IBM

IBM Systems and Technology Group
Network Transformation Solutions
for Telecom

v 1.0

Session Objectives

- **Define Network Transformation and it's impact on the telecom industry**

- **Describe the benefits and value of IBM's Network Transformation strategy and solutions for the telecom industry**

- **Identify key opportunities for IBM eServer and TotalStorage in Network Transformation**

- **Effectively position IBM eServer and TotalStorage platforms against competitors**

- **Articulate IBM's Network Transformation value propositions with key telecom executives**

Agenda

- **Overview of Network Transformation and the impact on the global telecom industry**

- **IBM Network Transformation strategy, solution components and partners**

- **Selling strategy for Network Transformation**

- **Competitive Positioning**

- **Call to Action**

Telecom Industry
Next Generation Network
Overview

We have identified Six Solution Focus Areas where IBM can both deliver significant value and earn significant revenues

Focus of today's session

Telecom Industry Specific

Network Transformation	Service Delivery Platforms & Portals	OSS/BSS Billing	Call Center Transformation

Cross Industry

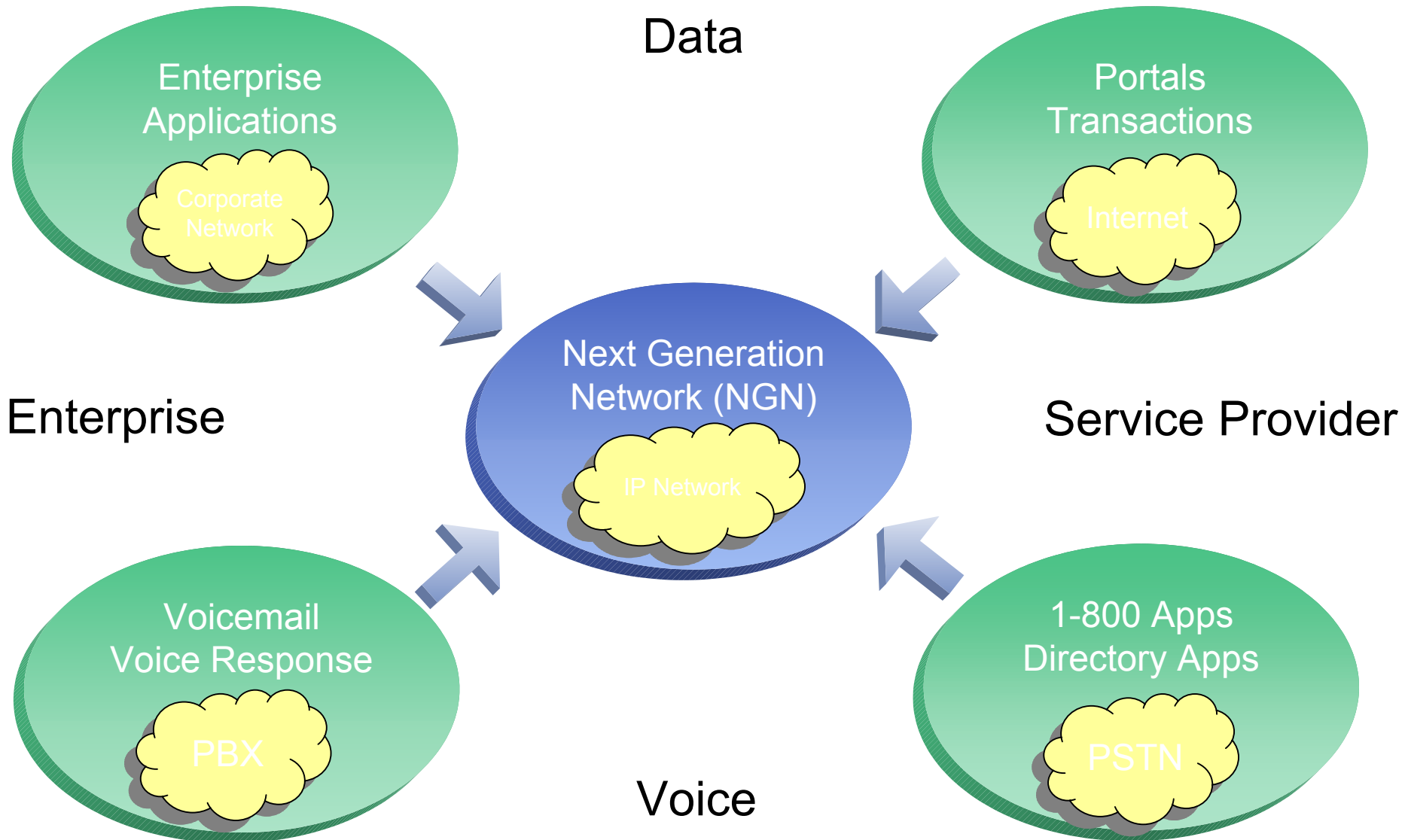| Enterprise Applications	On Demand Operating Env.

Network Transformation provides the largest growth opportunity within the Telecom Industry

Developing New Markets and Products 11%	Acquiring and Managing Customers 33%	Developing and Providing Network Services 43%	Enterprise Management 13%

	Marketing & NPD	Sales	Customer Care	Billing and Collections	Order Fulfillment	Service Assurance	Network Development	HR	IT	Finance & Accounting	Procurement
Opex	11%	5%	12%	16%	8%	7%	28%	5%	3%	3%	2%
Capex	4%	1%	1%	2%	3%	2%	83%	1%	1%	1%	1%
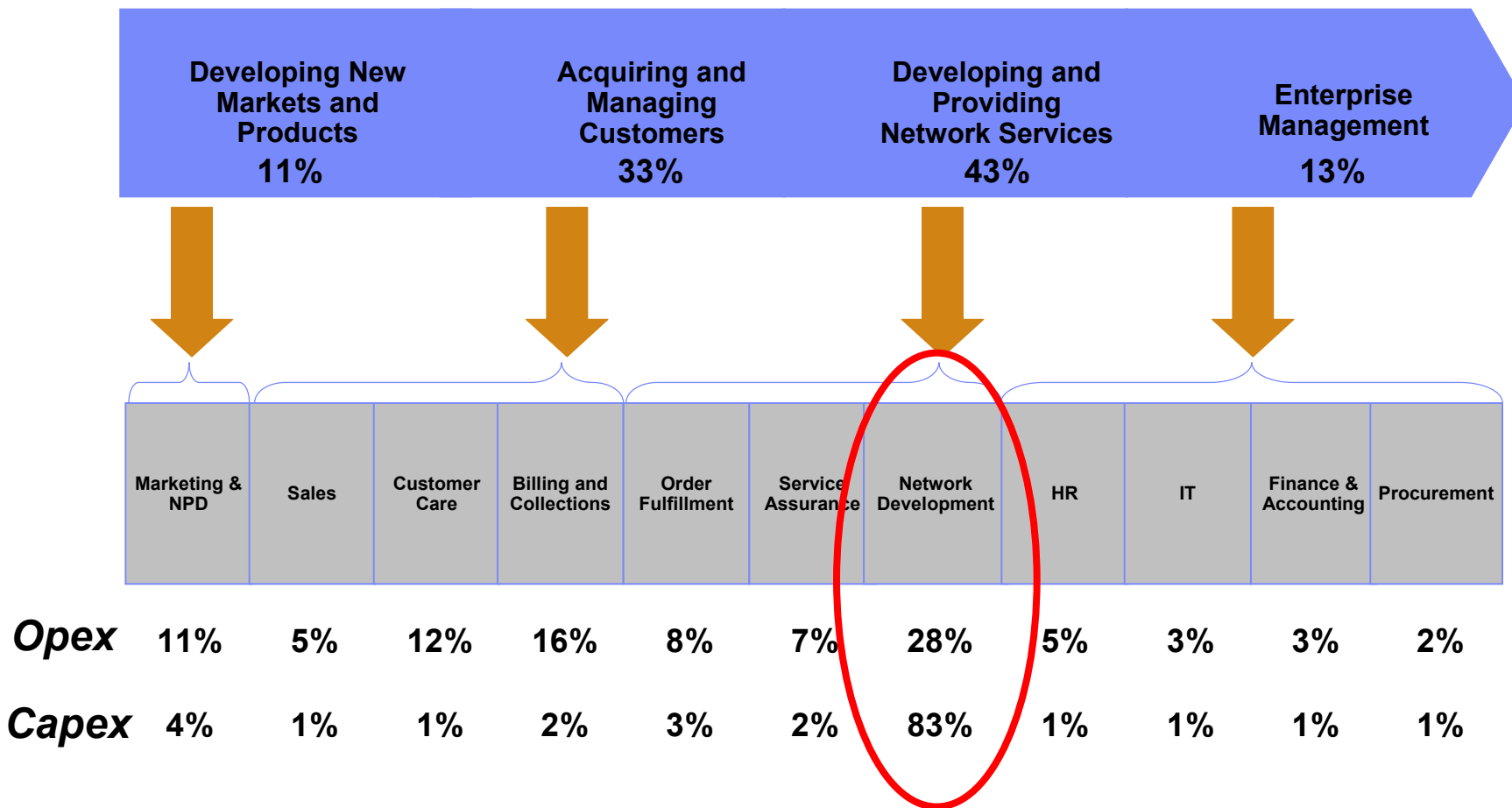
Source: FCC ARMIS Database; IBM Institute for Business Value (IBV) Analysis (based on interviews with leading global fixed carriers).

