



vmware®

# vSeminar Series 2010

虚拟化与云计算

吴启新

大中国区高级产品市场经理

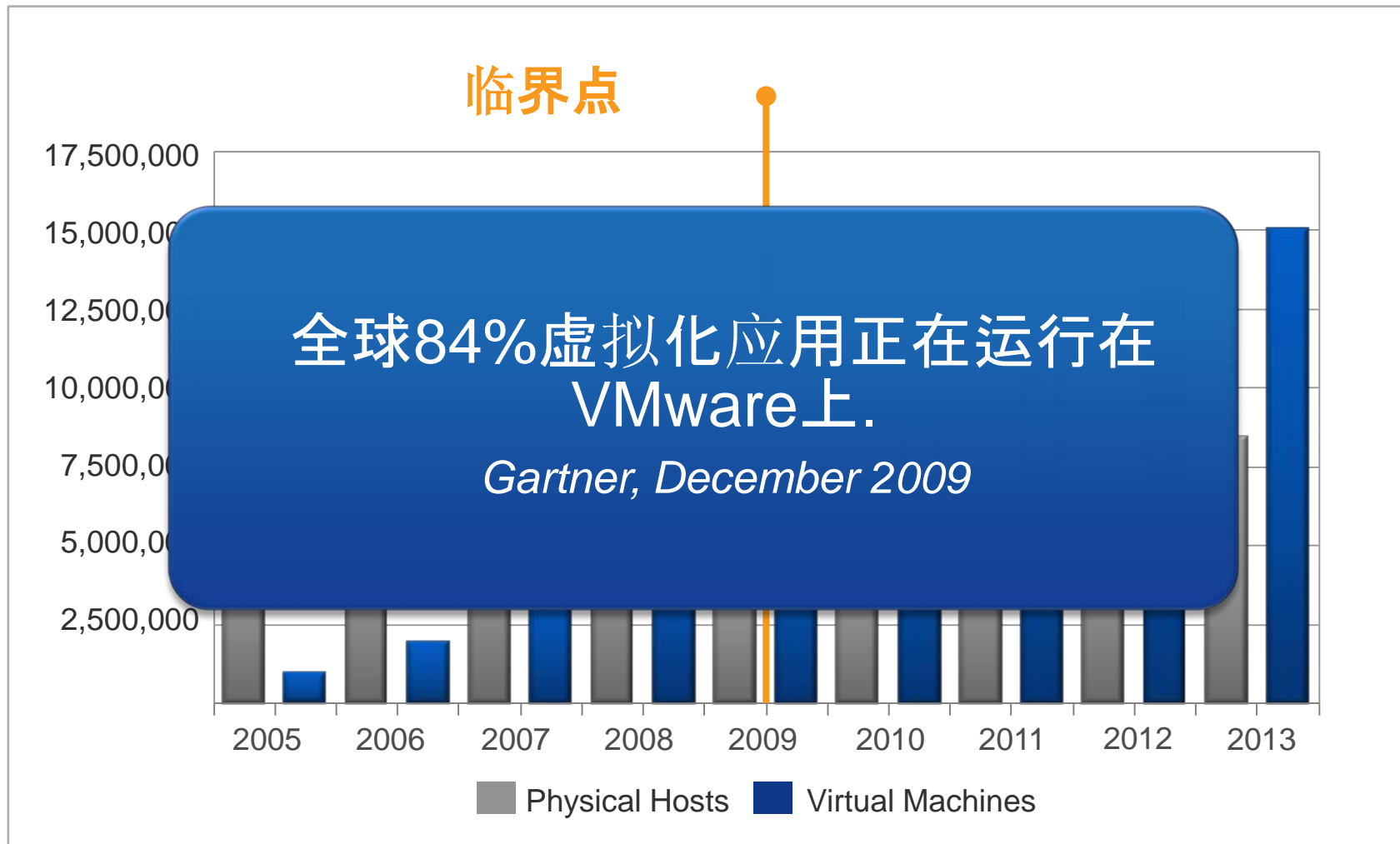
Confidential

**我们从那里来**

**我们现在的位置**

**我们会向何处去**

# 2010 Milestone: 虚拟化已经成为IT规范之一



Source: IDC

# 虚拟化和云计算= CIO 的首要考虑技术

CIO 考虑的技术	2010 年的优先级	2009 年的优先级
虚拟化	1	3
云计算	2	14

资料来源：Gartner 2009 年第 4 季度的 CIO 调查

## Server Sprawl

- 36M physical x86 servers by 2011— a ten-fold increase over 15 years
- \$140 bn in excess server capacity - a 3-year supply

## Power & Cooling

- \$1 for every \$1 spent on servers
- \$29 bn in power and cooling industry wide

## Space Crunch Costs

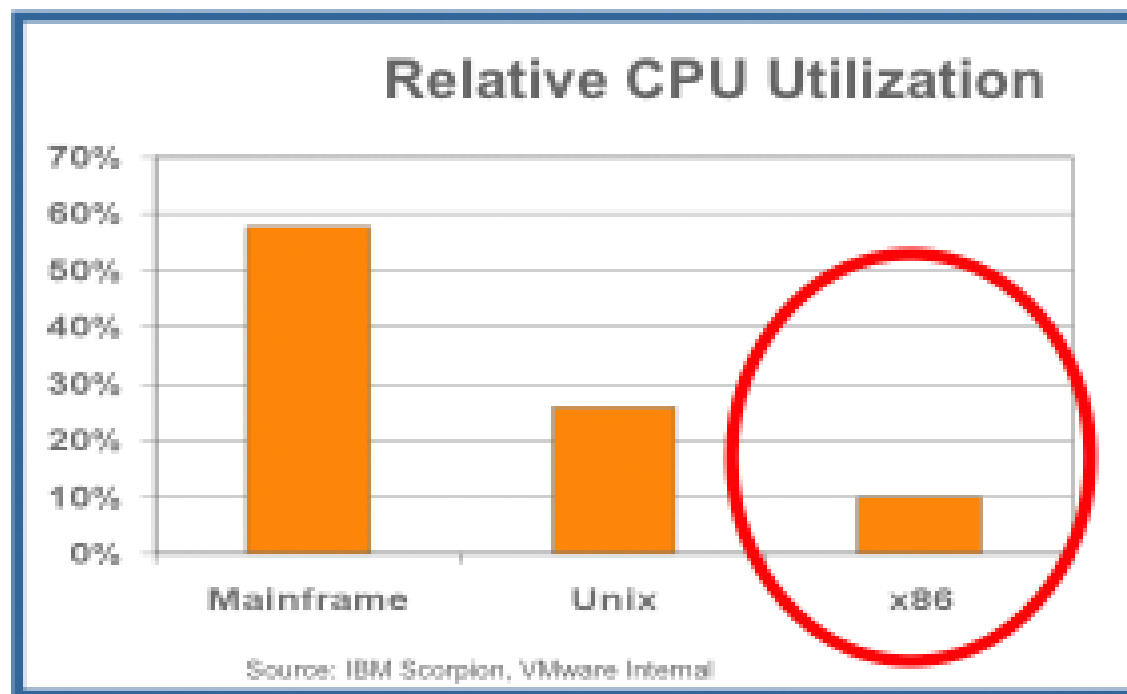
- \$1,000 / sq ft
- \$2,400 / server
- \$40,000 / rack

## Operating Costs

- \$8 in maintenance for every \$1 spent on new infrastructure
- 20-30 : 1 server-to-admin ratio

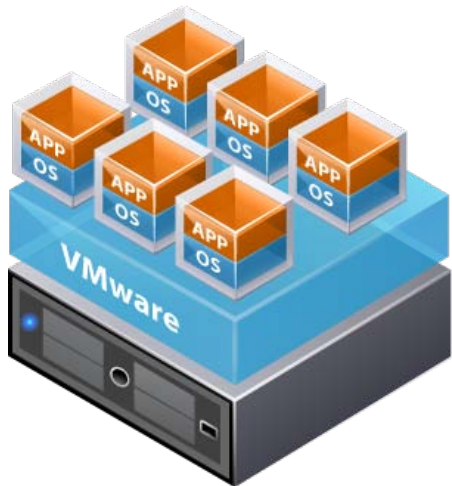
## CPU利用率情况分析

基于x86架构的服务器上，CPU利用率最低



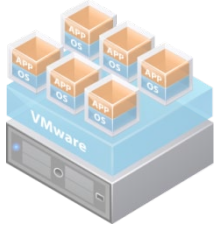
X86服务器上CPU利用率仅为5-15%

## 分区



- 在一个物理服务器上同时运行多操作系统
- 在多个虚机之间划分系统资源

# 虚拟化技术的特性和技术价值



## Partitioning

Run multiple operating systems on one physical machine  
Divide system resources between virtual machines

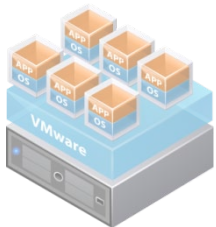


## 隔离

在硬件层实现故障和安全隔离  
高级资源调控保证性能



# 虚拟化技术的特性和技术价值



## Partitioning

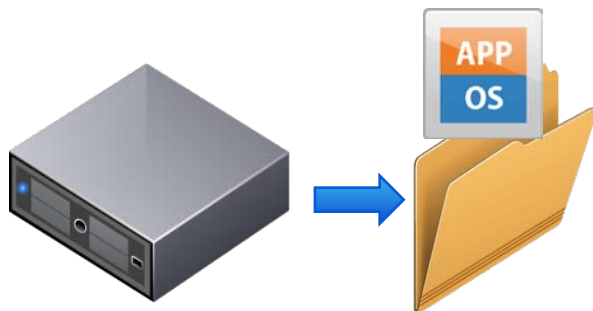
Run multiple operating systems on one physical machine  
Divide system resources between virtual machines



