Forsythe Talks

Experiences Implementing a PureFlex System

Andrew Goade
agoade@forsythe.com

FORSYTHE

Agenda

- Quick Introduction/Update to PureSystems
- Forsythe's Configuration
- How We Installed It
- What We Learned
- Feedback We Have Given IBM

FORSYTHE

What are PureSystems?

PureFlex

Infrastructure

Delivering Cloud Infrastructure Services

PureApplication

Application Platform

Delivering Cloud Application Platform Services

PureData

Data Platform

Delivering Big Data Platform Services

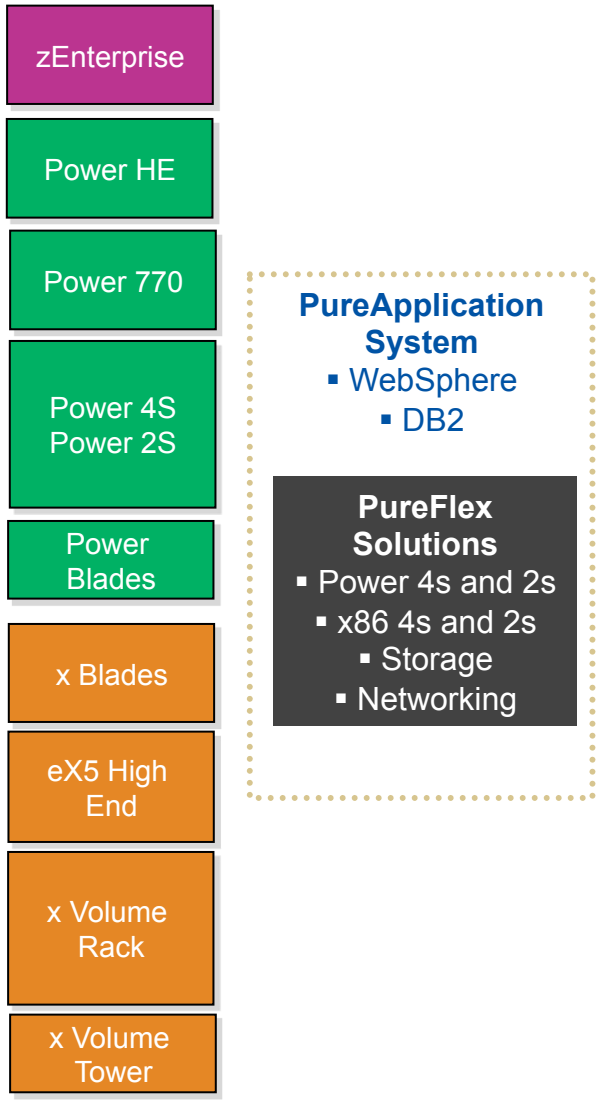
FORSYTHE

Pure Family

	FlexSystem	PureFlex	PureApplication	PureData For Transactions	PureData For Analytics	PureData For Operational Analytics
						
What is it?	Infrastructure Components	Integrated Infrastructure	Integrated Infrastructure & Web Application Platform	Integrated Infrastructure & Transactional Data Base	Netezza data warehouse, analytics, business intelligence	Integrated Infrastructure & Infosphere integration, management
Value	*Beyond Blades Designed for the next decade*	*Management across all physical & virtual resources*	*Integrated middleware stack to rapidly deliver web applications*	*Rapid time to value and scalability for data on-line transactions*	*Rapid time to value highly scalable for complex analytics and reports*	*Rapid time to value complex analytics for real time decision making*
Target Segment	Blade/Rack Replacement	Integrated Infrastructure and Cloud	Integrated Application Platform and Cloud	High volume on-line data transactions	Large data analytics and reporting	Deliver analytics in real time decision making

FORSYTHE

Where does PureFlex and PureApplication fit?



- **PureApplication System** provides a pre-integrated, pre-optimized hardware and software stack with a single point of management.
- **PureFlex System** provides unified management with enterprise storage and choice of compute nodes (Power and x86).
- **System z** remains the enterprise consolidation system with best economics for clients, delivering the best availability, security, scale and management required for enterprise critical work. zEnterprise with zBX is a proof point for hybrid universal management capabilities of IBM. zEnterprise can be connected to PureFlex System and both environments managed through the Tivoli suite.
- **Enterprise Power (High End and 770)** continues to be the leading system for UNIX consolidation with 60% unit share; delivers leadership virtualization, performance, security and resiliency needed by most enterprise clients.
- **Power Express** (4s and 2s) provides highly customizable systems for traditional UNIX and IBM i applications in Midmarket or distributed enterprise clients.
- **Power Blades** will transition to PureFlex System Power Compute Nodes.
- **eX5 High End** should be prioritized for scale-up and maximum x86 memory requirements.
- **System x Blades** should be prioritized if the customer focuses on existing investment protection.

FORSYTHE

Why bother with converged?

Advantages

- Pre-Configured (Racked / Cabled / Basic Logical Configuration)
- Pre-Tested (Interoperability / Performance)
- Unified, Simplified Support Organization (Hypervisor / Hardware / Software)
- Bundled System Upgrades (Ensuring Future Interoperability and Performance)
- Built for Non-Disruptive Scalability
- Single Infrastructure Management Tool (for converged platform only)
- Built-in Efficiency (increased virtualization, automated storage tiering)

Results

- Faster Time To Market
- Reduced Risk of Downtime and Performance Issues
- Reduced Operational Complexity and Effort

Compute Nodes

New Compute Node Choices: Leading edge compute technologies deliver an open architecture, operating system and hypervisor choice

IBM Flex System x220
Enhanced

IBM Flex System p260
Enhanced

IBM Flex System x240

IBM Flex System p24L

IBM Flex System x440
New

IBM Flex
System p460

IBM Flex System
PCI expansion node
Storage expansion node

FORSYTHE

Integrated Storage

Integrated by Design: automates deployment with full integration into IBM PureFlex

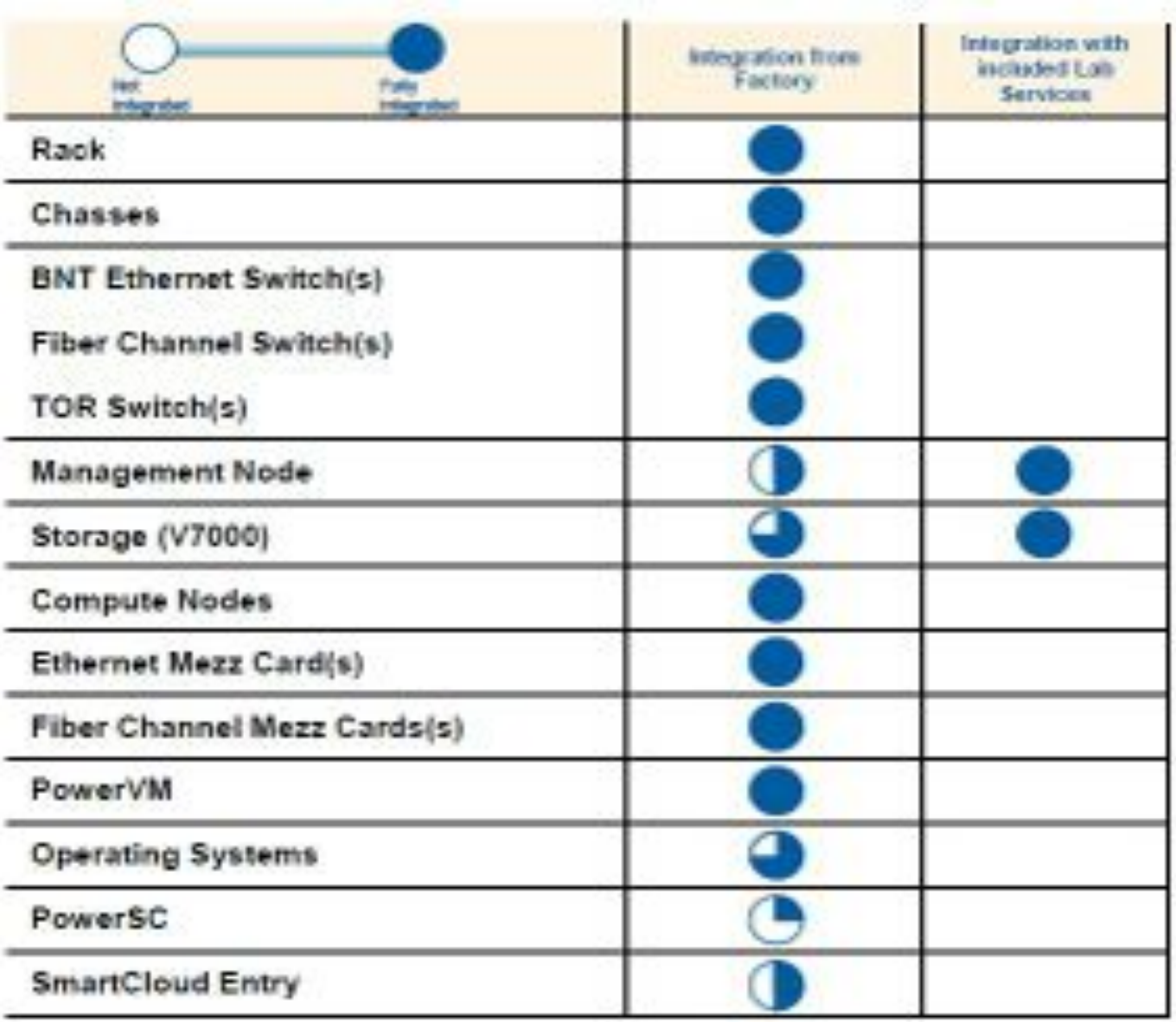
Simplified Experience: simplifies management significantly with an intuitive user interface for ease of use and faster system accessibility

Built-in Expertise:

- Virtualizes third-party storage for investment protection: **up to 30% higher storage utilization**
- Optimizes performance and costs for mixed workloads: **up to 200% higher performance** with automatic migration to SSDs
- Stores **up to 5x more active primary data** in the same physical disk space using IBM Real-time Compression

FORSYTHE

What does Integration by Design get me?



