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# YES IT'S TIME TO MIGRATE TO POWER8

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<http://www.circle4.com/forsythe/timeforpower8.pdf>

# POWER8 – YES IT'S TIME

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- It is time to transition to POWER8
- Scale out around since April 2014
- Performance boost
  - rPERF
  - Memory and I/O Bandwidth
- POWER6 and POWER7 and earlier servers and upgrades withdrawn for some time
- POWER7+ (except 720D, 750 and 760) will be withdrawn November 30, 2015
- POWER8 is now significantly cheaper than equivalent POWER7+
- Scaleout POWER8 servers have more disk bays and more slots than equivalent POWER7+
- Reduction in cores can lead to software savings
- Scaleout POWER8 servers have hot plug slots – POWER7+ do not

# POWER8 RPERF - ESTIMATES

IBM p8 Performance												
Power8 Mode												
Model - Description		CPU	ghz Spd	Rperf	SMT8 0.934359	SMT4 0.718974	SMT2 0.495385	SMT1	SMT8 Per core	SMT4 Per Core	SMT2 Per Core	SMT1 Per Core
S814 - 8286-41A	Power8	6	3.00	97.50	91.1	70.1	48.3		16.25	15.18	11.68	8.05
S814 - 8286-41A	Power8	8	3.70	143.90	134.5	103.5	71.3		17.99	16.81	12.93	8.91
S824 - 8286-42A	Power8	6	3.80	120.80	112.9	86.9	59.8		20.13	18.81	14.48	9.97
S824 - 8286-42A	Power8	12	3.80	235.60	220.1	169.4	116.7		19.63	18.34	14.12	9.73
S824 - 8286-42A	Power8	8	4.10	166.00	155.1	119.3	82.2		20.75	19.39	14.92	10.28
S824 - 8286-42A	Power8	16	4.10	323.60	302.4	232.7	160.3		20.23	18.90	14.54	10.02
S824 - 8286-42A	Power8	24	3.50	421.80	394.1	303.3	209.0		17.58	16.42	12.64	8.71
S822 - 8244-22A	Power8	6	3.80	120.80	112.9	86.9	59.8		20.13	18.81	14.48	9.97
S822 - 8244-22A	Power8	12	3.80	235.60	220.1	169.4	116.7		19.63	18.34	14.12	9.73
S822 - 8244-22A	Power8	10	3.40	177.80	166.1	127.8	88.1		17.78	16.61	12.78	8.81
S822 - 8244-22A	Power8	20	3.40	346.70	323.9	249.3	171.7		17.34	16.20	12.46	8.59
E870 - 9119-MME	Power8	32	4.02	674.50	630.2	484.9	334.1		21.08	19.69	15.15	10.44
E870 - 9119-MME	Power8	40	4.19	856.00	799.8	615.4	424.0		21.40	20.00	15.39	10.60
E870 - 9119-MME	Power8	64	4.02	1349.00	1260.45	969.90	668.3		21.08	19.69	15.15	10.44
E870 - 9119-MME	Power8	80	4.19	1711.90	1599.53	1230.81	848.0		21.40	19.99	15.39	10.60
E880 - 9119-MHE	Power8	32	4.02	716.30	669.28	515.00	354.8		22.38	20.92	16.09	11.09
E880 - 9119-MHE	Power8	64	4.02	1432.50	1338.47	1029.93	709.6		22.38	20.91	16.09	11.09
<b>POWER7+</b>												
770 - 9117-MMD	power7+	16	3.8		219.16	175.33	109.58			13.70	10.96	6.85
770 - 9117-MMD	power7+	32	3.8		410.80	328.64	205.40			12.84	10.27	6.42
740 - 8205-E6D	power7+	16	4.2		223.10	178.48	111.55			13.94	11.16	6.97
750 - 8408-E8D	power7+	32	3.5		354.90	283.92	177.45			11.09	8.87	5.55

# POWER E870 VS POWER 770 - BANDWIDTHS



2015

	9117-MMD Power 770	9119-MME Power E870
CPU Sockets per Node	4	4
Max processor nodes	4	2
Max number sockets	16	8
Max Cores	64	80
Max Frequency	3.8 GHz	4.19 GHz
Max Memory	1 TB per node	4 TB per node SOD
Memory per core	31.3 GB	100 GB
Memory Bandwidth (peak)	272 GB/s per node	922 GB/s per node
I/O Bandwidth (peak)	80 GB/s per node (GX)	256 GB/s per node (PCIe Gen3)
Max PCIe I/O drws	16 (4 per Node)	8 (4 per Node)
Max PCIe I/O Slots	160 - in IO drws 24 - internal	96 in IO drws 0 - internal