## Isolation

Fault and security isolation at the hardware level  
Advanced resource controls preserve performance

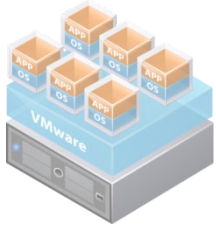
## 封装



每个虚拟机被封装为文件

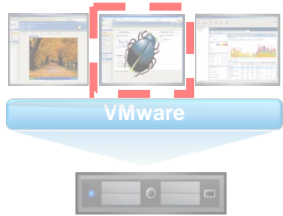
移动和复制虚拟机如同移动和复制文件一样简单

# 虚拟化技术的特性和技术价值



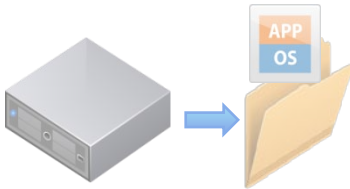
## Partitioning

Run multiple operating systems on one physical machine  
Divide system resources between virtual machines



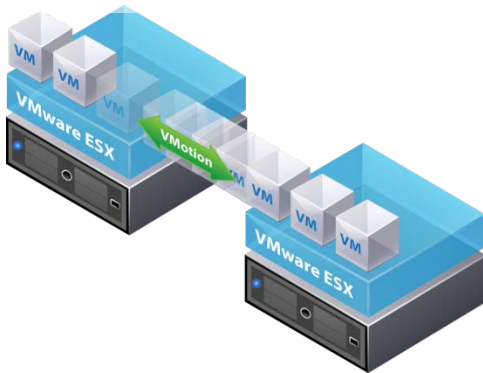
## Isolation

Fault and security isolation at the hardware level  
Advanced resource controls preserve performance



## Encapsulation

Entire state of the virtual machine can be saved to files  
Move and copy virtual machines as easily as moving and copying files