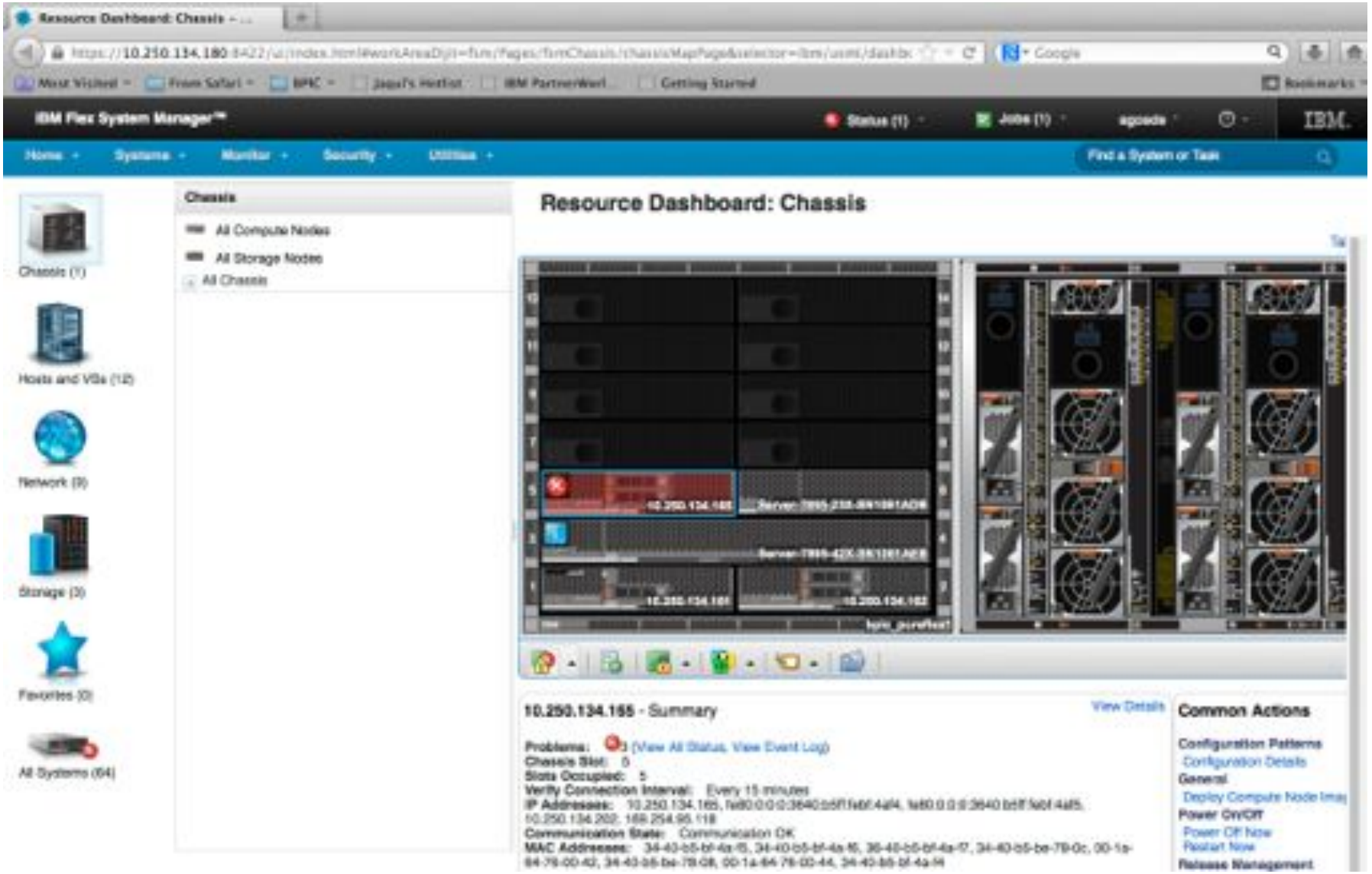
FORSYTHE

What's really included in Lab Services

Function delivered	PureFlex Intro 3 days	PureFlex Virtualized 5 days	PureFlex Enterprise 7 days	PureFlex Cloud 10 days	PureFlex Extra Chassis Add-on 5 days
► One node and one switch configured ► FSM configuration ► Discovery, inventory, and ESA setup ► Review internal storage configuration ► Skills transfer	Included	Included	Included	Included	No add-on
► Basic virtualization (VMware, KVM, and VMControl) ► Up to four nodes and two switches	Not included	Included	Included	Included	► Configure up to 14 nodes within one chassis ► Up to two virtualization engines (ESXi, KVM, or PowerVM)
► Advanced virtualization ► Server pools or VMware cluster configured (VMware or VMControl)	Not included	Not included	Included	Included	► Configure up to 14 nodes within one chassis ► Up to two virtualization engines (ESXi, KVM, or PowerVM)
► Configure SmartCloud Entry ► Basic External network integration ► First chassis is configured with 13 nodes	Not included	Not included	Not included	Included	► Configure up to 14 nodes within one chassis ► Up to two virtualization engines (ESXi, KVM, or PowerVM)

Table copied from http://www.redbooks.ibm.com/redbooks/pdfs/sg247984.pdf

New Interface – FSM Explorer



Agenda

- Quick Introduction/Update to PureSystems
- Forsythe's Configuration
- How We Installed It
- What We Learned
- Feedback We Have Given IBM

FORSYTHE

PureFlex Foundation Configurations

IBM PureFlex System Express	
IBM Flex System™ Compute Nodes	Broad selection of POWER-processor and Intel-processor compute nodes
IBM PureFlex System 42U Rack	Yes
IBM Flex System Enterprise Chassis	Yes
Integrated 10 Gb Networking Switch	1
Integrated 8 or 16 Gb Fibre Channel Switch	1
IBM Flex System Manager™	Yes, with 1-year support
Power supplies (std/max)	2/6
80 mm fans (std/max)	4/6
Chassis Management Modules	2
Integrated IBM Flex System V7000 Storage Node*	Yes (redundant controller)
IBM Flex System V7000 Storage Node Software†	Base with 1-year software maintenance agreement
IBM PureFlex System Services	9x5 hardware warranty with one microcode analysis services annually

IBM PureFlex System Standard	
IBM Flex System Compute Nodes	Broad selection of POWER-processor and Intel-processor compute nodes
IBM PureFlex System 42U Rack	Yes
IBM Flex System Enterprise Chassis	Yes
Integrated 10 Gb Networking Switch	1
Integrated 8 or 16 Gb Fibre Channel Switch	2
IBM Flex System Manager	Yes, including Advanced Option with 3-year service and support
Power supplies (std/max)	4/6
80 mm fans (std/max)	6/8
Chassis Management Modules	2
Integrated IBM Flex System V7000 Storage Node*	Yes (redundant controller)
IBM Flex System V7000 Storage Node Software†	Base with 3-year software maintenance agreement
IBM PureFlex System Services	24x7x4 technical support with one microcode analysis annually and 9x5 account advocate services

IBM PureFlex System Enterprise	
IBM Flex System Compute Nodes	Broad selection of POWER-processor and Intel-processor compute nodes
IBM PureFlex System 42U Rack	Yes
IBM Flex System Enterprise Chassis	Yes
Integrated 10 Gb Networking Switch	2 with choice of FOD upgrades for more ports and higher performance
Integrated 8 or 16 Gb Fibre Channel Switch	2
IBM Flex System Manager	Yes, including Advanced Option with 3-year service and support†
Power supplies (std/max)	6/6
80 mm fans (std/max)	8/8
Chassis Management Modules	2
Integrated IBM Flex System V7000 Storage Node*	Yes (redundant controller)
IBM Flex System V7000 Storage Node Software†	Base with 3-year software maintenance agreement
IBM PureFlex System Services	24x7x4 technical support with two microcode analysis annually and 24x7 account advocate services.

