transforming data center economics with hp

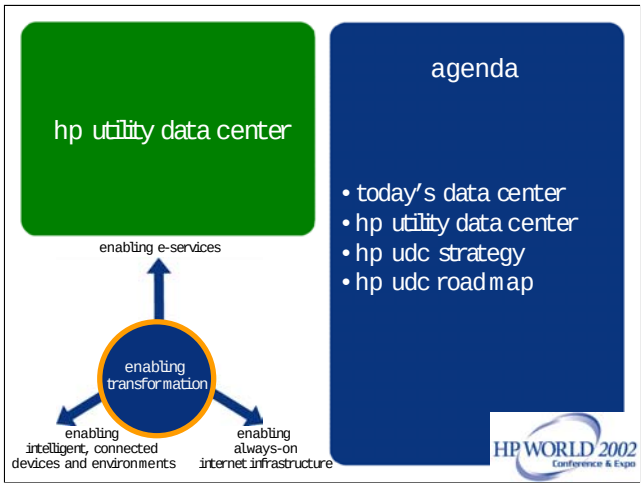
HP World # 175

david kelleher

marketing manager

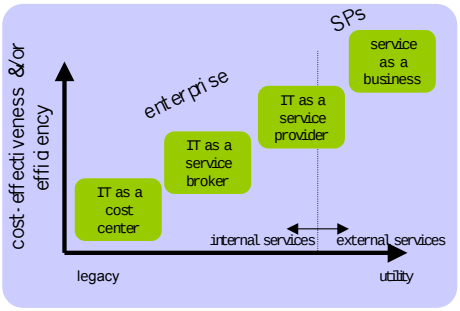
hp utility data center

sep 24 -27, 2002


hp utility data center
enabling e-services
enabling transformation
enabling intelligent, connected devices and environments
enabling always-on internet infrastructure
agenda
• today's data center
• hp utility data center
• hp udc strategy
• hp udc roadmap
HP WORLD 2002
Conference & Expo

today's challenge:

- reduce costs
- achieve better return on assets
- achieve improved operational excellence



"traditional" data center

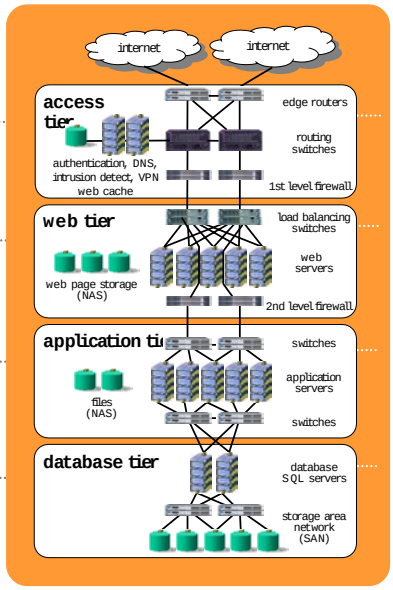
with fixed IT environments

access tier
- 1st level firewall
- authentication, DNS, intrusion detect, VPN edge routers

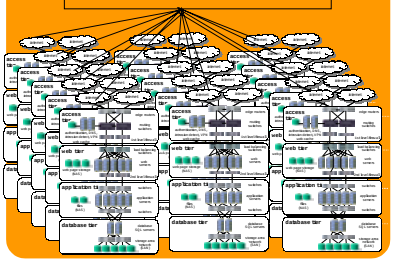
web tier
- load balancing switches
- web servers
- web page storage (NAS)
- 2nd level firewall

application tier
- application servers
- files(NAS)

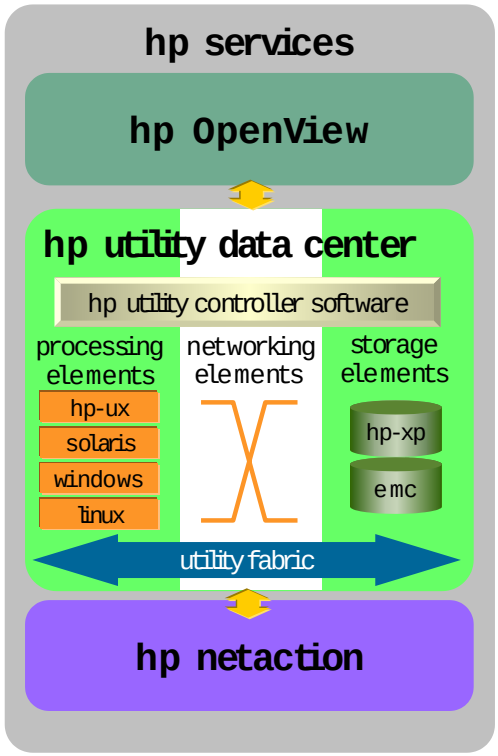
database tier
- database servers
- storage area network (SAN)



disadvantages of the "traditional" data center



- **expensive to operate**
  - manual labor intensive deployments & changes of IT environments
  - inefficient asset utilization because lack of data center wide load balancing
  - development and support of home-grown mgmt apps
- **inflexible, complex architecture**
  - 'fixed' architecture for each customer
  - highly complex overall architecture, to accommodate each customer's needs
  - difficult to scale because of evolutionary growth
- **error prone, unreliable and slow**
  - human factor in every change request
  - slow introduction of new services or infrastructures
  - no data center wide high availability
  - lacks integrated management view of all services