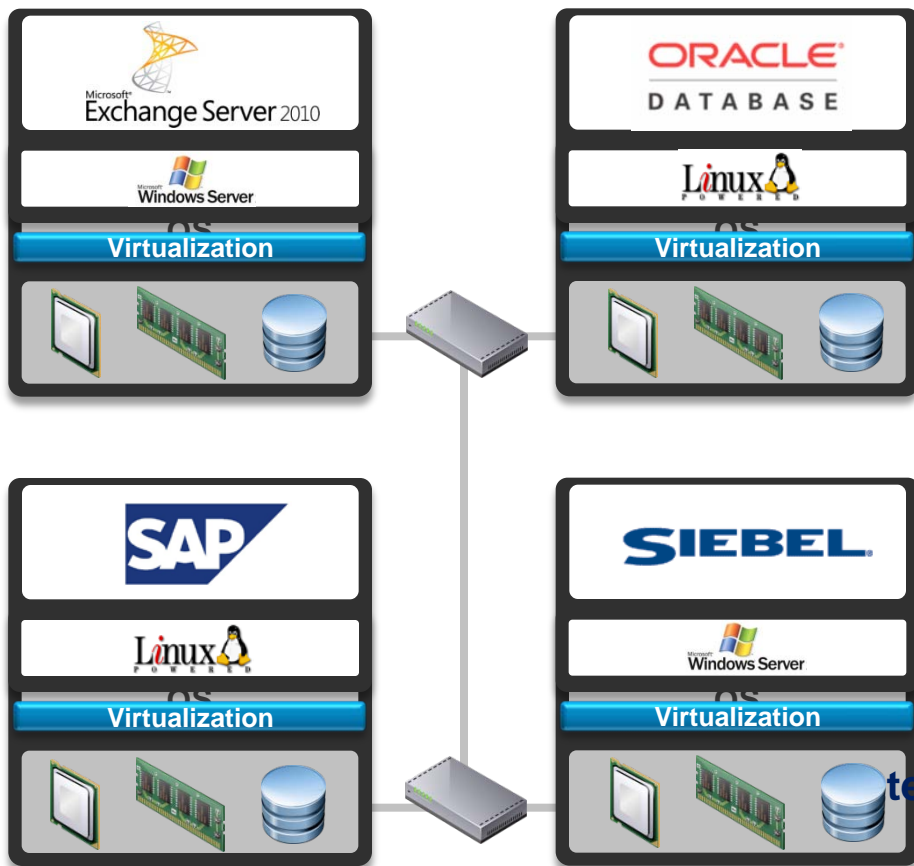


## 硬件独立性

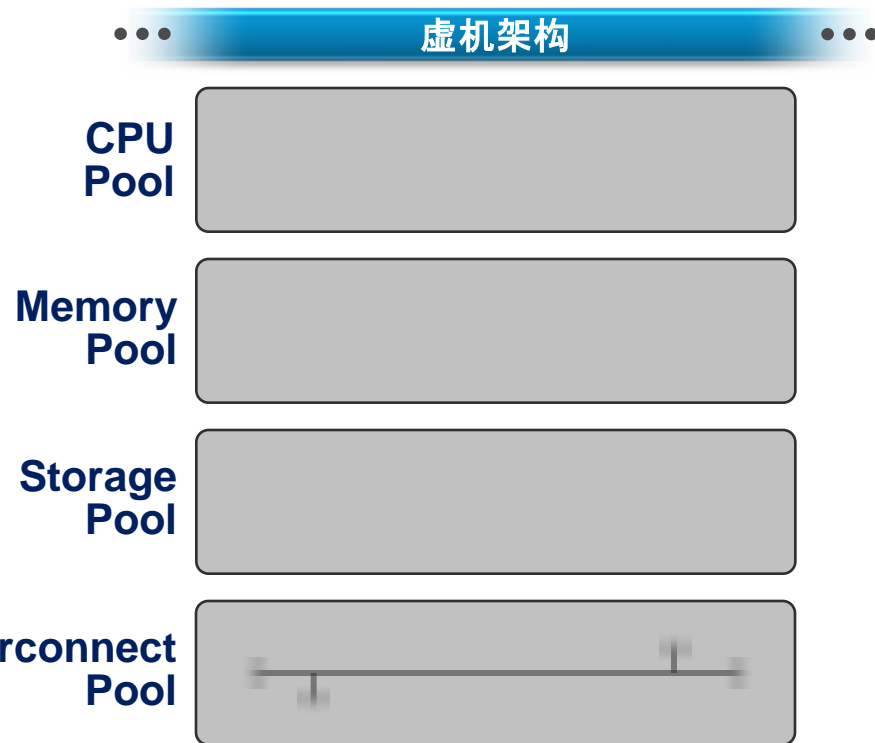
**虚拟机可以在异构硬件安装和移动**

# 抽象+池化 = 降低复杂性

## 传统方式



## 虚机架构

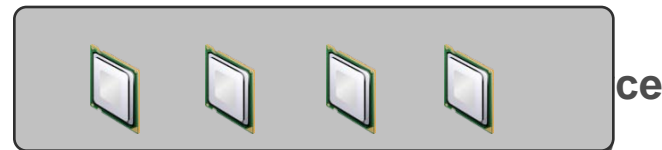


# 抽象+池化 = 降低复杂性

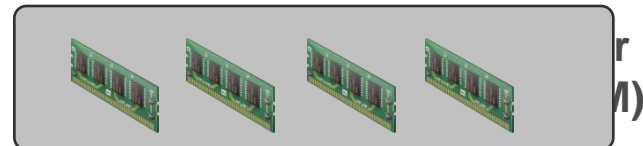


## Virtual Infrastructure

CPU Pool



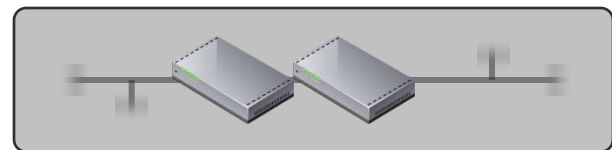
Memory Pool



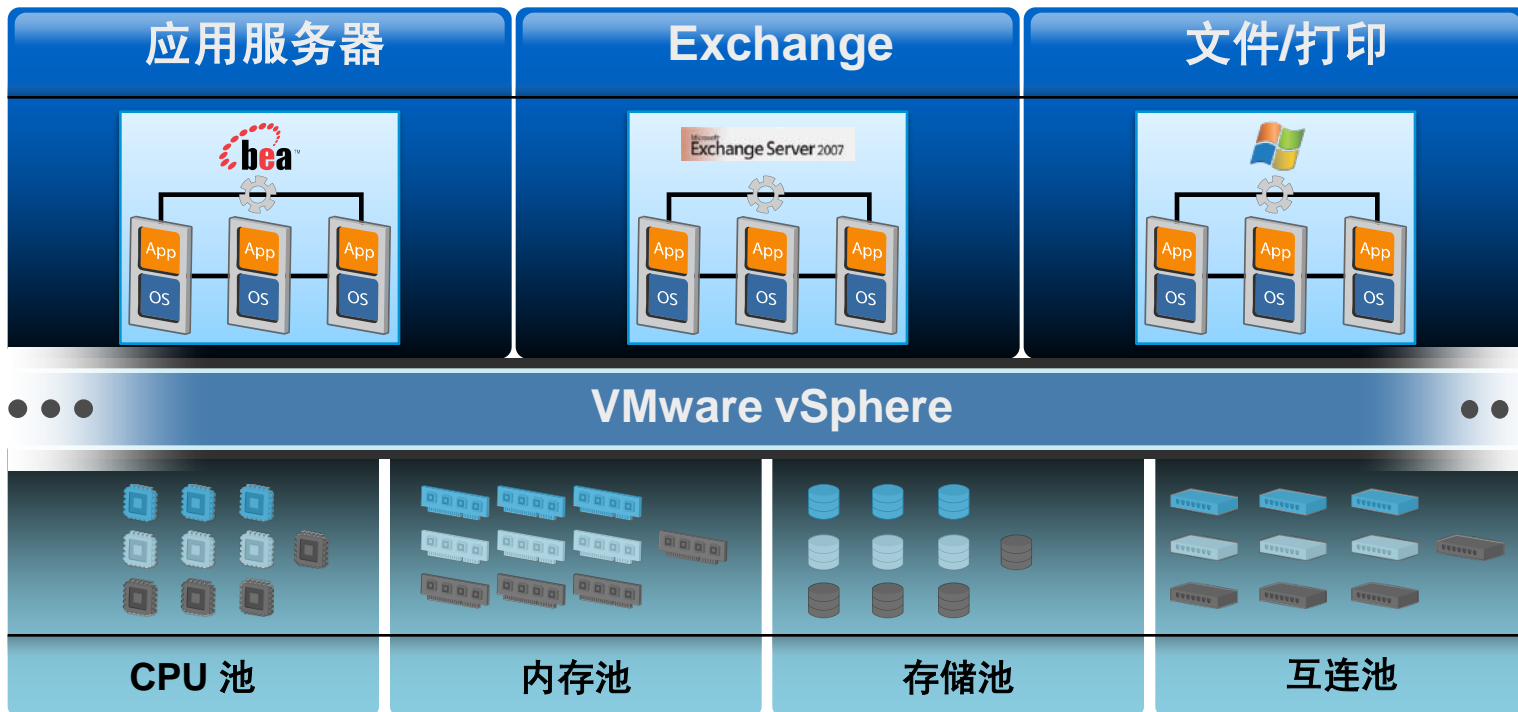
Storage Pool



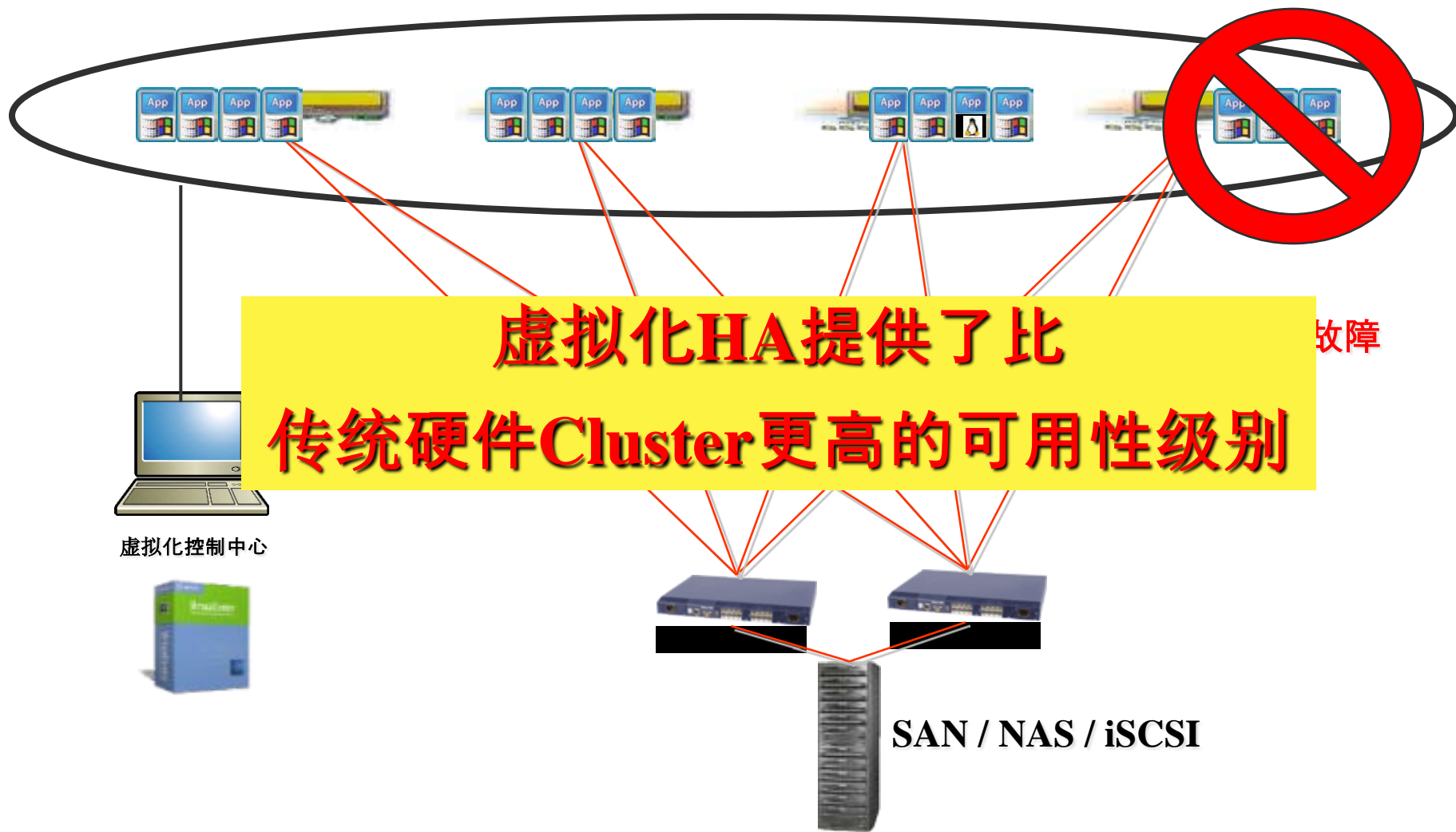
Interconnect Pool



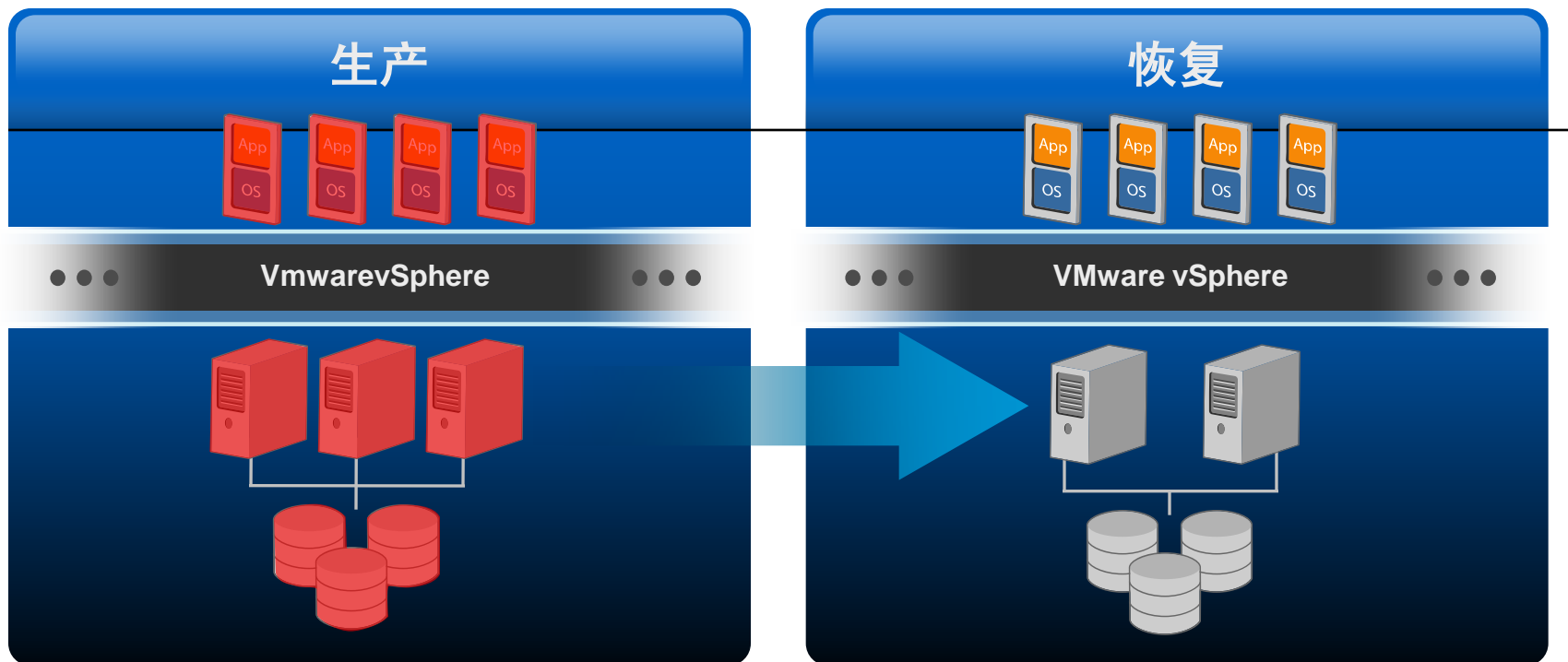
# 资源按需分配、业务应用精确交付



# Vmware High Availability 自动的高可用性保证



# 自动进行整个数据中心的灾难恢复



虚拟化转变灾难恢复方式

## 实例:使用虚拟化技术为数据中心节约能源开销

**VMware 将服务器、存储及网络连接基础架构整合到一起,旨在安全地实现更高的利用率**

虚拟化前			虚拟化后	
服务器类型	服务器数量	功率 (W)	服务器数量	功率 (W)
单CPU	30	475	0	550
双CPU	60	550	0	672
四CPU	10	950	3	1150

