

zEnterprise.

A New Dimension in Computing

# zEnterprise Technology Values



# Classical Mainframe Values

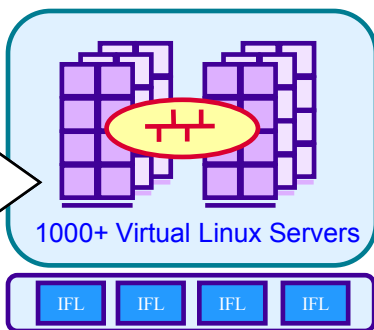
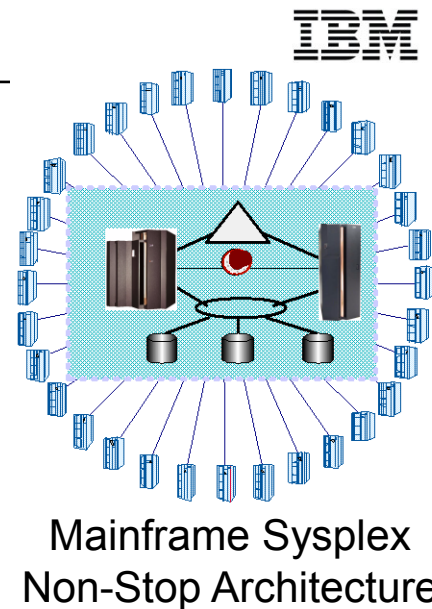
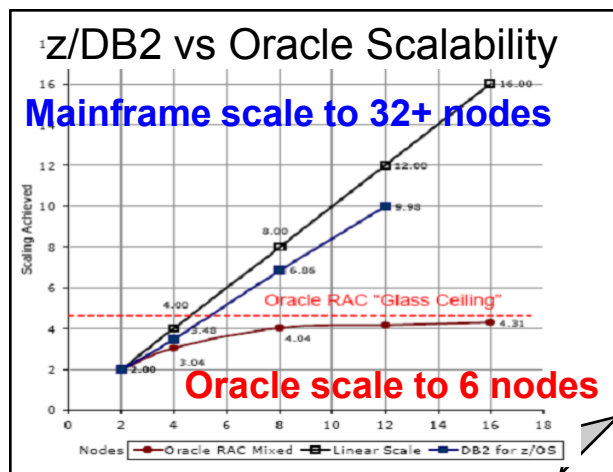
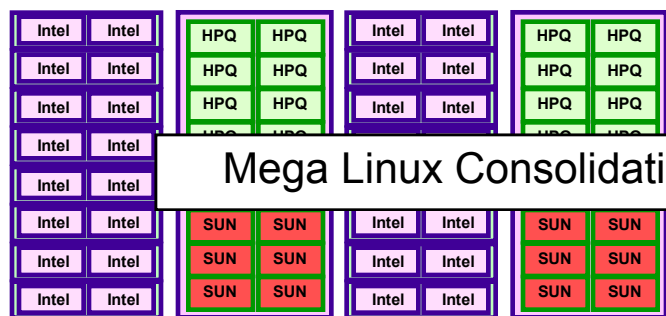