Economics

The need to converge Legacy Architectures is driving transformation

Data

Enterprise Applications

Corporate Network

Portals Transactions

Internet

Enterprise

Next Generation Network (NGN)

IP Network

Service Provider

Voicemail Voice Response

PBX

1-800 Apps Directory Apps

PSTN

Voice

NGN divides resources into Network & IT systems

Control
- Class 4 Softswitches
    - Class 5 Softswitches
- Media Gateway Controllers
- Access Gateway Controllers

Network

Transport
- Optical WAN and MAN routers/switches
- Access Gateways & Residential Gateways
- Public Wireless LAN
- 3G Wireless Infrastructure
- Broadband xDSL & Cable
- **Edge Content Delivery and Caching**

Services (& service enablars)
- Feature Servers, Application Servers, for:
    - Conferencing, Unified Messaging, Instant Messaging,
    - Follow-me services,
    - Web Applications, Digital Media
    - IP-Centrex
    - IP Call Centers

IT

OSS/BSS
- Network Management
- Trouble Management
- NG/OSS Transition
- OSS/NGOSS Consolidation
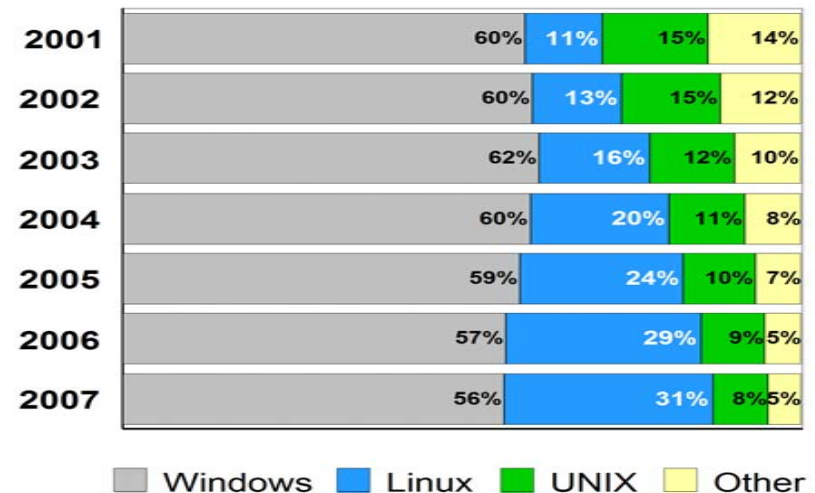- Service Assurance
- Service Creation Platforms

Network convergence is accelerating the adoption of standards based technology

- **Convergence of Data & Voice, Network & Enterprise driving transition to NGN**

- **SP's face increasing costs of operation and complexity introducing change in network infrastructure**

- **Industry going through radical transformation to open standards and COTS**

- **Linux enables the transition to open standards and components while reducing costs and complexity**

August 2003: DH Brown, Linux has now clearly become a mainstream operating environment...

IBM is leveraging unique leadership in Enterprise, Standards and Linux to deliver best in class open standards based NGN solutions …...

Server Share by OS Shipments

Year	Windows	Linux	UNIX	Other
2001	60%	11%	15%	14%
2002	60%	13%	15%	12%
2003	62%	16%	12%	10%
2004	60%	20%	11%	8%
2005	59%	24%	10%	7%
2006	57%	29%	9%	5%
2007	56%	31%	8%	5%

Source: IDC Server forecaster September 2003

Business issues driving network transformation

Offer innovative new products and services to grow revenue
- Increase revenue, ARPU and APPU
- Meet competitive threats
- Increase profitability of new services
- Increase number of subscribers and services per subscriber

Be more responsive to customers
- Improve customer experience
- Offer an enhanced product portfolio
- Implement innovative and flexible business models

Make better use of resources to bring products and services to market faster
- Develop more compelling business cases
- Reduce barriers to delivering new services
- Ability to market test new services

Barriers hindering network transformation

Offer innovative new products and services to grow revenue
- Increase revenue, ARPU and APPU
- Meet competitive threats
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- Increase number of subscribers and services per subscriber

Be more responsive to customers
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- Ability to market test new services

BARRIERS

- Proprietary technology
- Complex infrastructures
- Slow application development
- Limited internal resources

IBM Next Generation Network Solution Components

IBM Systems Mapped to Telecom Solution Focus Areas

	Enterprise Applications	Call Center Transformation	OSS/BSS	Service Delivery Platforms / Portals	Network Transformation	IT Simplification / on demand Operating Environment
iSeries	Medium	Low	Low			
pSeries	High	High	High	High	Medium	Medium
xSeries	Medium			Medium	High	High
zSeries	High	High	Medium	Low		Medium
Storage	☙DS6000/8000 ☙3590 Ent .Tape	☙DS6000/8000 ☙3590 Ent. Tape	☙DSS 6000/8000 ☙3590 Ent. Tape	☙DS4000 Series ☙LTO Ultrium	☙DS4000 Series ☙LTO Ultrium	All Storage incl Virtualization

What IBM brings to Network Transformation

- Open Integrated Platform for Telecommunications (IP-T)
- Carrier Grade Open Framework (CGOF)
- Service Provider Delivery Environment (SPDE)

- IBM Middleware Solutions for Telecom Next Generation Network Services

- BladeCenter – Telecom
- NEBs Servers and Storage

- Telecom Teams
- Service Providers
- NEP/ISVs
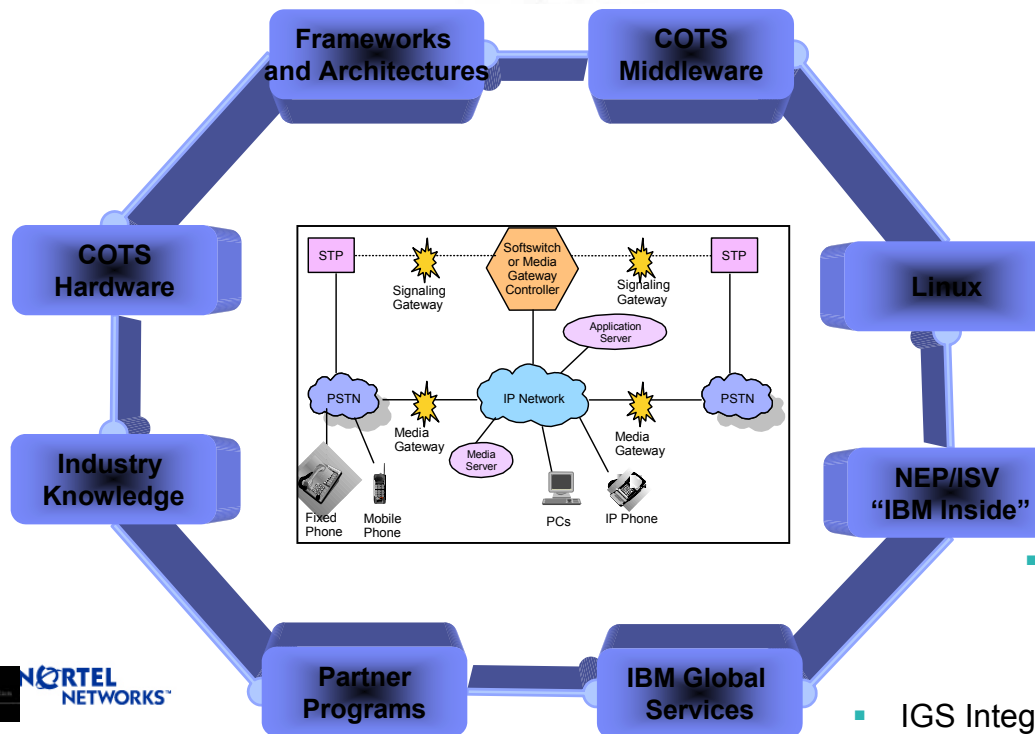
- Linux for Service Provider Lab (LSPL)
- Linux Technology Center (LTC)

Frameworks and Architectures

COTS Middleware

COTS Hardware

Linux

Industry Knowledge

NEP/ISV "IBM Inside"

Partner Programs

IBM Global Services

- IBM Inside – Hardware, Software & Services

- IGS Integration and Deployment
- OnDemand Capabilities
- PoC and Lab Testing

- Telecommunications Industry Partner Network
- Network Business Partners (NBPs)

SIEMENS
Lucent Technologies
Bell Labs Innovations
AVAYA
NORTEL NETWORKS
ERICSSON
ALCATEL
HUAWEI

ON DEMAND BUSINESS™

IBM Linux Leadership

IBM Middleware/Linux Integration Expertise

Linux Integration Center

w3.ibm.com/linux/lic

DeveloperWorks Linux Zone

Linux application development tools and assistance

Worldwide Porting Centers

Porting Expertise

28.5% CAGR

$9 billion+ by 2007

90% of CIOs believe in Linux

Over 50,000 developers

Linux Partner Ecosystem

Broad Range of Linux ISVs

Linux Technology Center (LTC)

Open Standards Expertise

(250-300)

100% of major NEPs are now working in Linux

Integrated Platform for Telecom

Integrated Carrier Grade Linux Platforms

Linux Service Provider Lab (LSPL)

Network Testing and Benchmark Expertise

IBM NGN Partners

Control
- Softswitches – Siemens, Avaya, Cisco, Cirpack, Nortel, Huawei, Lucent, Motorola
- Media Gateways – Snowshore, Siemens, Cisco, Lucent, Avaya
- Signaling Gateways – Lucent, Ulticom, Siemens, Motorola, Nortel
- Access Gateways – Ulticom, Cisco
- Session Border Control – Nextone, Acme, Packets

Network

Transport
- Access Gateways – Ulticom, Cisco

Services (& service enablars)
- IP Centrex – Sylantro
- Conferencing – Ubiquity, IP Unity, Nortel
- Unified Messaging – IBM Mess. Center, Lucent, Cisco, Avaya, Openwave
- Contact Centers – Genesys, Cisco, Nortel, Avaya
- IP VPN – Cisco (data only)
- Voice Mail – Openwave, Lucent, Avaya
- Calling Card – jNETX
- Mobility Applications – Openwave, Nokia
- Voice Portal – VoiceGenie
- Announcements – IBM WebSphere Voice Services, Nortel

