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# 数据中心自动化管理



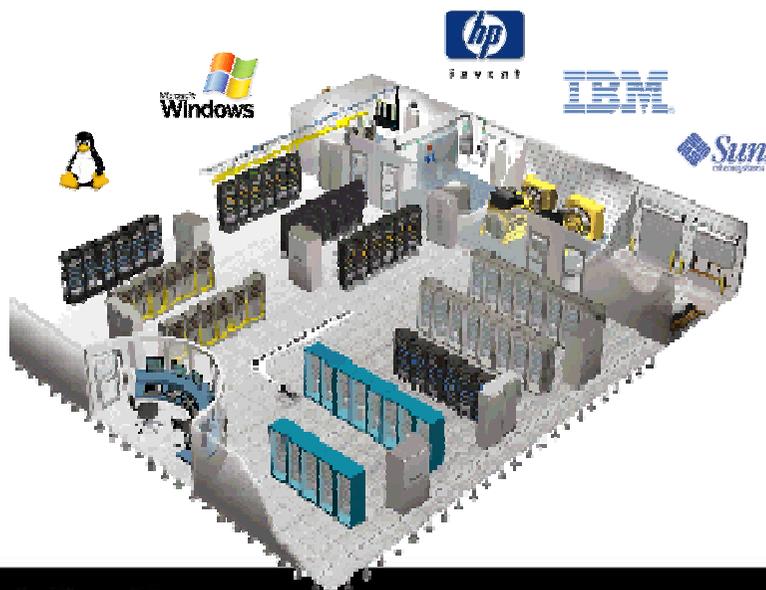
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# 数据中心面临的挑战

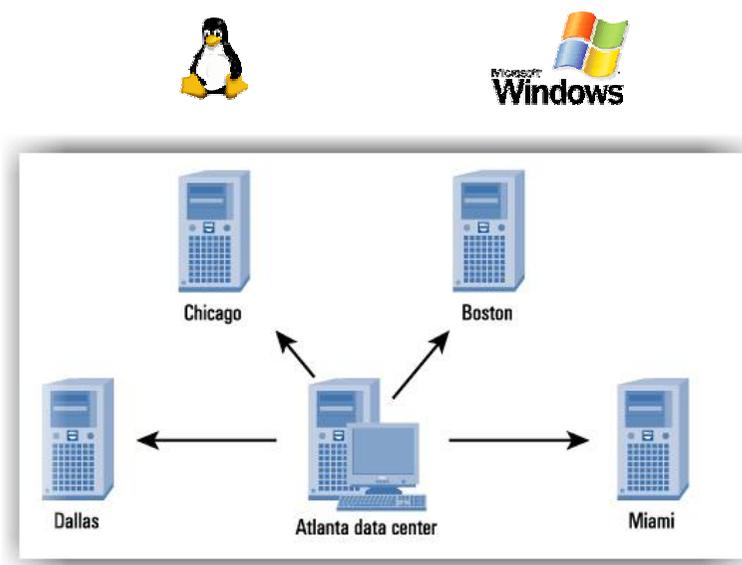
# 客户环境内两类不同的管理单元

## 企业信息官 (CIO)

数据中心单元  
(管理服务器和应用)



分布式单元  
(管理桌面机和远端服务器)



# 两种不同的业务需求

## 数据中心自动化

### §主要资源

- § Servers
- § Networks
- § Storage
- § O/S, Middleware, Applications
- § Databases
- § Virtualized resources



### §主要功能需求

- § Resource provisioning
- § Life Cycle Management
- § Complex automation
- § Back-up/recovery
- § Broad O/S and resource coverage
- § Resource security
- § Integration w/other products
- § Secure operation
- § Auditing
- § Customization

## 分布式管理

### §主要资源

- § Desktops
- § Laptops
- § Remote Servers
- § ATMs, PDAs, Cell Phones, ...
- § O/S, Middleware, Applications
- § Application Virtualization



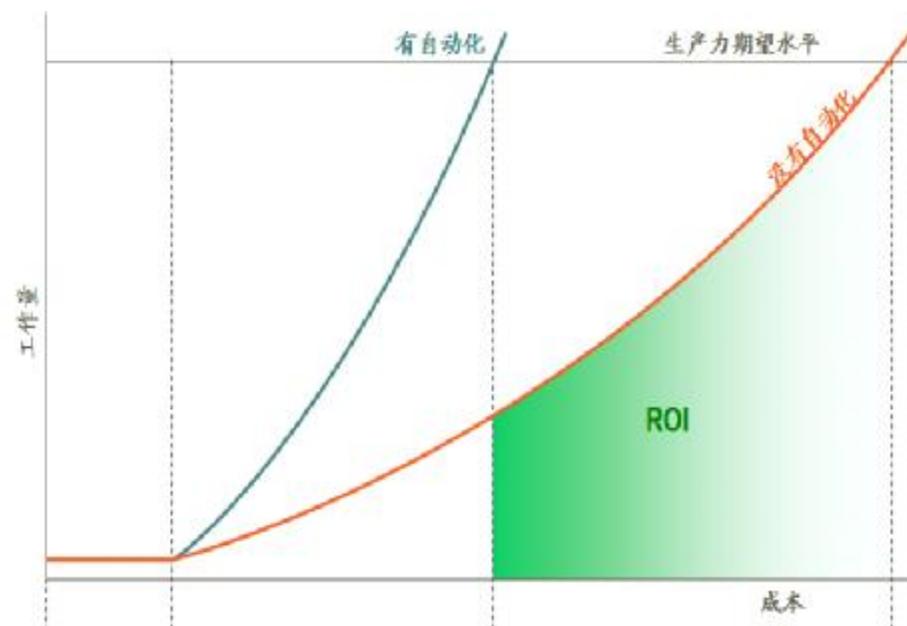
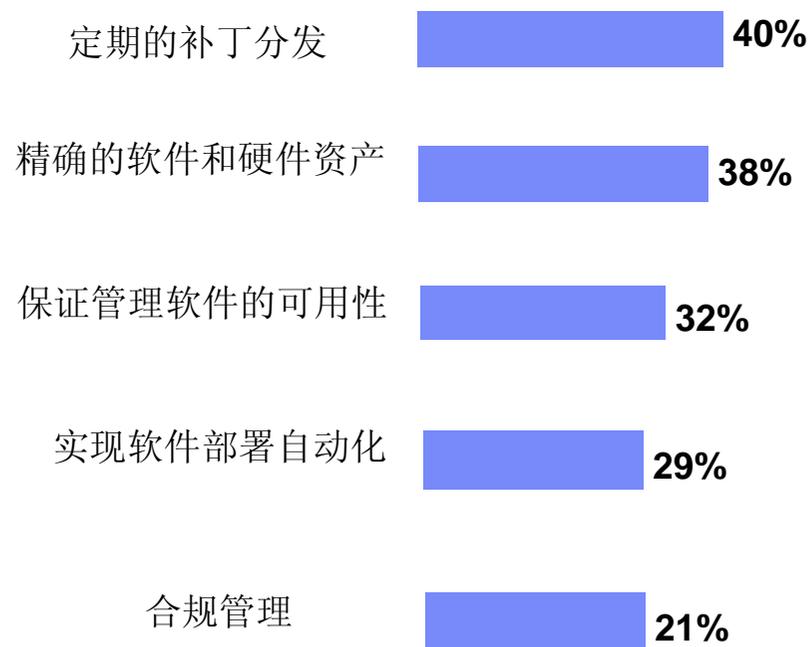
### §主要功能需求

- § Resource inventory control
- § Bare metal install
- § Software distribution
- § Remote Control
- § Software & security compliance
- § Scalability
- § Scheduled automation
- § Ease of use



