Software Defined Environments (SDE)
IBM SDE – Software Defined Environment

Shift in the Cloud Marketplace – Emergence of new, highly iterative models to deliver customer interaction

Focus on Operational Costs
- Consolidation (solutions & infrastructure)
- Operations Automation (reduce skills & risk)
  - Move from manual policy enforcement to analytics driven enforcement & optimization

Focus on Speed and Agility
- Assemble solutions from verified software components & services
- Fast deployment & redeployment of infrastructure resources using Software Defined Environments
  - Dev / Ops process enables fast iterative development

Optimization
Reduce Cost, Improve flexibility
Paul the provider

Innovation
Rapidly Add Business Value
Colin the consumer
What are Software Defined Environments?

**Software Defined Environments**

Abstracted and virtualized IT infrastructure resources managed by **software**

Workloads that **define** infrastructure requirements and configuration

IT infrastructure that extends multiple **environments** to go beyond the data center

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*With IBM’s Software Defined Environment, infrastructure is fully programmable to rapidly deploy workloads on optimal resources and to instantly respond to changing business demands*
IBM Software Defined Environment capabilities span workload and infrastructure lifecycles

**Lifecycle Management**
- Workload Pattern & Policy Definition
- Pattern & Policy Lifecycle Management
- Infrastructure Pattern & Policy Definition

**Workload Abstraction**

**Control Plane:**
- Workload Orchestration
- Resource Scheduling
- Analytics

**Operational Management**
- Performance Management
- Availability Management
- Security Management
- Problem Management

**Infrastructure Management**
- "Bare Metal" Compute Management
- Virtual Compute Management
  - PowerVM
  - zVM
  - x86/KVM
  - x86/ESX
- Virtual Storage Management
  - Block Data
  - Files
  - Objects
- Virtual Networking Management

**Resource Abstraction:** OpenStack
IBM SDE – Software Defined Environment

Software Defined Environments are Workload Aware, leveraging best practices with Patterns of Expertise

- Application developer specifies solution components
- Workloads expert defines required infrastructure components on a logical level
- Infrastructure experts provide infrastructure pattern to support workload types
- Orchestrator builds the required infrastructure based on the patterns using e.g. OpenStack APIs
Software Defined Environments are automated for consistency and agility

- Programmable infrastructure via open APIs
- Workloads dynamically assigned resources based on policies
- Automated Service Activation based on policies

Continuous Optimization

Solution Definition

Workload Pattern

Infrastructure Pattern

Software Defined Infrastructure

Infrastructures

Simplified Responsive Adaptive

Policies

APIs

Presentation tier
Application Tier
Data Tier

Resource Abstractions

Software Defined Compute
Software Defined Network
Software Defined Storage
Software Defined Environments impacts Service Management

**Service Modularity**
To allow for cost effective service selection dependent on workload life cycle and needs

**Service Automation**
To allow for high change rate due to optimization

**Service Tools and Process Integration**
To support multiple suppliers

**Infrastructure**

**Solution Definition**

**Workload Pattern**

**Infrastructure Pattern**

**Continuous Integration**

**Cloud 1**
- Resource Abstractions
  - Software Defined Compute
  - Software Defined Network
- Software Defined Storage

**Cloud 2**
- Resource Abstractions
  - Software Defined Compute
  - Software Defined Network
  - Software Defined Storage

**In House**
- Resource Abstractions
  - Software Defined Compute
  - Software Defined Network
  - Software Defined Storage
Software Defined Environments are Workload Aware, leveraging Analytics for Continuous Optimization

- Analytics-based compliance checking
- Analytics-based Performance checking
- Analytics based Availability checking
- Proactive management of IT resources
- Continuous optimization maximizing business outcomes
Is your IT already an SDE?