IT

OSS/BSS
- Network Management
- Trouble Management
- NG/OSS Transition
- OSS/NGOSS Consolidation
- Service Assurance
- Service Creation Platforms

IBM eServer Telecom Server Family Portfolio

✓ Built on open industry standards

✓ Enables On-Demand Applications

✓ Spans enterprise and core network environments

✓ Seamless compatibility using Linux

✓ Volume economics drive lower costs

✓ Strong Foundation for Carrier Grade Applications

**OpenPower
High-Performance,
Tuned for Linux**

**BladeCenter T
High Reliability,
NEBs-3
Dense Computing
Platform
Extended to Core
Network**

**BladeCenter
High Reliability,
Modular
Dense Computing
Platform**

**x343 2U
High Availability
NEBs-3 node for
Telco Network
Applications**

**x336 1U
Rack dense
2W**

**X306 1U
Rack Dense 1W**

▪ *Applications may be developed and deployed across IBM's line of Telco Servers*

► *flexible application development*

► *efficient application deployment*

► *faster time to market and lower cost for application development*

IBM Telecom eServer NGN Positioning

Control

x343 2U

BladeCenter Family

OpenPower

Network

Transport

x343 2U

BladeCenter Family

OpenPower

Services (& service enablers)

X306

x336 1U

x343 2U

BladeCenter Family

OpenPower

IT

OSS/BSS

X306

x336 1U

x343 2U

BladeCenter Family

OpenPower

IBM eServer Telecom Portfolio Positioning for NGN

Solution	Platform	Key Attributes	Positioning	Advantages

x343

NEBS/ETSI COMPLIANT

2-way Xeon Processor

High Availability Node For Network Applications

IPT

COTS – Lower TCO

Open, integrated CGOF compliant hardware, software, services offering

BladeCenter Family
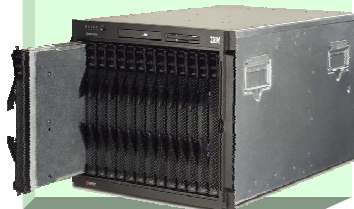
Modular Blade Arch.

Redundancy

Linux or CGL

Standard or NEBs

Highly reliable, modular dense computing platform

Data Center or Central Office Implementation

Reduced Infrastructure Costs

Reduced Complexity

Highly Available & Reliable

Reduced time-to-market

OpenPower

Tuned for Linux

High-Performance

Advanced Virtualization

Data Center or Edge of Network

IBM

- **NGN Solutions need both Central Office NEB's capable equipment and Telco Data Center equipment**
- **BladeCenter Delivers Compatible Solution Enablement for both environments**

Telco Data Center

- **Lower TCO – COTS, Linux, Partner Applications/Solutions**
- **Reliability – Redundancy, Hot Swappability**
- **Reduced time-to-market – Linux, Partner Applications/Solutions**
- **Reduced Complexity – Scalability**
- **Efficiency - Autonomics**

Telco Data Center Applications
- **CRM**
- **Call Centers/Operators**
- **Subscriber Management**
- **Service Provisioning**
- **Billing Support**

B u s i n e s s

Proven, open NGN technology

O p e r a t i o n s

N e t w o r k

Central Office

- **Lower TCO – COTS, Linux, Partner Applications/Solutions**
- **Reliability – HA Architecture, 5-9's**
- **Reduced time-to-market – Linux, Partner Applications/Solutions**
- **Reduced Complexity – Scalability**
- **Efficiency - Autonomics**

Highly Available Architecture
- No Single Point of Failure
- Redundant Power
- Redundant Blowers
- Redundant Switches
- Redundant Backplane wiring
- Redundant Management Modules
- Hot plug replacement of all elements
- EZ action handles for minimum offline time for upgrades/swapping

BladeCenter options for NGN implementations

	HS20 2-way Xeon	HS40 4-way Xeon	JS20 POWER-based
Features	• Intel Xeon DP processors • EM64T mid-2004 • Mainstream rack-dense blade server	• Intel Xeon MP processors • Delivers bladed 4-way SMP capability • Supports Windows and Linux	• Two PowerPC 970 processors • 64-bit performance at IA32 price • Performance for VMX deep computing clusters
Target Apps	• Core Network -VoIP • Edge of Network - Gateways • Value Add – Unified Messaging, Centrex • Management – Systems Mgrmt., Provisioning	• Core Network • Value Add Apps	• 64-bit HPC • Entry level AIX with NEBS (800/local number lookup)

Common Chassis Infrastructure

Linux on POWER technology — performance and reliability for an on demand world

Linux

- Fastest-growing operating environment

- Provides unmatched versatility

- A cost-effective, security-rich environment, powerful enough to run business-critical applications

- Hundreds of applications available

POWER

- A unifying architecture featuring the most innovative chip available

- Exceptional reliability, availability and serviceability — and the scalability you need to power your business

- IBM Virtualization Engine enables consistent management of heterogeneous environments

Telecom Value

- **Flexible - rapidly address market shifts and competitive threats**

- **Resilient - to maximize application and network uptime and availability**

- **Cost-Effective – lower acquisition cost and TCO**

- **Efficient – autonomic and management features reduce intervention by system mgt. resources**

IBM ON Demand Storage Requirements of Telecom Companies
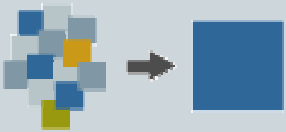
Simplify the underlying infrastructure and its management to help lower cost and complexity while increasing your ability to respond to changing demands.
- Telecoms gain a unified and strategic view of their data.
- Telecoms become more efficient.
- Telecoms change to be more responsive to new requirements in the market.
- Telecoms deploy new services to the market faster and at lower costs.
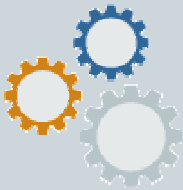
Help assure **business continuity,** security and data durability.
- Telecoms reduce business risk.
- Telecoms increase the resilience and protection of data.
- Telecoms provide more reliable and secure services.
- Telecoms stay competitive and maintain market readiness.

Efficiently manage information **throughout its lifecycle,** relative to its value.
- Telecoms match limited resources to the information business relevance.
- Telecoms gain access to information as required, regardless of where it resides.
- Telecoms develop a policy-based approach from creation to disposal.

IBM TotalStorage

New Capabilities breaking down barriers

Capability

- **Virtualization**
- **Common management tools based on open standards**
- **Common disk architecture leveraging server / storage convergence**
- **Modular design, improved density and smaller footprint**
- **Common autonomic capabilities**

Value

- **Improved resource utilization**
- **Ease of management across storage platforms**
- **Price/performance and affordable, optimized disaster recovery solutions**
- **Lower operational costs, easy scaling and upgradeability**
- **Reliability, availability**

INFRASTRUCTURE SIMPLIFICATION

Business Continuity

IBM

Information LifeCycle Management
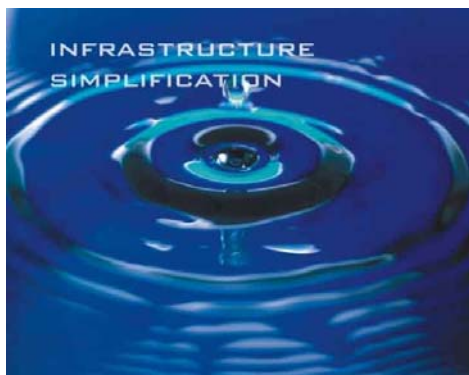
DS4300 Overview
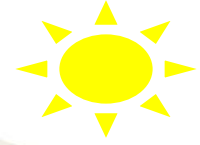
NEBs Compliant

- **Dual hot-swappable RAID controllers**
- **Four FC host connections - two per controller**
- **Supporting dual redundant FC disk loops (2 loops)**
- **1 Partition, with support for up to 16 storage partitions**
- **RAID levels 0,1, 3, 5, and 10**
- **512MB cache (256MB per controller), Write cache mirroring**
- **14 disk drive bays - up to 2TB**
- **Redundant hot-swappable power, fans, and dual AC line cords**
- **Attaches up to three EXP700s -Up to 56 FC disks - 8.2TBs**
- **Performance - 45,500 IOPS / 400 MB/s**
- **FlashCopy option**
- **AC Power**

DS4300 received NEBS 3 certification for Telecom Networks in June 2004

http://www.byteandswitch.com/document.asp?doc_id=54992

Entry Level Storage Solutions for BladeCenter and xSeries Servers

IBM TotalStorage DS 400

- 14-Drive, 2Gb FC to U320 SCSI subsystem
- Single and dual RAID controller options
- Scalable to 12TB (40 drives w/ 2 EXP400)
- Common software, RAID code and drive carrier

IBM TotalStorage DS 300

- 14-Drive, 1Gbe iSCSI to U320 SCSI subsystem
- Single and dual RAID controller options
- Scalable to 4.2TB (14 drives)
- Common software, RAID code and drive carrier

Storage Management Strategies in Telecommunications - Resources

**Storage Virtualization:
The success story
of British Telecom Conferencing**

- **http://www.larstan.com/IBMLand/IBM_Storage_Telecom.htm**
- **http://www.larstan.com/IBMLand/Telecomm/BT_Infoseries_Final(spreads).pdf**

TotalStorage addresses telecom challenges

- **Improve client loyalty and responsiveness**
  - High availability features improve network resilience and reliability
  - Scalability provides ideal platform for consolidation
  - Virtual sharing and workload management improves efficiency of IT environment

- **Reduce complexity through simplification**
  - Simplification and virtual sharing improve visibility of data for accurate analytics