# 理解市场需求

当管理数据中心服务器时，您遇到  
以下问题了吗？



业务发展带来自动化需求



# 自动化：解决日益突出的IT操作管理问题



成本与增加  
服务支付的  
矛盾

系统和网络的操作成本日益增加

数据和信息量的爆炸

部署新的应用和服务更加困难



支持业务的  
灵活性与安  
全性的矛盾

公司资产和客户信息的安全性

法律和政府的强制要求，如版权

系统和应用，要求能尽快支持业务的变化

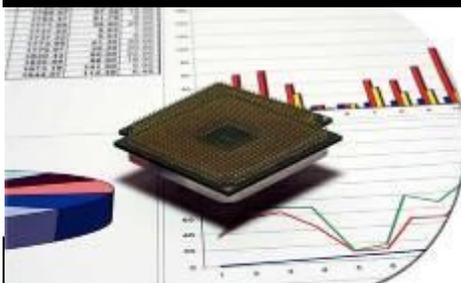


能效的问题

能源需求和成本的增加

电源供应和散热都会影响IT的操作

保护环境和對社会的责任



应用模型的  
更新需求

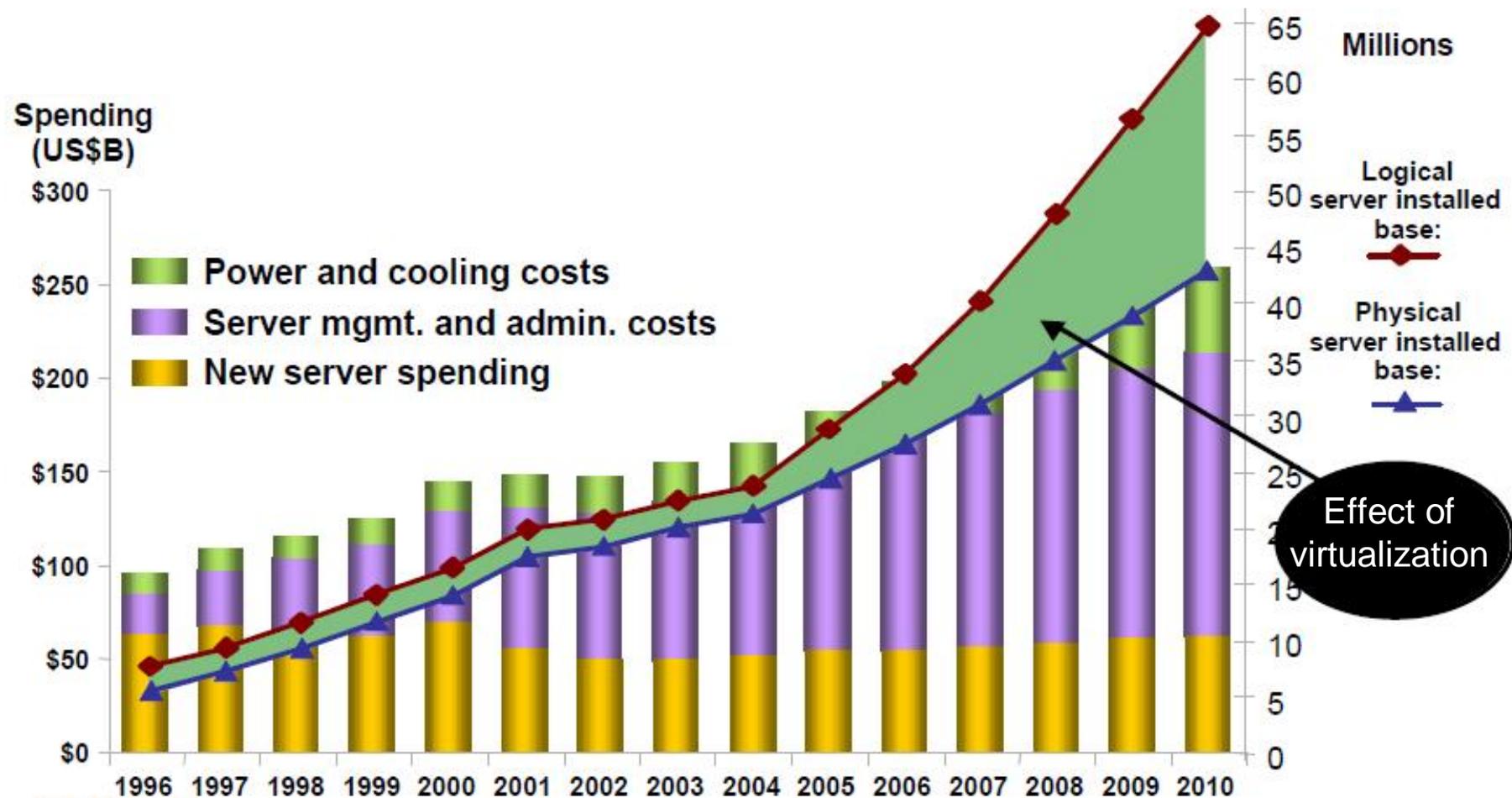
新的特性，如不可预知的工作量

难于管理快速增加的“敏捷”对象和数据量

实时交互操作时需要更大的灵活性



# 虚拟化、绿色计算成为数据中心建设必须要考虑



Source: IDC, "CIO Strategies to Build the Next Generation Data Center," Doc # DR2007\_5VT, February 2007.