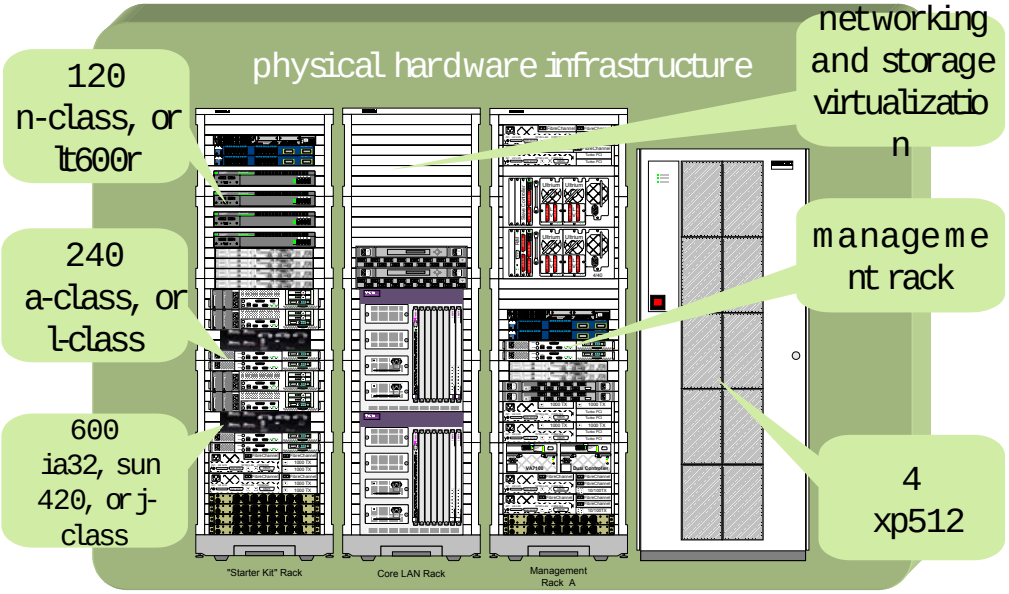


hp utility data center for customers' always-on internet infrastructure

- virtual programmable data center now & for the future
- utility controller software for dynamic service and application provisioning
- pre-certified processing, networking & storage elements as pools of shared & traded resources
- utility fabric for infrastructure provisioning on demand

HP WORLD 2002 Conference & Expo

hp utility data center
basic wire once configuration



hp utility data center building blocks

- scales from 1 to 100 service cores

		one udc service core	multiple udc service cores
number of servers/udc	n-class or lt6000r	120	12,000
	a-class or l-class	240	24,000
	ia32, sun 420 or j-class	600	60,000
	typical configuration	350	35,000
storage capacity	4 X xp512	55TB	~ 5.5PB

HP WORLD 2002 Conference & Expo

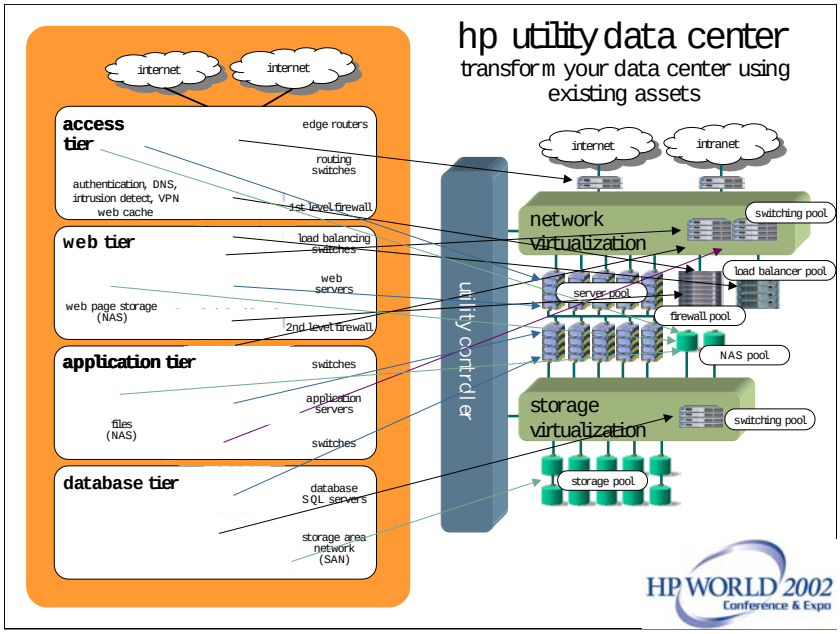
hp solves today's data center challenges

with …

hp utility data center with utility controller software

providing

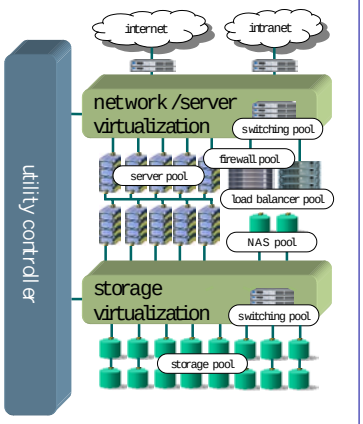
- legacy integration
- enabling support of multiple OS's
- enabling support of multi vendor equipment
- integrated custom services and support
- the most economic infrastructure possible
- protection for your current infrastructure investments

