Agenda

- Power E880 & E870 enhancement
- Gen3 I/O Drawer – Enterprise & Scale-out
- 7.1 TR10  7.2 TR1
# Announce / Availability

<table>
<thead>
<tr>
<th>Enterprise announcements</th>
<th>Annnc</th>
<th>eConfig</th>
<th>General Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power E880 48-core drawer 1-4 nodes</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Same serial number upgrade 770 → E880</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Up to four PCIe Gen3 I/O drawers per node</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Single &amp; half PCIe Gen3 I/O drawers per node</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>4TB memory per Power E870 node</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Expanded list existing PCIe adapters supported</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>New PCIe adapters</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Expanded SR-IOV support</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
</tbody>
</table>

SPT support of Apr/May announcement planned 11 May 2015
## Announce / Availability

<table>
<thead>
<tr>
<th>Scale-out announcements</th>
<th>Annnc</th>
<th>eConfig</th>
<th>General Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>110V power for rack mount S814</td>
<td>28 Apr 2015</td>
<td>now</td>
<td>now</td>
</tr>
<tr>
<td>4.1 GHz for S822 and S822L</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>Bigger memory for S814 and S824L</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>PCIe Gen3 I/O drawers</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td>S814 Tower ↔ Rack</td>
<td>28 Apr 2015</td>
<td>28 Apr</td>
<td>5 June 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S824L general non-GPU configs</td>
<td>28 Apr 2015</td>
<td>9 Jun</td>
<td>19 June 2015</td>
</tr>
<tr>
<td>K80 GPU on Sk24L</td>
<td>June</td>
<td>June</td>
<td>June</td>
</tr>
</tbody>
</table>

SPT support of Apr/May announcements planned 11 May 2015
Power E880 & E870
Power Enterprise Servers with POWER8 processors

**Power E880**  
9119-MHE  
New  
192 cores @ 4.02 GHz  
1 – 4 node, 4 – 8S (12c)  
Up to 16 TB memory  

**Power E870**  
9119-MME  
New  
128 cores @ 4.35 GHz  
1 – 4 node, 4 – 8S (8c)  
Up to 16 TB memory  
80 cores @ 4.19 GHz  
1 – 2 node, 4 – 8S (10c)  
Up to 8* TB memory  
64 cores @ 4.02 GHz  
1 – 2 node, 4 – 8S (8c)  
Up to 8* TB memory

GA = 4Q14  
1st & 2nd node

GA = 5 June 2015  
3rd & 4th node

*8TB was originally SOD as only 4TB initially available. 8GB announced April 2015 with June 2015 GA date*
### CPW

<table>
<thead>
<tr>
<th>E870</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32-core</td>
<td>4.02 GHz</td>
<td>359,000</td>
</tr>
<tr>
<td>64-core</td>
<td>4.02 GHz</td>
<td>711,000</td>
</tr>
<tr>
<td>40-core</td>
<td>4.19 GHz</td>
<td>460,000</td>
</tr>
<tr>
<td>80-core</td>
<td>4.19 GHz</td>
<td>911,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E880</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>32-core</td>
<td>4.35 GHz</td>
<td>381,000</td>
</tr>
<tr>
<td>64-core</td>
<td>4.35 GHz</td>
<td>755,000</td>
</tr>
<tr>
<td>96-core</td>
<td>4.35 GHz</td>
<td>1,144,000</td>
</tr>
<tr>
<td>128-core</td>
<td>4.35 GHz</td>
<td>1,523,000</td>
</tr>
<tr>
<td>48-core</td>
<td>4.0 GHz</td>
<td>518,000</td>
</tr>
<tr>
<td>96-core</td>
<td>4.0 GHz</td>
<td>1,034,000</td>
</tr>
<tr>
<td>144-core</td>
<td>4.0 GHz</td>
<td>1,551,000</td>
</tr>
<tr>
<td>192-core</td>
<td>4.0 GHz</td>
<td>2,069,000</td>
</tr>
</tbody>
</table>

Measured using SMT8

SMT4 would be somewhat lower
Withdrawal from marketing of Power 770+ and 780+ announced Feb 2015 to be effective 30 Nov 2015. Upgrades into 770+ & 780+ also withdrawn. Upgrades to Power E870/E880 remain available.
## SAS SFF-3 Supported Options as of May 2015