# 主机系统特有价值

(1) 运行不可中断的“顶级关键性”应用

(2) 支撑极致扩展性的数据库  
Beyond 4~6 nodes  
offered by Oracle RAC

(3) 建立大规模的Linux云环境  
500+ images on 1 mainframe server



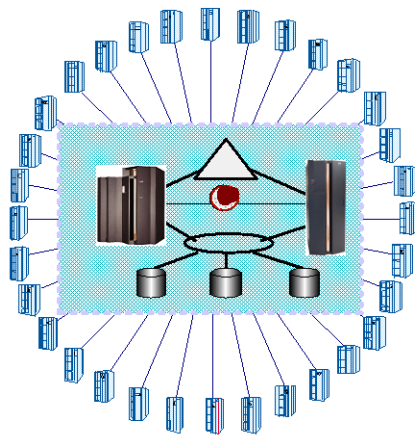
# 不间断的可用性 – 业界独一无二



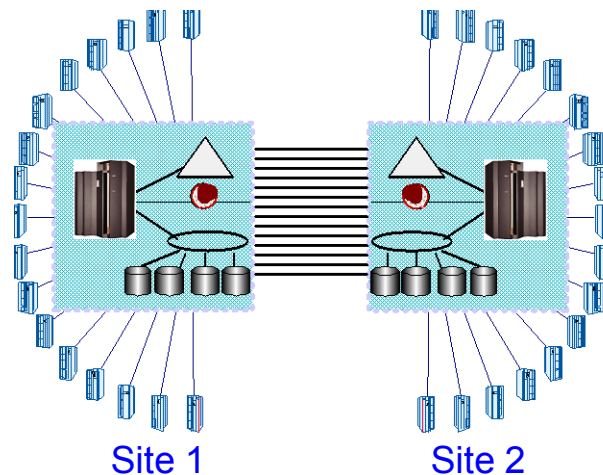
## 单机可用性



## 单站点可用性



## 多站点可用性



- 内部冗余设计
  - 比其它商业服务器多出一倍的冗余部件
  - 操作系统与硬件结合
- 容量按需升级
- 热插拔模块

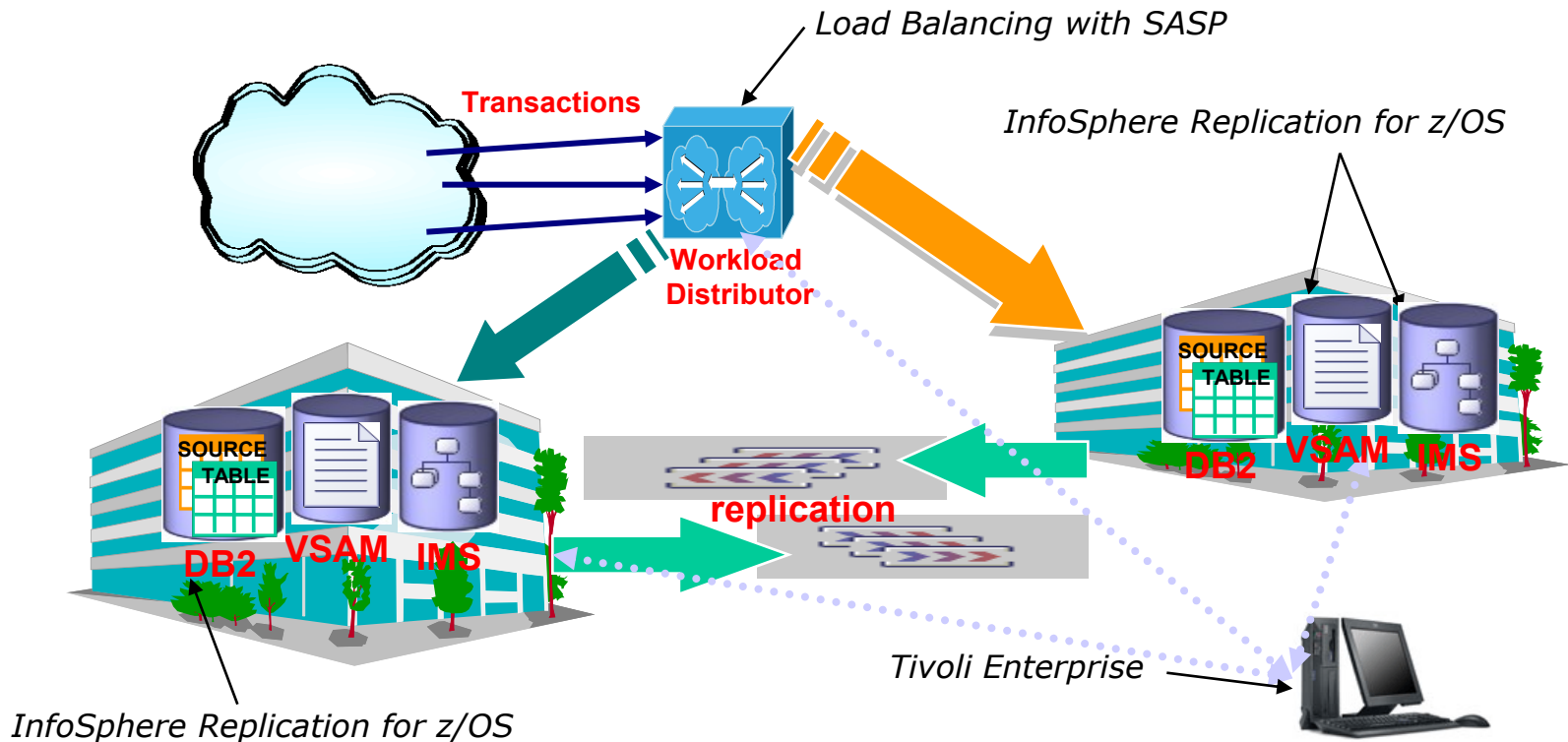
- **Parallel Sysplex** 并行系统耦合体
- 近乎“零”宕机
- 不间断的升级
- 无限的扩展能力
- 动态负载管理

- **Active-Active** 双活解决方案
- 应对单站点灾难
- 没有单一故障点
- 近乎“零”数据丢失
- 全面自动化
- 业界无可比拟的可用性

## 一主一热备 (或双活)



- 两个或多个站点，无距离限制，运行同样应用、存取一份数据，支持跨站点的持续可用性和分钟级灾备
- 方式转换: 从灾难发生时的接管模式，转变为近乎连续的热切换模式



# 极致扩展性的数据库 – 同行独一无二

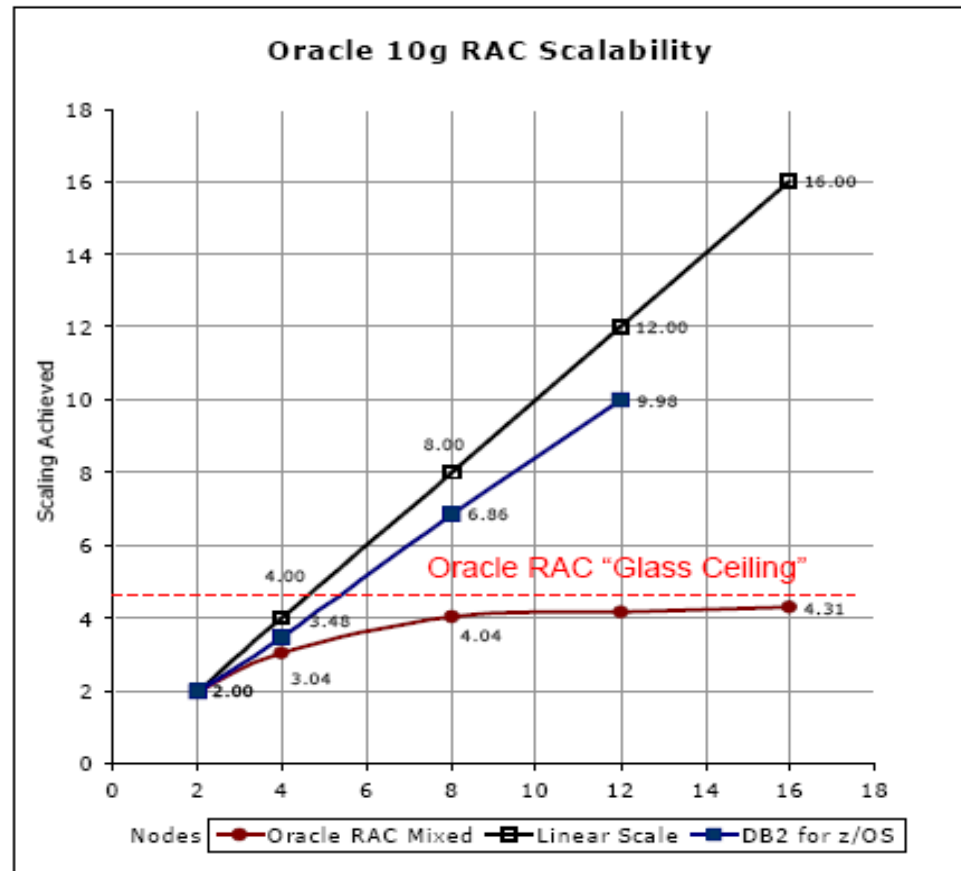


- Oracle RAC的耦合效率在4-6节点时显著衰减
- 主机系统是唯一支持32个节点线性扩展的平台
- Parallel Sysplex架构在硬件上支持数据库耦合