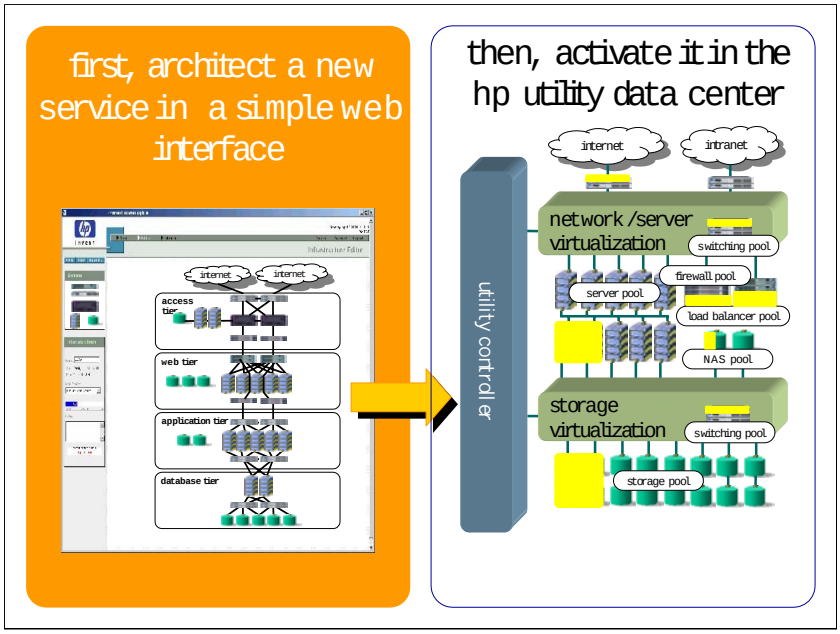

hp utility data center
transform your data center using existing assets
internet
internet
access tier
edge routers
routing switches
authentication, DNS, intrusion detect, VPN
web cache
1st level firewall
web tier
load balancing switches
web servers
web page storage (NAS)
2nd level firewall
application tier
switches
application servers
files (NAS)
switches
database tier
database SQL servers
storage area network (SAN)
utility controller
internet
intranet
network virtualization
switching pool
load balancer pool
server pool
firewall pool
NAS pool
storage virtualization
switching pool
storage pool
HP WORLD 2002
Conference & Expo

hp utility data center

is a fully integrated software and hardware solution that enables virtual provisioning of application environments to optimize asset utilization and reduce administrative staff

1. wire once
   all components are wired once to support virtual allocation of resources for the entire system
2. resource virtualization
   all networking, storage, and server components are wired once, and can be allocated and reallocated many times without having to rewire any physical components.
3. utility controller
   simple user interface allows administrators to architect new systems and activate them using available resources

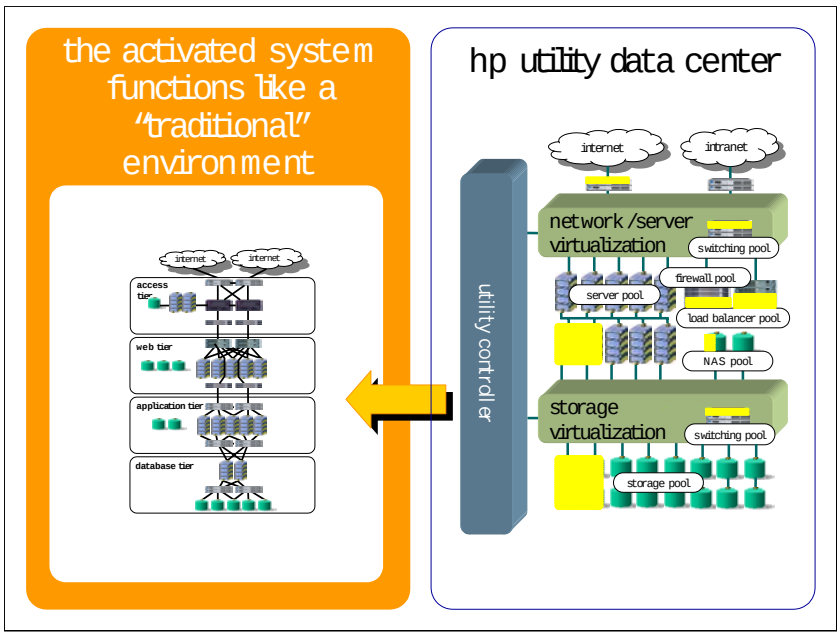




PURPOSE: This slide and the next are designed to help customers see how simple it is to architect and activate new services.

Once you have hp utility data center infrastructure in place, its very simple to deploy new services. It's also simple to allocate and reallocate resources among the various services deployed.

You start by architecting a new service in a drag and drop environment, pulling in server, storage, and networking resource; and also defining the application infrastructure to be deployed. Once the new service is completely architected, you simply push a button and activate the service in the hp utility data center.


the activated system functions like a "traditional" environment
internet
internet
access tier
web tier
application tier
database tier
hp utility data center
internet
intranet
network /server virtualization
switching pool
firewall pool
server pool
load balancer pool
NAS pool
storage virtualization
switching pool
storage pool
utility controller