FORSYTHE

PureFlex Foundation Standard

- Pureflex Foundation Standard in 42U rack
- 1 Enterprise Chassis
  - http://www.redbooks.ibm.com/technotes/tips0863.pdf
- EN4093 10GB scalable switch x 2
  - http://www.redbooks.ibm.com/technotes/tips0864.pdf
- FC3171 8GB SAN switch x 2
  - http://www.redbooks.ibm.com/technotes/tips0866.pdf
- Storwize V7000
  - 16 x 600GB HDD and 2 x 200GB SSDs
- Nodes
  - 7955-01M Flex System Manager
    - http://www.redbooks.ibm.com/technotes/tips0862.pdf
  - 7895-23x p260 node and 7895-42x p460 node
    - http://www.redbooks.ibm.com/technotes/tips0880.pdf
  - x240 x 2
    - http://www.redbooks.ibm.com/technotes/tips0860.pdf

FORSYTHE

Setup Specs

- ~946lb if chassis full
- Both rack and chassis are CSU but chassis comes in the rack when you buy Foundation
- 2 x PDUs each with 1 x 6492 Power Cord (total 2 cords)
  - 200-240v ac, 48 A, 1-phase power cord with a Souriau UTG system connector and an IEC309 (63A, 2P+G) locking wall plug (363P6W)
  - Wall compatible with 360R6W receptacle or 360C6W connector

FORSYTHE

Enterprise Chassis

Chassis

System Infrastructure

Infrastructure to support the compute, storage and networking components

◊

Energy efficient cooling and power system

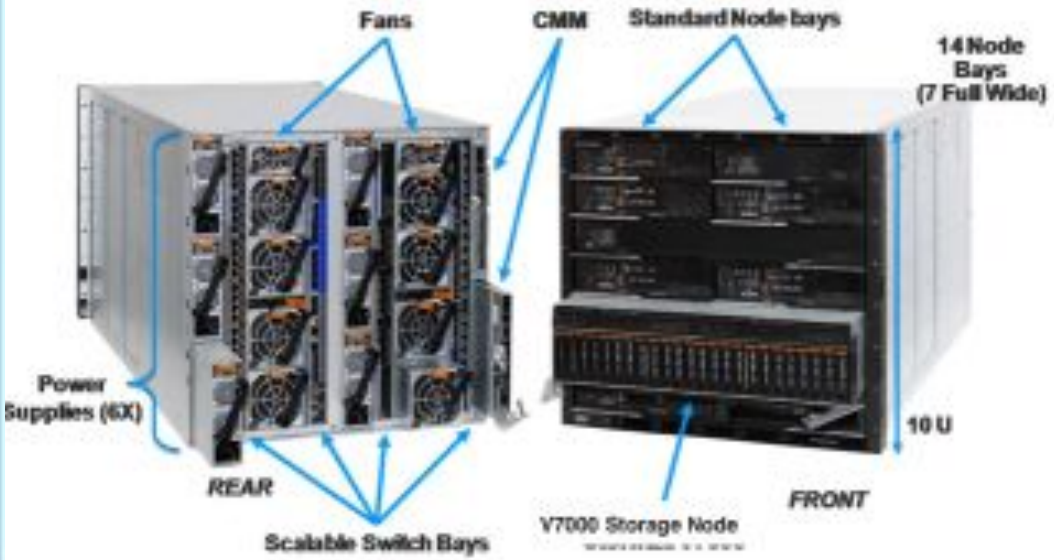
◊

Easy to use with integrated single-point management

◊

Designed to support future advancements in I/O, processors, memory, and storage

IBM Flex System Chassis



- 4 scalable switch bays
- 10U Chassis, 14 bays
- Standard and Full width node support
- Up to 6 2500W power supplies N+N or N+1 configurations
  - Optional lower wattage 2100W PS
- Up to 8 cooling fans (scalable)
- Integrated chassis management through CMM

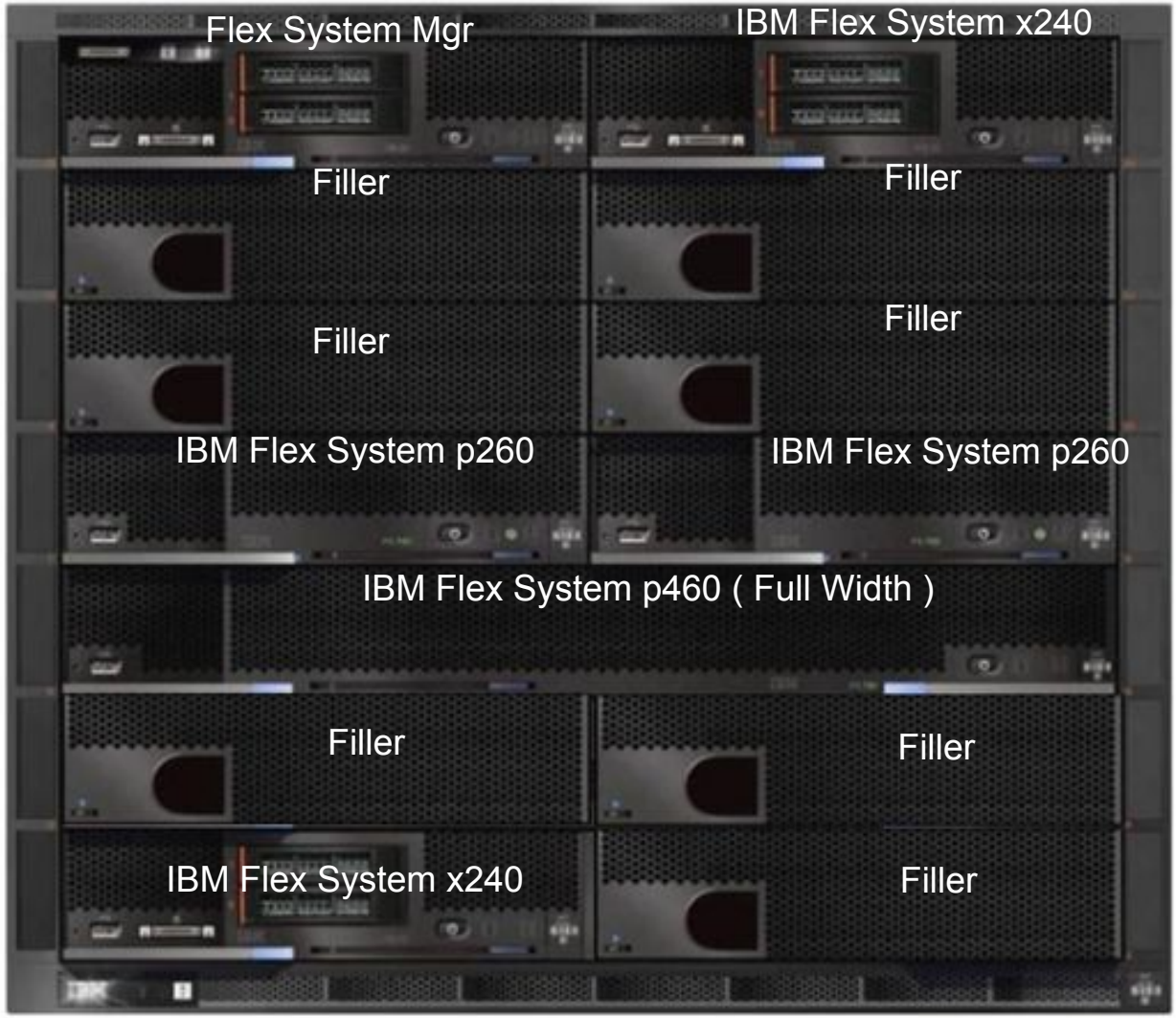
FORSYTHE

IBM Flex System Enterprise Chassis – Front View

Size: 10 U
19” Rack

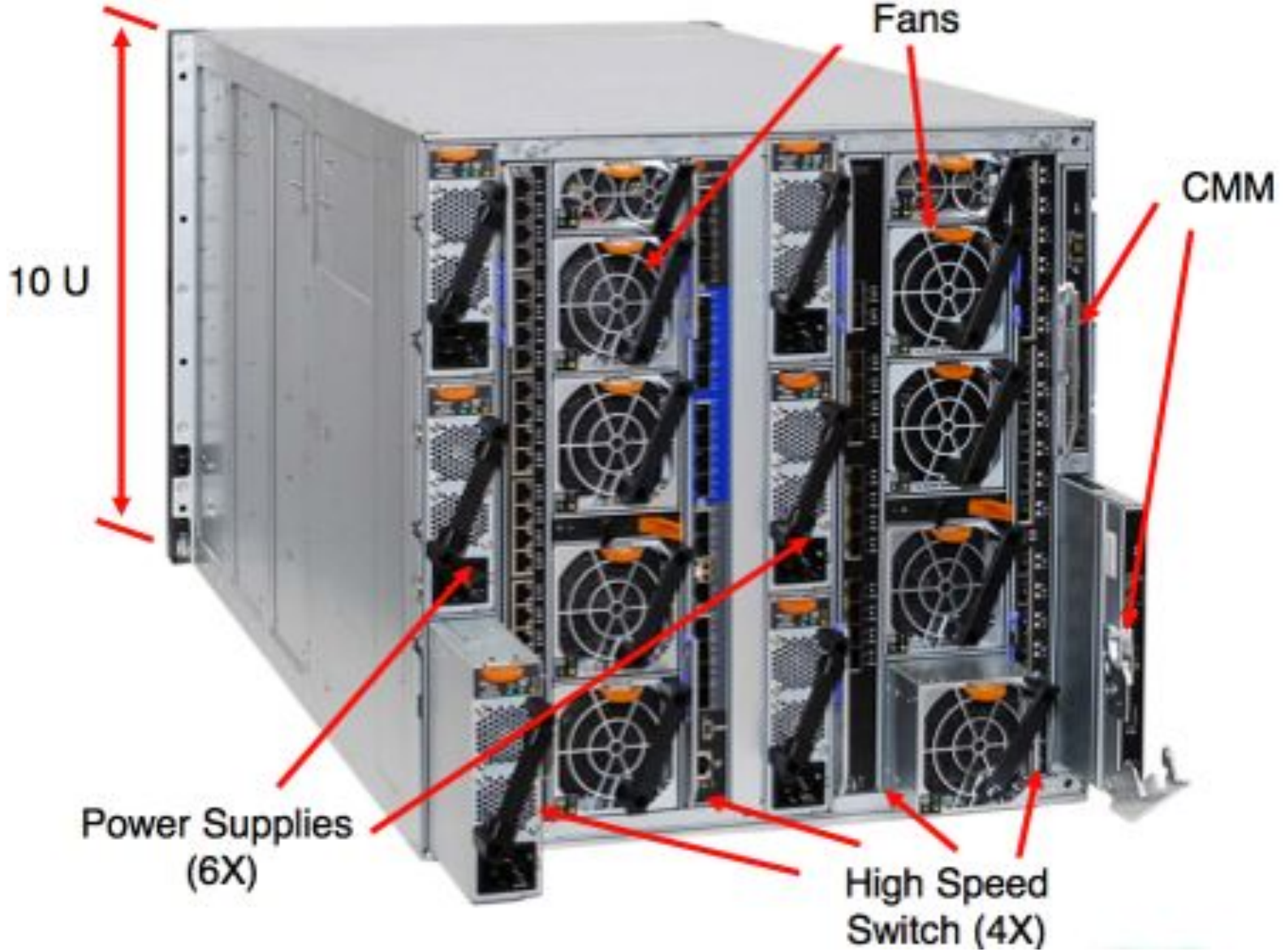
14 Node Bays
(7 Full Wide)