- DB2 for z/OS provides near-linear scalability with relatively little overhead as nodes are added
- With Oracle RAC, overhead increases rapidly as additional nodes are added and performance degrades after only 4 to 6 nodes

Sources: "Scale-up versus scale-out using Oracle 10g with HP StorageWorks", Hewlett-Packard, 2005

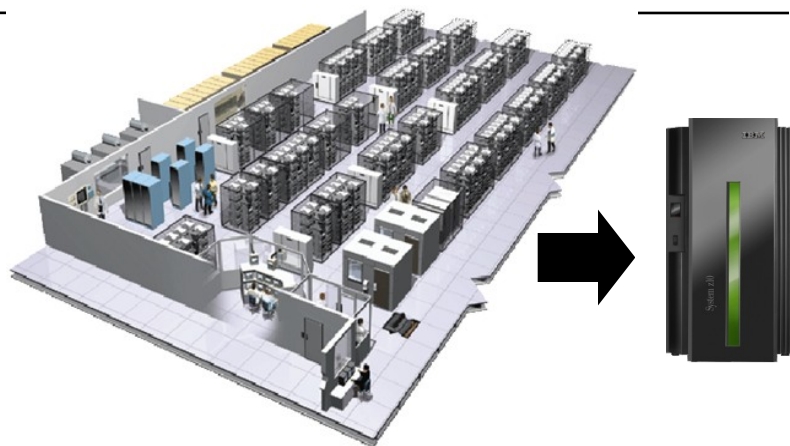
"Enterprise Data Base Clustering Solutions"  
ITG, October 2003



# 主机云环境 – 单机运营数据中心



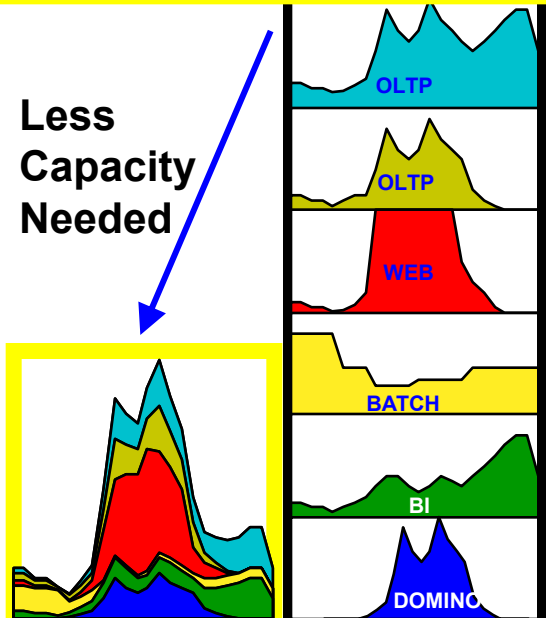
- 全面支持云计算的架构设计
  - Multi-Workload Friendly
  - Thin Provisioning
  - Capacity On-Demand
  - Super Scalable
  - "Green" with much LESS footprints



## 主机云的特点

- ✓ 处理器、I/O全共享
- ✓ 处理器、I/O动态调配
- ✓ 高可用性
- ✓ 利用率可达100%
- ✓ Linux虚拟机服务器
- ✓ 占地面积小
- ✓ 低能耗

Less  
Capacity  
Needed



## Dramatic Simplification thru Virtualization

| Unit                         | Distributed | Mainframe | % Reduction |
|------------------------------|-------------|-----------|-------------|
| Software Licenses            | 26,700      | 1,800     | 93%         |
| Ports                        | 31,300      | 960       | 97%         |
| Cables                       | 19,500      | 700       | 96%         |
| Physical Network Connections | 15,700      | 7,000     | 55%         |



## 1. 多户共享 Multi-Tenants

- Multi-workload friendly
- Interrupt-driven OS
- Lots of application servers on a single OS
- De-coupled I/O subsystem
- Only OS that runs 100%+ without falling out