# 数据中心自动化部署的要求

§ 自动化地实现配置、部署，将资源配置到需要的地方

§ 预先管理资源的需求

§ 资产的自动发现

§ 软件分发、补丁管理以及内容发布

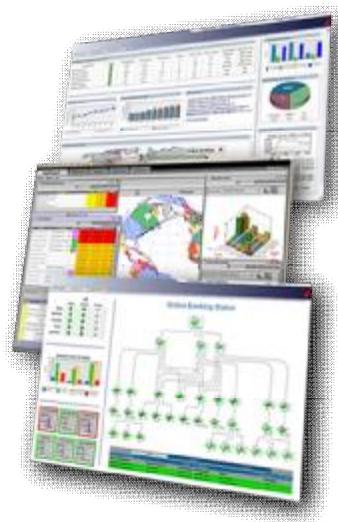
§ **好处**：更高的IT资产利用率、质量、安全、效率、降低成本



# IBM服务管理平台

# 创新的IBM服务管理

可视化



快速响应  
以及最佳决策

控制



提高质量  
以及降低风险

自动化



降低成本  
以及建立弹性

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# Tivoli的新一代数据中心自动化的策略方向

集成

基于请求的分配

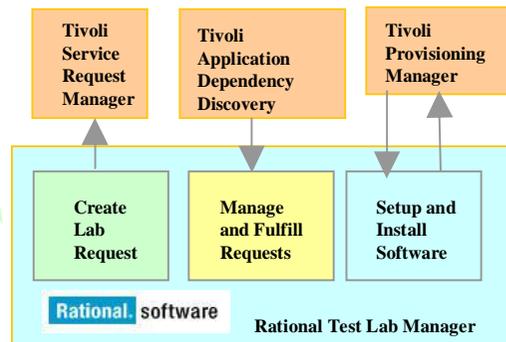


统一的访问界面

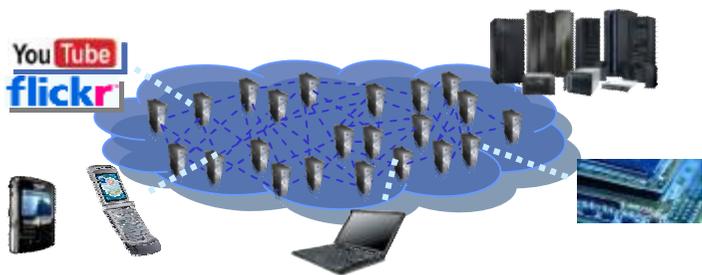
通用基本服务



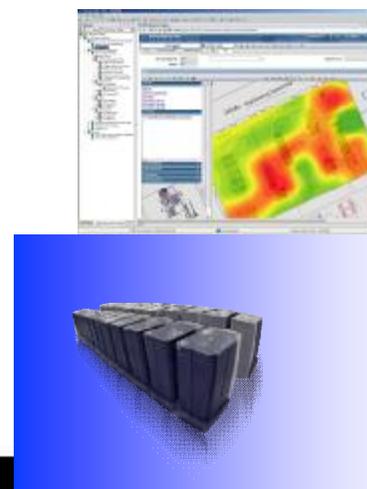
测试实验室的主动资源分配



云计算

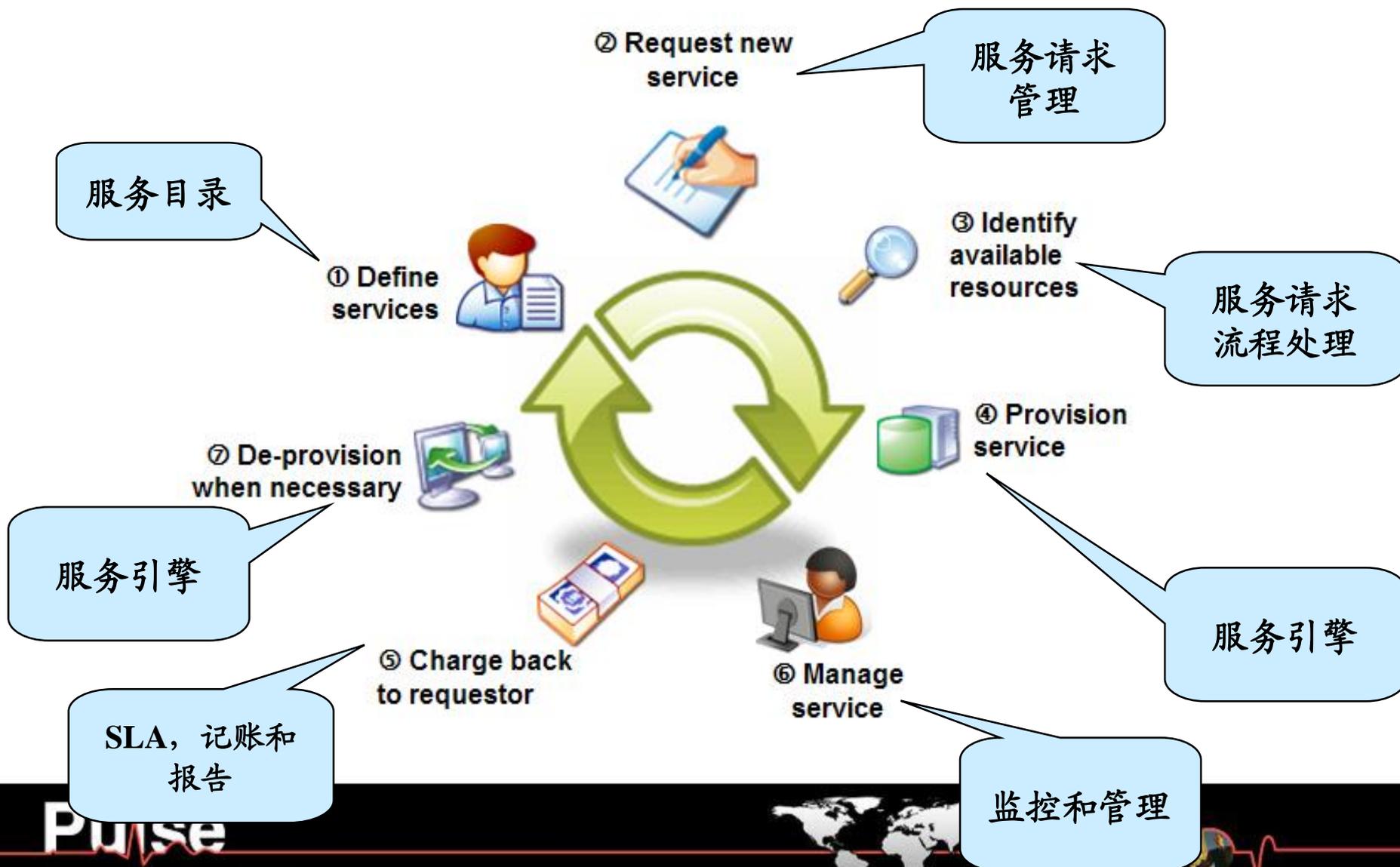


绿色计算

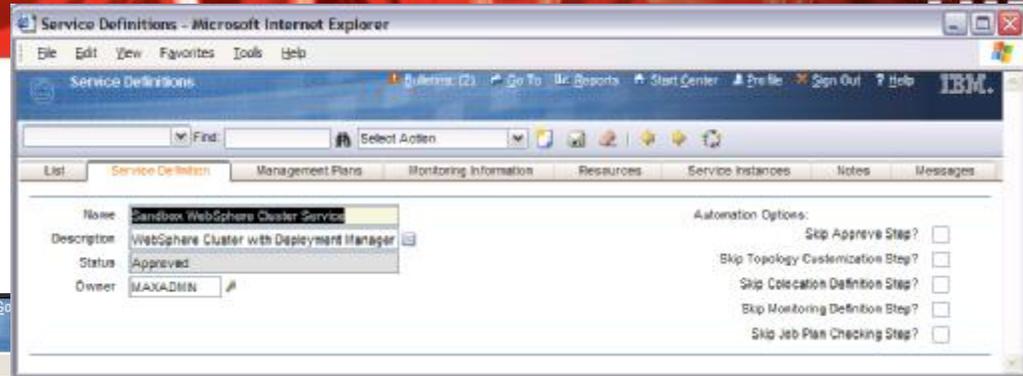


# IBM具有生命周期管理的 数据中心自动化

# 管理自动化服务的生命周期



# 服务目录



Offering Catalog

IBM Tivoli Service Request Manager 7.1 Service Catalog

Searching in: CATALOG1 IT Services

Shopping Cart  
Item(s) in Cart: 0 > View Cart  
> View All Carts  
> Start New Cart

Find what you need  
View All Offerings

Search by Keyword

Search by Category

- Composite Services
- Distributed Client Services
- Data Network Services
- Enterprise Security Management
- Fixed Cost Service Requests
- Server Systems Management

There are no breadcrumbs to display.

**Favorite Offerings**

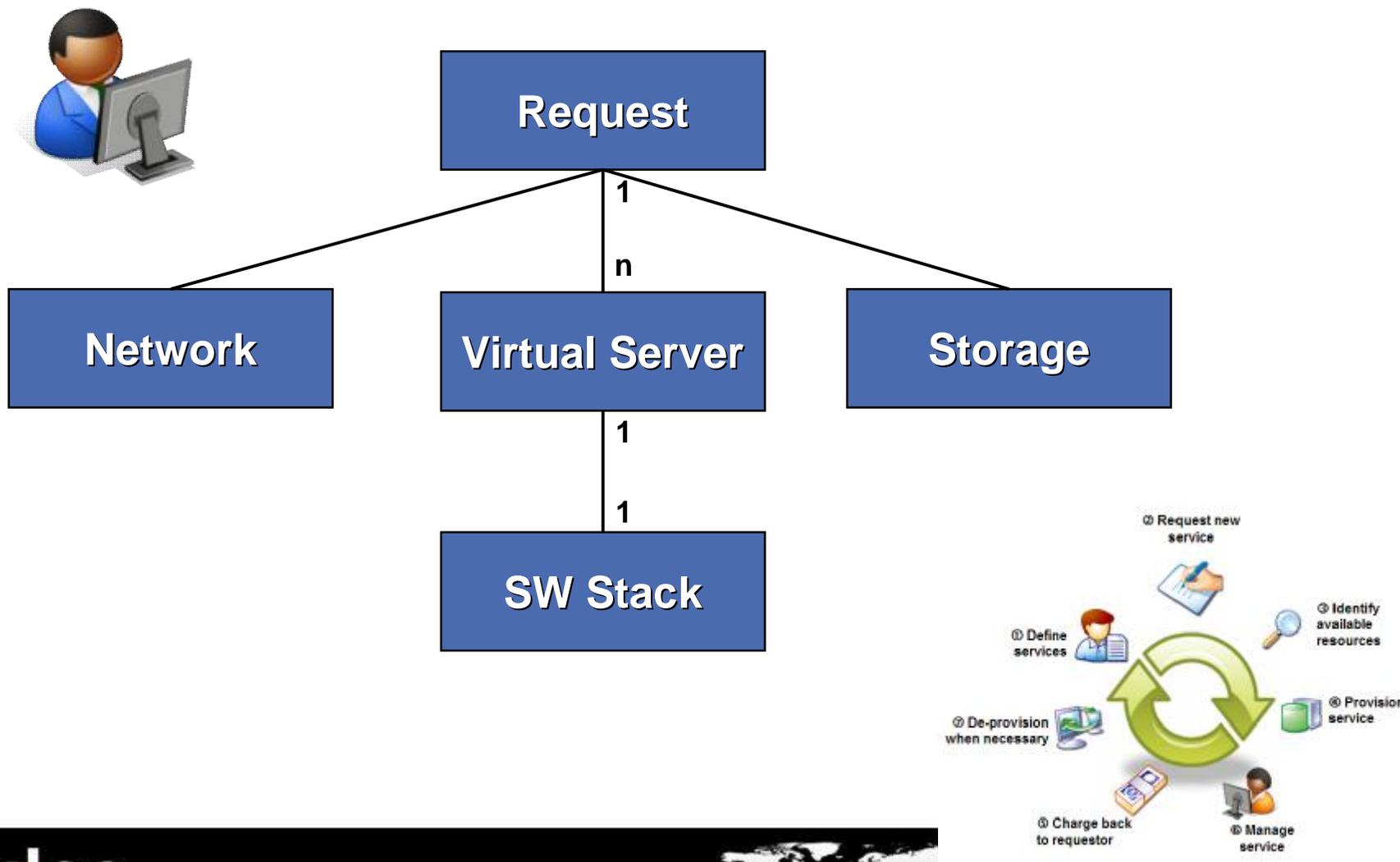
Description	Price	Currency
Add Database to Server Premium -10 days	350.00	USD
Add Database to Server Standard DLY	175.00	USD
Build New Server with Middleware	1,125.00	USD