Nodes:
- Power
- Intel
- Flex System Mgr



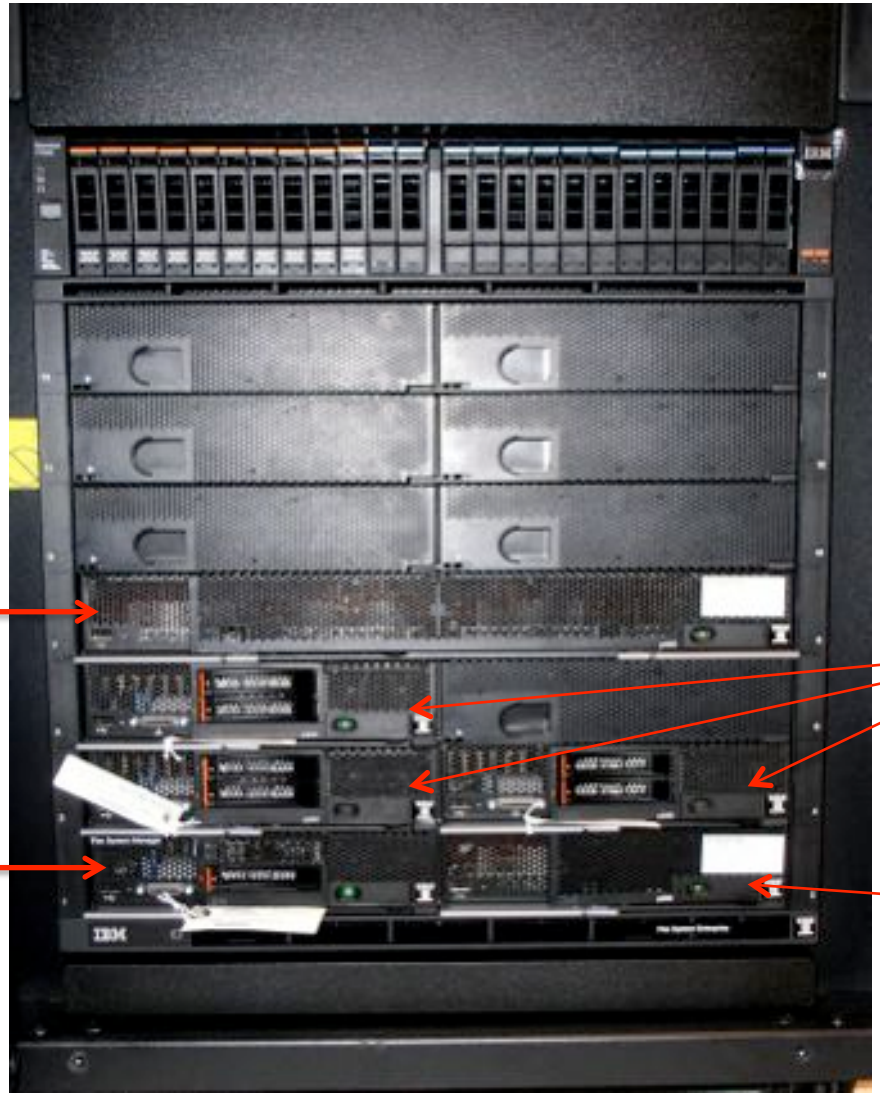
FORSYTHE

IBM Flex System Enterprise Chassis – Rear View



FORSYTHE

Photo of a Chassis



FORSYTHE

EN4093 10Gb Scalable Switch

Networking Infrastructure

Networking

"Pay as you grow" scalability

◊

Optimized for performance

◊

Efficient network automation

◊

Enhanced virtualization intelligence

◊

Lower TCO

◊

Seamless interoperability

Scalable 10Gb Ethernet with 10/40Gb Uplinks

Overview

- Layer 2/3 Data Center design – upgrade in order
- Base Switch: 14 x 10Gb server port & 10 x 10Gb uplinks
- Switch upgrade 1: 28 x 10Gb server ports & 10 x 10Gb plus 2 x 40Gb uplinks.
- Switch upgrade 2: 42 x 10Gb server ports & 14 x 10Gb plus 2 x 40Gb uplinks.

Leadership

- Single ASIC Design
- Proven Operating System
- Exceptional Price/Performance
- Investment Protections – scalable pay-as-you-grow design
- FCoE convergence support planned Mid 2012
- VM aware & VM Mobility with VMready
- Virtual Fabric – carve up virtual NIC's and pipes
- Seamless interoperability with other vendors switches
- 3 year warranty and 3 year software upgrade licenses

Recommended Top-of-Rack switch

- Multiple chassis of 10Gb connection G8264

FORSYTHE

FC3171 8GB SAN switch

End to end 8Gb offering for low cost Storage connectivity

- **What's New**
  - Low cost 8Gb connectivity
- **Key Features / Business Value**
  - Port Aggregation
  - NPIV support
  - Automatic failover
- **Client Benefits**
  - Reliable low cost 8Gb connectivity to Storage
  - Interoperability with a broad range of storage solutions

IBM Flex System 8Gb Fibre Channel

- ✓ Up to 14 internal and six external 8Gb links
- ✓ Support for Fabric / Switch mode and NPIV mode for seamless interoperability

FORSYTHE

Flex System Manager

- New user interface and configuration automation brings new components online faster
- Cross-resource integration and automation enables transformation from managing resources to managing applications, services and workloads
- Works with the management you have - other IBM platform tools, Tivoli and third party enterprise management (e.g., CA, BMC, HP, etc.)
- Easier monitoring, alerts and problem management through automated resolution processes with integrated expertise

Global Find

Chassis Map

Remote Presence

Mobile

FORSYTHE

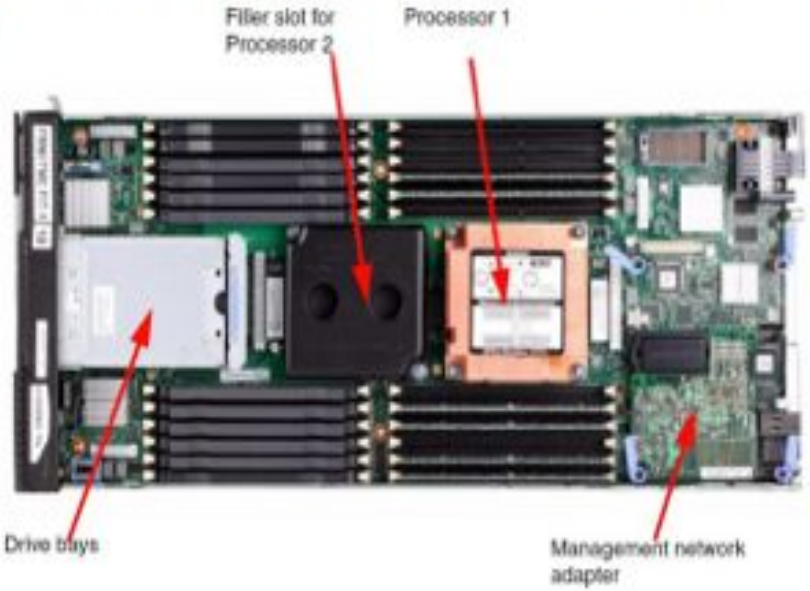
FSM Versions

Product/Feature	IBM x86 and Power Systems	
	Base/Chassis	Advanced Upgrade/Chassis
IBM FSM Base Level	√	Included
IBM Service & Support Manager	√	
IBM Fabric Manager	√	
IBM Storage Control	√	
IBM Network Control	√	
IBM VMControl Express Edition	√	
(VM Life Cycle Management)	(For VMware, KVM, Hyper-V, PowerVM)	
IBM Flex Systems Manager Advanced Function		
VMControl Standard Edition (Image Management)		√ (KVM and PowerVM only)
VMControl Enterprise Edition (System Pools)		√ (KVM and PowerVM only)

FSM Hardware

- Customized x86 compute node
- Locked down firmware, do NOT attempt to use x240 firmware stack.
- FSM has a special Everything-to Everything (ETE) adapter that allows it to communicate across the chassis internal network for chassis element discovery, configuration and monitoring.
- The FSM is delivered pre-configured from the factory for optimal performance of FSM software stack