## 2. 精简部署 Thin Provisioning

- zVM, CICS, LPARs

## 3. 多负载平台所必需的高可靠性

- Hardware redundancy
- Software reliability
- Parallel Sysplex

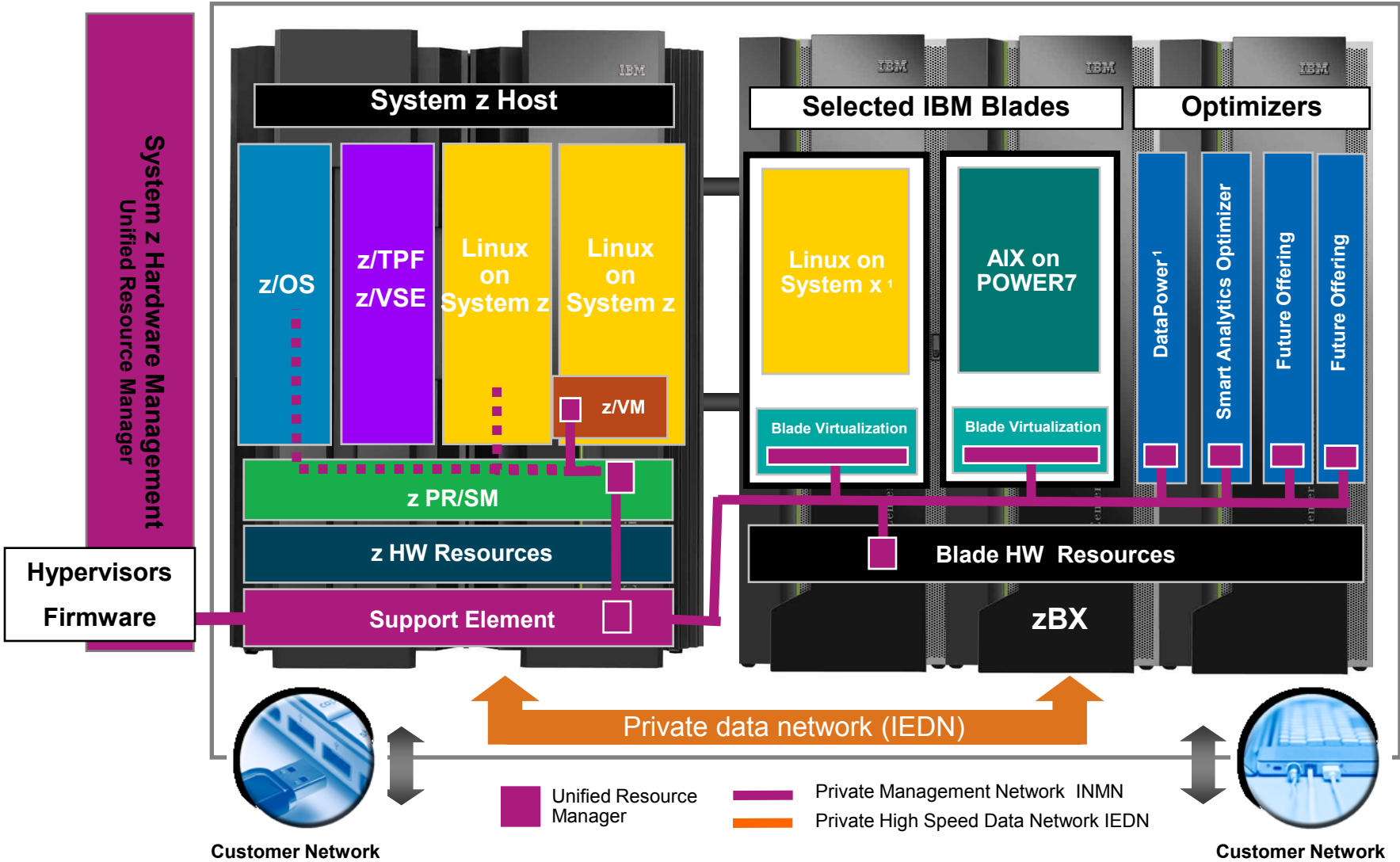
## 4. 设计初衷符合集中采购的模式



# zEnterprise



# zEnterprise的架构



<sup>1</sup> All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represents goals and objectives only.