  - Large portfolio of available, world class ISV applications to replace legacy applications to improve time to market
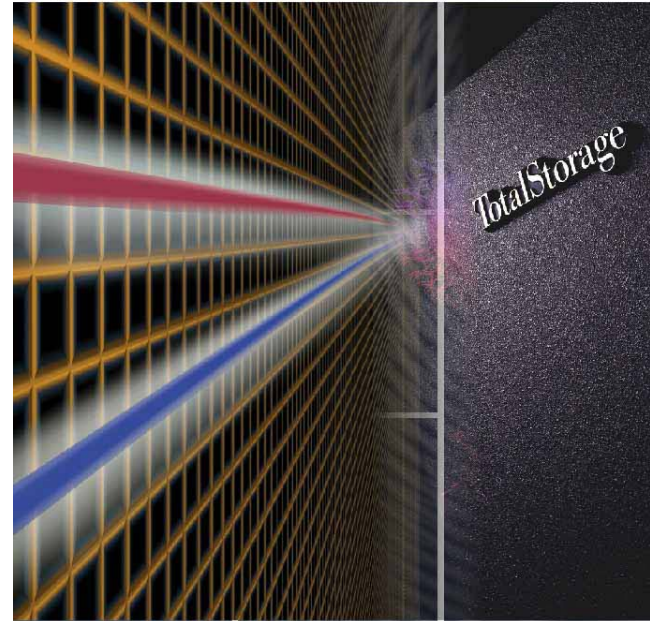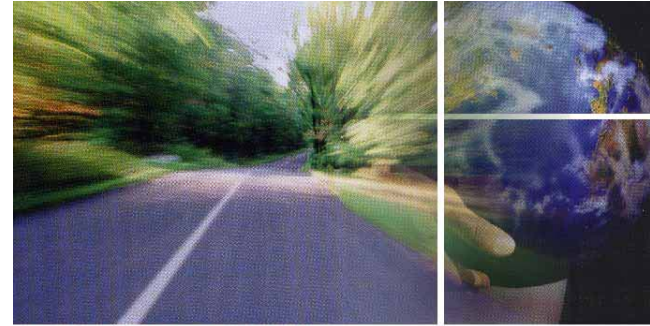
TotalStorage addresses telecom challenges

- **Reduce costs**
  - High performance, scalable platform for consolidation
  - Powerful, centralized system management tools
  - Virtual sharing and workload management
  - Investment protection

- **Improve resource utilization and security**
  - Autonomics and Virtualization
  - System management tools; centralized management
  - Secure logical partitioning
  - Large portfolio of world class ISV applications

- **Integrate and align business processes with IT and Network strategies - On demand, Infrastructure Simplification**
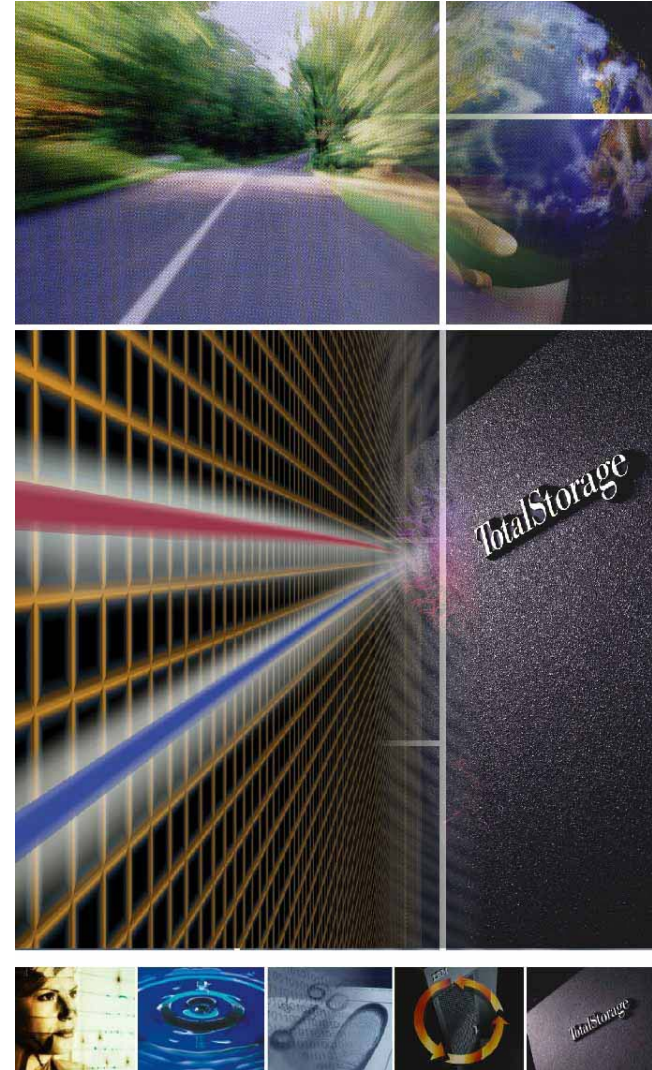
IBM eServer Integrated Platform for Telecommunications (IP-T)

Carrier Grade Open Framework – defines the categories of COTS components implementing open standards

Carrier Grade Open Framework

| Solution Specific Applications |
| Application Services |
| Middleware |
| Platform Services |
| Operating System |
| Modular Hardware Services |
| Hardware |

…accelerating the transformation to Next Generations Network Infrastructures
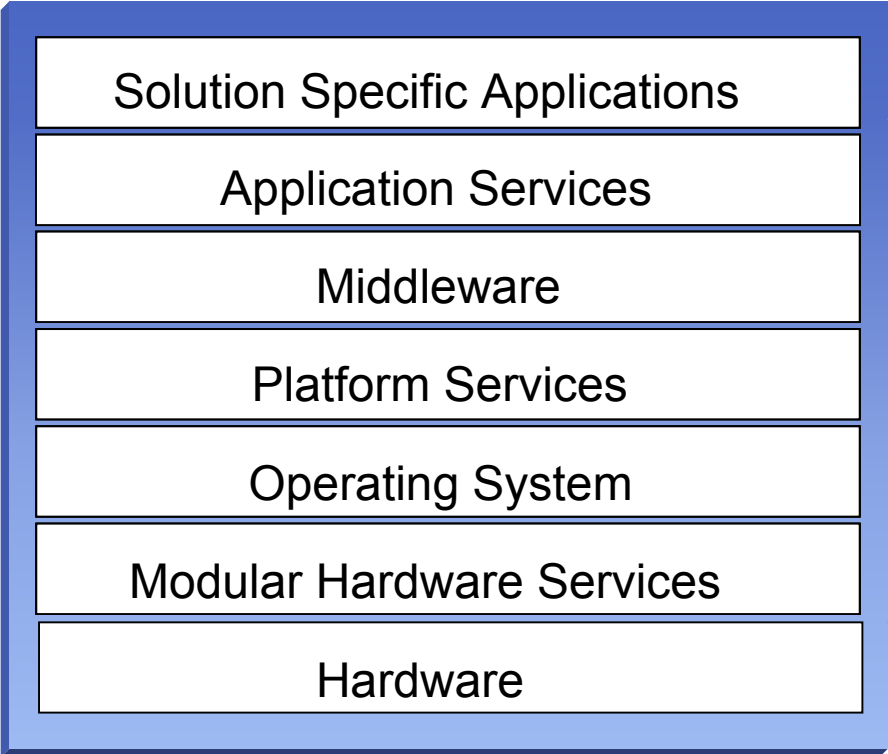
Network Applications
- VOIP   * UM
- Conferencing   * Wireless
- Application Servers

Network Control
- Media Server   *Media GW
- Softswitch
- Session Border Controller

Network Infrastructure
- Broadband access
- Ethernet switching

Leveraging the Value of Carrier Grade Linux for NGN

Excellent Price/Performance

Horizontal & vertical Scalability

Enhanced Security

Superior Reliability

Open Standards

Availability of New Technologies

Growing Systems Management Offerings

Linux Adoption and Growth

Skills Availability

Broad Application Availability

Scalability
- <= 4way SMP performance & scalability validation
- > 4way SMP performance & scalability validation

Threading
- POSIX
- M:N

Device Driver Hardening
- 10/100 Mbps Ethernet
- Gigabit Ethernet
- ATM
- Fiber Channel
- SCSI
- ServeRaid

New Protocols
- SCTP, IPv6, IPSEC, IKE...   SS7

Availability & Serviceability
- Dynamic Probes
- Kernel debugger
- Trace tool
- Crash dump
- Online/concurrent diagnostics
- Event logging/analysis/alerting
- NIC failover with fast detection

OS Robustness
- Robustness/reliability test

Systems Management
- Single point of control
- Operating system consoles
- Power on/off
- Distributed Shell
- Cluster install
- Resource Monitoring

File System
- Journaled File System

HA for Telecomm
- HA Manager

HA for Telecommunications
- Fast detection, Rapid recovery, standards

Flexibility
- Virtualization, logical Partitioning, security, dynamic resource allocation, in-memory DB

IBM's Carrier Grade Open Framework (CGOF) defines the network transformation platform based on open industry standards

Application Delivery Environment

Users | Devices | Network Delivery
- Mobile
- Broad Band
- Core IP
- PSTN
- other

Services Brokerage
- Network Services
- Presentation Services
- B2B Gateway
- Subscription Services

User Services
- Provisioned Assets (internal)
- Business Applications
- Location Services
- other
- Commerce
- Messaging
- Connected (external) Content and Applications

SPDE Framework

Carrier Application
- Application Services
- Carrier Middleware
- High Availability Services
- Carrier-Grade Linux Services
- Carrier Framework
- Carrier Hardware

Value Proposition

- ✓ **Faster time-to-value by enabling ISVs/NEPs to focus on their core value-added applications and not the underlying hardware/software infrastructure;**

- ✓ **Access to a broad range of third party COTS + CGL application offerings – shorten new service launch time**

IP-T is designed to allow Telecoms to focus on delivering new, value added services

IBM eServer Integrated Platform for Telecommunications

Telecom Applications

Services

- **System Mgmt**
- **HA Middleware (planned 1H05)**
- **CG Linux**

BladeCenter **BladeCenter T**

Total Storage

IP-T

✓ *Provides an open, integrated approach streamlining the complexity of Network Delivery*