<table>
<thead>
<tr>
<th>SFF-3 HDD</th>
<th>Block size</th>
<th>Formatted with 512 or 4096 byte sectors</th>
<th>Formatted with 528 or 4224 byte sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>10k 5xx</td>
<td>300 GB</td>
<td>#ESDR</td>
<td>283 GB</td>
</tr>
<tr>
<td>10k 5xx</td>
<td>600 GB</td>
<td>#ESD5</td>
<td>571 GB</td>
</tr>
<tr>
<td>10k 4k</td>
<td>600 GB</td>
<td>#ESF5</td>
<td>571 GB</td>
</tr>
<tr>
<td>10k 5xx</td>
<td>1.2 TB</td>
<td>#ESD9</td>
<td>1.1 TB</td>
</tr>
<tr>
<td>10k 4k</td>
<td>1.2 TB</td>
<td>#ESF9</td>
<td>1.1 TB</td>
</tr>
<tr>
<td>10k 4k</td>
<td>1.8 TB</td>
<td>#ESFV</td>
<td>1.7 TB</td>
</tr>
<tr>
<td>15k 5xx</td>
<td>146 GB</td>
<td>#ESDT</td>
<td>139 GB</td>
</tr>
<tr>
<td>15k 5xx</td>
<td>300 GB</td>
<td>#ESDB</td>
<td>283 GB</td>
</tr>
<tr>
<td>15k 4k</td>
<td>300 GB</td>
<td>#ESFB</td>
<td>283 GB</td>
</tr>
<tr>
<td>15k 4k</td>
<td>600 GB</td>
<td>#ESFF</td>
<td>571 GB</td>
</tr>
<tr>
<td>15k 5xx</td>
<td>600 GB</td>
<td>#ESDF</td>
<td>571 GB</td>
</tr>
</tbody>
</table>

**SFF-3 HDD shipped from IBM formatted in 528 or 4224 byte sectors. They can be reformatted to 512 or 4096 by the client if the extra protection is not desired.**

4k drives (HDD or SSD) can NOT be reformatted to 5xx drives.

4k drives and 5xx drives can NOT be mixed on the same array. True for both HDD and SSD.

<table>
<thead>
<tr>
<th>SFF-3 SSD</th>
<th>Block size</th>
<th>For AIX/Linux/VIOS rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>eMLC3</td>
<td>528 byte</td>
<td>387 GB #ES0L</td>
</tr>
<tr>
<td>eMLC3</td>
<td>528 byte</td>
<td>775 GB #ES0N</td>
</tr>
<tr>
<td>eMLC3</td>
<td>4224 byte</td>
<td>387 GB #ES0U</td>
</tr>
<tr>
<td>eMLC3</td>
<td>4224 byte</td>
<td>775 GB #ES0W</td>
</tr>
</tbody>
</table>

The above features use SFF-3 or Gen3 carriers/trays and can be placed in the SFF SAS bays of the POWER8 servers.
PCIe Gen3 I/O Expansion Drawer
PCle Gen3 I/O Expansion Drawer for Scale-out

- 6 or 12 PCle Gen3 slots
- 4U drawer
- Full high PCle slots
- Hot plug PCle slots
- Modules not hot plug

Fan-out Module
6 PCle Gen3 Slots
4 x8 & 2 x16

Feat #EMX0
Feat #ELMX

Feat #EMXF
Feat #ELMF

Use same Blind Swap Cassette (BSC) as used in
#5802/5877/5803/5873 I/O drawer

#EMX0/EMXF for S814, S824, S822
#ELMX/ELMF for S824L, S812L, S822L
4U System to PCIe Gen3 I/O Drawer (S814, S824, S824L, E850)

**PCle3 Optical Cable Adapter (#EJ08) single-wide card**
- One #EJ08 per fan-out module
- Can be in any of system unit’s x16 PCIe slots

**AOC cable pairs**
- #ECC7 3 meter length
- #ECC8 10 meter length
- One feat code ships two identical cables
  - Connect top CXP port of #EJ08 to top CXP port of fan-out module. Likewise connect bottom port to bottom port. Do NOT reverse !!
  - Do NOT mix lengths of AOC cables for the same fan-out module
  - Do NOT cross cables connecting one fan-out module to two different #EJ08 adapters
- Each cable has two electrical-to-optical convertors in the transceiver/CXP module at each cable end. 12-lane optical cables are used for bandwidth and for incremental redundancy.

Conceptual diagram. Does not depict actual x16 slot locations
Rear of 4U2S picture shown above
I/O Bandwidth (Comparing POWER8 to POWER7 I/O Drawers)

POWER7 12X-attached PCIe I/O drawer = #5877 or #5802
One or two #5877 or #5802 can share a single GX++ slot’s 20GB/s bandwidth
A per slot average of 2GB/s (1 drawer) or of 1GB/s (2 drawers)

POWER8 PCIe-attached Gen3 I/O drawer has two fan-out modules and each fan-out module has 32GB/s
A per slot average of 5+GB/s
SR-IOV on POWER8
POWER8 SR-IOV NIC Enhancements

• History
  – Announced 2014 on POWER7+ 770/780 with latest levels of firmware and software. Supported newest IMFC card and specific 4-port Ethernet adapters
  – POWER8 SR-IOV SODs provided 2014
  – Announced Feb 2015 for Power E870/E880 in system node (not I/O drawer) for two specific 4-port Ethernet adapters (#EN0J and #EN0L).