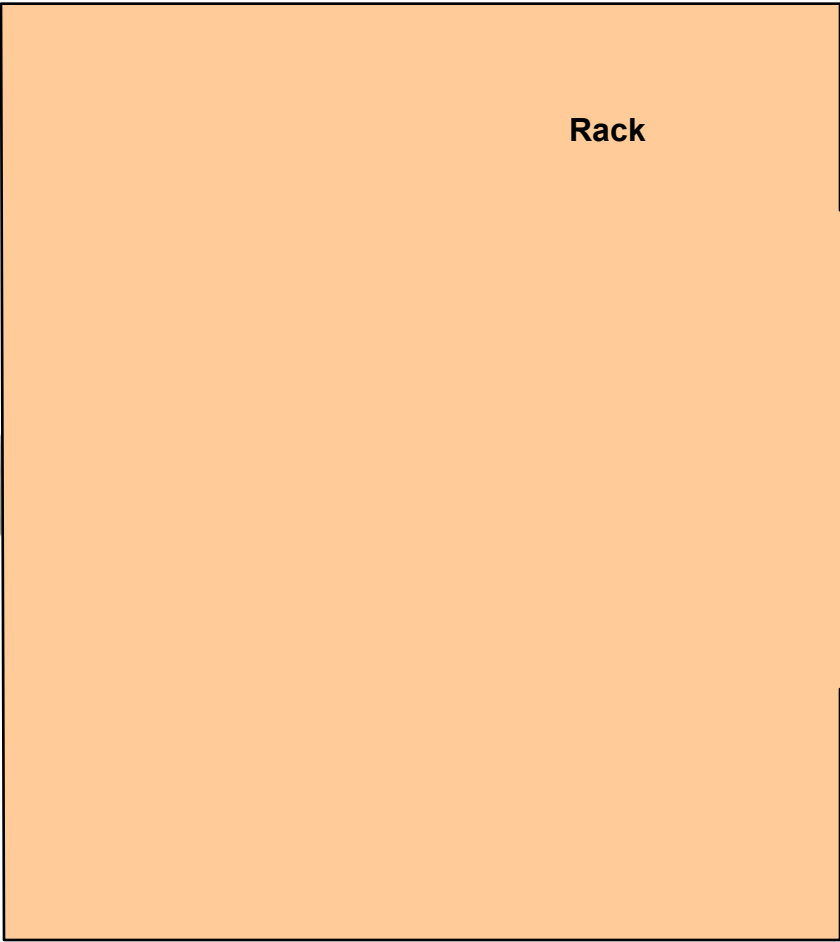
# zEnterprise的组成



## System z CEC



## zBX Infrastructure



Rack

## Blades

*Specific blades  
provided by solution  
owner or customer*



**Smart Analytics Optimizer**

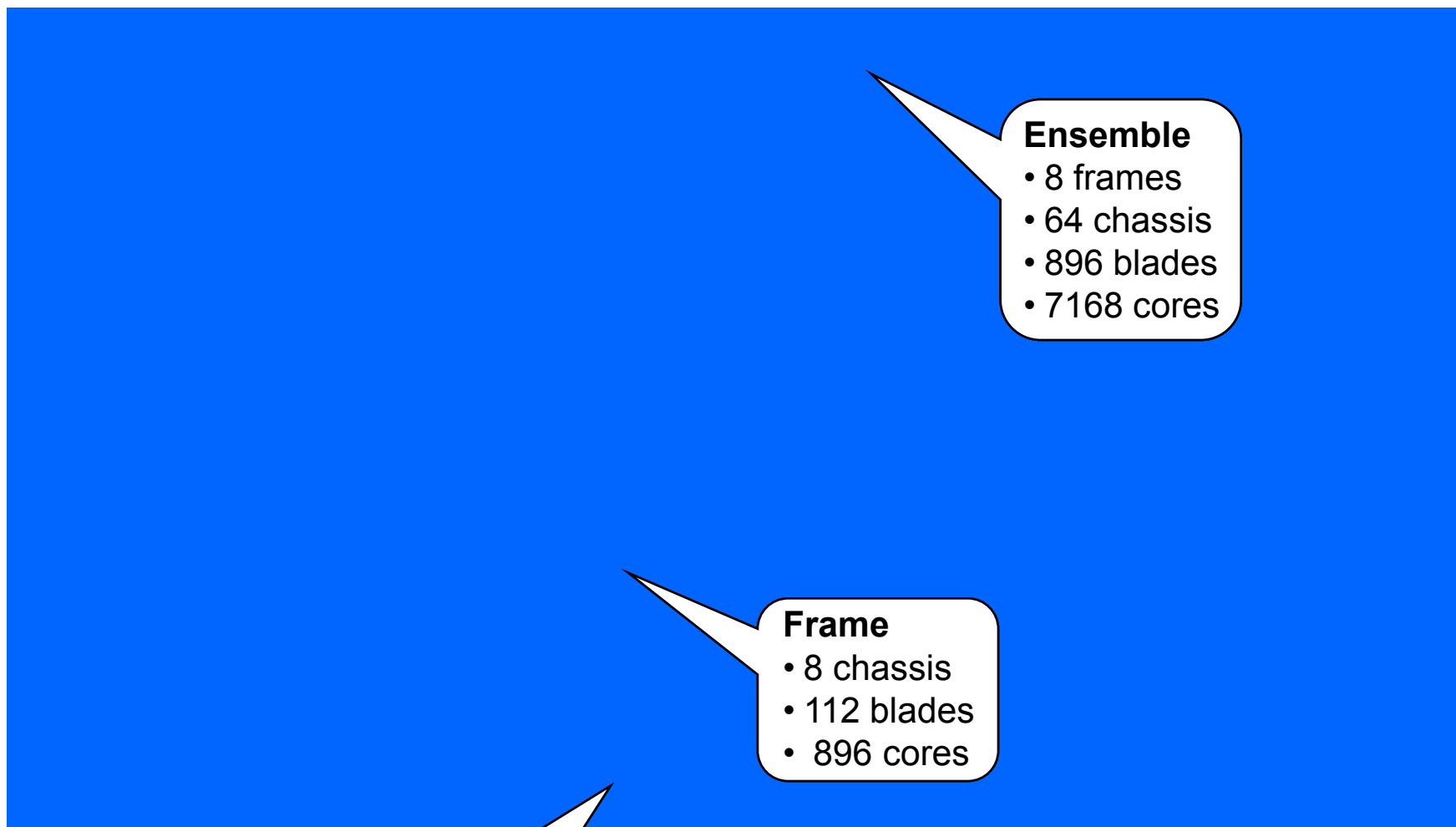
(future)



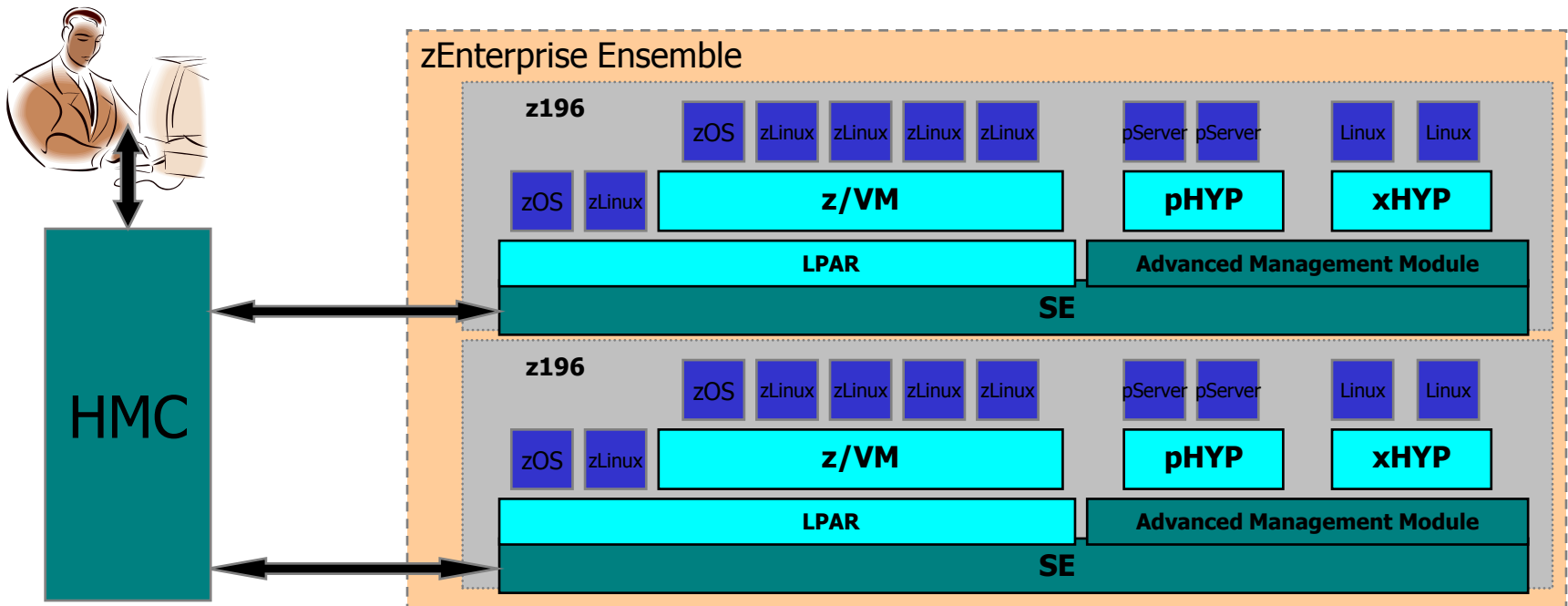
**POWER  
Blade**



**System x  
Blade**



- 管理目标
  - Provide IT resources to the workloads to meet their business objectives
  - Objectives expressed in a policy
- 操作对象
  - The zEnterprise ensemble as a single resource space