**Available Offerings**

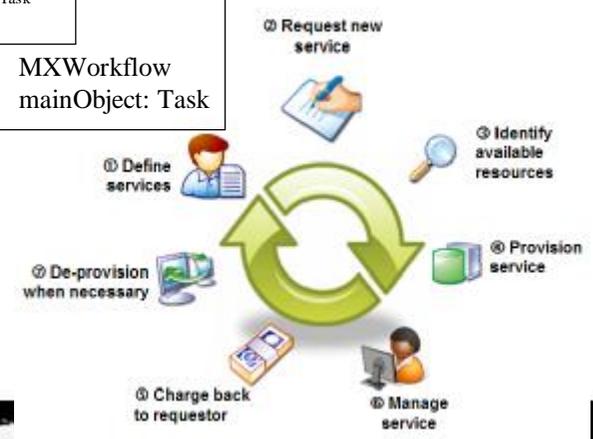
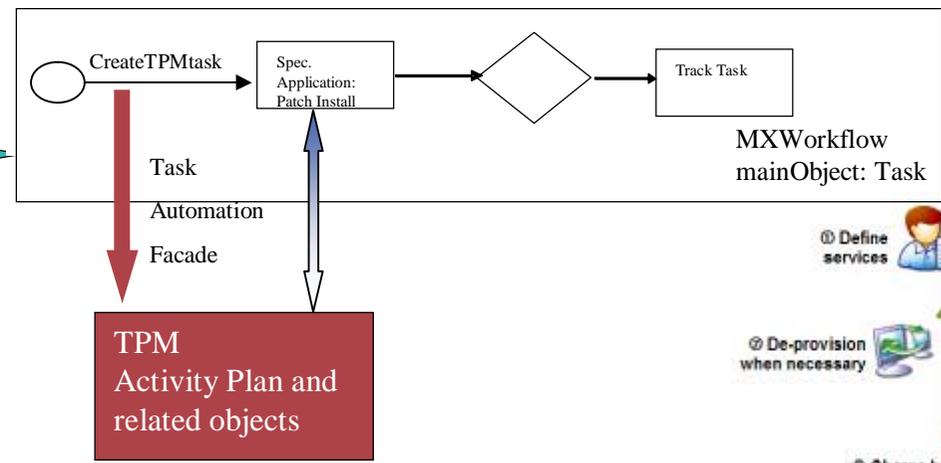
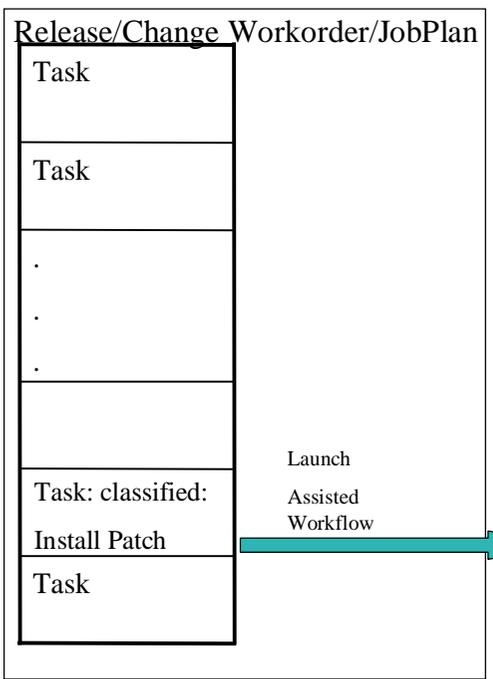
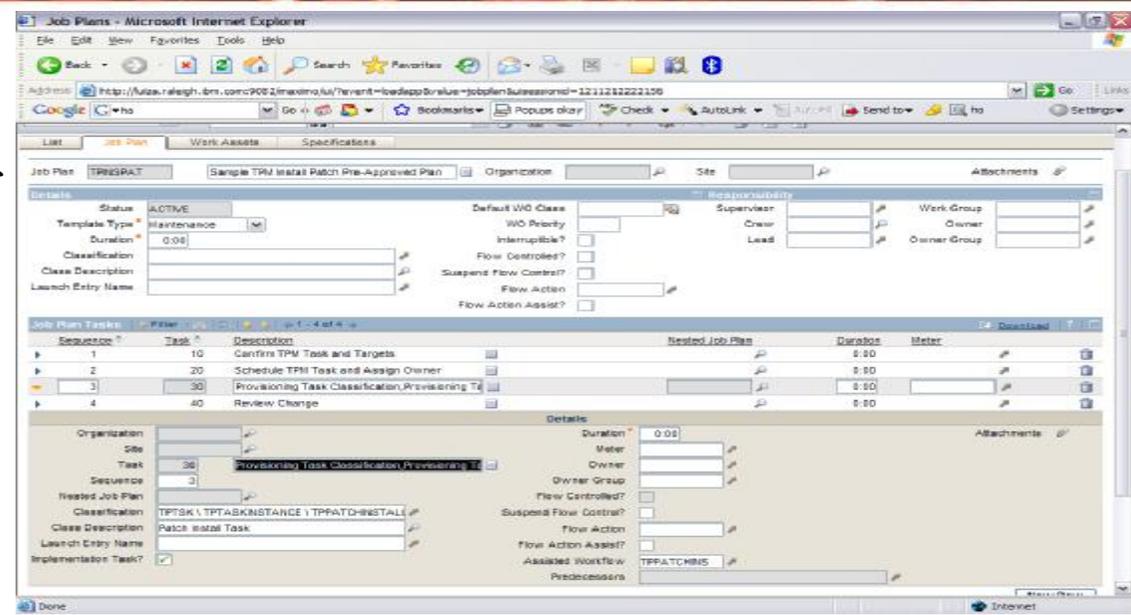
Description	Price	Currency
Add Database to Server Premium -10 days	350.00	USD
Add Database to Server Standard DLY	175.00	USD
Build New Server with Middleware	1,125.00	USD
Build New Standard Server Image	195.00	USD
Build Standard Server	825.00	USD
DB Install and Config	150.00	USD
Deploy Server to Floor	150.00	USD
Firewall Change Requests	295.00	USD
IBM Launch in Context	25.00	USD
ITIM - Lotus Notes Change Password	25.00	USD
ITIM - Lotus Notes Reset Password	25.00	USD
Lotus Notes - Change Password	25.00	USD
Lotus Notes - Change User Name or Certif	25.00	USD
Lotus Notes - Create Account	25.00	USD
Lotus Notes - Delete Account	25.00	USD
Middleware Install and Configure	500.00	USD
Minor Facility Request	250.00	USD
Minor Site Enhancement	325.00	USD
Office Move Request	200.00	USD
Remove Database From Server	175.00	USD



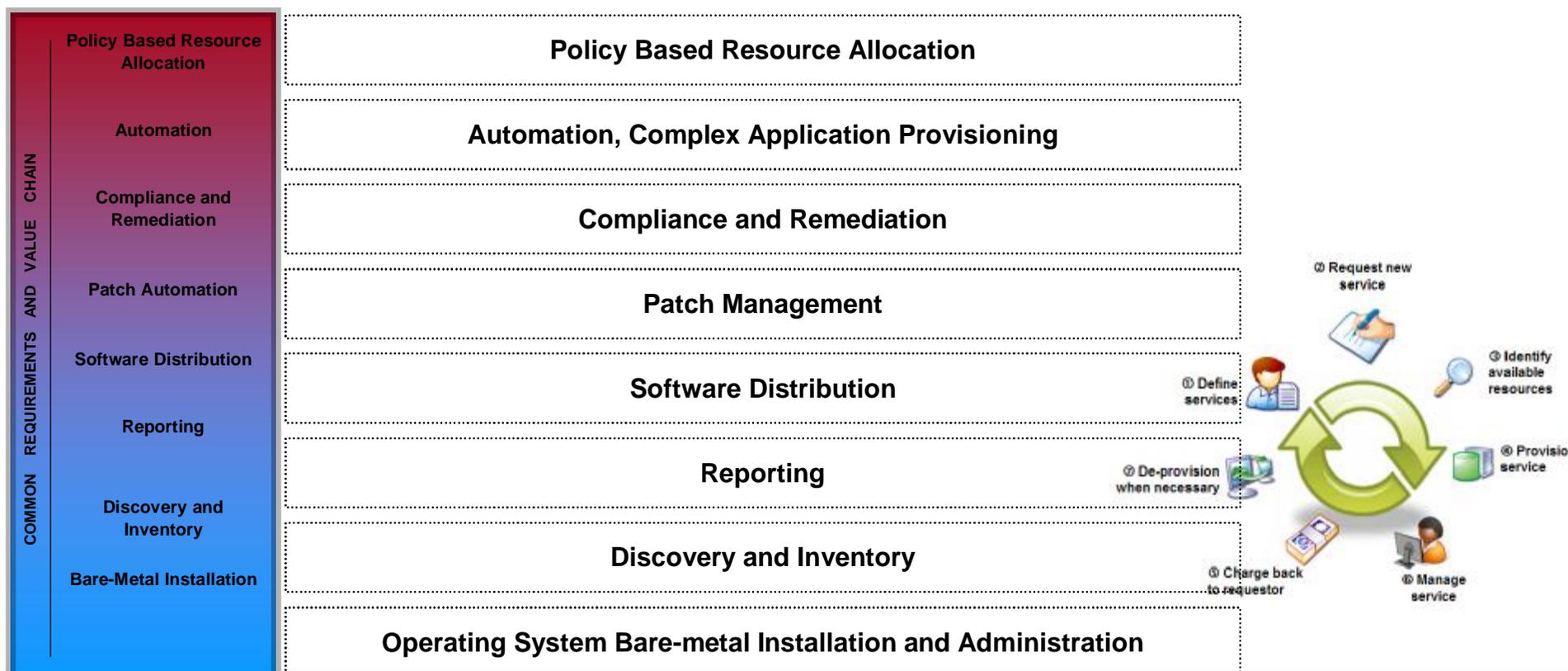
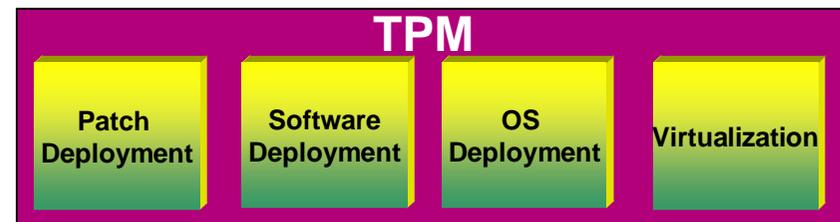
# 服务请求管理