# MEMORY AND I/O BANDWIDTH

Memory and I/O Bandwidth						
ESTIMATES						
	8205-E6C	8204-E8A	9117-MMI	8286-41A	8286-42A	9119-MME
	3.3g	4.2g	3.8g	3.72g	3.5g	4.02g
			770-MMD	S814	S824	E870
	740C	550				
	P7 8c	P6 8c	P7+ 32c	P8 8c	P8 8c	P8 12c
Peak Memory bandwidth (GB/s/node)	136.00	128.00	272.00	192.00	384.00	256.00
Peak IO Bandwidth (GB/s/node)	20.00	8.40	80.00	192.00	192.00	252.00
PCIe Interconnect GB/s				96.00	192.00	252.00
rperf	92.79	68.20	410.80	134.50	394.10	236.33

# POWER8 SCALE-OUT SERVERS SLOTS

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S814 7 PCIe Gen3, full high slots  
10 or 12 or 18 SFF-3 SAS bays



S824 11 or 7 PCIe Gen3, full high slots  
12 or 18 SFF-3 SAS bays



S822 9 or 6 PCIe Gen3, low profile slots  
12 or 8 SFF-3 SAS bays



S812L 6 PCIe Gen3, low profile slots  
12 or 8 SFF-3 SAS bays



S822L 9 PCIe Gen3, low profile slots  
12 or 8 SFF-3 SAS bays

# POWER8 PRICE COMPARISON

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- POWER8 is now significantly cheaper than equivalent POWER7+
- Reduction in cores can lead to software savings

Compare 32GB 12 core S822 with 32GB 16 core 740D Express  
Compare 128GB 12 core S822 with 32GB 16 core 740D Express

32GB 740 vs S822 32GB	Cost 1.6x
32GB 740 vs S822 128GB	Cost 1.4x

Costs above don't include reductions in 3<sup>rd</sup> party software licences due to fewer cores

740 needs 16 cores	197.7 rPERF SMT4
S822 12 core	220.1 rPERF SMT4

# SO IF POWER8 IS SO GREAT WHY ARE PEOPLE NOT GOING THERE?

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- Requires HMC to be at v8 which only supports POWER6 and later
- Requires HMC to be at least a CR5 with at least 4GB memory)
  - Highly recommend at least 8GB
- No native AIX v5.3 (but there is always a versioned WPAR option)
- Requires fairly current AIX v6.1 or v7.1 TLs and SPs
  
- Older POWER6 and POWER7 servers may require firmware updates to connect to v8 HMC
  
- SOLUTION:
- If the HMC is the main issue then bring in a new HMC with the first POWER8
- Transition older servers over as they are brought up to date
- You can use LPM (Live partition mobility) to move workloads over
- Or you can rezone LUNs
- Remember that being current on technology, O/S and firmware will help avoid many problems, especially the latest security issues.

# POWER REFERENCES

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Article on POWER8 Transition

<http://www.ibmssystemsmag.com/aix/trends/whatsnew/power8-time-is-now/>

Announcement letter for withdrawals

[http://www-01.ibm.com/common/ssi/rep\\_ca/0/897/ENUS915-050/ENUS915-050.PDF](http://www-01.ibm.com/common/ssi/rep_ca/0/897/ENUS915-050/ENUS915-050.PDF)

IBM POWER Code Matrix

<http://www-304.ibm.com/webapp/set2/sas/f/power5cm/>

AIX Strength to Strength

<http://public.dhe.ibm.com/common/ssi/ecm/po/en/poo03022usen/POO03022USEN.PDF>

## EDGE 2015 AND IBM CONFERENCES

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IBM has changed their conferences this year

The big October conference has now been integrated into Edge in May at the Venetian Las Vegas – this is a change so I want you to be aware that discounted registration is now open at:

<http://www-03.ibm.com/systems/edge/>

The symposium IBM used to have in April is now the October conference. The dates are not set but this will be somewhere on the east coast

# ARTICLES, MOVIES, ETC

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## Journal Articles

<https://enterprisesystemsmedia.com/author/jaqui-lynch>

<http://www.ibmsystemsmag.com/authors/Jaqui-Lynch/>

## ForsytheTalks and Movies Site

<http://www.circle4.com/movies>

<http://www.circle4.com/forsyhetalks.html>

## Direct YouTube Feed

<http://www.youtube.com/user/adespota4?feature=watch>

The handout for this presentation will be linked to from:

<http://www.circle4.com/movies/>

# QUESTIONS?

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