# 统一资源管理 Unified Resource Manager



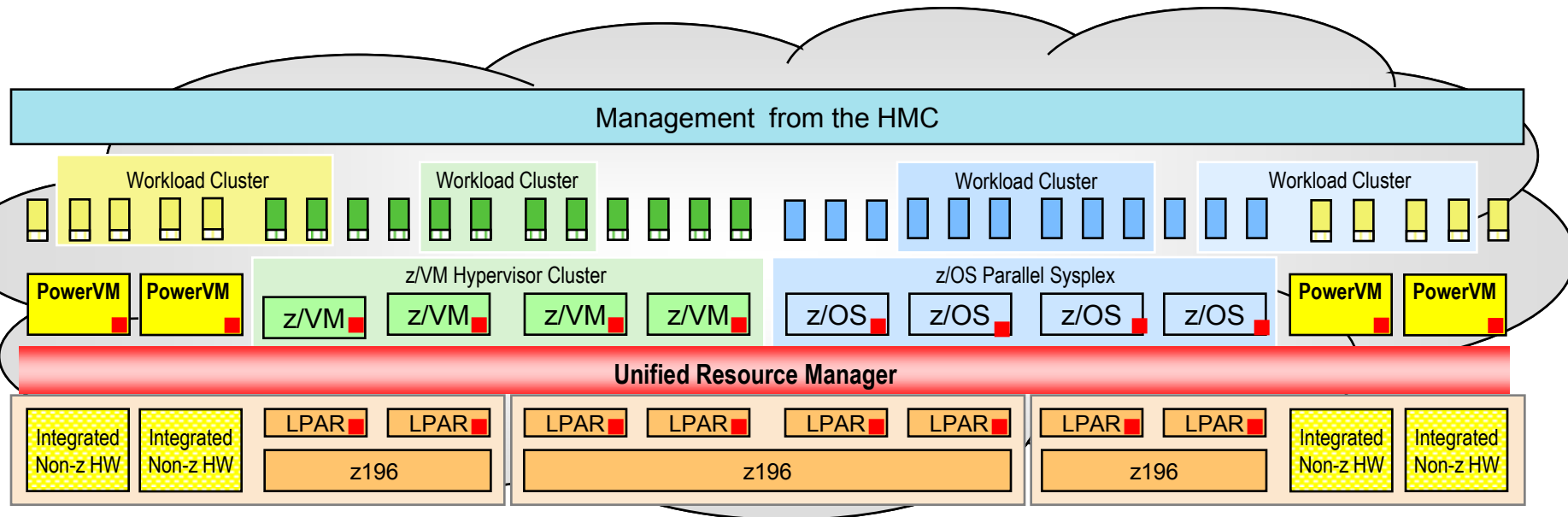
## ■ 统一资源管理的功能

- 资源监控 Resource monitoring
- 映像管理 Image management
- 负载管理 Workload management
- 能耗管理 Energy management
- 可用性管理 Availability management

## ■ 集成了硬件管理和虚拟化功能

## ■ 控制刀片上的虚拟机环境和管理进程

## ■ 分配与回收分配给刀片的存储资源



■ = Code that interfaces with Unified Resource Manager

## 1. 多系统集成的体系

- Mainframe
- Power7 Blade
- System x Blade (SoD)
- Workload optimization

## 2. 基础架构集中管理

- Firmware
- Hypervisors
- Storage
- Multi-platform provisioning

## 3. 专用加速器

- Smarter Analytics Optimizer (BI)
- (SoD) DataPower (XML)
- ... more in the future

## 4. 主机与zBX间安全、专用、高速的互连





# 多系统集成的体系



## 集中管理跨企业的、多层架构的负载

### 交易处理与数据库

- OLTP
- Database
- Batch



### 分析

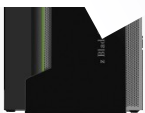
- Operational BI
- Data Mining Application
- M...
- Enterprise Search