# 基于流程的服务管理



# 自动化引擎



# Tivoli数据中心自动化 服务引擎

# 基于Tivoli Provisioning Manager的自动化引擎

生命周期的流程化管理

基于策略的资源分配

自动设置复杂应用

制度遵从和错误补救

补丁管理

软件分发

报表

资产自动发现和管理

操作系统的裸机安装和管理

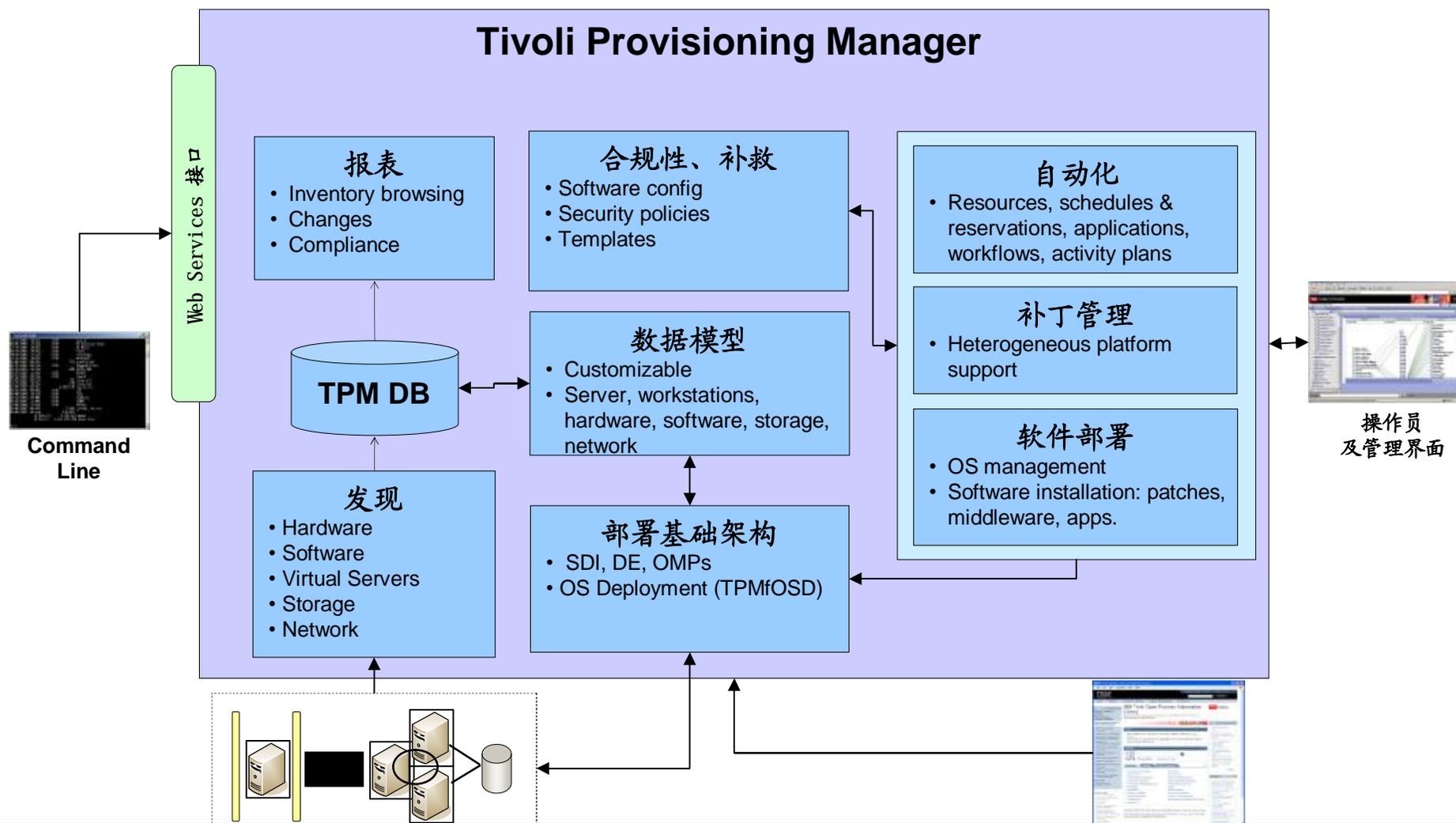
常见需求

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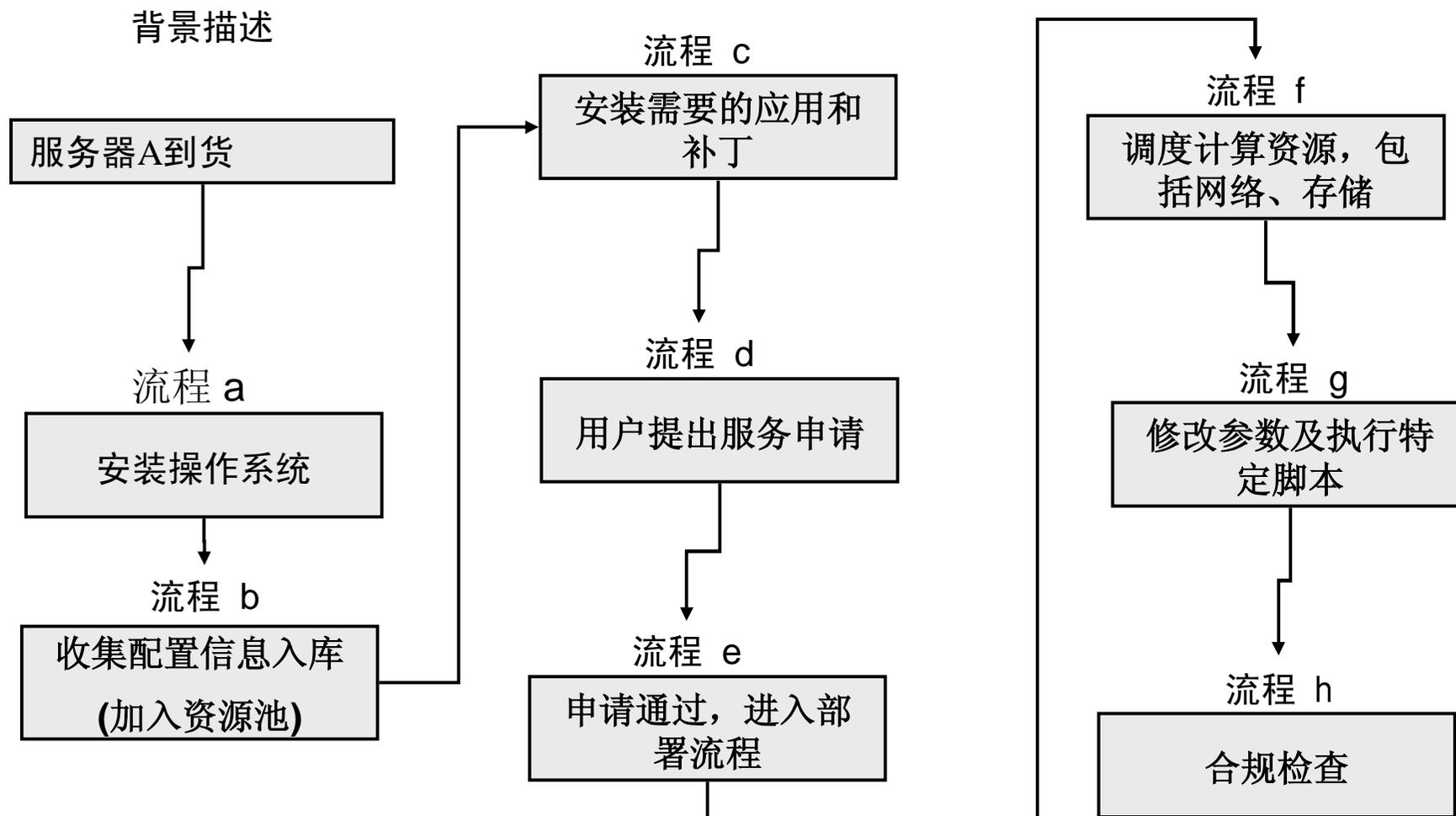
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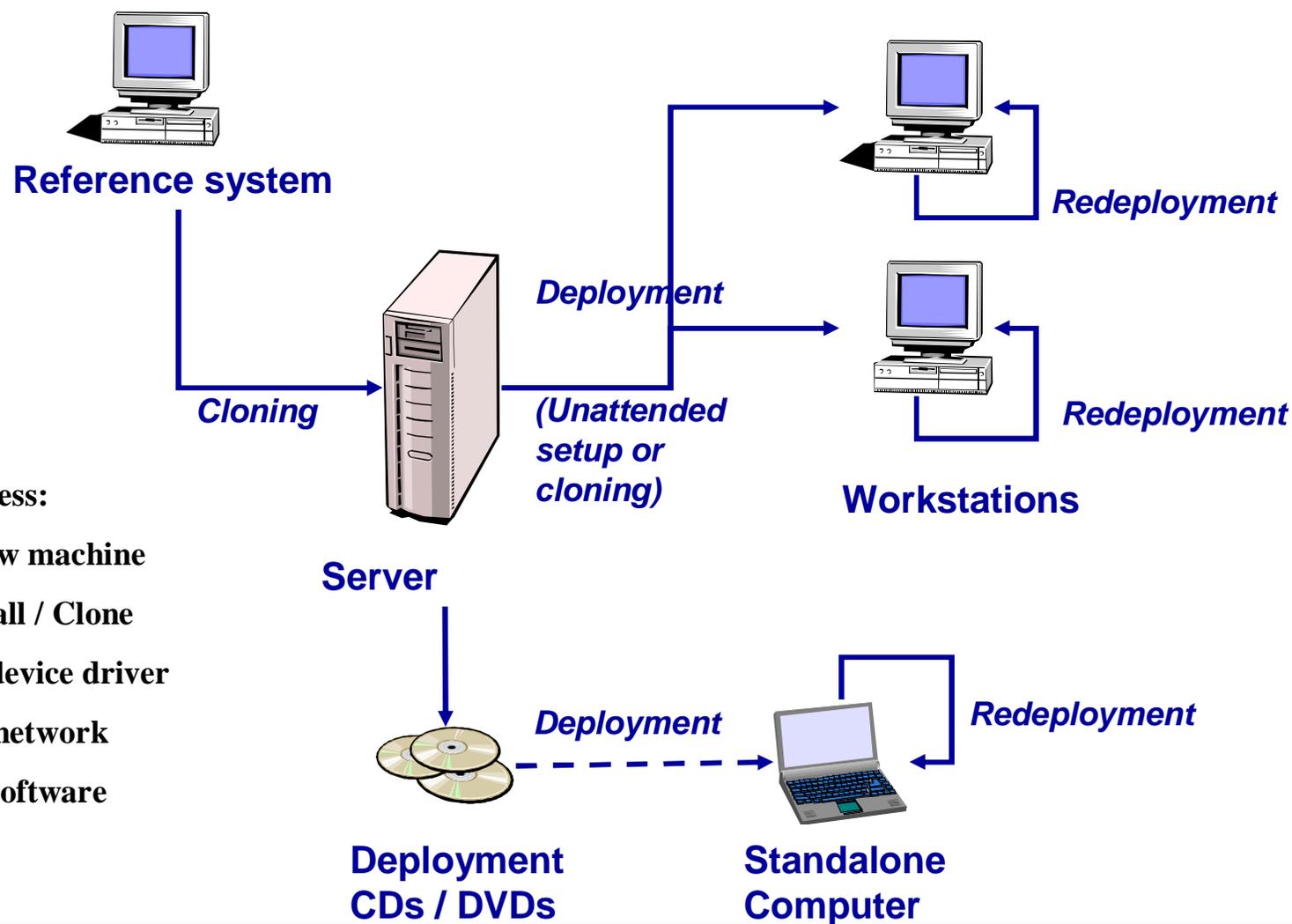
# Tivoli Provisioning Manager的逻辑架构