advantages

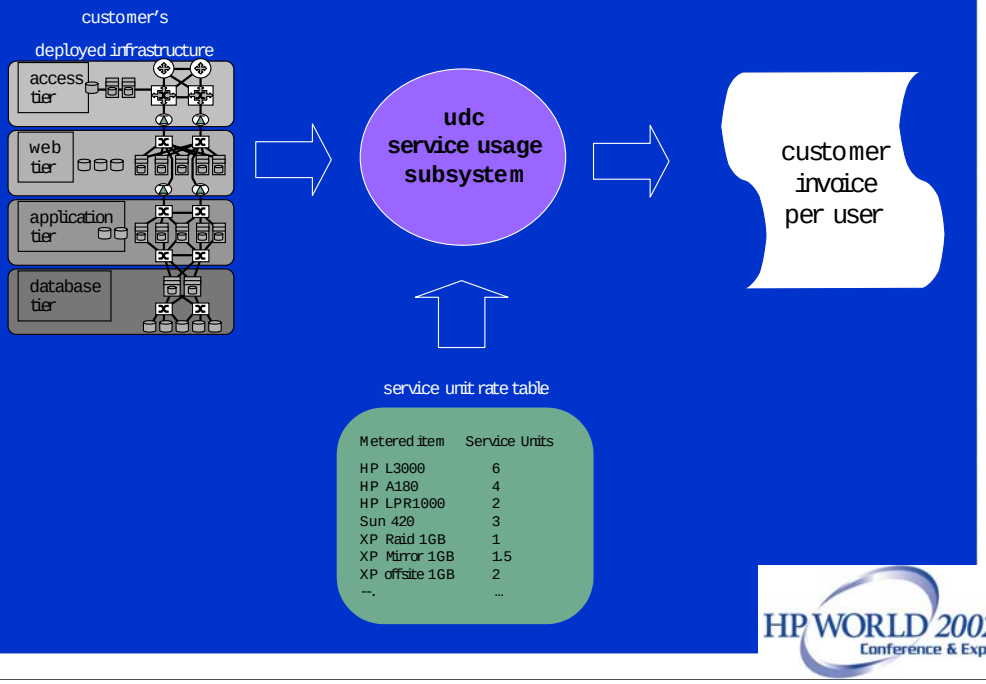
of

hp utility data center

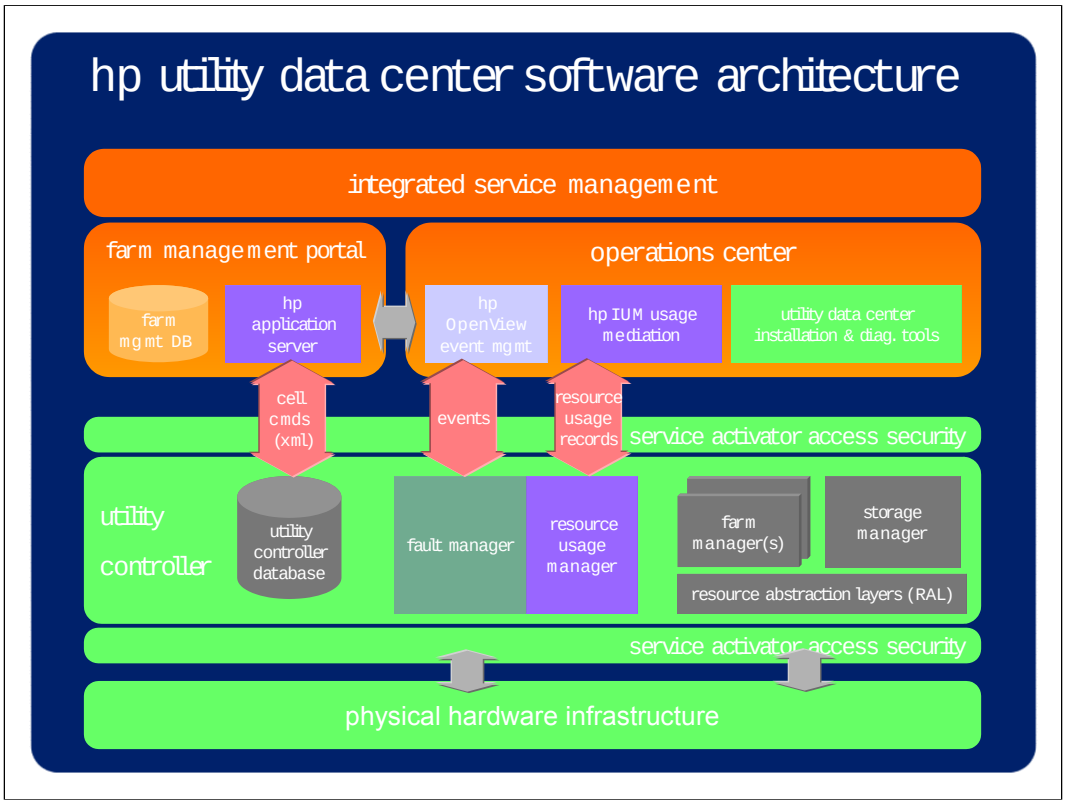
- **flexible architecture**
  - virtual architecture for each customer
  - standardized overall architecture
  - extremely scalable, "starting small growing huge"
- **highly available, higher utilization**
  - automated asset allocation and provisioning in change request
  - new services or infrastructures ignite with a few mouse clicks
  - data center wide HA, asset provisioning, tracking
- **less expensive to operate**
  - less human labor needed to operate, no labor for deployments
  - optimized asset utilization because data center wide load balancing
  - standardized solution with support