### 业务流程与应用开发



- ERP



- Application Development

### 网页服务、协同办公与基本IT环境

- Web H...
- Message Gatew...
- Networking
- File and Print



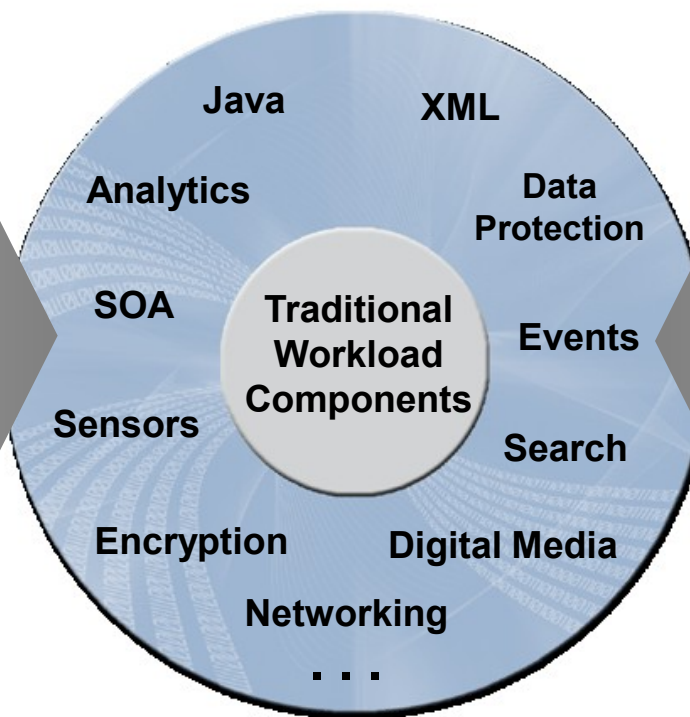
## 应用部署全面优化

1. Workload profile - multiple platforms
2. Policy-based VM scaling
3. Special purpose accelerators

虚拟化与虚拟机扩展性

**Optimized for  
a broad set of  
applications  
or components**

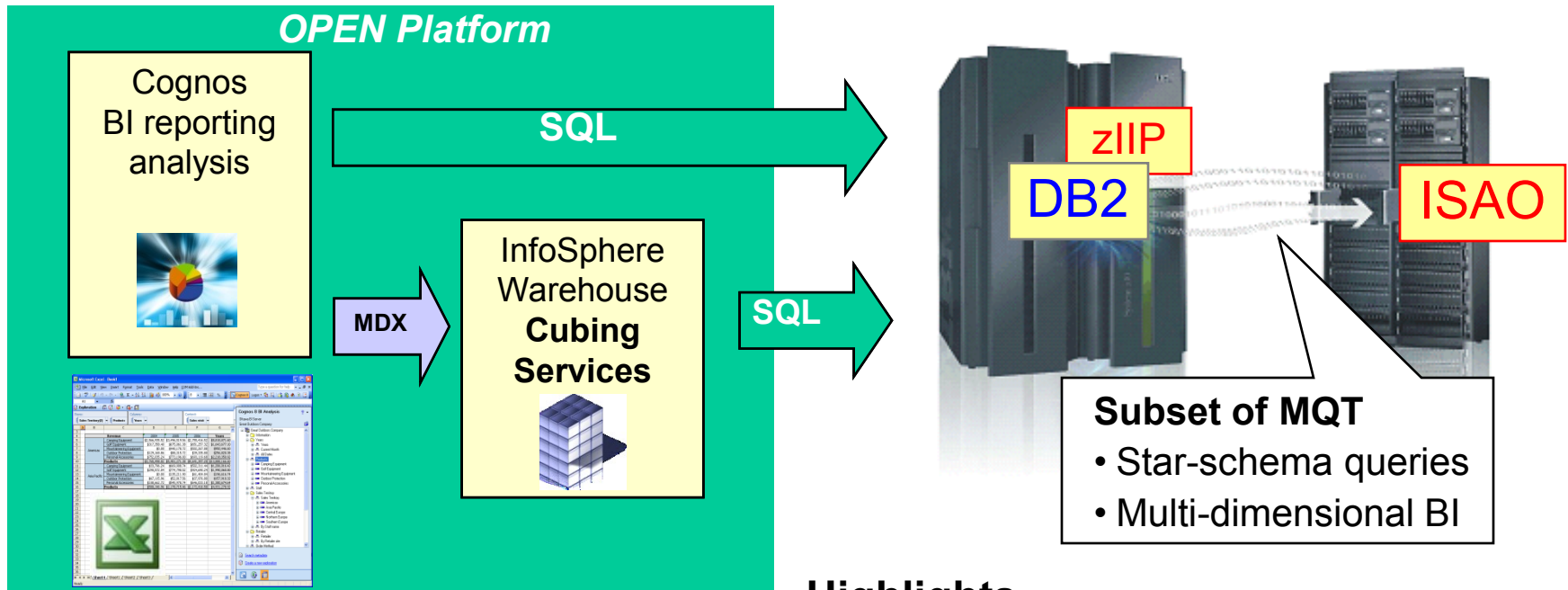
### 新的负载类型



专用加速器

**Optimized for a  
specific set of  
applications or  
components**

# 负载优化实例: Smart Analytics Optimizer (SAO)



**ANY tool that connects to DB2 today:**

- Cognos BI
- DataQuant (z/OS)
- IBI - WebFocus
- Business Objects
- Brio
- (others)

## Highlights

- 应用无需改变
- DB2透明地利用专用加速器
- 性价比显著提升
- 5-10倍的性能提升
- 线性扩展能力
- 类似工具的使用方式

- 数据中心的简化
  - Edge servers
  - Network, firewall, switches, cabling
  - Power & cooling
- 系统管理的转变
  - Firmware standardization
  - Common hypervisor
  - Centralized provisioning
  - OS and Middleware version (Next Step)
- 新应用的开发
  - Analytics, BI
  - Web, Java, XML
  - ... all with superb price-performance

将主机系统的特有价值  
推广到多平台的环境

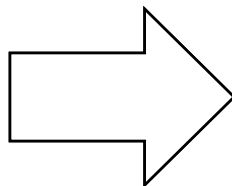
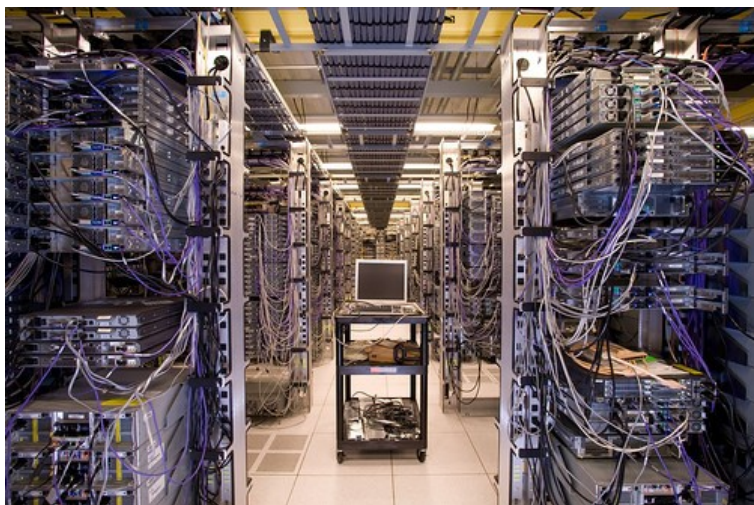