# 数据中心服务器部署自动化举例



# 流程a: 部署服务器操作系统



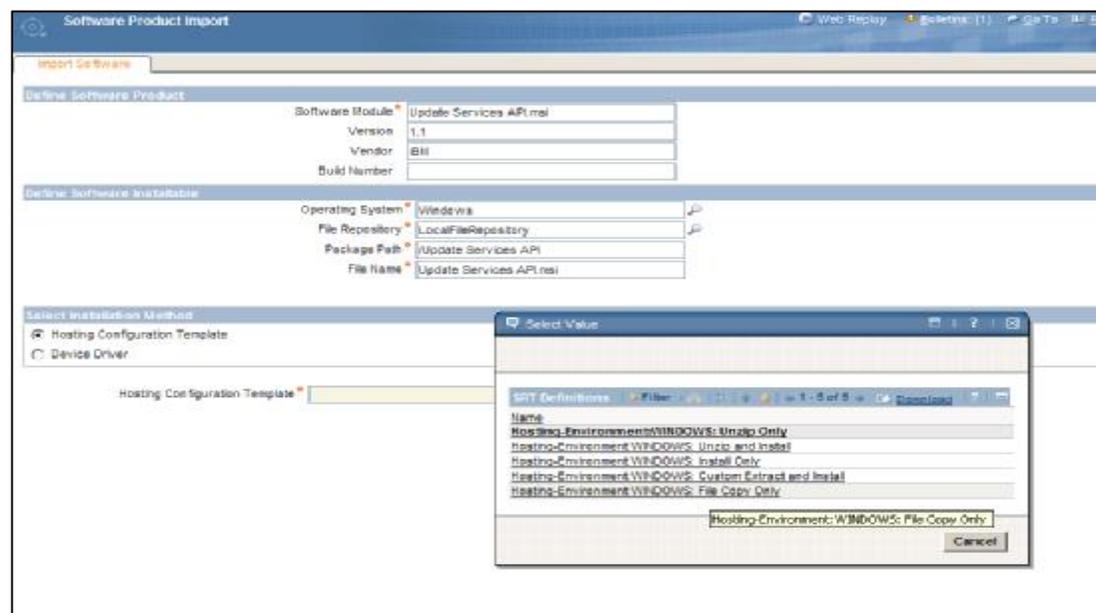
## Deploy Process:

1. Boot new machine
2. OS install / Clone
3. Install device driver
4. Config network
5. Install software
6. ...



## 流程c: 软件和补丁自动部署

- 支持多种安装对象:
  - 补丁程序
  - 数据库
  - 中间件
  - 客户应用
    - 可以和Rational集成
- 客户化定制安装流程
- 确认检查



# 流程d:用户提出服务申请

**新项目**

1. 浏览可使用的基本系统并选择日期      2. 选择服务器并且配置软件      3. 提交请求

选定的日期

起始日期 05/28/2009    结束日期 05/31/2009    期间 3 days

完成输入新项目

项目名称:     客户:

描述:

你的虚拟机

**Provisioning Computers**    Web Replay    Bulletins: (0)    Go To    Reports    Start Center    Profile    Sign Out    Help    IBM

Find:     Select Action

List    **Computer**    Hardware    Software    Compliance    Recommendations    Credentials    Workflows    Variables    Deployment Properties

Computer\*

Globally Unique Identifier

Configuration Item

**Configuration**    Last Known Status

Management IP Address	<input type="text" value="9.26.71.2"/>	Operations	Framework	<input type="text" value="Scalable Distribution Infras"/>
Operating System	<input type="text" value="Windows Server 2003 En"/>		Agent	<input type="text" value="A9176D5FAD2430838320"/>
Computer Template	<input type="text"/>			
Locale	<input type="text"/>			
<b>Details</b>		Compliance	Security	<input type="text" value="7 issues"/>
Model Type	<input type="text"/>		Software	<input type="text" value="Configuration required"/>
Architecture	<input type="text"/>		Patches	<input type="text" value="Configuration required"/>
Serial Number	<input type="text"/>			
Manufacturer	<input type="text"/>			

Provisioning Groups    Filter    1 - 1 of 1    Download    Recent Discovery Scans    Filter    Download

Provisioning Group	Description	Type	Discovery	Scan Date
TPC Servers		Computer	<input type="text"/>	<input type="text"/>

Assign To Provisioning Group    ...No rows to display...

# 流程e: 审批通过

The screenshot displays the IBM Maximo Provisioning Configuration Librarian interface. The top navigation bar includes 'Welcome, MAXADMIN' and various utility links. The main content area is divided into several sections:

- Discovery and task applications:** Includes Discovery Configurations, Patch Acquisition, and Provisioning Task Tracking.
- Data model applications:** Includes Provisioning Computers, Virtualization Management, Provisioning Groups, Software Products, Software Configuration Templates, and Patches.
- Networking applications:** A category for network-related tasks.
- Infrastructure applications:** A category for infrastructure-related tasks.
- Bulletin Board:** A table of messages with columns for Subject, Message, Post Date, Expiration Date, and Viewed?.
- My favorite reports:** A section for user-defined reports with a description field.
- Status of my recent provisioning tasks:** A table showing task names and their status (e.g., Success).
- Data model object finder:** A table listing object types and their names.

### Automation development applications

- Provisioning Workflows
- Provisioning Computers
- Provisioning Task Tracking
- Activities and Tasks
- Actual Configuration Items

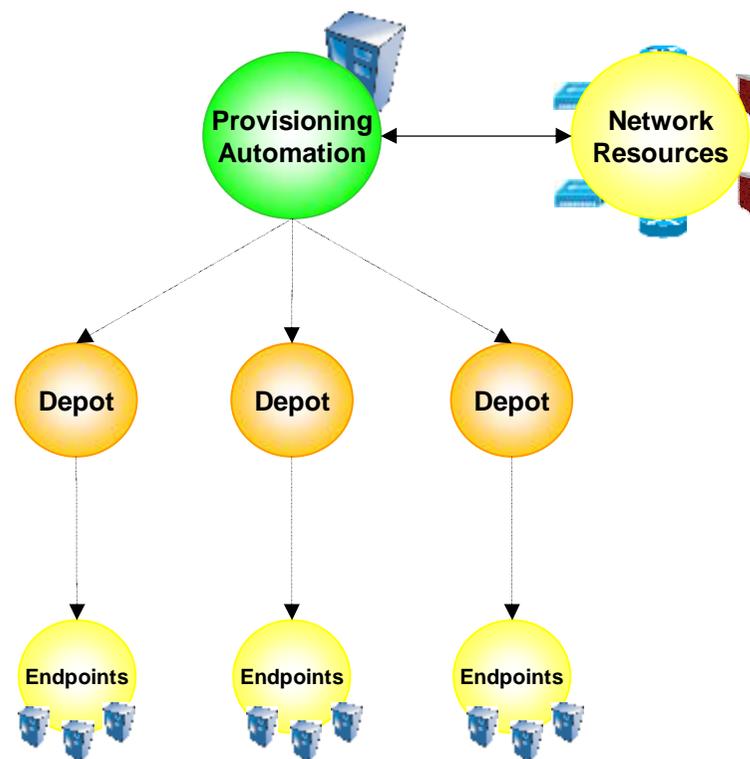


# 流程f: 部署资源

基于经过测试的流程来实现对于虚拟运行环境、中间件和应用软件的自动部署

1. 对虚拟资源进行分配
2. 执行中间件和应用的安装程序
3. 增加必要的存储并配置合适的虚拟服务器IP设置
4. 配置合适的路由器、交换机和路由器
5. 配置负载均衡器并将虚拟服务器加入生产系统

采用已有的程序和脚本及软件分发技术，实现端到端的自动化解决方案



Windows/Linux  
(RDM - ADS - Kickstart)

AIX  
(NIM/CSM)