• New news: April 2015
  – Announcing capability for all POWER8 servers (E850 in May)
    • Scale-out servers have specific slots which support SR-IOV
  – Adding support for specific slots in PCIe Gen3 I/O drawer
  – Adding additional PCIe Ethernet adapter with SR-IOV capability
SR-IOV .... A Technology of Interest

• Single Root I/O Virtualization
• Runs “closer to the silicon” potentially offering some performance efficiencies
• Doesn’t require VIOS as a pre-req and thus can do simple virtualization under PowerVM without VIOS .... **BUT** .... VIOS continues to offer many additional advanced functions
• Architecturally can virtualize a resource like an Ethenet adapter and allocate/provide a user-defined minimum level of bandwidth to a partition … Quality of Service (QoS)
  – Ethernet NIC announced. FCoE and FC not announced.
• **Can use VIOS & SR-IOV together**
SR-IOV (Single Root I/O Virtualization) for Ethernet NIC

- Simple virtualization without VIOS
- With quality of service controls

* For specific adapters with SR-IOV capable electronics In PCIe Gen2/3 slots
* For specific Integrated Multifunction Cards with SR-IOV capable electronics (770+/780+)
* Under latest 7.8 firmware (770+/780+) or later firmware on POWER8 server
* With recent OS level software
Other POWER8 related
IBM i Storage-Related Announcement

Native and VIOS NPIV attachment of FlashSystem

- Alternative to native SSD configurations
- Previously IBM i required SVC in configuration with FlashSystem
- Supported configurations:
  - Native direct attach
  - VIOS and native SAN attach with switches
- IBM i 7.2 TR 2 only
- FlashSystem 900
- Watch SSIC for any additional future FlashSystem configs to be supported
Withdrawal of Power Systems and Associated Features

- RFA 70219
  - Announce date: February 24, 2015
  - Effective date: November 30, 2015
- IBM Power Systems
  - IBM PowerLinux 7R1 server (8246-L1D)
  - IBM PowerLinux 7R2 server (8246-L2D)
  - IBM PowerLinux 7R2 server (8246-L2T) (does not apply to China)
  - IBM PowerLinux 7R4 (8248-L4T)
  - IBM Power 710 Express (8268-E1D)
  - IBM Power 730 Express (8231-E2D)
  - IBM Power 740 Express (8205-E6D)
  - IBM Power 770 Express (9117-MMD)
  - IBM Power 795 Server (9119-FHB)
  - IBM Power 780 Server (9179-MHD) (China effective date June 15, 2016)
  - IBM Power ESE (8412-EAD)
- IBM Power 720 (8202-E4D) is NOT being withdrawn from marketing at this time
IBM i – 7.2 TR2 Announce 28 April, 2015
IBM i 7.2 TR2 and IBM i 7.1 TR10 – April 28, 2015

*** - this chart pertains to IBM i 7.2 TR2 only; only a subset of function will be available for IBM i 7.1 TR10

Analytics & DB2
- Improving the simplicity and stability of database management for DB2 for IBM i
  - CREATE OR REPLACE TABLE instead of ALTER TABLE(s)
- Key industry leading technology - building on JSON support from 4Q 2014
  - JSON Store Tech Preview

Mobile & Solution Enablement
- Java 8
- Python language supported
- iAccess Mobile client shipped as part of Access Client Solutions

Hardware Enablement
- Native/VIOS attach of Flash System 900
- Support for New I/O devices

Security & Social
- Maintaining currency of SWG products
  - Guardian Vulnerability Assessment (VA)
  - Guardium DAM - Filtering extensions
  - Domino 9.0.2
  - Traveler 9.0.2
  - Sametime 9.0.1
  - Connections 5.0 Next
IBM i updates on developerWorks

ibm.com/developerworks/ibmi

http://www.developerworks.com/ibmi/techupDATES/

http://www.ibm.com/developerworks/ibmi/techupDATES/i72-TR2
IBM i Roadmap

- 7.1 Introduced Technology Refreshes
- 7.2 Incorporates 7.1 TRs and adds new capabilities
- TRs will transition to 7.2 over time
- New Releases for pervasive changes beyond scope of TRs

** All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.
IBM i 6.1 Service Extension

– Current Plan
  • Announce a Service Extension for IBM i 6.1
  • Details still being negotiated
  • Usual announcement timeframe for Extended Service Offering is 4-5 months in advance of EoS date
  • Will be modeled after the 5.4 Service Extension
    • 1.5 – 2 times expense of regular SWMA
    • Effective October 1, 2015
    • 3-year Extension
    • Usage, known and new defect support (Level 2/Level 3)
ITG Whitepapers

"Three-year IT costs for use of IBM i 7.1 and Power Systems average 44 percent less than for x86 servers with Microsoft Windows Server and SQL Server, and 57 percent less than for x86

Refreshed Whitepapers Available by 4Q
WebCast from ITG in September
Details available in Education/Enablement newsletters or Todd Bloom/Dallas/IBM@IBMUS

"No matter how one rates the value of IBM i’s distinctive strengths, that value is increasing over time."  

1. ITG Management Brief: IBM i for Midsize Businesses - Minimizing Costs and Risks for Midsize Businesses; October 2012
THANKS