- One Intel Xeon Processor E5-2650 8C 2.0 GHz 20 MB Cache 1600 MHz 95 W
- 32 GB of memory with eight 4 GB (1x4 GB, 1Rx4, 1.35 V) PC3L-10600 CL9 ECC DDR3 1333 MHz LP RDIMMs
- Integrated LSI SAS2004 RAID controller
- Two IBM 200 GB SATA 1.8" MLC SSD configured in a RAID 1
- One IBM 1 TB 7.2 K 6 Gbps NL SATA 2.5" SFF HS HDD
- Dual-port 10 Gb Ethernet Emulex BladeEngine 3 (BE3) network controller for data network connections
- Dual-port Broadcom 5718 network controller for internal chassis management network connections
- Integrated Management Module II (IMM



FORSYTHE

Power Compute Node Comparison

	Flex System p260	Flex System p24L	Flex System p460
CPU	4/8c, 2s, POWER7+	6/8c, 2s, POWER7	4/8c, 4s, POWER7
Memory	16 memory DIMMs Up to 512 GB	16 memory DIMMs Up to 512 GB	32 memory DIMMs Up to 1 TB
Disk	Up to 2 HDD or 2 SSD	Up to 2 HDD or 2 SSD	Up to 2 HDD or 2 SSD
I/O slots	2	2	4, Dual VIOS
OS Support	AIX, Linux, IBM i	Linux	AIX, Linux, IBM i

c=core, s=socket

p260 – Power7+ Compute Node

System Infrastructure

Compute

Standard Width node

2-socket POWER7+ processor

Supports AIX, IBM i, Linux

16 core : 2 Socket x 8 core
Multiple Speeds 4.1 or 3.6GHz

8 core : 2 Socket x 4 core
New 4.0GHz speed

16 DIMMs DDR3, 512GB Max

Double the number of VM's per core

Flex System p260 compute node

Delivers over 30% greater performance with same density and energy use as existing p260 nodes

RAID Controller

2 x SAS 2.5" HDD
or 2 x 1.8" SDD
drives

FORSYTHE

p260 in Forsythe's configuration

- 16 x 4.1GHz cores Power7+
- 512GB memory
  - Limited due to use of HDDs instead of SSDs
- 2 x 177GB SDDs
- En4054 4 port 10GB ethernet
- FC3172 2 port 8GB fibre adapter
- IBM i V7, AIX v7 Enterprise and PowerVM Enterprise
- Single VIOS

p460 – Power7 Compute Node

System infrastructure

Compute

Full Width compute node

◊

4-socket POWER7®

◊

64-bit POWER7® processor

◊

32 core : 4 Socket x8 core

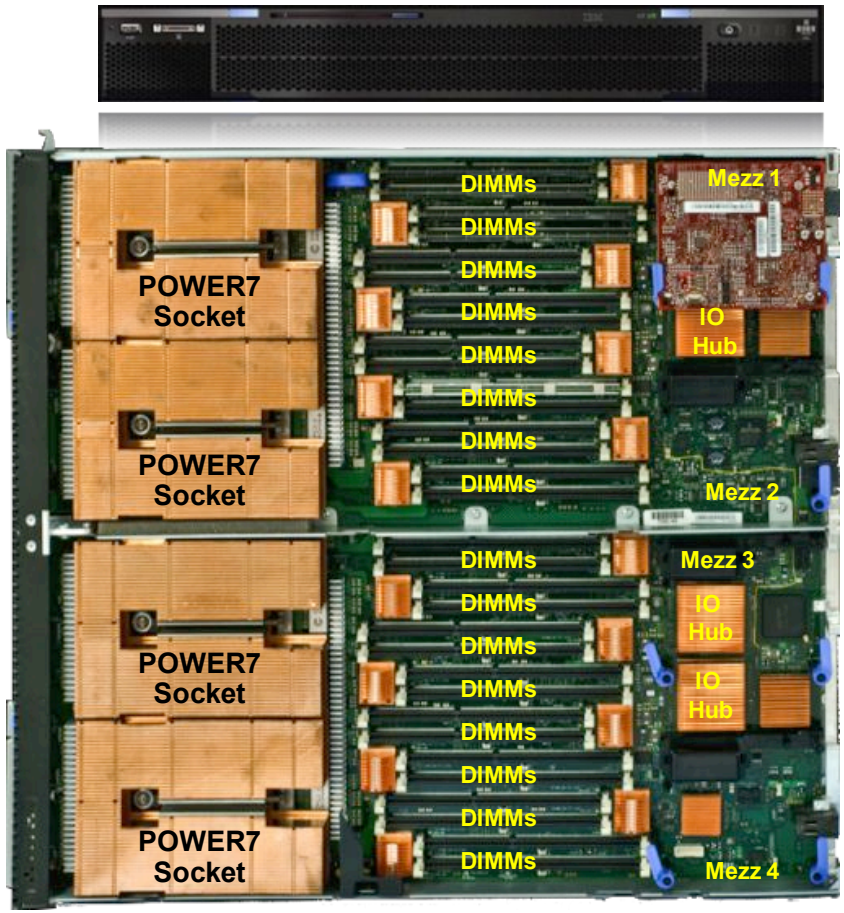
◊

32 DIMMs DDR3, 1066 MHz, 512GB Max

◊

Quad Mezz cards and IO Hubs

IBM Flex System p460



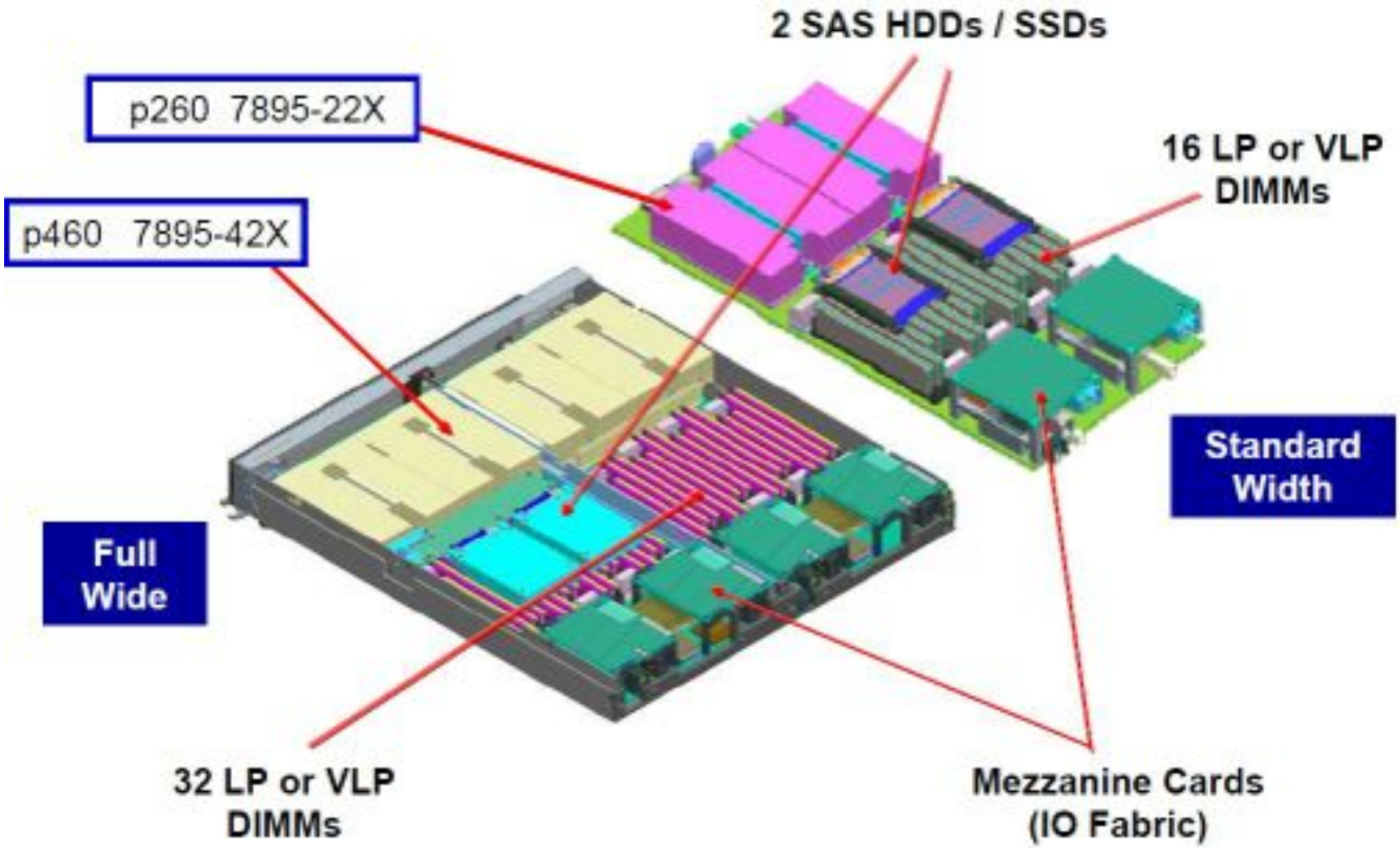
*HDD or SSD – Mounted on cover (located over memory)

FORSYTHE

p460 in Forsythe's configuration

- 32 x 3.55GHz cores Power7
- 512GB memory
- 2 x 177GB SDDs
- 2 x EN4054 4 port 10GB ethernet
  - Note this is very similar to the CN4054 on the next page but it operates as a straight 4-port 10Gbe ethernet adapter
- 2 x FC3172 2 port 8GB fibre adapter
- AIX v7 and PowerVM Enterprise
- Dual VIOS
  - Second VIOS boots from SAN

