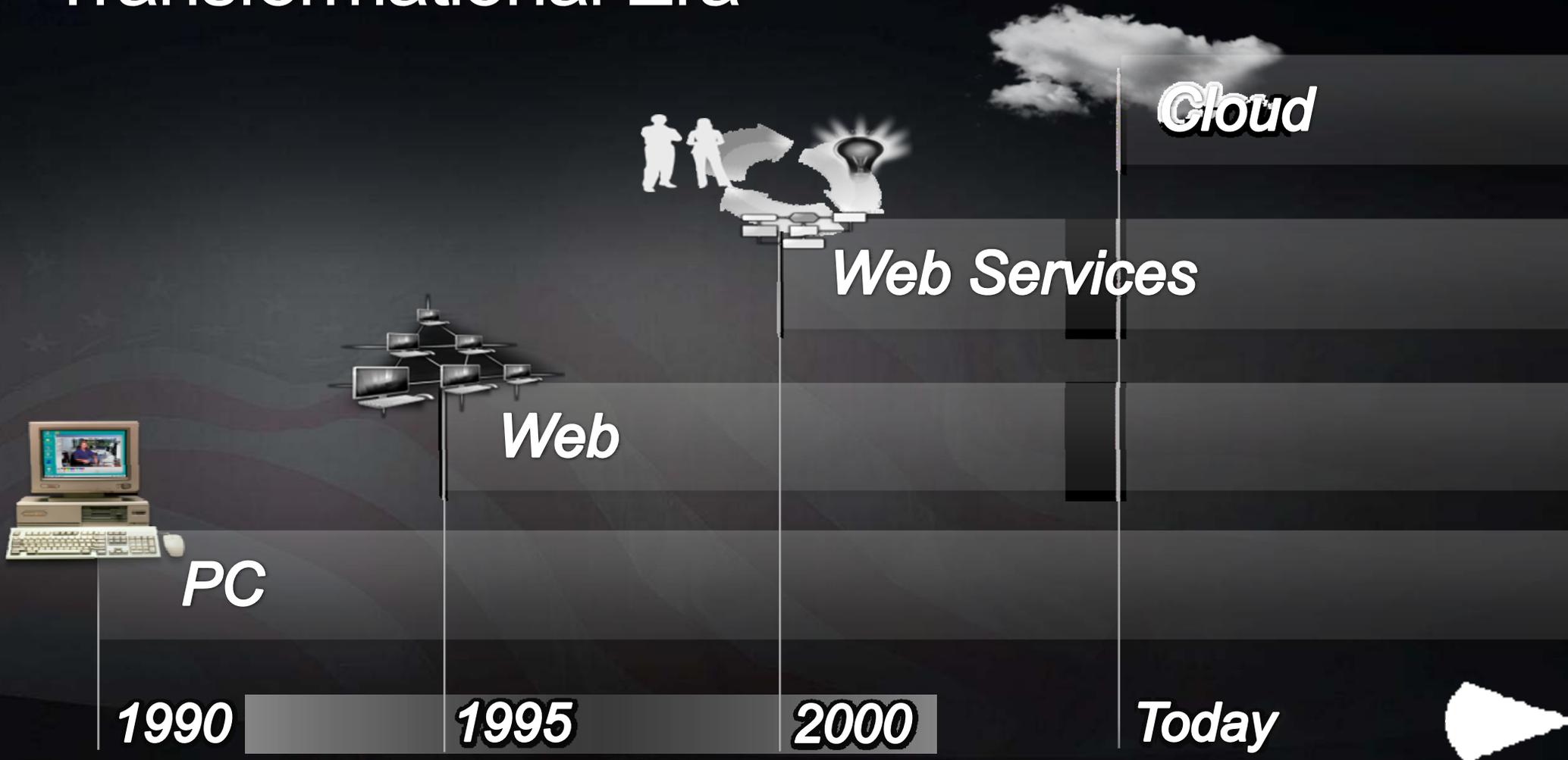


- **Best in class collaboration**
- **Stay up to date**

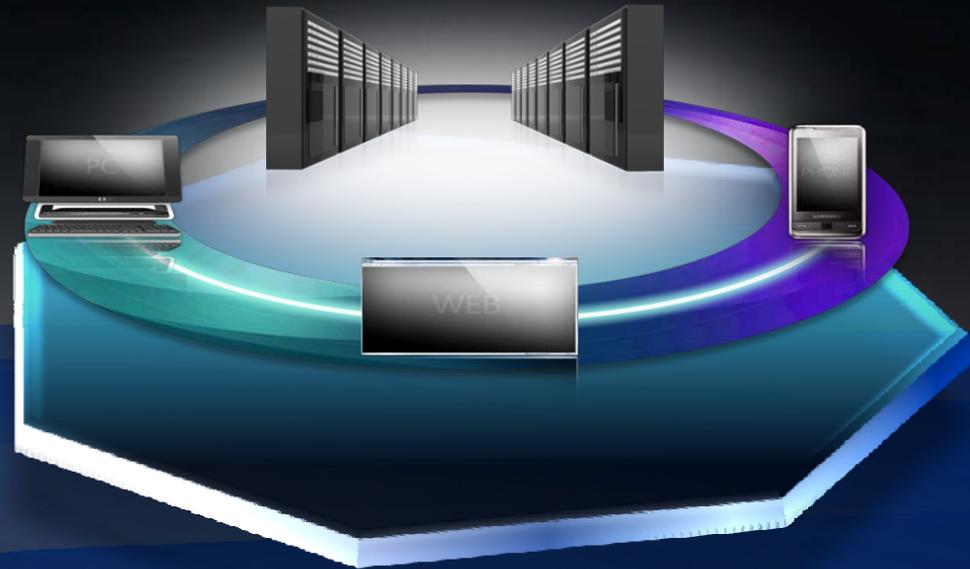
- **Lower, predictable costs**
- **Scarce IT resources**

- **High Security**
- **High Availability**

Transformational Era



Technology Trends



- Virtualization/Energy Efficiency
- Unified Communication/Virtual Collaboration
- Infrastructure Optimization & Application Platform Standardization (*ALM, BPM, DWM, etc.*)
- Services Oriented Architecture, ESB/ISB
- Hybrid Approach (Software + Services)
 - On-Premise connected systems/automated processes
 - Off-Premise services and hosted applications/data

What does Service Orientation mean?

- **Service Oriented Architecture**: is a software design approach in which key functions are built as reusable components which implement industry standards for **interoperable communications**.
- **Service Oriented Architecture**: enables loose coupling, **interoperability, discoverability, management of change**, and operation of business services in a **well governed** environment. Business Services operating in a well run SOA can be **composed into business processes** that align IT with the business.