✓ *Faster time-to-market by certifying key foundation components, enabling NEP/ISV to focus on their core value-added applications.*

✓ *Can help NEPs reduce Capital and Operating expenses:*

- *CapEx: Savings associated with Linux-based O.S., Intel-based servers*
- *OpEx: Savings associated with lower integration and skills-development costs.*
- *True TCO value over competitors*

✓ *Provides demonstrable proof of concept of an integrated CGL framework*

IBM eServer Integrated Platform for Telecommunications (IP-T)

IBM eServer Integrated Platform for Telecommunications (IP-T)

Services & Support

Preloaded

IBM Director 4.11 – Remote Deployment Mgr

High Availability Middleware (planned 1H05)

**Carrier Grade Linux - RedHat RHEL 3.0
(SuSE SLES 8 planned 3Q04)**

Storage (IBM TotalStorage solution - FASTt, NAS)

eServer BCT, BC (xSeries RMS planned 1H05)

- **Single integrated offering: a) <u>CGOF compliant</u> b) <u>Preloaded Linux</u>, b) <u>Pre-defined set of components</u>, c) <u>Growing roadmap of components</u>, d) <u>Tested and certified product</u> e) <u>Easier fulfillment</u> f) <u>Less risk</u>**

- **Services & Support include customization, installation, maintenance, extended warranty**

IBM Integrated Platform for Telecommunications Extended Offering…

extending IP-T offering with IBM and third parties Middleware, a Development Tool Kit, an Installer and IGS Services Engagement Portfolio to deliver a complete NGN integration platform.
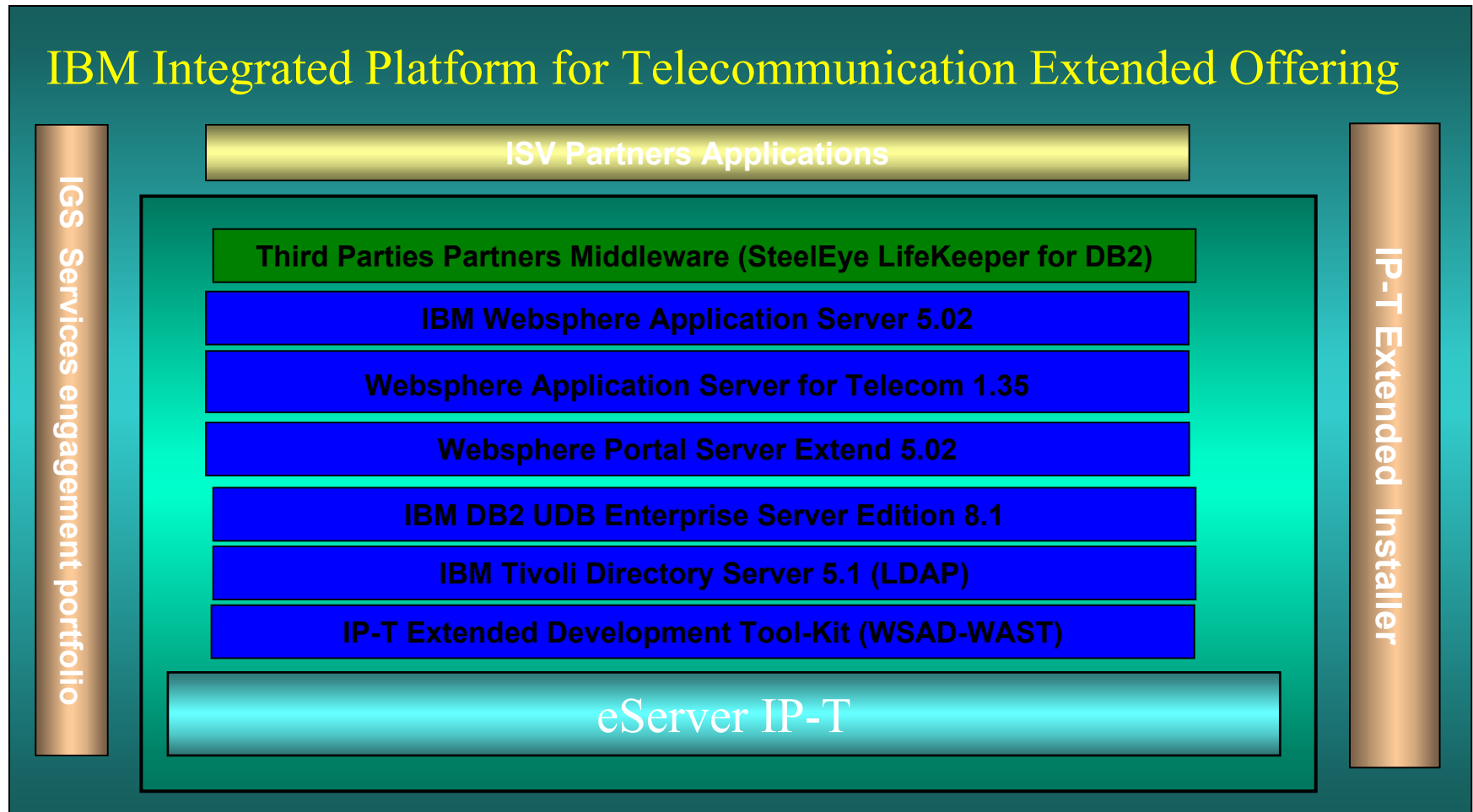
IBM Integrated Platform for Telecommunication Extended Offering

IGS Services engagement portfolio

ISV Partners Applications

Third Parties Partners Middleware (SteelEye LifeKeeper for DB2)

IBM Websphere Application Server 5.02

Websphere Application Server for Telecom 1.35

Websphere Portal Server Extend 5.02

IBM DB2 UDB Enterprise Server Edition 8.1

IBM Tivoli Directory Server 5.1 (LDAP)

IP-T Extended Development Tool-Kit (WSAD-WAST)

eServer IP-T

IP-T Extended Installer

IBM

Selling IBM Solutions
for
Next Generation Networks

Selling IBM Network Transformation solutions

Business Problem	Objectives and Measurements	Alternatives
•Timeliness in addressing market changes •New sources of revenue •Identifying and retaining the most profitable customers •Creating and sustaining differentiation •Bundling and selling existing offerings •Portfolio flexibility •Cross selling and up selling •Increasing market share •Enhancing channels to market •Agility and responsiveness to market •Superior customer service •Controlling costs •Prioritizing offering portfolio	•Revenue Growth •Drive new sources of re venue •Revenue by service offering •Profitability and profitability per user •Selected customer retention •ARPU and APPU •Market Share	•Implement NGN solutions •Tactical – use existing application vendors and IT dept. to build solutions •Out task select sales & marketing operations •Use Systems Integrator to build solution •Develop targeted retention and focused churn management programs •Re-engineer customer services process •Increase advertising •Change brand image •Increased sales enablement •Status quo – do nothing •Develop improved value propositions •Mergers & Acquisitions

Network Transformation Executive Audience Profile

Telecom Executives	Executive Responsibilities	Influencers
- CMO - VP or Director of Marketing - VPs or Directors Business Development (Networks, LoB, Marketing) - VP or Director of Product Development with business development functions - VP or Director of Business/ Strategic Planning	- Drive revenue & profit - Gain Market Share - Develop new services and markets - Extend brand image - Customer Sat and reduce churn - Gain marketplace differentiation - Develop business cases for new products and services	- Internal: - Senior Management Team - Network execs - CIO, CTO, IT execs and managers - Sales and marketing execs / LoB's - External: - Customers - Consultants, SIs, Vendors/Business Partners - Trade Shows / Trade Magazines - Competitors - Telecom Industry Associations, USTA, - Government & Regulatory Agencies
Company Types	**Number of Firms**	**Location**
- Traditional Wireline - Wireless (including Mobile Virtual Network Operators) - Broadband Access Providers (DSL and Cable) - Converged Providers (wireline and wireless)	Top 35 carriers worldwide	Global
Buying History	**IBM Relationship Factors**	**Other Behavior History**
- Emphasis on revenue enhancement, ROI and payback - Have an increasing level of knowledge and are bombarded by vendors claims - There is still an evolution from IN / AIN to NGN - They are used to buying point solutions	- IBM has traditionally sold to IT. We still have a minimal but increasing relationship with these executives - Also IBM dominates in the enterprise market, where they want to be - They appreciate IBM for its brand	- Partners and alliances are key to these customers, - Power shifting to Marketing and to Network - Looking for experienced, responsive, trusted advisors - They want a "balance of trade"

Alliance to Win

IBM's value to addressing NGN objectives

Offer innovative new products and services to grow revenue
- Increase revenue, ARPU and APPU
- Meet competitive threats
- Increase profitability of new services
- Increase number of subscribers and services per subscriber

Be more responsive to customers
- Improve customer experience
- Offer an enhanced product portfolio
- Implement innovative and flexible business models

Make better use of resources to bring products and services to market faster
- Develop more compelling business cases
- Reduce barriers to delivering new services
- Ability to market test new services

Proven, open NGN technology

Ecosystem of World-class Partners

Complex project management & expertise

Customer References

IBM's Network Transformation solutions address telecom industry objectives

Proven, open NGN technology

- Open industry standards eliminate barriers and enhance convergence strategies
- Enables On Demand – Responsive, Resilient, Focused, Variable infrastructures
- Provides deployment flexibility
- Reduces time-to-market and TCO
- Scalability provides ideal platform for infrastructure simplification, reducing complexity
- Compatibility provides investment protection and growth

Ecosystem of World-class Partners

- NEP and ISV partners in key network application areas
- Partner solutions increase responsiveness and reduce time-to-market
- Improve utilization of internal resources to increase responsiveness to market changes
- Replace existing legacy applications, and internal development to reduce costs and eliminate barriers