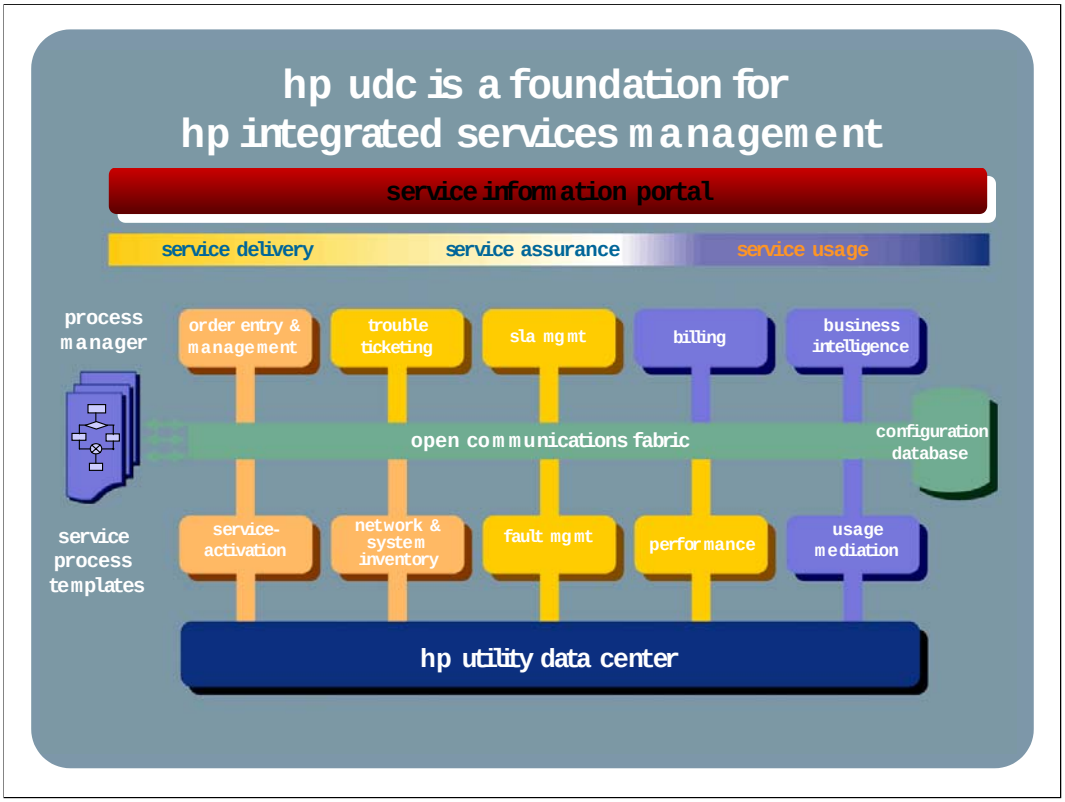
HP WORLD 2002 Conference & Expo

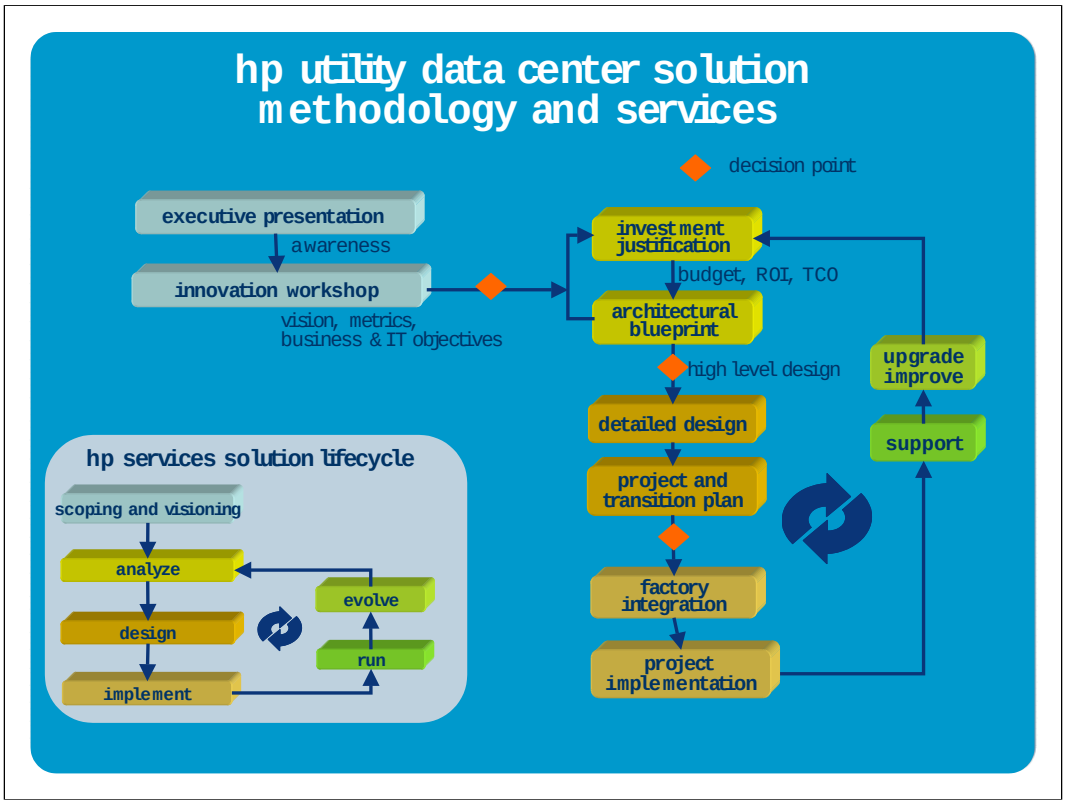
udc service usage for billing and chargeback



HP WORLD 2002 Conference & Expo

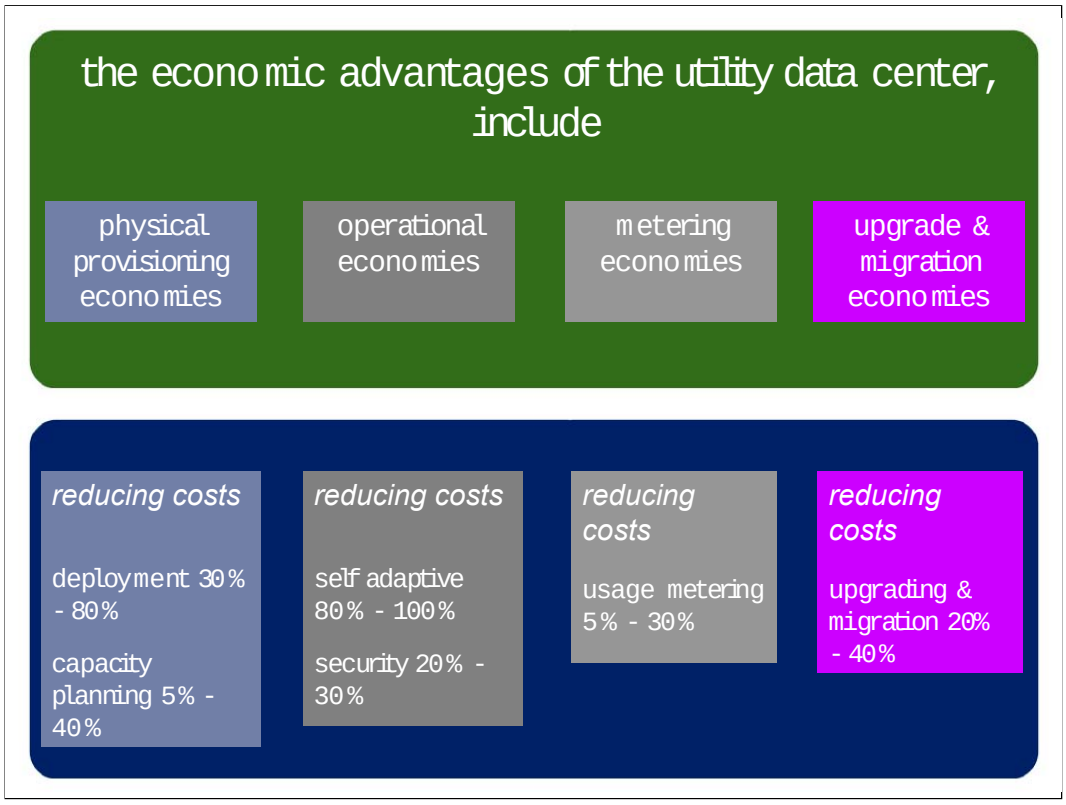

hp utility data center software architecture
integrated service management
farm management portal
farm mgmt DB
hp application server
operations center
hp OpenView event mgmt
hp IUM usage mediation
utility data center installation & diag. tools
cell cmds (xml)
events
resource usage records
service activator access security
utility controller
utility controller database
fault manager
resource usage manager
farm manager(s)
storage manager
resource abstraction layers (RAL)
service activator access security
physical hardware infrastructure