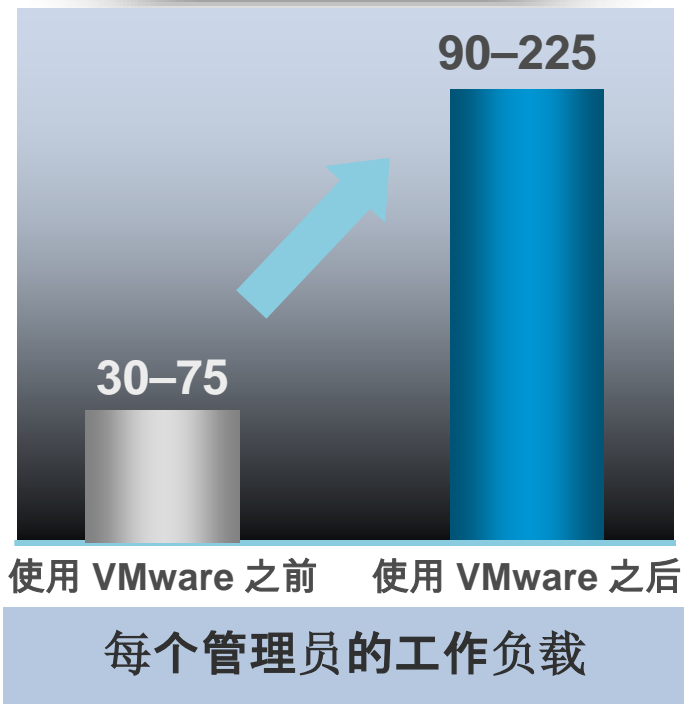
数据中心冷却系统节省的电能为: 31364 (W)

依照上述计算,我们可以估计出该数据中心在一年内节省大约**58.8万度**电力!



# 实例:降低运营成本, 提高服务水平

提高生产率、灵活性  
与响应度

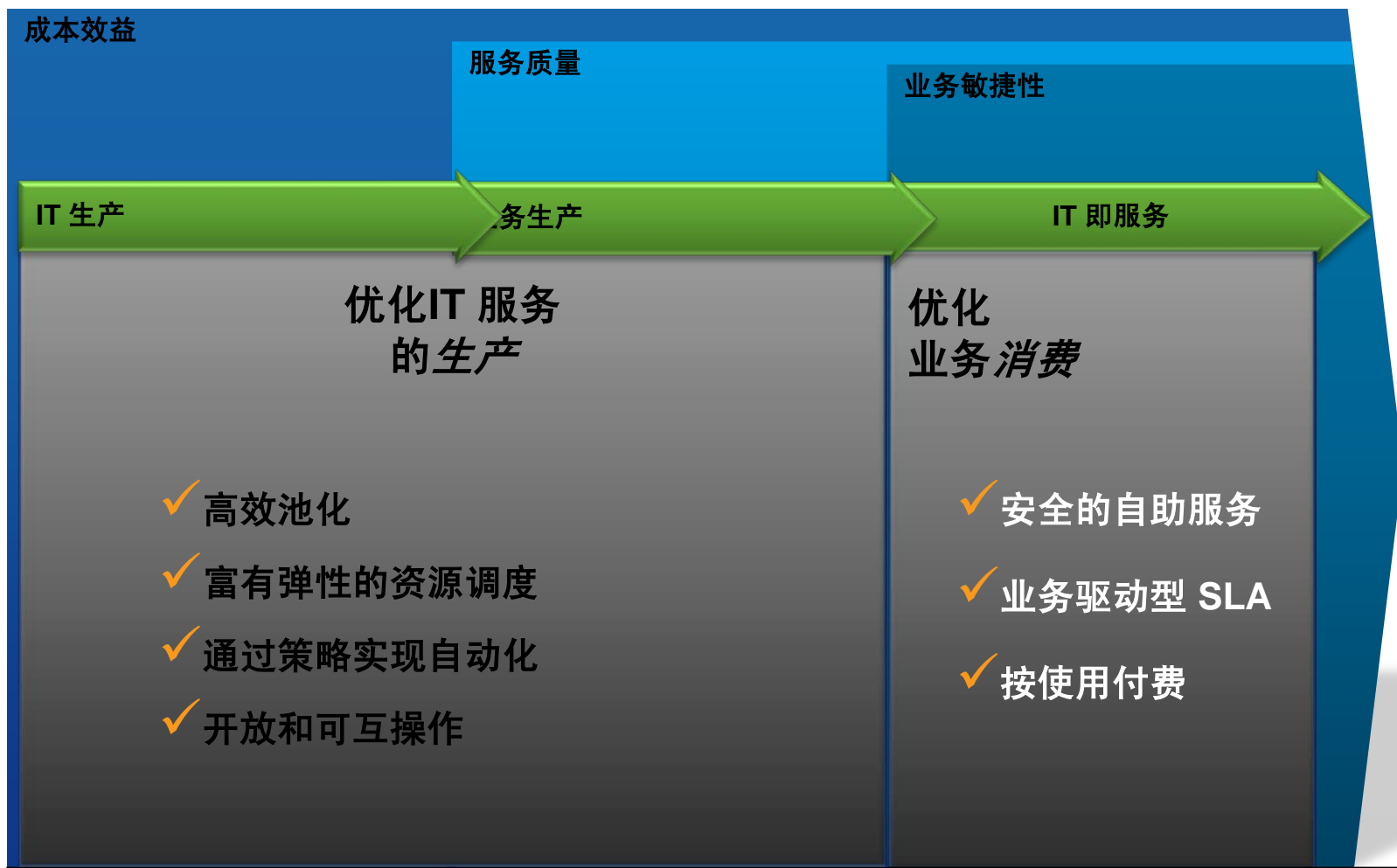


- > 相同的人数完成更多的工作 = 节省运营成本
- > 提高生产率的动力:
  - > 瞬间调配
  - > 动态修补
  - > 零宕机维护
  - > 内置高可用性
  - > 自动进行灾难恢复