Complex project management & expertise

- Systems Integration leadership
- Comprehensive networking skills and resources for network planning, design, deployment and management
- Full suite of services available to cover the entire project lifecycle
- Integrated Industry Solutions, SPDE & On Demand, to address telecom objectives
- Global presence

An On Demand Telecom
Requires an On Demand Operating Environment

Horizontal Process

Business Flexibility

IT Simplification

BladeCenter is the foundation
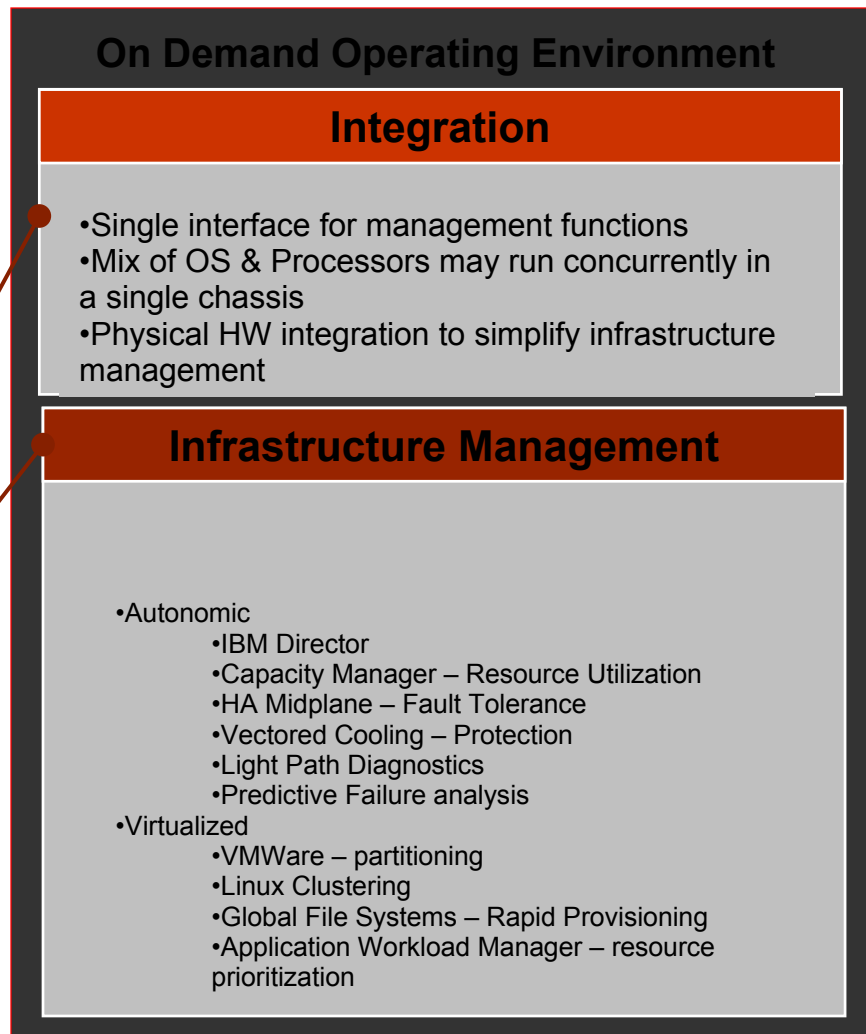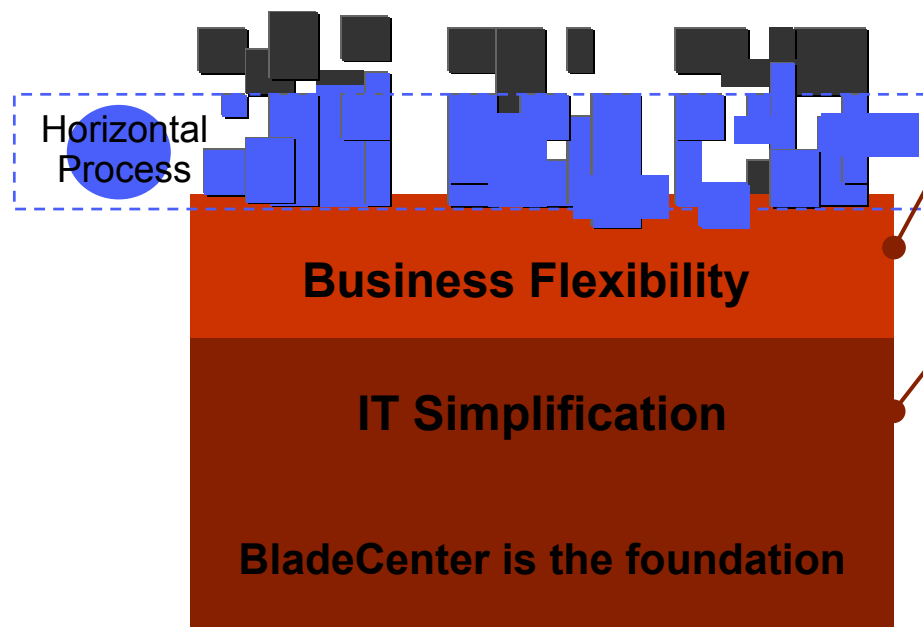
•**Reduce Costs**

•**Accelerate Revenue**

•**Address New Business Opportunities**

On Demand Operating Environment

Integration

•Single interface for management functions
•Mix of OS & Processors may run concurrently in a single chassis
•Physical HW integration to simplify infrastructure management

Infrastructure Management

•Autonomic
  •IBM Director
  •Capacity Manager – Resource Utilization
  •HA Midplane – Fault Tolerance
  •Vectored Cooling – Protection
  •Light Path Diagnostics
  •Predictive Failure analysis
•Virtualized
  •VMWare – partitioning
  •Linux Clustering
  •Global File Systems – Rapid Provisioning
  •Application Workload Manager – resource prioritization

IBM Global Services Offering Areas building upon SPDE and ITS core services
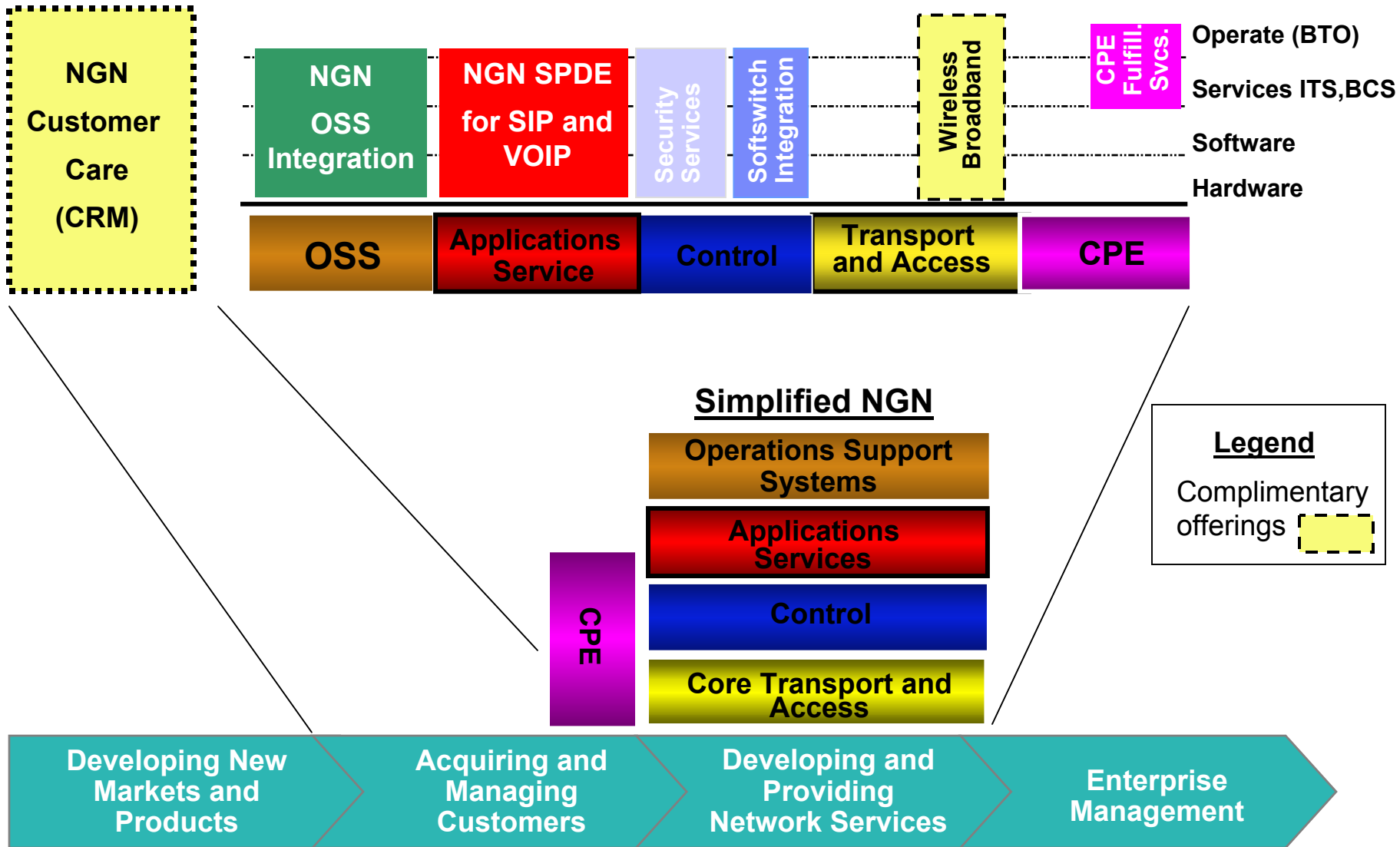
IBM Network Transformation Advantage

Next Generation Network technology and experise: Linux, eServer, TotalStorage, WebSphere, Services