What does Service Orientation mean?

- To developers is a means for creating dynamic and collaborative applications
- To the IT manager it's a means for effectively integrating the diverse systems typical of modern enterprise data centers
- To the CIO it's a means for protecting existing IT investments without inhibiting the deployment of new capabilities
- To the business analyst it's a means of bringing information technology investments more in line with business strategy
- To Microsoft it's a crucial prerequisite to creating connected systems

What does Cloud Computing mean?

- **Cloud Computing**: is a **style of computing** in which **dynamically scalable** and often **virtualized resources** are provided as a service over the **internet**.
- **Cloud Computing**: consists of **reliable services delivered through data centers** and built on servers with different levels of virtualization technologies. The “Cloud” appears as a **single point of access** for **all the computing needs** of consumers.

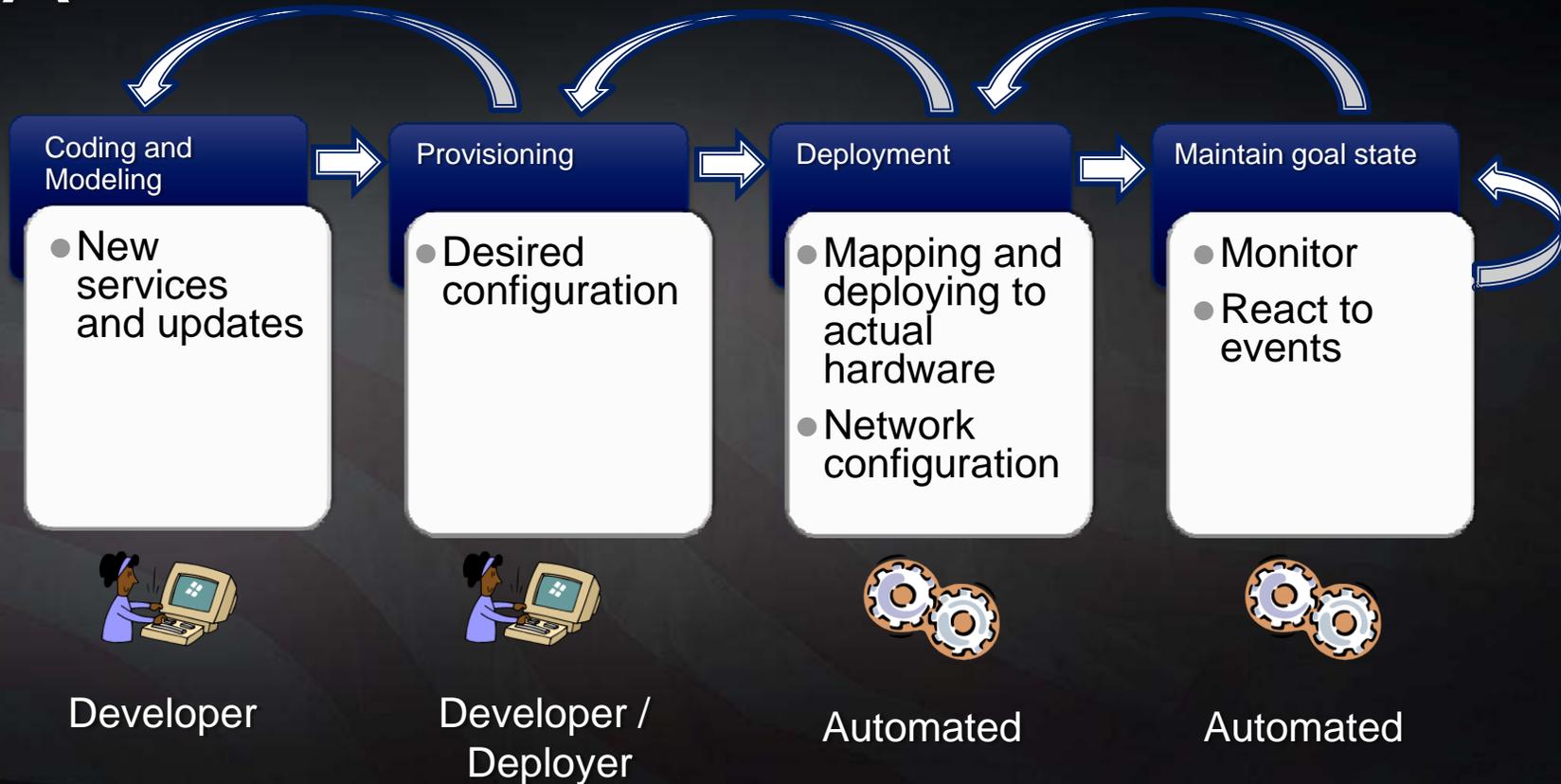
What does Cloud Computing mean?