Sun Solaris/HP-UX  
(Jumpstart - Ignite)



# 支持虚拟化系统

## Logical Operations



	Discovery	Create	Destroy	Manage						Configure
VIRTUALIZATION TECHNOLOGY - VMWARE				Start	Stop	Pause	Reboot	vMotion	Clone	Resources
VMWare Virtual Infrastructure 3	ü	ü VM	ü VM	ü	ü	ü	ü	ü	ü	ü VM



	Discovery	Create	Destroy	Manage				Configure
VIRTUALIZATION TECHNOLOGY - AIX LPAR				Start	Stop	Pause	Reboot	Resources
Power5	ü	ü LPAR	ü LPAR	ü	ü	°	ü	ü
Power4	ü	ü LPAR	ü LPAR	ü	ü	°	ü	ü



	Discovery	Create	Destroy	Manage				Configure
VIRTUALIZATION TECHNOLOGY - AIX WPAR				Start	Stop	Pause	Reboot	Resources
AIX 6.1	ü	ü	ü	ü	ü	°	ü	ü



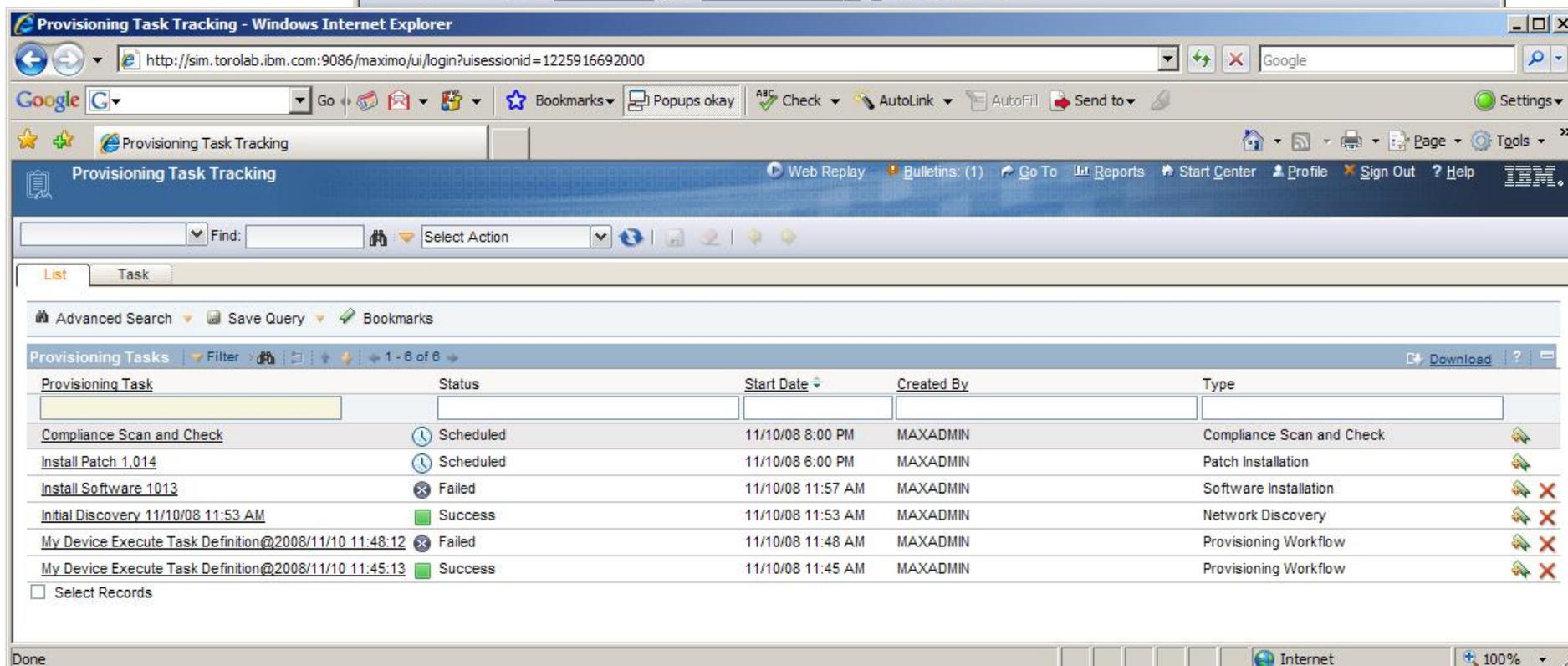
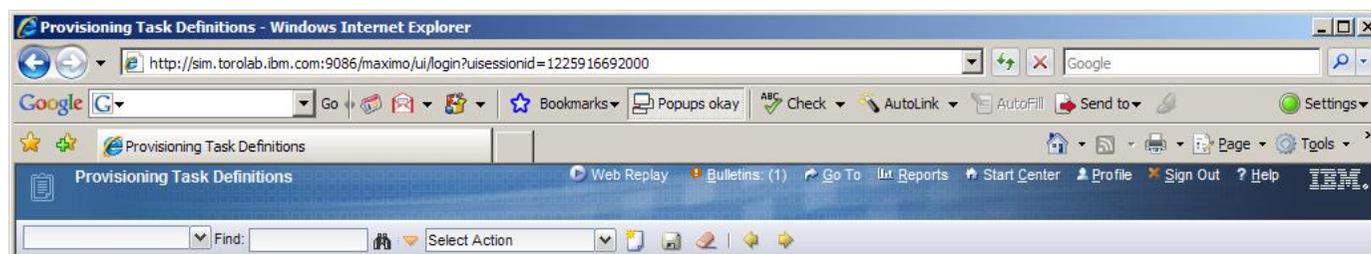
	Discovery	Create	Destroy	Manage				Configure
VIRTUALIZATION TECHNOLOGY - Solaris Zones				Start	Stop	Pause	Reboot	Resources
Solaris 10	ü	ü	ü	ü	ü	°	ü	ü



	Discovery	Create	Destroy	Manage				Configure
VIRTUALIZATION TECHNOLOGY - Xen				Start	Stop	Pause	Reboot	Resources
Linux (Redhat, SuSE ...)	ü	ü	ü	ü	ü		ü	ü



# 流程g: 修改配置、执行脚本



# 流程h: 合规检查

Provisioning Computers

Find:  Select Action

List Computer Hardware Software **Compliance** Recommendations Credentials Workflows Variables Deployment Properties

Compliance Scan

Computer: pc-0050569c7e32

Status: Unknown

Enable Automatic Approval

Compliance recommendations are not approved automatically

Run Schedule

No scheduling options were specified. Click Schedule to change these options

All Configured Checks Security Checks Software Checks Allowed Software Software Configuration Checks Notification Setup

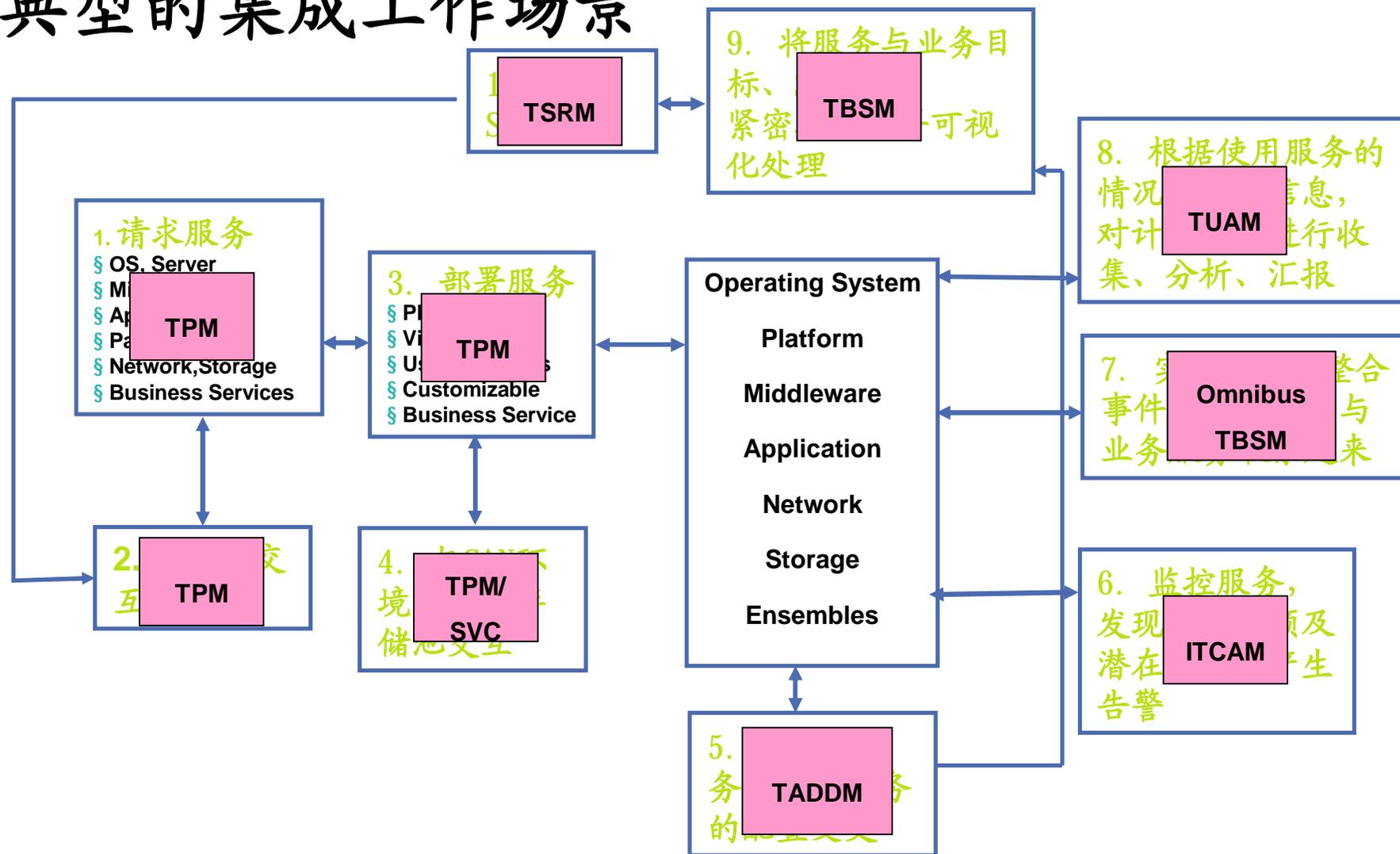
Compliance Checks Filter

Compliance Check	Type	Group	Last Scan	Compliant
...No rows to display...				