Growing Ecosystem of World-Class NGN Partners: ISV's, Network Equipment Providers, Service Providers
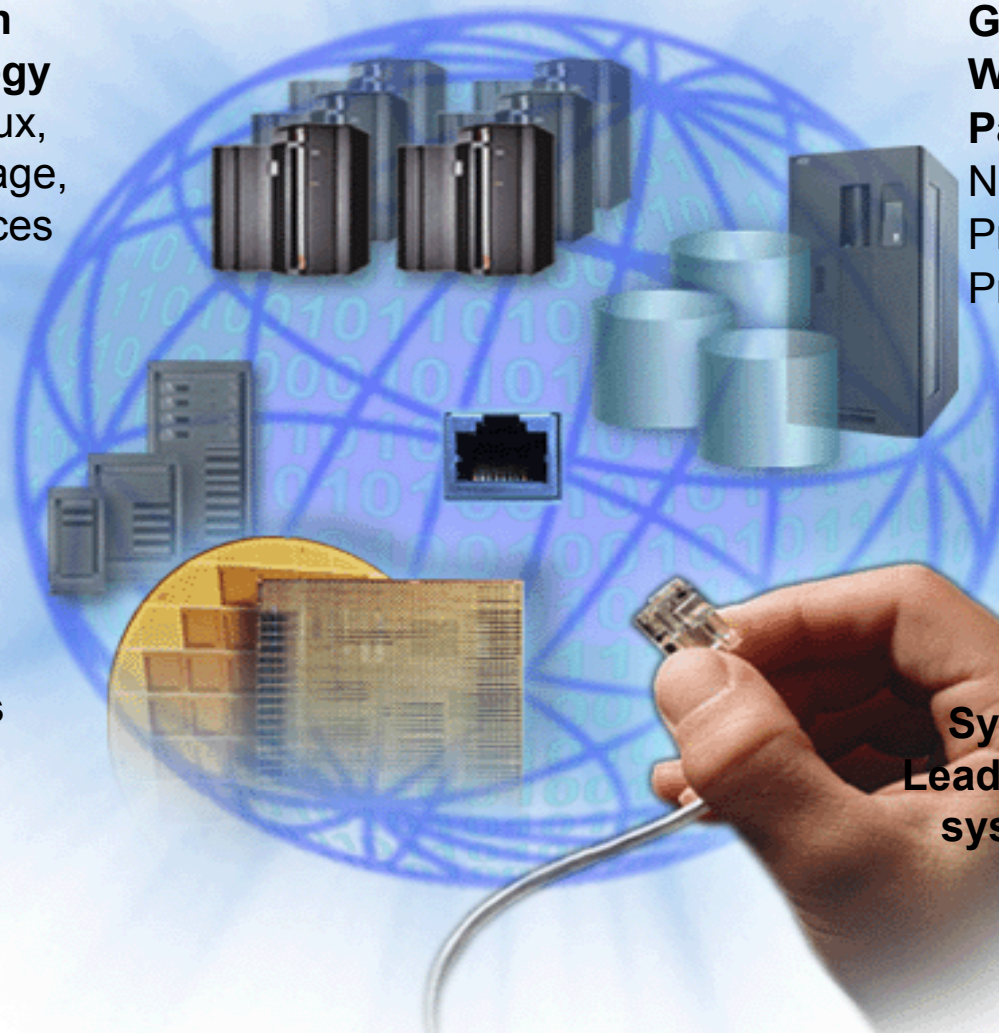
Professional services and IT technology support services for the network

Systems integration Leadership and complex system management expertise

Call To Action

Identify business objectives, priorities and barries impeding Network Transformation

Create a vision and build a solution leveraging team-IBM: ISV's, Network Equipment Providers, Service Providers

Position IBM as the "Premier" NGN partner:
- Best of Breed technology using open standards
- Services and Systems Integration leadership
- Integrated Industry Solutions
- Ecosystem of world-class partners

Reference sell
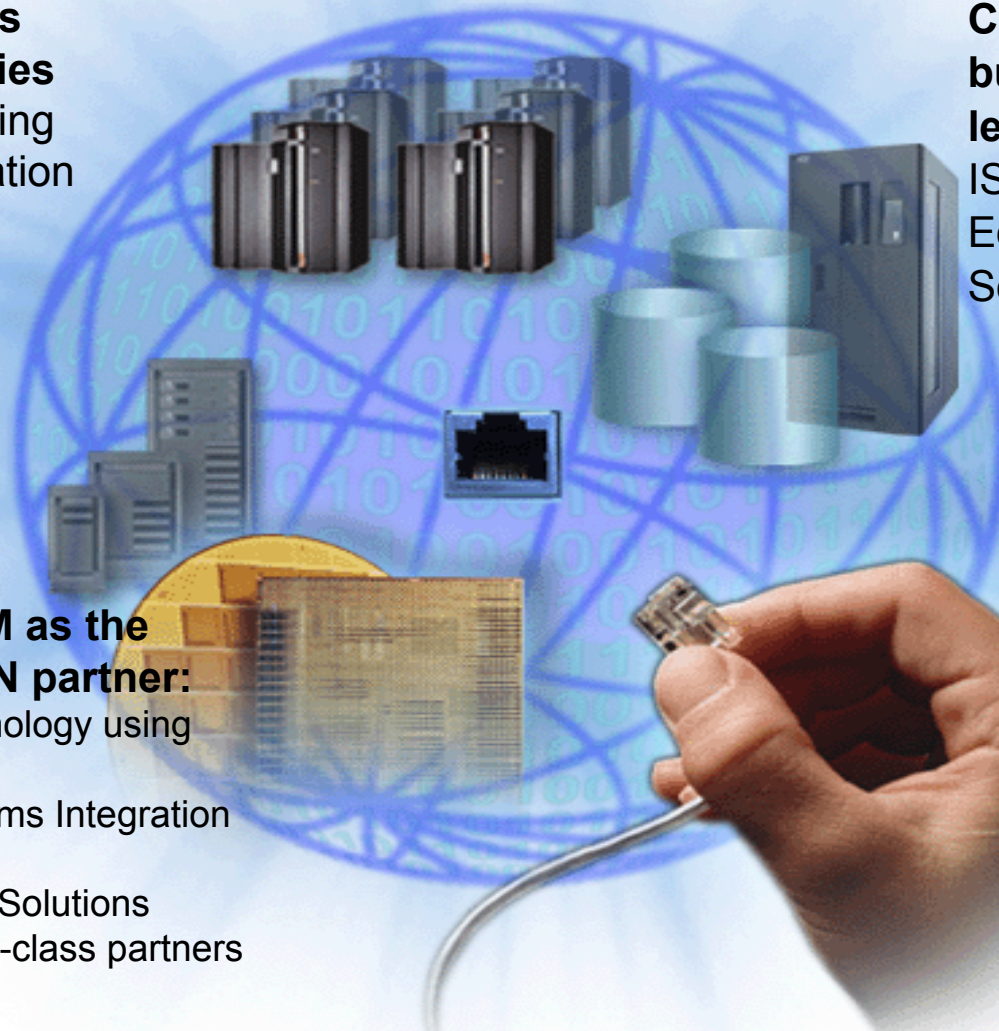
RESOURCES

IBM Support of Standards, Linux and COTs Offerings for NGN

IBM Linux Technology Center (LTC)

IBM @server Integrated Platform for Telecom

IBM Linux Service Provider Lab (LSPL)

Carrier Grade Linux (CGL), Service Availability Forum (SAF), Open Communication Architecture Forum (OCAF)

BladeCenter

BladeCenter T
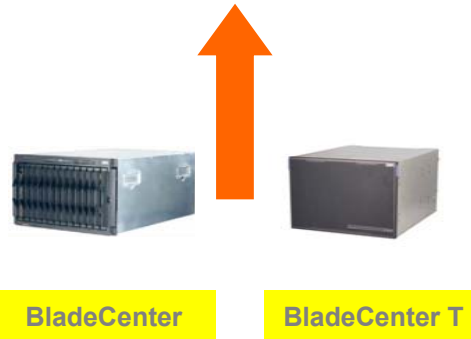
Linux Technology Center

Workloads to Linux

- 600 People
- 43 Locations
- 150 Open Source Projects

Enable IBM Products

Make Linux Better

Expand Linux Reach

- Linux on Power
- Performance optimizations
- Integrated Platform for Telco
- Linux security assurance

- Development Focus Areas
  - *Scalability*
  - *RAS*
  - *Networking*
  - *Systems Mgmt*
  - *Security*
  - *Performance*
  - *Standards*
  - *Test*
  - *Quality*
  - *Performance*
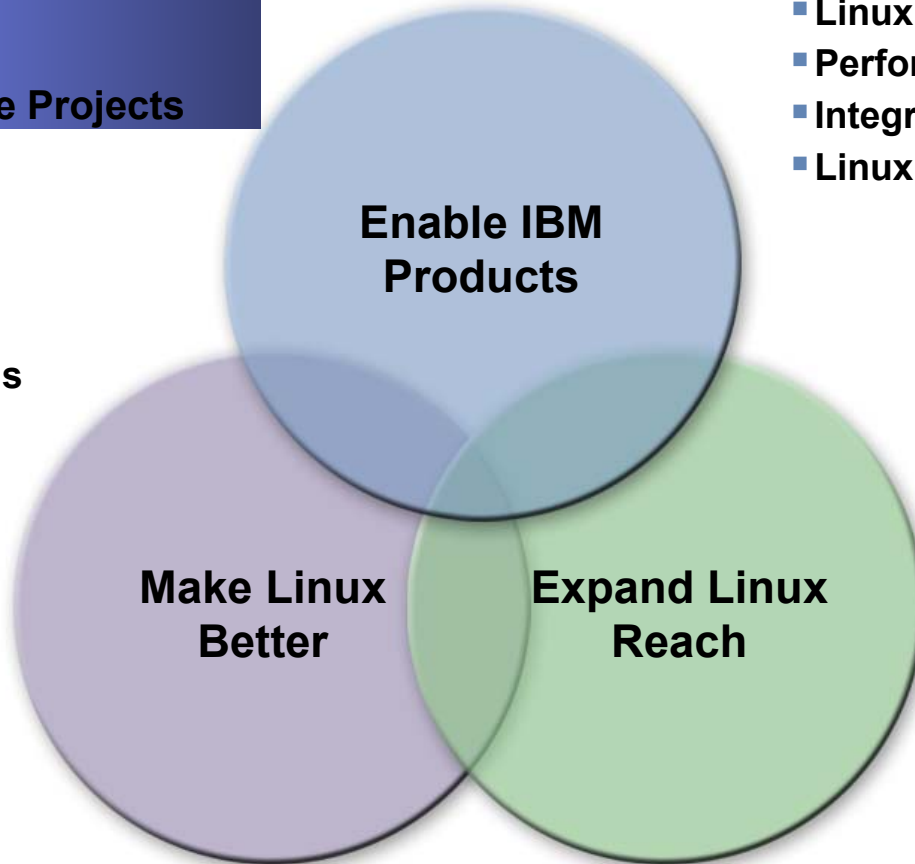
- Secure Linux
- Windows Interoperability
- Data Center Linux
- Carrier Grade Linux