POWER Compute Nodes



FORSYTHE

x86 Compute Node Comparison

	Flex System x220	Flex System x240	Flex System x440
CPU	4/6/8c, 1/2s, E5-2400 2c, 1s, E5-1403	4/6/8c, 1/2s, E5-2600	4/6/8c, 1/2/4s, E5-4600
Memory	12 memory DIMMs Up to 48 GB (Pentium) Up to 384 GB E5-2400	24 memory DIMMs Up to 768 GB	48 memory DIMMs Up to 1.5 TB
Disk	Up to 2 HDD or 8 SSD	Up to 2 HDD or 8 SSD	Up to 2 HDD or 8 SSD
I/O slots	2 or 1 + LOM	2 or 1 + LOM	2 + 2 LOM or 4
OS Support	Windows, Linux	Windows, Linux	Windows, Linux

cx-core, sx-socket, LOM=LAN on Motherboard

x240 – EP Compute Node

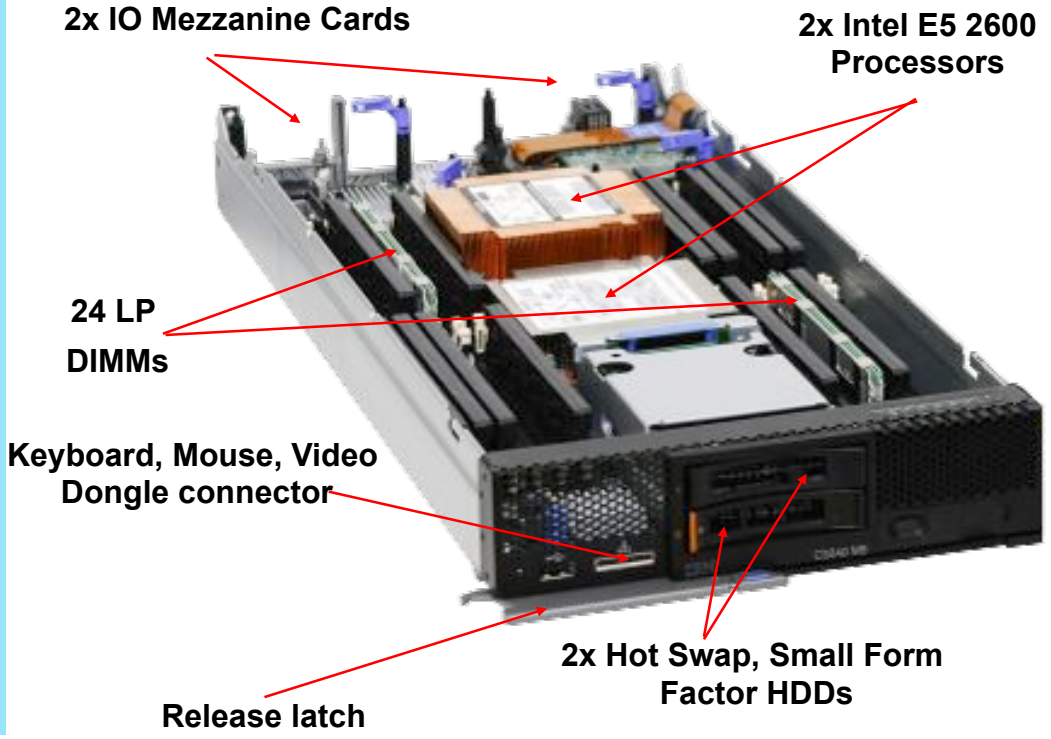
System infrastructure

Compute

Industry leading form factor ◊
2-socket Sandy Bridge-EP
up to 135W support
◊
24 LP DDR3 DIMMs, 768GB
Max, 1333MHz / 1600MHz
◊
10Gb Converged LOM
FCoE/iSCSI protocol support
◊
2 hot swap 2.5” SAS/SATA
SSDs or HDDs
◊
Dual Enabled Hypervisor –
ESXi on Flash Key Option

IBM Flex System x240

Uncompromised Compute, IO, and Storage performance, designed for mainstream virtualization, and a broad range of workloads



FORSYTHE

x240s in Forsythe's configuration

- 16 x 2.9GHz cores
- 192GB memory
- 2 x 600GB HDDs
- Onboard LOM 10Gb
- FC3172 2 port 8GB fibre adapter
- VMWare ESXi 5.0 on USB Key

Agenda

- Quick Introduction/Update to PureSystems
- Forsythe's Configuration
- How We Installed It
- What We Learned
- Feedback We Have Given IBM

FORSYTHE

Planning – IP Planning

Server	Model	Serial	LPAR	LPARid	IP	Comments	Other Name
v7000			v7service		100	v7000 service IP	
v7000			v7mgmt		101	v7000 mgmt IP	
v7000			v7iscsi1		102	v7000 iscsi node 1	
v7000			v7iscsi2		103	v7000 iscsi node 2	
XIV			xivmip		143	XIV Management IP	
FLEX			flexcmm		151	Flex Chassis Management Module	
FLEX			flexv71		152	Flex v7000 1	
FLEX			flexv72		153	Flex v7000 2	
FLEX			flex10gb		154	10GB switch	
FLEX			flex8gb1		155	8GB switch 1	
FLEX			flex8gb2		156	8GB switch 2	
FLEX			flexv7mgmt		157	Flex v7000 management	
FLEX	7955-01M	102744B	flexsm		161	MM for Flex Manager	
FLEX	7895-22X	10273EB	p260		162	FSP for p260 (ASMI)	node01
FLEX	7863-10X	102735B	x240a		163	MM for first X node	node02
FLEX	7863-10X	10273CB	x240b		164	MM for 2nd X node	node03
FLEX	7863-10X	102739B	x240c		165	MM for 3rd X node	node04
FLEX	7895-42X	102743B	p460		167	FSP for p460 (ASMI)	node05
							node078
Server			**LPAR**	**LPARid**	**IP**	**Comments**	
FLEXMGR			flexmgr		180	Flex System Manager Main IP	
p260			flex1vio1		181	VIO1 on p260	
p260			flex1vio2		182	VIO2 on p260	
p260			flex1l1		183	LPAR 1 on p260	
p460			flex2vio1		190	VIO1 on p460	
p460			flex2vio2		191	VIO2 on p460	
p460			flex2l1		193	LPAR 1 on p460	

Planning – Passwords

FLEX			**flexcmm**		**151**	**Flex Chassis Management Module**		**USERID:P@ssw0rd**
FLEX			flexv71		152	Flex v7000 1		passw0rd
FLEX			flexv72		153	Flex v7000 2		passw0rd
FLEX			flex10gb		154	10GB switch		USERID:PASSW0RD
FLEX			flex8gb1		155	8GB switch 1		admin:password
FLEX			flex8gb2		156	8GB switch 2		admin:password
FLEX			flexv7mgmt		157	Flex v7000 management		superuser:passw0rd
FLEX	7955-01M	102744B	flexsm		161	MM for Flex Manager	node01	USERID:Passw0rd
FLEX	7895-22X	10273EB	p260		162	FSP for p260 (ASMI)	node02	USERID:Passw0rd
FLEX	7863-10X	102735B	x240a		163	MM for first X node	node03	USERID:Passw0rd
FLEX	7863-10X	10273CB	x240b		164	MM for 2nd X node	node04	USERID:Passw0rd
FLEX	7863-10X	102739B	x240c		165	MM for 3rd X node	node05	USERID:Passw0rd
FLEX	7895-42X	102743B	p460		167	FSP for p460 (ASMI)	node078	USERID:Passw0rd
Server			LPAR	LPARid	IP	Comments		
FLEXMGR			flexmgr		180	Flex System Manager Main IP		USERID:Passw0rd

Initial Steps – Green Light Procedure

- Read Installing and configuring IBM PureFlex System document found at:
  http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.acc.pureflex.doc/p7eel_ex_pdf.pdf
  - **Important to note DO NOT press the power button on the IBM Flex System Manager (FSM)**
    - The above line is critical – this is what causes most problems
- Remove all shipping braces.
- Cable Network for CMMs, V7000, FSM and BNT Switch.
- Put IPs on CMMs, V7000, and FSM for system management.
  - RJ45 SFP needs to be installed in I/O module 1, port 6.
  - Set service IPs for the V7000 from a single node. Once complete, verify both IP addresses for the V7000 and step through the V7000 setup guide and assign cluster IP address.
- Access CMM and verify all HW components are operational and error free.

Start HERE!!

If you have one chassis, install the IBM BNT® SFP (RJ45) transceiver in I/O module slot 1, port 6.

Connect your laptop to the transceiver on I/O module slot 1, port 6 on the switch chassis and open a browser window.

Ensure that your device is set to IP address 192.168.93.5, subnet mask 255.255.255.0, and gateway 192.168.93.217.

In the address field, type https://192.168.93.100

If you have additional chassis, type https://192.168.93.102 for the second chassis and https://192.168.93.104 for the third chassis.

Accept any security exceptions to continue.

In the IBM Chassis Management Module sign-in window, type the user name and password. The user name is USERID and the password is PASSW0RD.

. Click Log In. Create a new password. The new password is Passw0rd.

Cancel out of the Initial Setup Wizard.

Click System Status.

Hover over each component to ensure that it is functioning properly.