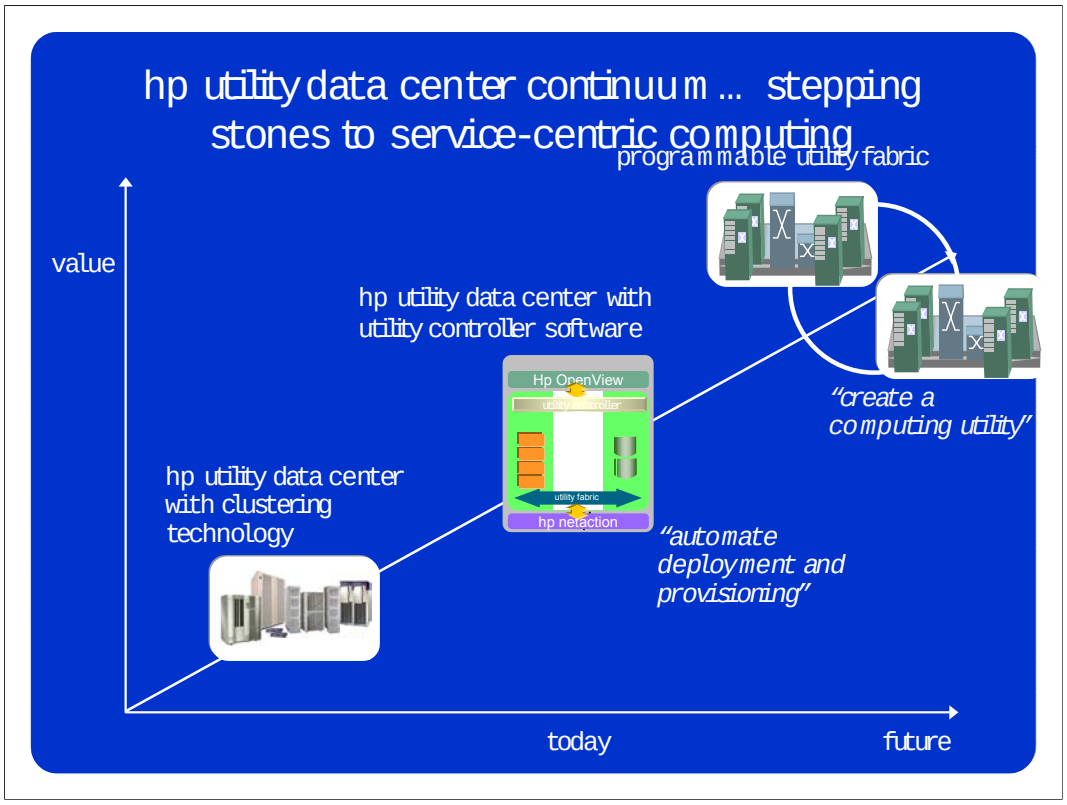

hp udc is a foundation for
hp integrated services management
service information portal
service delivery
service assurance
service usage
process manager
order entry & management
trouble ticketing
sla mgmt
billing
business intelligence
open communications fabric
configuration database
service process templates
service-activation
network & system inventory
fault mgmt
performance
usage mediation
hp utility data center


hp utility data center solution
methodology and services
decision point
executive presentation
awareness
innovation workshop
vision, metrics,
business & IT objectives
investment justification
budget, ROI, TCO
architectural blueprint
high level design
detailed design
project and transition plan
factory integration
project implementation
upgrade improve
support
hp services solution lifecycle
scoping and visioning
analyze
design
implement
evolve
run

realizing
the lowest economic
cost of ownership

- **physical provisioning economies**
  - single set of infrastructure for production, test & development
  - use what you already have
  - provision for average not peaks
- **operational economies**
  - self adaptive systems
  - significant reduction in human errors
- **metering economies**
  - out of control if can't be measured
  - integrated tool allowing you to measure, meter & collect revenues
- **upgrade & migration economies**
  - architectural readiness for next generation technologies


the economic advantages of the utility data center, include
physical provisioning economies
operational economies
metering economies
upgrade & migration economies
reducing costs
deployment 30% - 80%
capacity planning 5% - 40%
reducing costs
self adaptive 80% - 100%
security 20% - 30%
reducing costs
usage metering 5% - 30%
reducing costs
upgrading & migration 20% - 40%