# 数据中心的简化

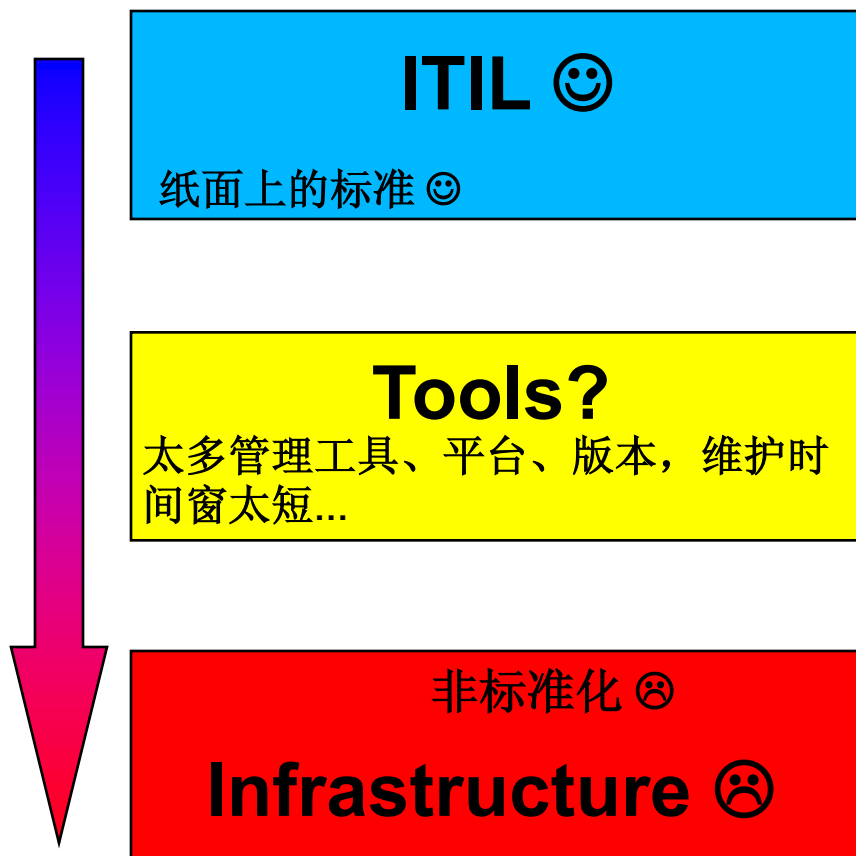


## 减少开支的同时降低复杂性, 实现“低投入高产出”

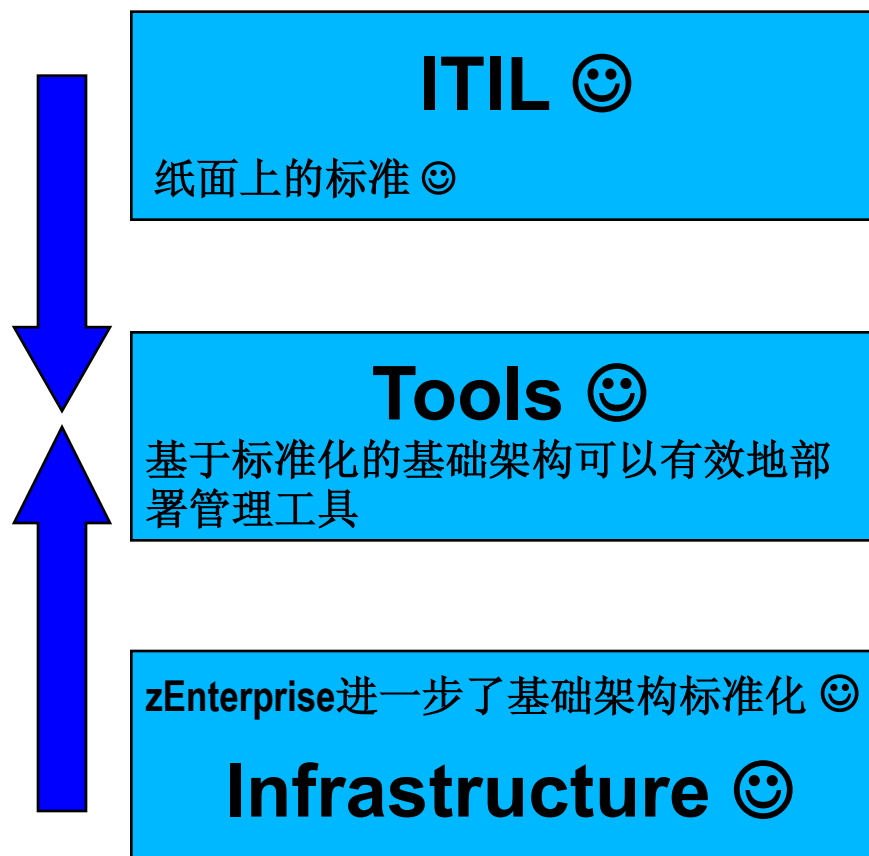
- 单个处理器整合更多的服务器, 软件成本降低50%
- 更少的人员管理更多的服务器映像, 员工生产效率提高50%
- 节能超过80%, 同时减少占地面积
- 更快部署新的服务器和应用
- 从容应对业务突发峰值, 确保服务水平



## 传统的自顶向下的方法



## zEnterprise特有的双向方法







## ISV的增长不断拓宽System z的应用领域

- 1700 ISVs building applications on System z
- 175 new ISVs added to the System z community in 2009
- More than 3150 applications for Linux on System z
- More than 2700 applications available for z/OS

## 大学合作的推广不断积累System z的人力储备

- 643 schools registered offering 30 separate courses, with more to come
- 56,000 students have attended mainframe education



## 降低成本 Reduce Cost



实现高水准的**资源共享**和高效率的**虚拟化**

## 提升服务 Improve Service



确保新应用**快速部署**，迅速响应业务需求

## 控制风险 Manage Risk



提供无与伦比的**系统可用性**和跨平台的**统一管理**



*thank you!*