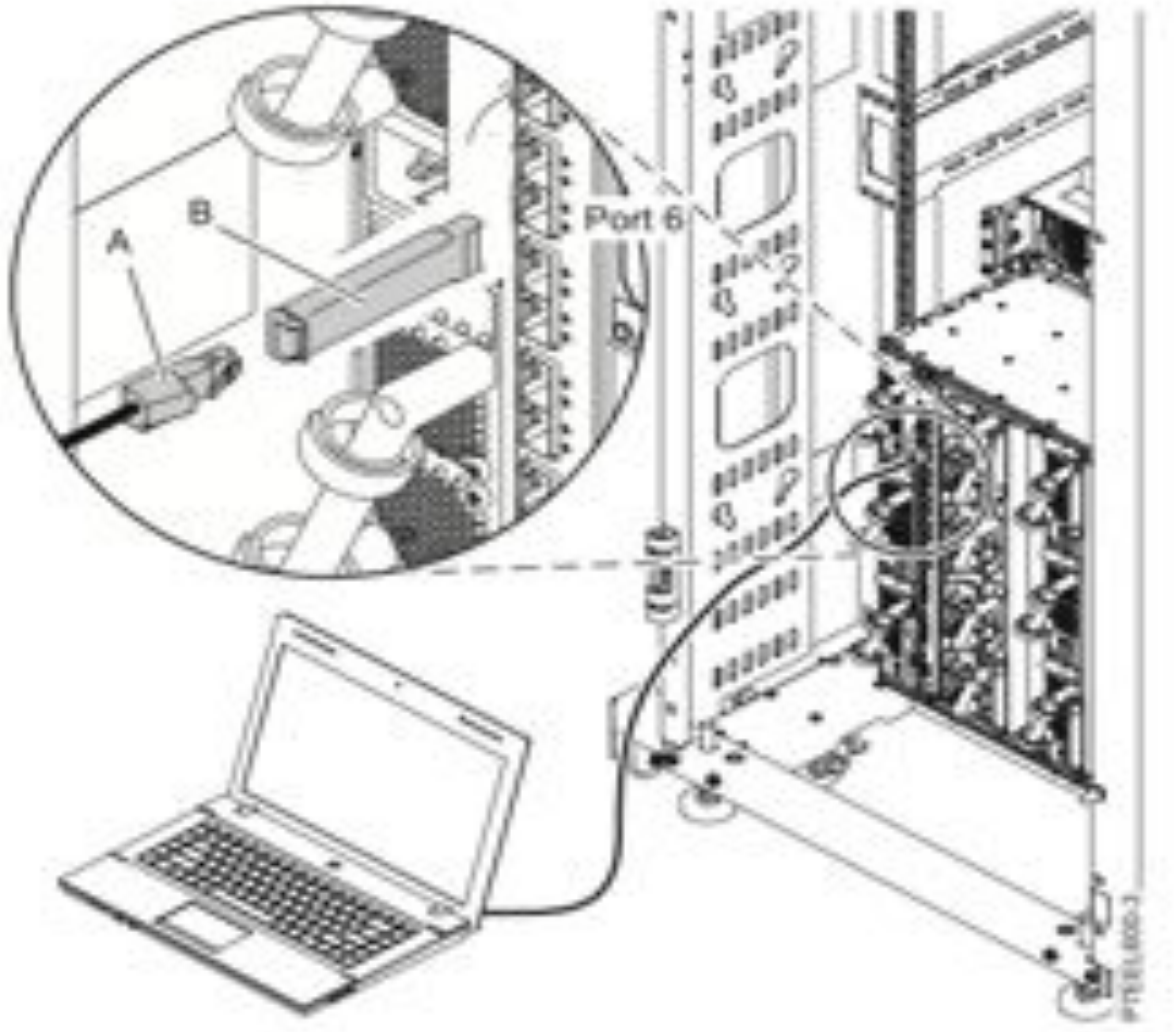
Click the Events tab and ensure that there are no errors.

13. Repeat steps 5 on page 14 through 12 for each additional chassis using the following IP addresses:

https://192.168.93.102

https://192.168.93.104

Connecting Laptop



FORSYTHE

Storage Configuration

Verify that your IBM Storwize V7000 storage is functioning. Open a different browser window, and type 192.168.93.213/service. Accept any security exceptions to continue.

Note: Your IBM Storwize V7000 storage is preconfigured.

In the IBM Storwize V7000 Service Assistant Tool, type passw0rd for the password.

Ensure that there are no errors reported in the **Error** field.
Note: If you identify a component that is in the **Error** state, contact your service provider.

If you have a second IBM Storwize V7000, type 192.168.93.217/service in a different browser window. Complete steps 15 on page 16 and 16 for this second IBM Storwize V7000.

Note: When you are in the Service Assistant Tool of the V7000 you can assign new service IPs that will reside on your network. Once you have done this, revisit each service IP. The one that is the configuration node will take you through the configuration wizard for the V7000. This will not destroy any pre-configuration done by IBM.

You may now disconnect the device from I/O module slot 1, port 6 on the switch chassis.

Additional Note: Not all storage is configured by default

Additional Setup Steps on the CMM

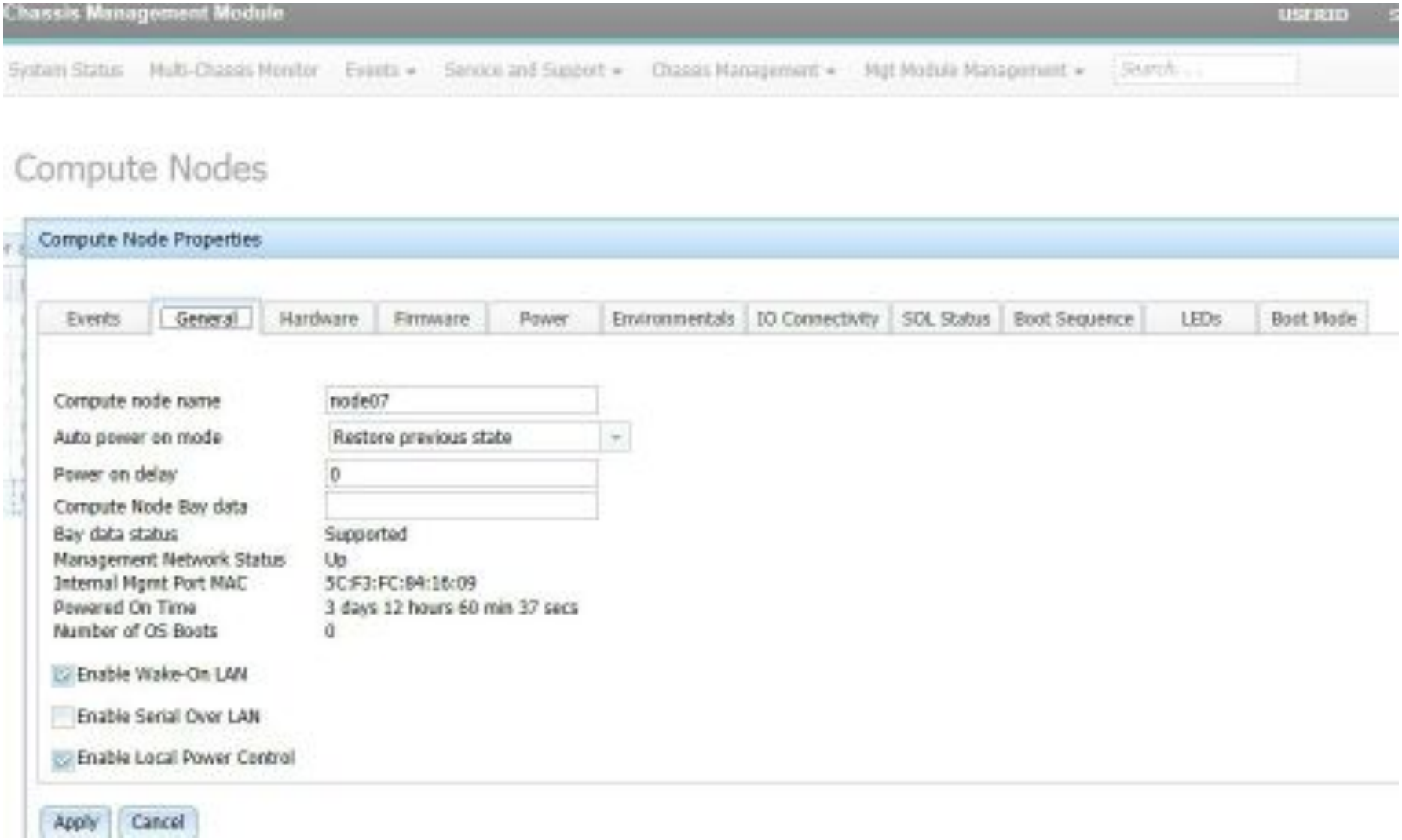
Assign IP addresses to the IMM and ASMI interfaces of the FSM and Compute nodes through the CMM.
User authentication will flow from the IMM and ASMI interfaces of the FSM and compute nodes through the CMM

FORSYTHE

Post Green Light

- Servers are available for configuration as you would any other server
- Can setup VMControl resource pools
- Integrate with SmartCloud Entry

Disable SOL on POWER Node so can ssh to FSM and use vtmenu to open a console



FORSYTHE

Using vtmenu

```
------------------------------------------------------------
 Managed Systems:
------------------------------------------------------------
  1) Server-7895-22X-SN102A61B
  2) Server-7895-42X-SN102A68B

Enter Number of Managed System.    (q to quit):
```

```
------------------------------------------------------------
 Partitions On Managed System:  Server-7895-22X-SN102A61B
 OS/400 Partitions not listed
------------------------------------------------------------
  1)    7895_SN102A61B_VIOS1                    Not Activated
  2)    FSG_test1                               Not Activated
  3)    FSG_test2                               Not Activated
  4)    SmartCloudEntry                         Not Activated
  5)    TemplateOS                              Not Activated

Enter Number of Running Partition (q to quit):
```