来源: IDC 和 VMware TAM 计划

# ITaaS 之旅





# 云计算的特征

云计算是一种 *计算方法*，它将按需提供的自助管理虚拟基础架构汇集成高效池，以服务的形式提供计算资源。

通过提高利用率和  
实现自动化获得高效性

优化 IT 服务的生产

兼具敏捷性和可控性

优化 IT 服务的  
业务消耗

可自由选择

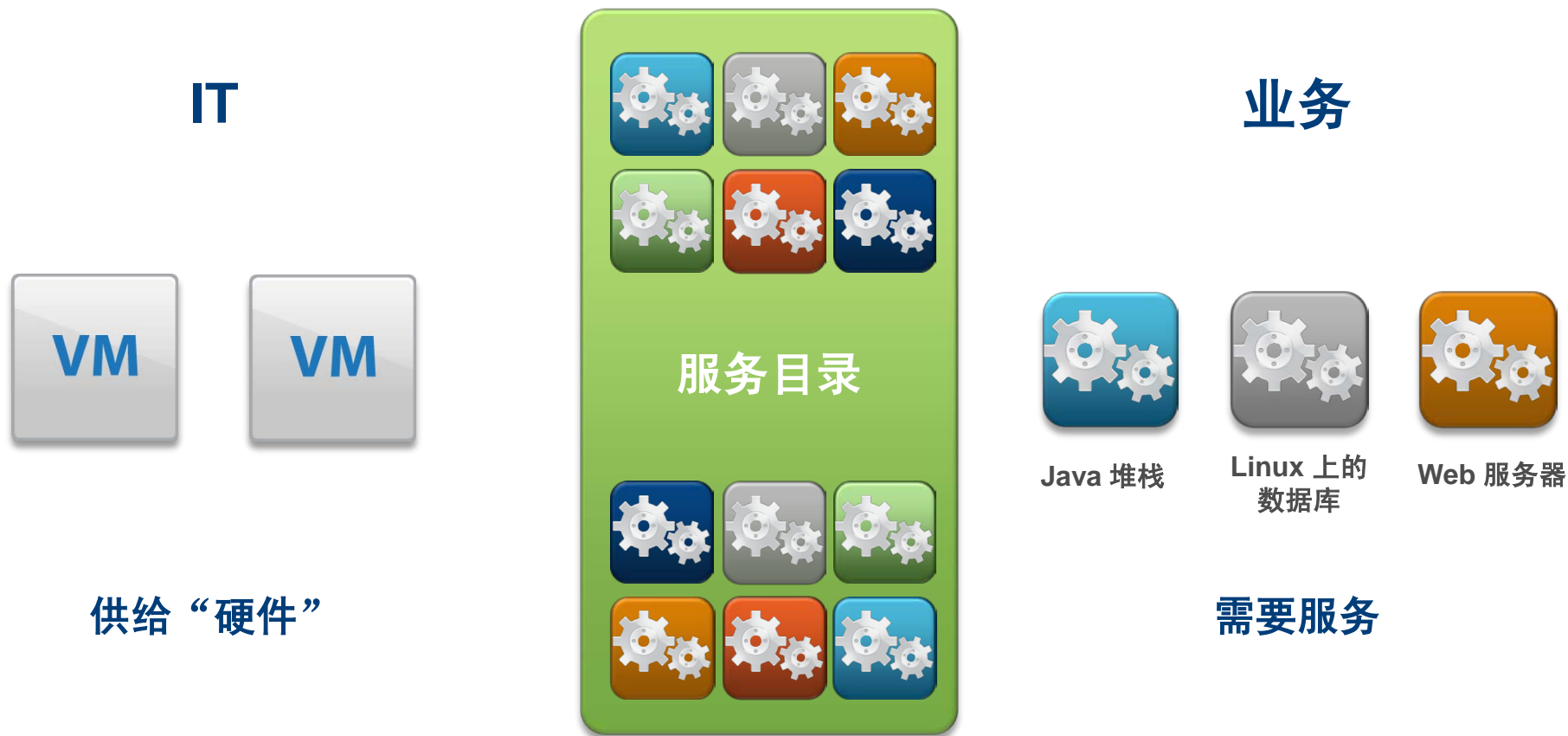
开放和互操作

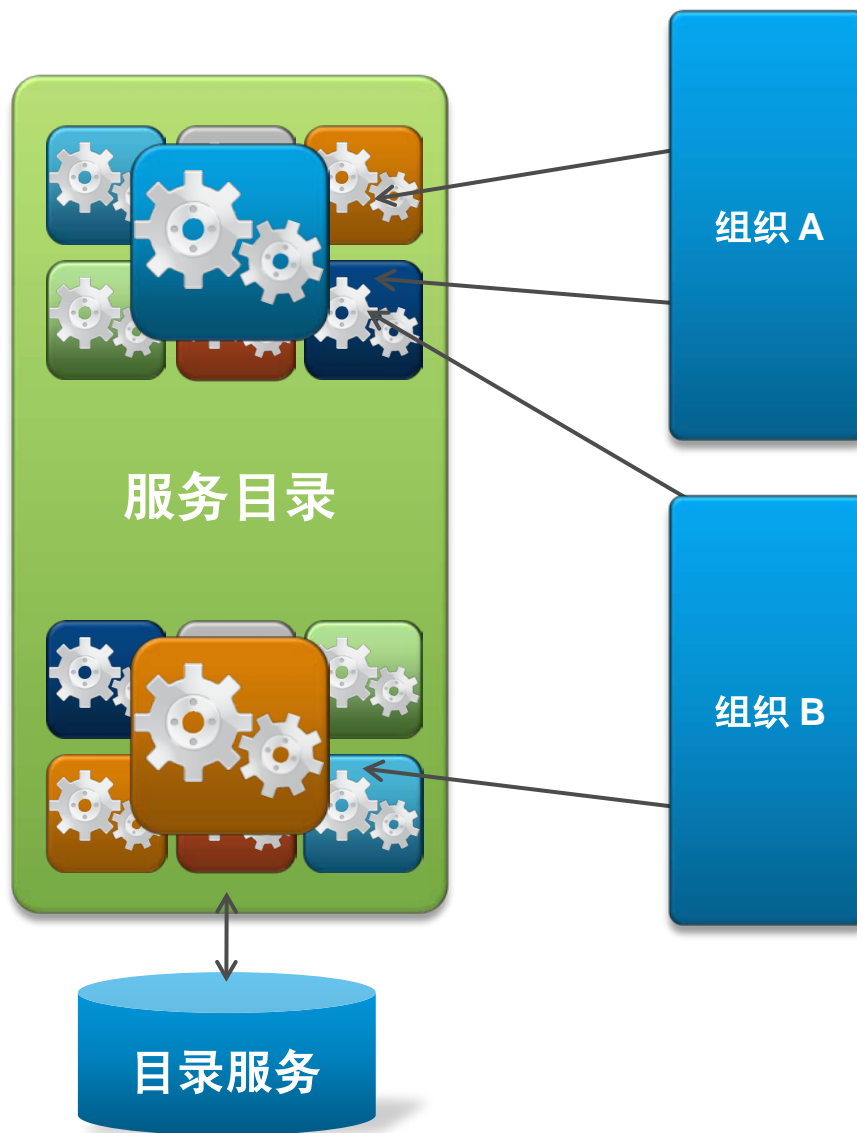
应用程序可基于开放标准在云之间实现移动

利用现有投资

云计算为现有应用程序和数据中心带来诸多好处

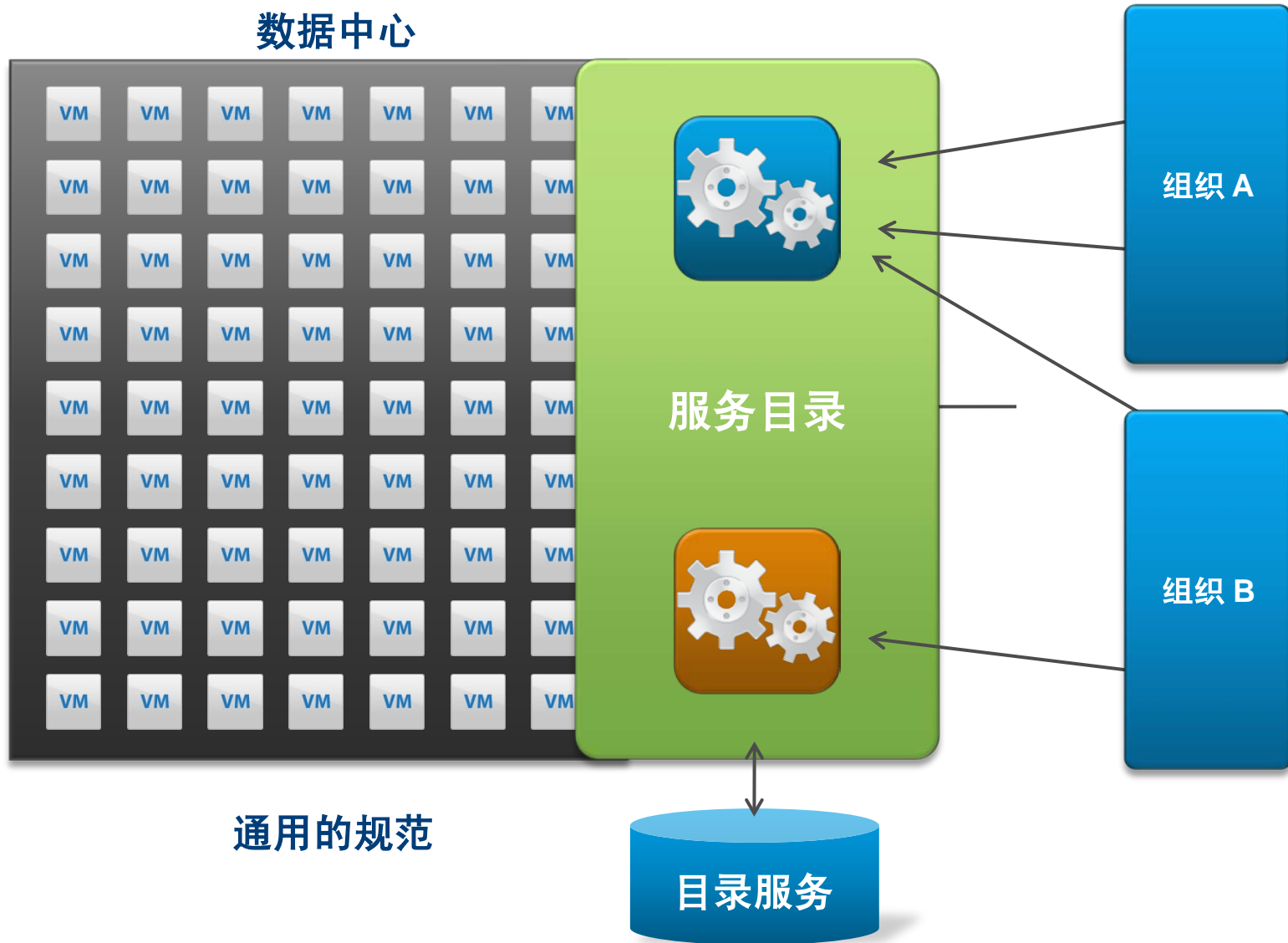
# 从提供“机器”发展为提供服务





与目录服务集成

# 逻辑数据中心可提供多种服务水平 (SLA)



# 逻辑数据中心可提供多种服务水平（SLA）

## 虚拟数据中心



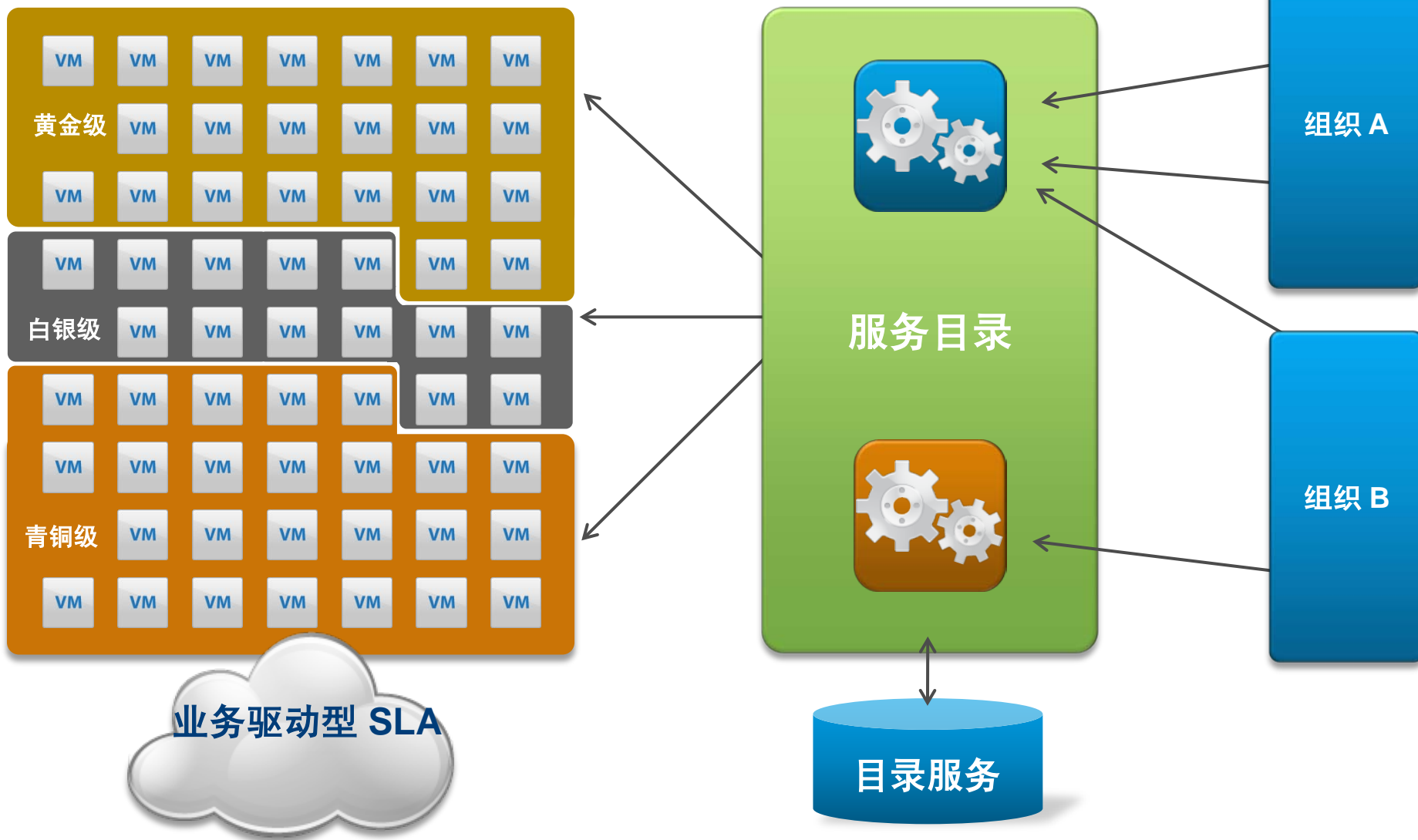
## 业务驱动型 SLA



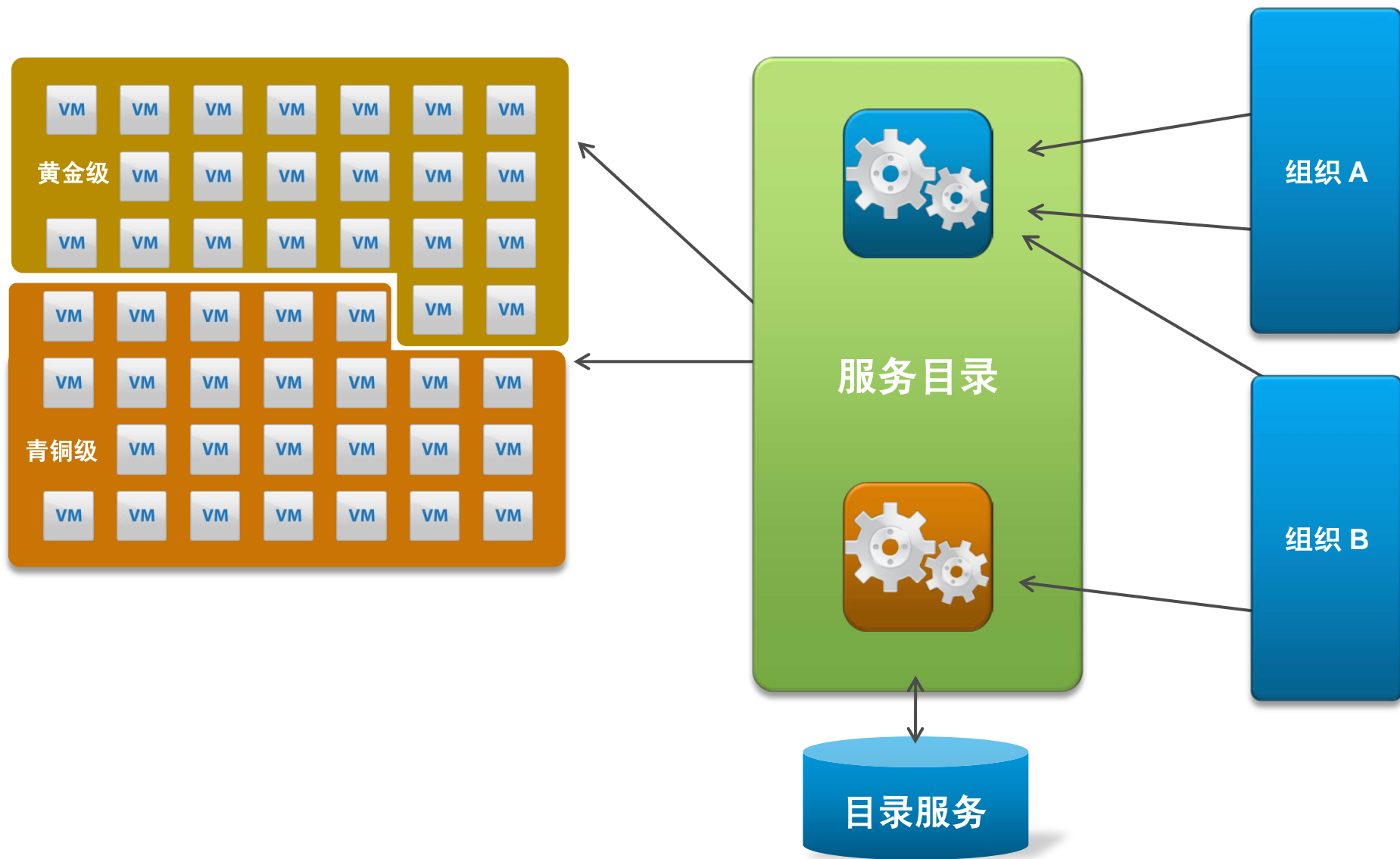


# 逻辑数据中心可提供多种服务水平（SLA） – 跨云提供

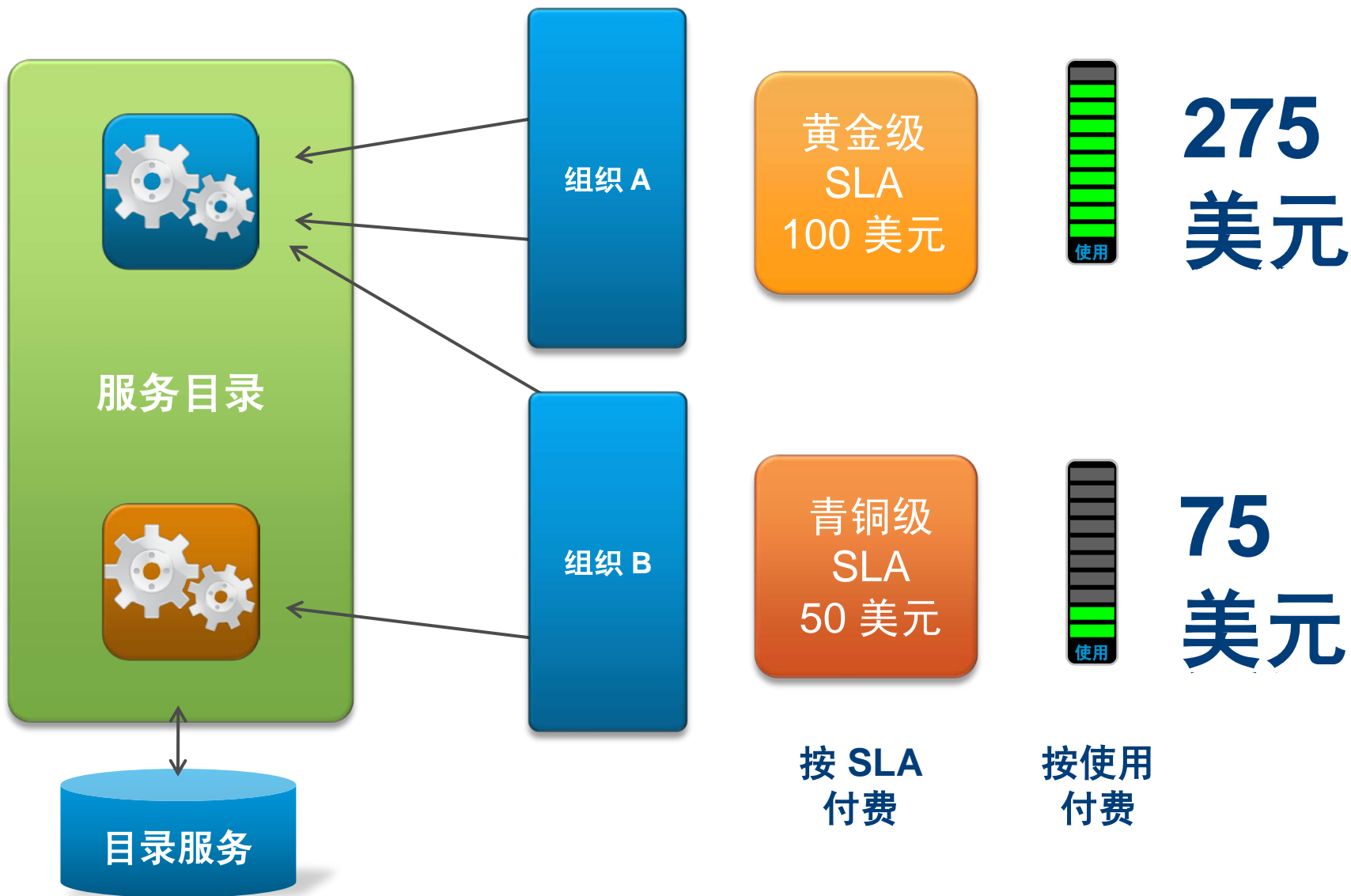
## 虚拟数据中心



# 按使用付费的模式



# 按使用付费的模式

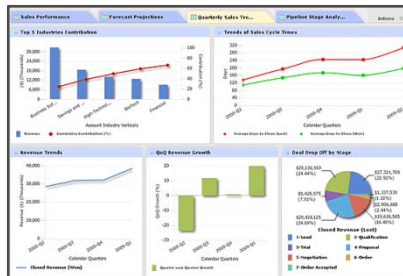


# 新 IT 前景

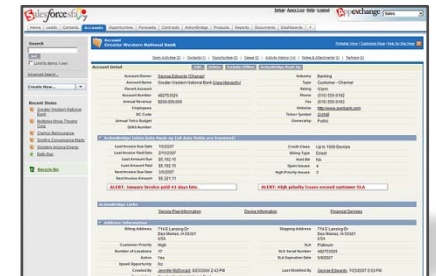


Segment	Segment Class 2	Type	Beginning Balance (Credit)	Beginning Balance (Debit)	Debits	Credits	Ending Balance (Debit)	Ending Balance (Credit)
1400	Operating Equipment	E	0.00	0.00	1,100,000.00	0.00	1,100,000.00	0.00
1405	Telephone Equipment	E	0.00	0.00	1,000,000.00	0.00	1,000,000.00	0.00
1500	Prepaid	E	0.00	0.00	400,000.00	0.00	400,000.00	0.00
1520	Equipment Expense	E	0.00	0.00	1,400,000.00	0.00	1,400,000.00	0.00
1525	Lease Liabilities	E	0.00	0.00	600,000.00	0.00	600,000.00	0.00
1600	Liabilities	E	0.00	0.00	2,500.00	0.00	2,500.00	0.00
1620	Accounts Payable	E	0.00	0.00	700.00	0.00	700.00	0.00
1630	Accumulated Depreciation	E	0.00	0.00	1,000.00	0.00	1,000.00	0.00
1640	Income Tax Payable	E	0.00	0.00	800.00	0.00	800.00	0.00
1700	Manufacturing	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00
1710	Inventory	E	0.00	0.00	44,444.44	0.00	44,444.44	0.00
1720	Manufacturing Overhead	E	0.00	0.00	2,000.00	0.00	2,000.00	0.00
1730	Cost of Sales	E	0.00	0.00	8,800.00	0.00	8,800.00	0.00
1740	Cost of Goods Sold	E	0.00	0.00	1,427.78	0.00	1,427.78	0.00
1750	Cost of Sales	E	0.00	0.00	24,472.22	0.00	24,472.22	0.00