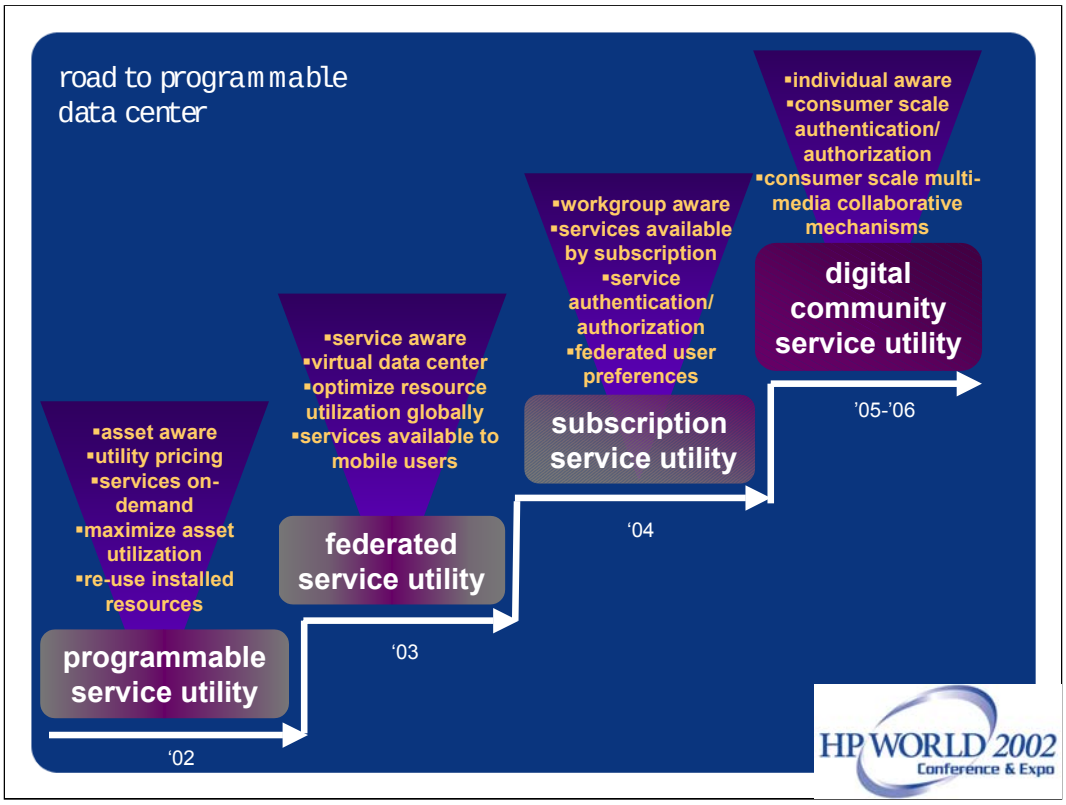


So where do we begin…

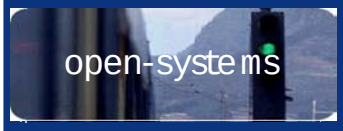
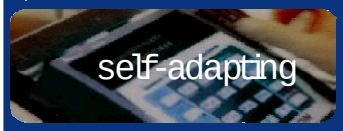
We have evolved through many different waves of technological evolution. We have seen the emergence of batch computing, to distributed computing, to networked personal computing & then internet computing. We believe strongly that the next big wave of computing will be service centric computing & that the underlying technology will be based upon utility computing. Today HP has a strong offering based upon a solution called the HP utility data center with mission critical services that you can see on the bottom right of this slide. We have brought together many hardware & software components along with key mission critical services to solve clearly defined customer needs. It is the collection of these components that has helped us some of the most demanding data center problems of today for both enterprise & service provider customers.

The things that we have learned wit these solutions have helped us to develop & create the latest solution, today's announcement, the HP UDC with Utility Controller Software. Besides the incredible technology in the form of pre-packaged racks & the UC SW both unique to this solution, we continue to offer our customers the optimum level of support based upon their individual needs. It is possible to have mission critical support services but more importantly we offer custoomized support plans for our customers at every point of this continuum.

Beyond today's announcement is true utility computing. Our ability to connect multiple UDC's together & to virtualize the massive amount of resources available with innovative metering technologies & now you can see that from every aspect of the solutions value this is unique & adding tremendous value for real world customer problems.


road to programmable data center
▪asset aware
▪utility pricing
▪services on-demand
▪maximize asset utilization
▪re-use installed resources
programmable service utility
'02
▪service aware
▪virtual data center
▪optimize resource utilization globally
▪services available to mobile users
federated service utility
'03
▪workgroup aware
▪services available by subscription
▪service authentication/ authorization
▪federated user preferences
subscription service utility
'04
▪individual aware
▪consumer scale authentication/ authorization
▪consumer scale multi-media collaborative mechanisms
digital community service utility
'05-'06
HP WORLD 2002
Conference & Expo

programmable data center attributes

 open-systems	**flexible** *extensive support for industry leaders & legacy environments*	▪ 3rd party components interfaces ▪ business process integration ▪ Multi-OS
 self-adapting	**built-in intelligence** *minimum human intervention*	▪ self-healing ▪ Responsive to varying service demands ▪ User location awareness
 proactive	**automate operations management** *optimization & planning*	▪ Asset selection ▪ service delivery ▪ Shared resource utilization
 utility	**pay-as-you-go** *built-in utility models*	▪ Assets usage ▪ pay by service, group or user ▪ License management/reporting
 policy driven	**extensible automation** *Sentient behaviors*	▪ Closed loop control behaviors from Policy hierarchies ▪ Infrastructure, Services & Communities knowledge

hp utility data center expertise

assessment consulting service
architecting consulting service

provisioning software
management software
metering software
networking devices
3rd party components
racks

network/storage hardware

ia 32 server hardware

unix server hardware

wiring hw installation service
sw installation &
training service

support

engaging with customers

- single part number, easy to order
- pre-configured, drop on the data center floor
- single customized support contract, customer support available

With the new Utility Data Center, OpenView and Netaction products we have brought to market, HP is enabling our customers to meet the challenges of reducing costs, achieving a better return on assets and achieving improved operational efficiencies.