Discovery

To get discovery to work nicely

- I created a userid that I called flexaix on the two VIOs – it is in the system group

When I did the request access for discovery I used that id

I then did a discover by individual IP and had no problems

I went to collect inventory and told it to do so

I exported the inventory report to html and csv

Integration of VMControl and NIM

http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.acc.commontasks.doc/managing_images_using_vmcontrol_and_nim_v1.1.pdf

Ensure dsm.core, openssh and openssl are installed on NIM server

Stop cas_agent, fix cas_src.sh and then restart it

On the flexmgr discover the NIM server, request access and then inventory it

Select vmcontrol from home page

- On the Summary page, click Install Agents.
- On the Welcome page of the Agent Installation wizard, click Next.
- On the Agents page, click Common Agent Subagent Packages.
- From the Common Agent Subagent Packages view, select the subagent that you want to install (it has nim in the name).
- Click on add and then next and then select bpicnim and click on add and then on next
- Follow the instructions in the installation wizard to install the subagent for your virtualization environment.
- After checking summary page click on run now

When it is complete set up the NIM properties file and stop and start the common agent

- cd /opt/ibm/director/agent/runtime/agent/subagents/conf/
- cp VMControl-NIM.properties /opt/ibm/director/agent/conf/overrides
- cd /opt/ibm/director/agent/conf/overrides
- vi VMControl-NIM.properties
- Change the imagestore from /export/nim to /nim
- # The default directory value for VMControl imageStore is /export/nim
- com.ibm.director.im.rf.nim.master.imageStore=/nim
- #com.ibm.director.im.rf.nim.master.disableCompression=false
- com.ibm.director.im.rf.nim.master.disableCompression=true
- /opt/ibm/director/agent/runtime/agent/bin/endpoint.sh stop and then start

Now go to VMControl Basics page and discover virtual appliances to discover your repositories, etc

- I selected my NIM server by IP

VMControl with SCS repository

- http://pic.dhe.ibm.com/infocenter/director/pubs/index.jsp?topic=%2Fcom.ibm.director.vim.helps.doc%2Ffsd0_vim_c_learnmore_repositories.html

Agenda

- Quick Introduction/Update to PureSystems
- Forsythe's Configuration
- How We Installed It
- What We Learned
- Feedback We Have Given IBM

FORSYTHE

Up and running in 3 hours!!

1. Solid TDA
2. Planning IPs, power etc
3. Review all preinstall materials
    1. As in READMEs!!!

Within 3 hours we were ready to start deploying LPARs via NIM (not VMControl yet) to the nodes

FORSYTHE

What worked well

- Reading the documentation!!
- If FSM is chosen for authentication, IDs flow to all components
- CMM and FSM Setup Wizards
- Global find and Chassis map
- System Discovery and Inventory
- FSM Explorer
- Problem alerting

What didn't work so well

- Smooth integration throughout interfaces
  - More wizards, minimize clicks
- Job error notification
  - Error messages very esoteric
- Resolving Problems – Resolving HW problems did not notify the CMM
- Automated server creation only works with vSCSI
- Some issues with load times and FSM locking up
- Smooth updating procedure
- Ease of integration
  - No single sign on
  - Controlling all components from FSM

Overall

- Good
  - Converged Hardware Platform
  - Speeds and Feeds
  - P260 coming out with ability to run dual VIOs – with converged adapter
- Needs work
  - Complete integration
  - User interface
  - Would like rack map as well as chassis map

Other

- Flexmgr – need to edit profile after creating LPAR as it does VPs but entitlement may be wrong
- Each power node comes with a VIO and there is a media repository for your FBO (file backed optical) already populated
- Lots of tabs with esoteric names – makes navigation challenging
- Error messages can be esoteric
- Need big screen or you scroll a lot
- Terminology different to HMC
  - i.e. LPAR is now virtual server

Useful Tool – HMC Scanner – Sample Output

Server-7895-23X-SN1061ADB								
Name	**ID**	**Status**	**Environment**	**OS Version**	**Pool data available**	**Proc mode**	**RMC IP**	**RMC State**
FSG_test	5		aixlinux	Unknown	false	POWER7		none
flex1nim	4		aixlinux	Unknown	false	POWER7		none
flex1sccm	3		aixlinux	Unknown	false	POWER7		none
flex1test1	2		aixlinux	AIX 7.1 7100-01-00-0000	false	POWER7	10.250.134.189	inactive
					false	POWER7	10.250.134.181	active
				410 0	false	POWER7		none
					false	POWER7		none

		Server-7895-23X-SN1061ADB	Server-7895-42X-SN1061AEB
Status		Started	Started
Identification	**Type-Model**	7895-23X	7895-42X
	Serial	1061ADB	1061AEB
Cores	**Installed**	16	32
	Active	16	32
	Deconfig	0	0
	Curr Avail	0.95	26.00
	Pend Avail	0.95	26.00
Memory (MB)	**Installed**	524288	524288
	Active	524288	524288
	Deconfig	0	0
	Firmware	7680	12032
	Curr Avail	396800	499968
	Pend Avail	396800	499968
Perf Sample Rate			
Manager	**#1**	10.250.134.180	10.250.134.180
	#2	10.250.134.180	10.250.134.180
Service Processor IP	**Primary**	fd94:72a2:b8f5:0:5ef3:fcff:fe84:3404	fd94:72a2:b8f5:0:5ef3:fcff:fe84:1b68
	Secondary		
Code Levels	**EC Number**	01AF763	01AF763
	IPL Level	52	43
	Activated Level	52	52
	Deferred Level	None	None

System Summary

42X-SN1061AEB				
sion	**Pool data available**	**Proc mode**	**RMC IP**	**RMC State**
	false	POWER7		none
	false	POWER7		none
	false	POWER7		none

LPAR Summary

Latest HMC Scanner is available at http://tinyurl.com/HMCscanner

FORSYTHE

HMC Scanner – Sample Output

Server-7895-23X-SN1061ADB

Name	Status	Mode	Virt/Phys procs			Entitlement			Weight	Sharing M
			Min	Curr	Max	Min	Curr	Max		
FSG_test	Off	shared	1	0	16	0.10	0.00	8.00	0	uncap
flex1nim	Off	shared	1	0	12	0.10	0.00	6.00	0	uncap
flex1sccm	Off	ded	0	0	0					share_idle_procs
flex1test1	Off	shared	1	0	12	0.10	0.00	12.00	0	uncap
flex1vio1	On	shared	1	2	4	0.50	1.00	3.00	255	uncap
ibmitr6test1	On	shared	1	2	4	0.05	1.00	2.00	128	uncap
test	Off	shared	1	0	11	0.05	0.00	11.00	0	uncap

	Size	Assigned	Available
Active Physical Cores	16		
Dedicated Cores		0	
Shared Pool	16	2.00	14.00
Virtual Processors		4	

LPAR CPU

Server-7895-23X-SN1061ADB

Name	Mode	Memory (MB)				Active Memory Shar	
		Min	Curr	Max	ExpFact	Weight	Prim VIO
FSG_test	ded	256	16384	17408	0.00		
flex1nim	ded	1024	16384	17408	0.00		
flex1sccm	ded	0	0	0	0.00		
flex1test1	ded	1024	16384	17408	0.00		
flex1vio1	ded	2048	4096	8192	0.00		
ibmitr6test1	ded	2048	65536	66560	0.00		
test	ded	256	1024	2048	0.00		

LPAR Memory

FORSYTHE

Agenda

- Quick Introduction/Update to PureSystems
- Forsythe's Configuration
- How We Installed It
- What We Learned
- Feedback We Have Given IBM

FORSYTHE

Feedback given to IBM

- Single signon enhancements – FSM is used for ID propagation and authentication; however, it does not automatically pass credentials
- Screen coherency – Flow and look of screens should not be fragmented. FSM Explorer is a step in right direction.
- Fuller integration – Ability to configure/control I/O switches and storage without exiting FSM
- Timelier updates/patches

References

- Quick Start Guides
  - http://publib.boulder.ibm.com/infocenter/flexsys/information/index.jsp?topic=%2Fcom.ibm.acc.commontasks.doc%2Fcommontasks_intro.html
- Redpiece 4834 – Network configuration
  - http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/redp4834.html?Open
- Configure NIM/Vmcontrol
  - http://publib.boulder.ibm.com/infocenter/flexsys/information/index.jsp?topic=%2Fcom.ibm.director.vim.helps.doc%2Ffsd0_vim_c_learnmore_repositories_vios_aix_and_lop.html
- Managing storage, specifically Storage System Pools:
  - http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.acc.8731.doc/managing_storage_resources.html
- Pureflex Interoperability Guide
  - https://www-947.ibm.com/support/entry/myportal/docdisplay?lndocid=FLEX-INTEROP
- Managing Server System Pools
  - http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.director.vim.helps.doc/fsd0_vim_t_managing_pools.html
- Redbooks
  - http://www.redbooks.ibm.com/portals/puresystems
- VMControl Troubleshooting
  - http://publib.boulder.ibm.com/infocenter/flexsys/information/topic/com.ibm.director.vim.helps.doc/fsd0_vim_t_troubleshooting_support.html
- Other
  - http://www.ibmsystemsmag.com/ibmi/trends/whatsnew/pureflex_primer/
  - http://www.ibmsystemsmag.com/aix/trends/whatsnew/puresystems_p260_overview/
  - http://www.circle4.com/convergence/

Questions?

Contact Information:

Andrew Goade
agoade@forsythe.com
847-415-3301

FORSYTHE


FORSYTHE
Realize the business value of IT®