1760	Manufacturing Overhead	E	0.00	0.00	912,500.00	0.00	912,500.00	0.00
1800	Manufacturing Overhead	E	0.00	0.00	912,500.00	0.00	912,500.00	0.00
2000	Other Assets	E	0.00	0.00	10,000,000.00	0.00	10,000,000.00	0.00
2020	Other Assets	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00
9999	TOTAL		2,790,000.00	2,790,000.00	2,790,000.00	2,790,000.00	2,790,000.00	2,790,000.00

现有应用



新的企业级应用



SaaS应用



现有数据中心



公共云服务

# 三个核心关注领域

终端用户计算

云计算应用平台

云计算基础架构和管理

现有数据中心

公共云服务

# 可跨云移植

spring  
框架和工具



丰富的 Web



集成



批处理



数据访问



社交媒介



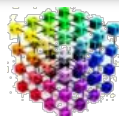
云计算 API

## VMware vFabric

通用平台服务



应用管理



数据管理



信息传递



动态负载均衡



应用服务器



私有云



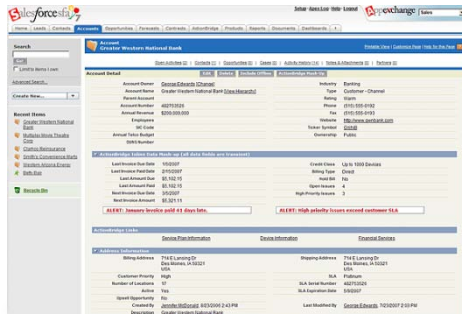
vmforce



Google  
app engine



# 终端用户所看到的



SaaS应用

The screenshot shows a financial ledger application. It features a table with columns for 'Segment', 'Type', 'Beginning Balance Debit', 'Balance Credits', 'Debit', 'Credit', 'Ending Balance Debit', and 'Ending Balance Credit'. The table lists various transactions such as 'Cleaning and Maint.', 'Equipment Expense', and 'Legal Services'.

Segment	Type	Beginning Balance Debit	Balance Credits	Debit	Credit	Ending Balance Debit	Ending Balance Credit
1400	E	0.00	0.00	1,100,011.17	0.00	1,100,011.17	0.00
1400	E	0.00	0.00	1,009,645.45	0.00	1,009,645.45	0.00
7010	E	0.00	0.00	496,473.97	0.00	496,473.97	0.00
7020	E	0.00	0.00	1,441,394.72	0.00	1,441,394.72	0.00
7020	E	0.00	0.00	606,406.10	0.00	606,406.10	0.00
1400	E	0.00	0.00	2,546,900.00	0.00	2,546,900.00	0.00
7020	E	0.00	0.00	768.00	0.00	768.00	0.00
7020	E	0.00	0.00	1,000.00	0.00	1,000.00	0.00
7020	E	0.00	0.00	675.00	0.00	675.00	0.00
7740	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00
7020	E	0.00	0.00	44,141.94	0.00	44,141.94	0.00
7020	E	0.00	0.00	2,609,531.27	0.00	2,609,531.27	0.00
7020	E	0.00	0.00	5,542.30	0.00	5,542.30	0.00
7020	E	0.00	0.00	6,814.90	0.00	6,814.90	0.00
7040	E	0.00	0.00	13,627.83	0.00	13,627.83	0.00