- To developers is a means for creating dynamic and collaborative applications (e.g. No change in focus. You leverage existing skillsets)
- To the IT manager it's a means for effectively integrating the diverse systems typical of modern enterprise data centers (e.g. No change in focus. You gain operational efficiency)
- To the CIO it's a means for protecting existing IT investments without inhibiting the deployment of new capabilities (No change in focus. You gain efficiency and transparency)
- To the business analyst it's a means of bringing information technology investments more in line with business strategy (No. change in focus. You gain business efficiency and realize new revenue streams)
- To Microsoft it's a crucial prerequisite enabling connected systems gain a greater degree of reliability and scalability and lower cost and greater efficiency yielding higher return on existing investments in IT

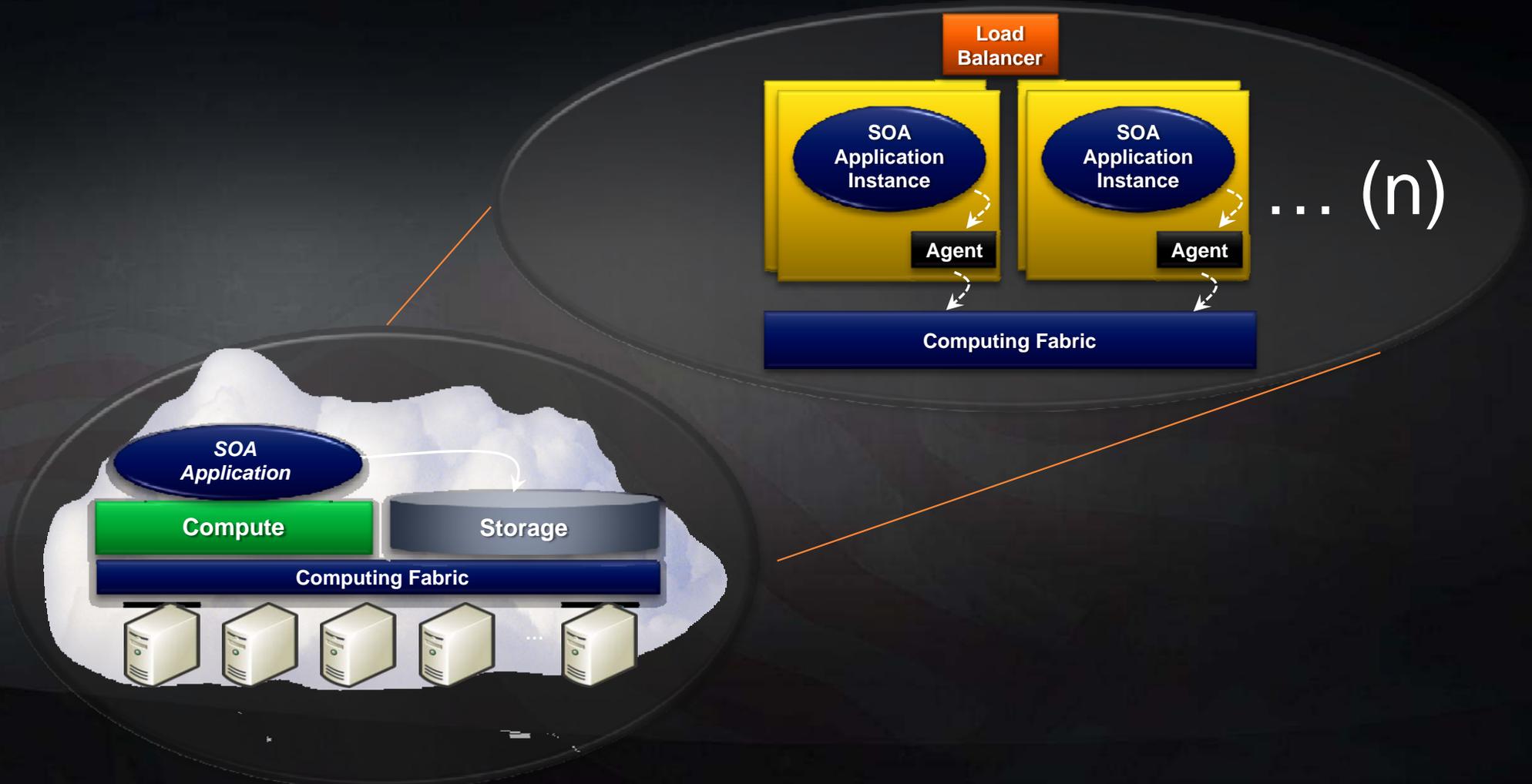
How does Cloud Computing extend SOA?