Linux Technology Evolution

2.4

Future (2.6 and beyond)

- Efficient 4-way SMP scalability
- 64-bit support
- Multi-tasking
- 1TB file size, Journaling
- Clustering
- IBM@server Partition support
- Enhanced RAS
- Advanced networking
- Linux standards base
- Sub-processor partitioning support

Recertification

- 16-way+ scalability
- I/O & file system performance
- Security enhancements
- Hyperthreading performance enhancements
- Kernel & driver 'hardening'
- Pre-emptive Kernel
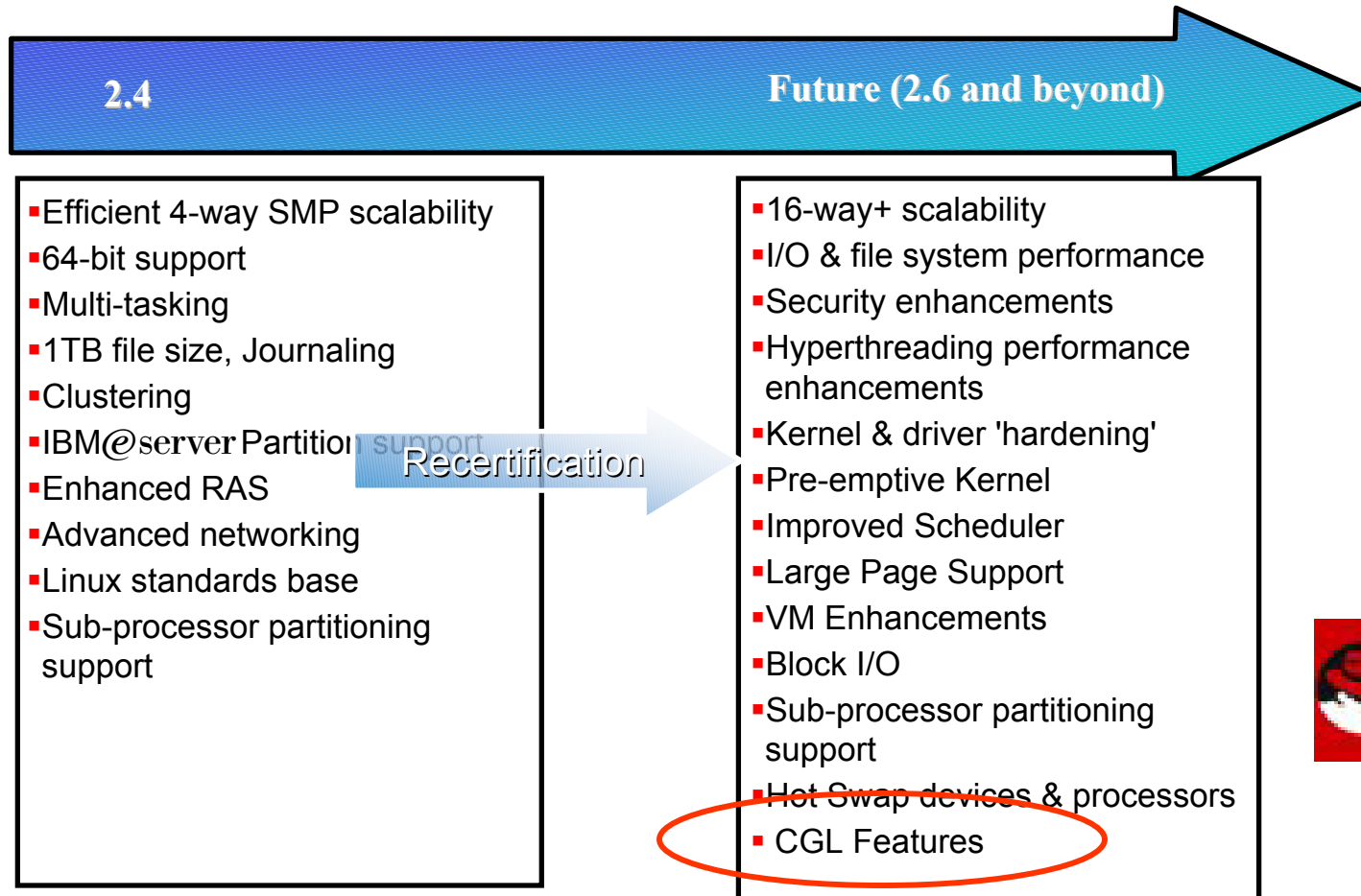- Improved Scheduler
- Large Page Support
- VM Enhancements
- Block I/O
- Sub-processor partitioning support
- Hot Swap devices & processors
- CGL Features

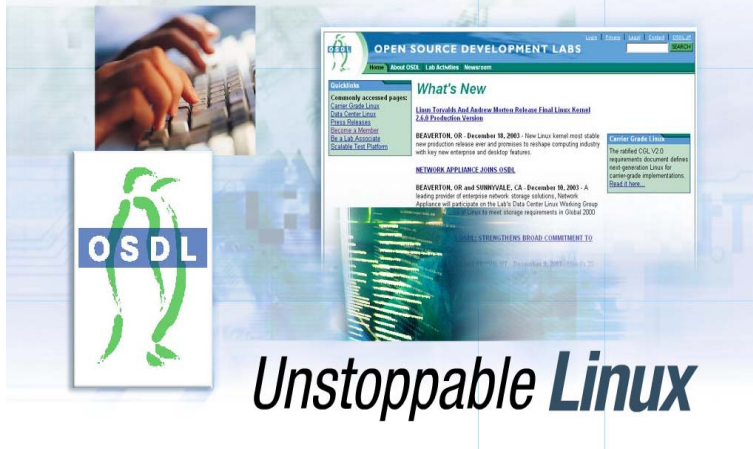**This represents a combination of current open source community priorities and IBM LTC project plans. Open source communities do schedules or commit to specific dates or functions.**

Open Source Development Lab (OSDL)
Carrier Grade Linux (CGL)

Continuous Improvement: OSDL

Unstoppable Linux

CGL is a cooperative effort sponsored through the Open Source Development Lab (OSDL) to gather requirements for making Linux "carrier grade".

– Technology Providers, Network Equipment Providers, Linux Distributions and ISVs:
  • IBM, Intel, Radisys, HP, Sun, Cisco, Nokia, Ericsson, Alcatel, Red Hat, SuSe, MontaVista, Times Sys, NTT,
    Motorola etc

- **IBM Chairs Requirements Specification Working Group:**
    – V1.1 Req Spec August 2002
    – V2.0 Req Spec October 2003.
- **Identify specific functional enhancements to Linux kernel, key libraries and tools.**
- **These enhancements are being implemented across the Linux communities, and into major Linux distributor's enterprise lines.**
- **SuSE, RH and MontaVista, WindRiver, Time Sys participate**

Requirements documents available at:
   http://www.osdl.org/projects/cgl.

V3.0 Requirements Spec planned 1Q 2005:
    – General System
    – Cluster
    – Security
- **Align with other Standards groups like SA Forum (SAF)**

Linux Service Provider Lab (LSPL) Helps Partners implement CGOF Solutions

Testing Linux based applications in a world class environment, analog and digital simulated traffic:

– Current and beta versions of Linux
– Engineers with deep Linux and Unix experience
– Mature set of load generation tools
– Comprehensive instrumentation
– Compelling mix of reference platforms and ISVs
– In person or via secure

Compare vendor applications for IP "softswitch" & NGN environment:

- Application Server   - Signaling Gateway
- Media Server   - Media Gateway Controller
- Access Gateway   - Media Gateway
- VOIP PBX   - Linux HA/Cluster Solutions

Benefits to the ISV/NEP/SP:

– Reduce evaluation time / accelerate business case
– Capital and expense avoidance - no need to develop maintain facilities
– Non-biased application consultative approach
– Lower risk than live market trials

AT&T
Verizon *
Level3
Deutsche Telekom
Cisco
Lucent *
Motorola
ZTE
Siemens,
Siemens-Fujitsu
Avaya
MCI *
etc

Key Contacts

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320-8717) Mobile: 1-917-655-7695 E-mail: anugupta@us.ibm.com Notes mail: Anu M Gupta/New York/IBM@IBMUS

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Link

- **http://w3-1.ibm.com/sales/systems/portal/_s.155/254?navID=f220s240&geoID=All&prodID=IBM%20eServer%20And%20TotalStorage%20Products&docID=industrysellingsk.skit&docType=SalesKit&skCat=DocumentType**