2040	E	0.00	0.00	24,471.56	0.00	24,471.56	0.00
0100	A	512,366.68	0.00	0.00	0.00	512,366.68	0.00
0200	A	973,300.81	0.00	0.00	0.00	973,300.81	0.00
0510	E	0.00	0.00	15,375,000.00	0.00	15,375,000.00	0.00
0520	E	0.00	0.00	142,000,000.00	0.00	142,000,000.00	0.00
9999	N/A	0.00	0.00	22,222.22	0.00	22,222.22	0.00

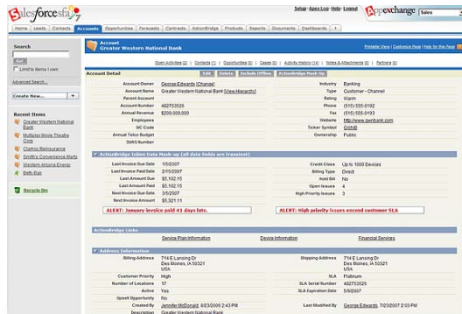
企业级应用



Windows 应用



# 终端用户所看到的



SaaS应用

The screenshot shows a financial ledger application. The table displays transactions with columns for Segment, Type, Beginning Balance, Ending Balance, Debits, Credits, and Ending Balance. The data is as follows:

Segment	Type	Beginning Balance	Ending Balance	Debits	Credits	Ending Balance
1400	Clearing and Interest	0.00	0.00	1,100,000.00	0.00	1,100,000.00
1400	Equipment Expenses	0.00	0.00	1,000,000.00	0.00	1,000,000.00
7000	Freight	0.00	0.00	400,000.00	0.00	400,000.00
7000	Equipment Expenses	0.00	0.00	1,400,000.00	0.00	1,400,000.00
7000	Legal Services	0.00	0.00	600,000.00	0.00	600,000.00
1400	Interest	0.00	0.00	2,500,000.00	0.00	2,500,000.00
7000	Car Rental	0.00	0.00	700,000.00	0.00	700,000.00
7000	Accommodation	0.00	0.00	1,000,000.00	0.00	1,000,000.00
7000	Meals	0.00	0.00	670,000.00	0.00	670,000.00
7700	Microfinance	0.00	0.00	22,222.22	0.00	22,222.22
7000	Interest Income	0.00	0.00	44,444.44	0.00	44,444.44
7000	Interest Expense	0.00	0.00	2,000,000.00	0.00	2,000,000.00
7000	Discount Taken	0.00	0.00	5,544.30	0.00	5,544.30
7000	Currency Gains	0.00	0.00	8,814.90	0.00	8,814.90
7000	Currency Losses	0.00	0.00	13,627.90	0.00	13,627.90
2000	Unrealized Foreign Ex.	0.00	0.00	24,473.56	0.00	24,473.56
8100	Manufacturing In	512,366.68	0.00	0.00	0.00	512,366.68
8100	Manufacturing Out	0.00	973,300.00	0.00	0.00	973,300.00
8100	Other Account 10	0.00	0.00	15,375,000.00	0.00	15,375,000.00
8100	Other Account 20	0.00	0.00	142,000,000.00	0.00	142,000,000.00
9999	N/A	0.00	0.00	22,222.22	0.00	22,222.22