- Provides capabilities that facilitate automation of service management tasks (Service Transformation Lifecycle)
- Provides power of utility computing. Services dynamically deployed to “computing fabric” of commodity hardware
- Provides a flexible means for data access and storage without compromising IT investments around security and system availability nor intellectual property of the organization
- Facilitates improved system administration practices and improved utilization of existing IT personnel/resources

Service Transformation Lifecycle applied to SOA



Utility Computing applied to SOA



Cloud data storage and access applied to SOA

Common pillars for facilitating data management in the cloud

1. Storage for all data types from birth to archival
2. Rich data processing services
3. Operational Excellence

Cloud computing empowers data in SOA-based solutions by providing capabilities such as:

- High degrees of scalability/availability
- Support for Geo replication
- On-demand service



Operational efficiency of the Cloud

Powering SOA in the Cloud



Infrastructure
Services



Security and
Compliance



Global
Delivery



Environmental
Awareness

Operational efficiency of the Cloud Infrastructure Services for SOA solutions



Operations



Site selection & development



Research & Engineering



Automation & Tools

Operational efficiency of the Cloud

Security and Compliance for SOA solutions



Securing Data and Protecting Identity



Compliance and Audits



Global Criminal Compliance



Business Continuity

Operational efficiency of the Cloud

Global Delivery of SOA Capabilities



Available 7 x 24 x 365



Efficient and Manageable



Performance



In Language and Market

Operational efficiency of the Cloud

Making SOA Environmentally Aware



Impact of the cloud on existing Architectural Frameworks

Federal Enterprise Architecture (FEA)

“To transform the Federal government to one that is citizen-centered, results-oriented, and market-based, the Office of Management and Budget (OMB) is developing the Federal Enterprise Architecture (FEA), a business-based framework for government-wide improvement.”

Impact of the cloud on existing Architectural Frameworks

Department of Defense Architectural Framework (DoDAF)

“Provide the guidance and rules for developing, representing, and understanding

architectures based on a common denominator across DoD, Joint, and multinational boundaries.

Provide insight for external stakeholders into how the DoD develops architectures.”

Impact of the cloud on existing Architectural Frameworks

- Extends the business model of the aforementioned frameworks
- Provides a foundation to address critical challenges faced by organizations applying FEA or DoDAF frameworks giving current and foreseeable economic challenges
- Enhances the design patterns of solution architectures that model the principles of FEA or DoDAF by focusing on end-to-end lifecycle management of service capabilities, infrastructure, and support
- Leverages existing expertise around the design and implementation of component/service-based architectures

Key Takeaways

- Cloud computing provides a cost-effective means for extending the capabilities of SOA and helping organizations realize additional gains from their existing investments in SOA
- Cloud computing complements on-premise SOA solutions by supporting “hybrid” on-premise and cloud-based solution architectures
- Allows developers to leverage existing skills when building SOA-based solutions
- Takes care of mundane details of deploying, securing, and monitoring the health of SOA applications

Discussion

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