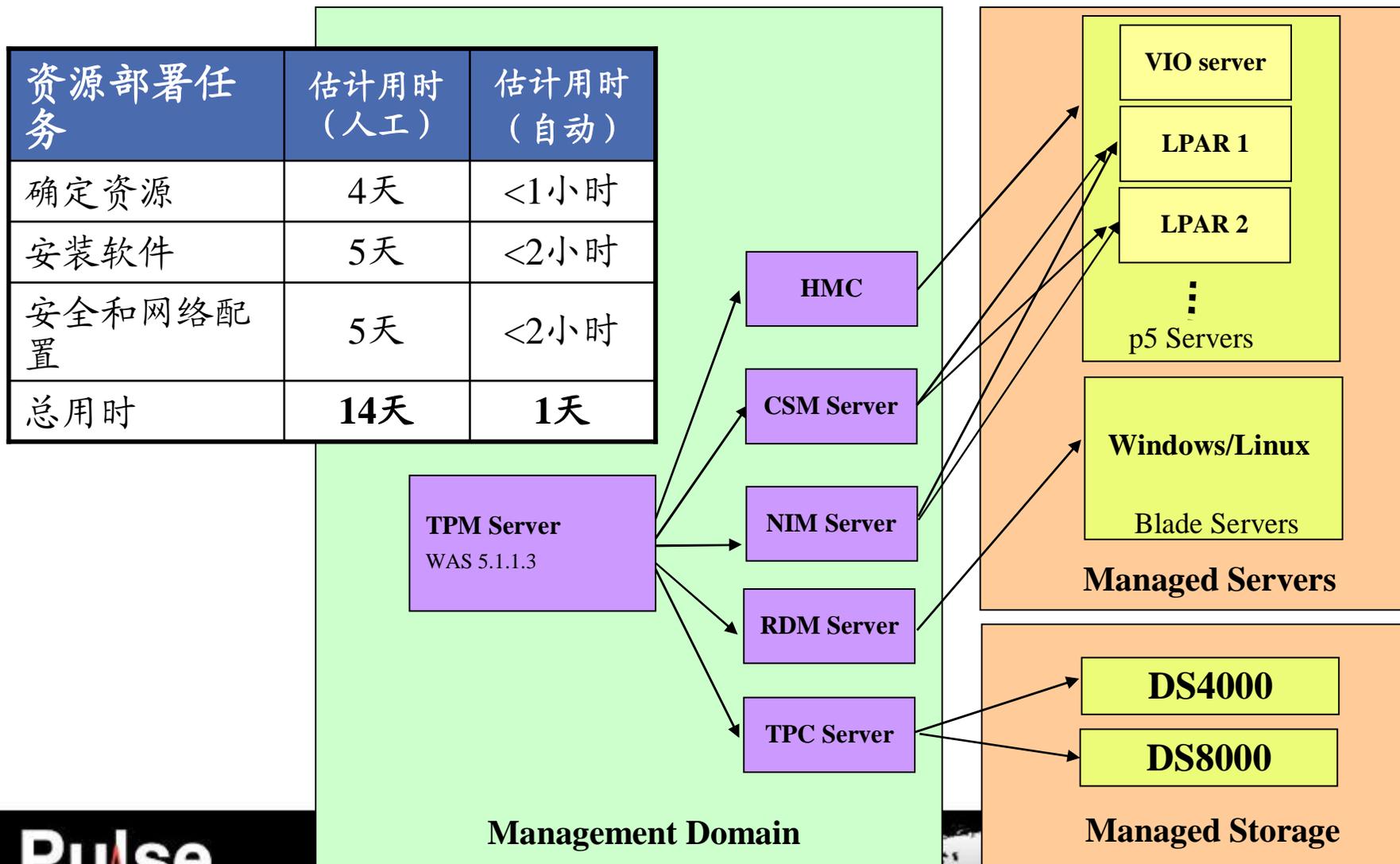
Copy Checks New Checks from Model Computer New Compliance Check



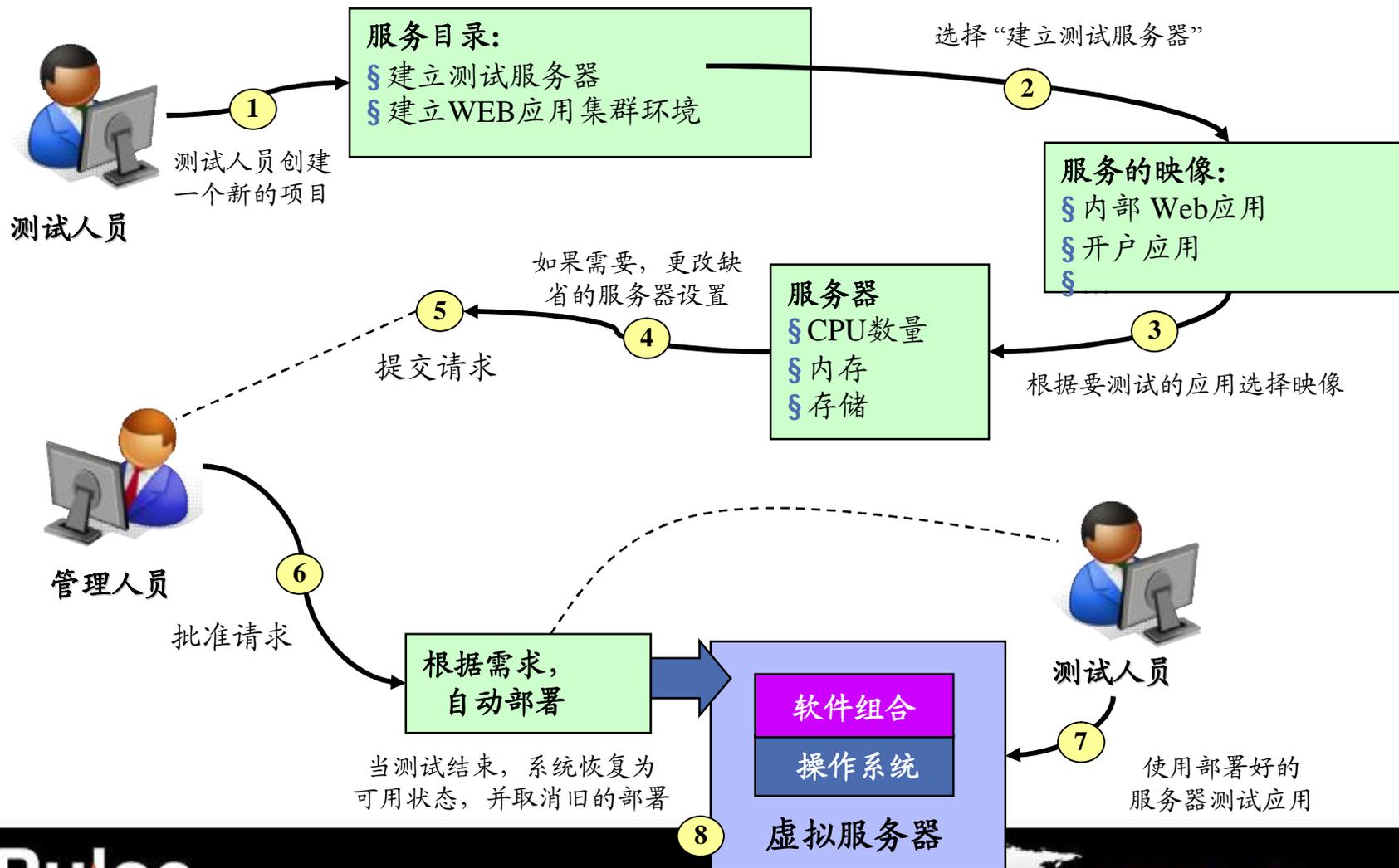
# 典型的集成工作场景



# 案例：自动化的资源部署的价值评估



# 案例：提供一个测试环境的服务



## 为何IBM?

- 唯有IBM提供完整端到端的服务管理解决方案，基于一个通用的流程自动化引擎，交付一个与Tivoli管理工具完全集成的完整流程。
- 支持云计算、虚拟系统和绿色计算，全面提升数据中心的自动化水平。
- 基于服务流程驱动，藉由流程来提升自动化管理能力。



# Thank You

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