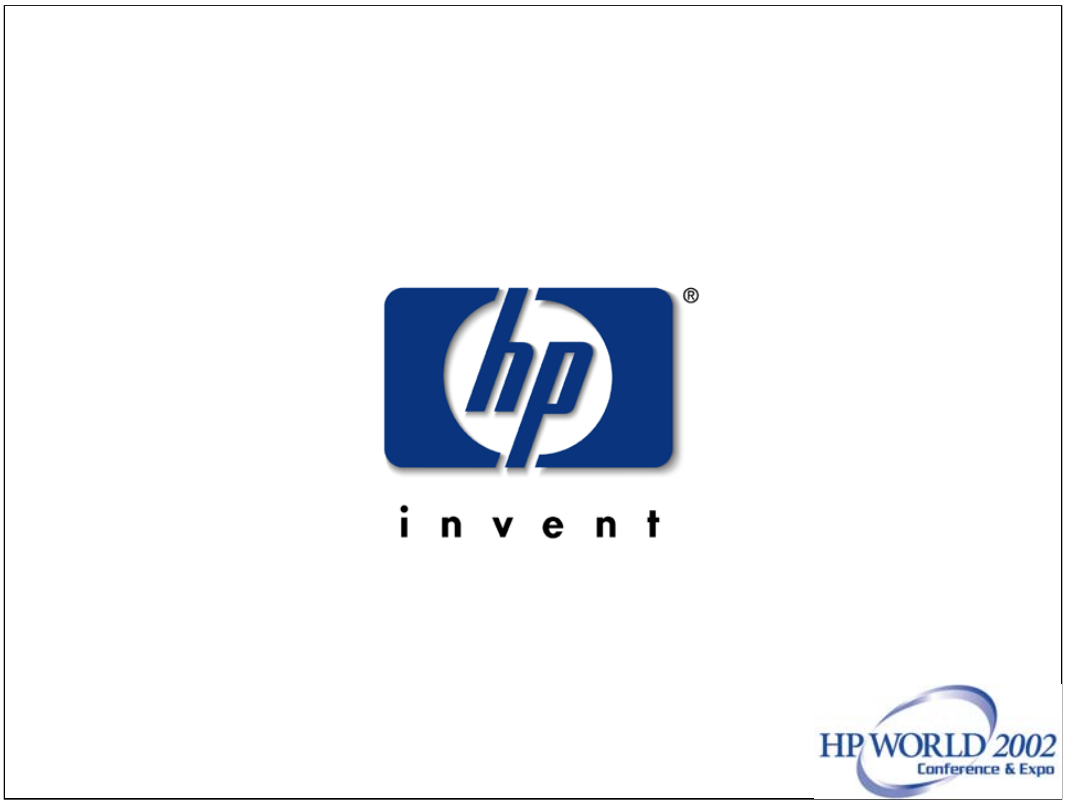
The HP Utility Data Center delivers a virtual data center that delivers a dramatic reduction in data center cost of ownership.

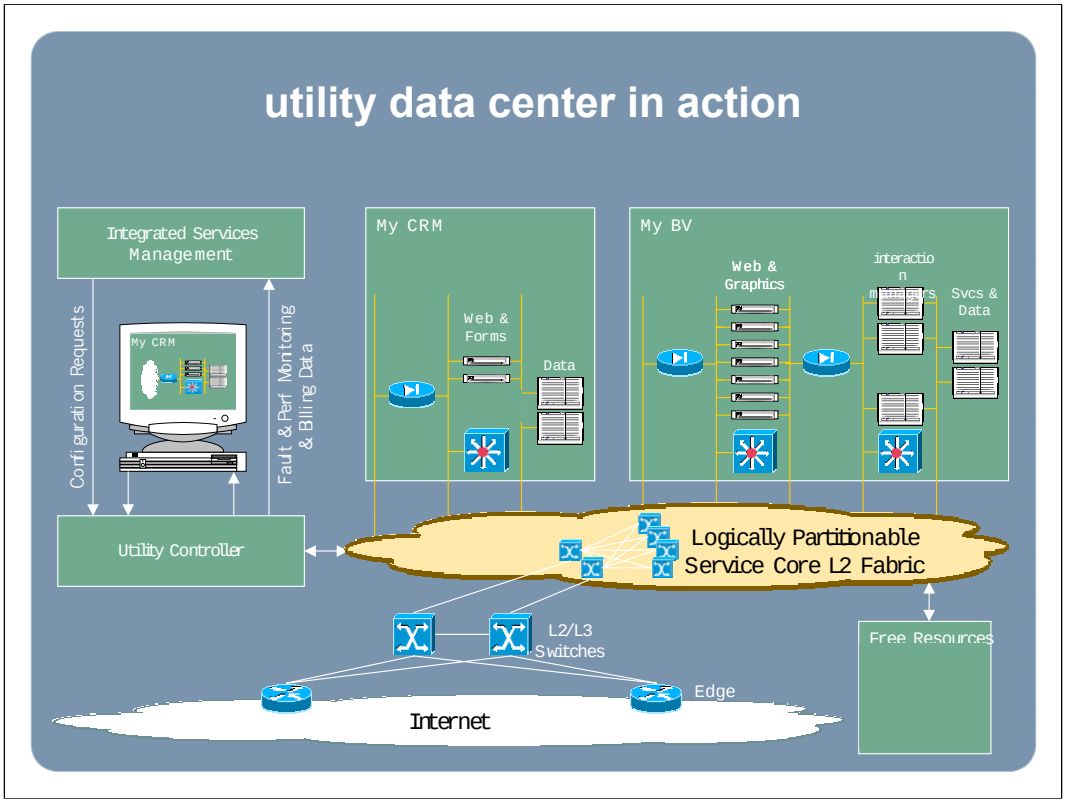
HP OpenView integrated service assurance products maximize the value of IT investments while HP OpenView Internet Usage manager products deliver usage based information for billing, chargebacks and business intelligence

HP Netaction solutions provide:

- a high-performance web services infrastructure platform that enables companies to create and deploy J2EE and .NET compliant web services. and
- A carrier-grade platform for the development and delivery of new revenue generating voice services along with a set of pre-integrated solutions enabling telecommunication operators and service providers to offer highly scalable, differentiated services to their customers through our HP Opencall suite.

Elaborate on your specific solution area.....


invent
HP WORLD 2002
Conference & Expo


utility data center in action
Integrated Services Management
Configuration Requests
Fault & Perf Monitoring & Billing Data
My CRM
Utility Controller
My CRM
Web & Forms
Data
My BV
Web & Graphics
Svcs & Data
Logically Partitionable Service Core L2 Fabric
L2/L3 Switches
Free Resources
Edge
Internet