企业级应用

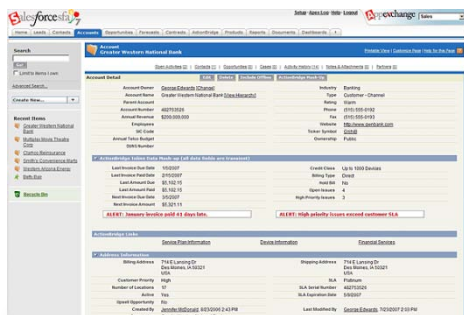


Windows 应用





# 终端用户计算 = 以用户为中心



SaaS应用

Segment	Segment Desc 3	Type	Beginning Balance Debit	Beginning Balance Credit	Debit	Credit	Ending Balance Debit	Ending Balance Credit
1400	Clearing and Interest	E	0.00	0.00	1,100,010.17	0.00	1,100,010.17	0.00
1400	Telephone Expenses	E	0.00	0.00	1,009,645.45	0.00	1,009,645.45	0.00
7010	Freight	E	0.00	0.00	490,473.97	0.00	490,473.97	0.00
7020	Equipment Expenses	E	0.00	0.00	1,445,194.72	0.00	1,445,194.72	0.00
7020	Legal Services	E	0.00	0.00	605,406.10	0.00	605,406.10	0.00
7040	Advert	E	0.00	0.00	2,545,000.00	0.00	2,545,000.00	0.00
7050	Car Rental	E	0.00	0.00	760.00	0.00	760.00	0.00
7070	Accommodation	E	0.00	0.00	1,000.00	0.00	1,000.00	0.00
7740	Microfinance	E	0.00	0.00	675.00	0.00	675.00	0.00
7740	Health	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00
8100	Interest Income	R	0.00	0.00	44,147.94	0.00	0.00	44,147.94
7020	Interest Expense	E	0.00	0.00	2,009,533.27	0.00	2,009,533.27	0.00
7020	Discount Taken	E	0.00	0.00	5,542.30	0.00	5,542.30	0.00
7020	Currency Gain	E	0.00	0.00	6,814.90	0.00	0.00	6,814.90
7040	Currency Loss	E	0.00	0.00	13,627.80	0.00	13,627.80	0.00
2040	Unrealized Foreign Ex.	E	0.00	0.00	24,471.56	0.00	24,471.56	0.00
8100	Manufacturing In	A	512,366.68	0.00	0.00	0.00	512,366.68	0.00
8100	Manufacturing Out	A	0.00	973,300.01	0.00	0.00	0.00	973,300.01
8110	Offsh Account 10	E	0.00	0.00	15,375,000.00	0.00	15,375,000.00	0.00
8120	Offsh Account 05	A	0.00	143,900,000.00	0.00	0.00	0.00	143,900,000.00
9999	Null	E	0.00	0.00	22,222.22	0.00	0.00	22,222.22

企业级应用



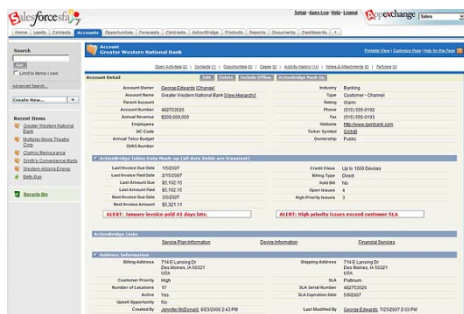
Windows 应用



对所有设备提供本机支持

安全访问所有应用

# 源自云的终端用户计算



SaaS应用

The screenshot shows a financial ledger application with a table of transactions. The table has columns for Segment, Description, Type, Beginning Balance, Balance Credits, Debits, Credits, Ending Balance, and Ending Balance Credits.

Segment	Description	Type	Beginning Balance	Balance Credits	Debits	Credits	Ending Balance	Ending Balance Credits
1400	Cleaning and Mainten.	E	0.00	0.00	1,100,011.17	0.00	1,100,011.17	0.00
1400	Equipment Expenses	E	0.00	0.00	1,009,645.45	0.00	1,009,645.45	0.00
7010	Portage	E	0.00	0.00	490,473.97	0.00	490,473.97	0.00
7020	Equipment Expenses	E	0.00	0.00	1,441,394.72	0.00	1,441,394.72	0.00
7020	Legal Services	E	0.00	0.00	606,406.10	0.00	606,406.10	0.00
1400	Admin	E	0.00	0.00	2,540,000.00	0.00	2,540,000.00	0.00
7020	Car Rental	E	0.00	0.00	768.00	0.00	768.00	0.00
7020	Accommodation	E	0.00	0.00	1,000.00	0.00	1,000.00	0.00
7020	Meals	E	0.00	0.00	475.00	0.00	475.00	0.00
7740	Microfinance	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00
7020	Interest Income	R	0.00	0.00	44,147.94	0.00	44,147.94	0.00
7020	Interest Expense	E	0.00	0.00	2,028,533.27	0.00	2,028,533.27	0.00
7020	Discount Sales/E	E	0.00	0.00	5,542.30	0.00	5,542.30	0.00
7020	Currency Gains	E	0.00	0.00	8,814.90	0.00	8,814.90	0.00
7040	Currency Losses	E	0.00	0.00	13,627.83	0.00	13,627.83	0.00
2040	Unrealized Foreign Ex.	E	0.00	0.00	24,471.56	0.00	24,471.56	0.00
0100	Manufacturing In	A	512,366.68	0.00	0.00	0.00	512,366.68	0.00
0200	Manufacturing Out	A	973,300.01	0.00	0.00	0.00	973,300.01	0.00
0510	Other Account 10	E	0.00	0.00	15,375,000.00	0.00	15,375,000.00	0.00
0520	Other Account 20	A	0.00	142,900,000.00	0.00	0.00	142,900,000.00	0.00
9999	N/A	E	0.00	0.00	22,222.22	0.00	22,222.22	0.00

企业级应用



Windows 应用





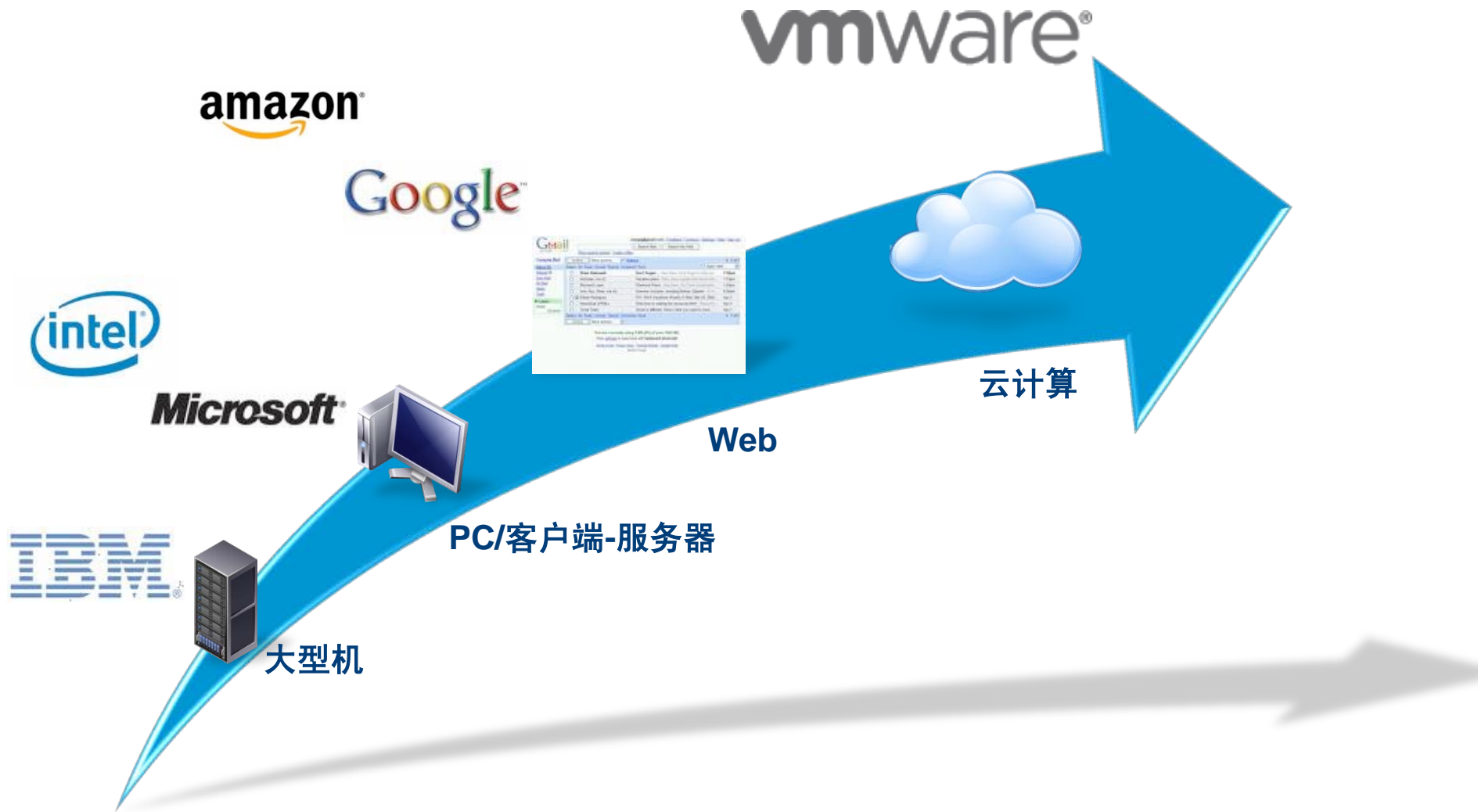
Windows 应用

# 面向 ITaaS 的 VMware 解决方案

## 安全、可管理、内聚



# IT 周期由业内革新技术驱动



# 谢谢