

SAP Sizing 'Daumenwerte'



Manfred Engelbart, SAP Solution Infrastructure Architect

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IBM Rule of Thumbs for SAP Sizing

- Simple sizing approach based on best practice experiences
- Common Rule of Thumbs for p, i, (x)
- First guess for IT-landscape design
- Does not replace the formal SAP sizing procedure

Best Practice Sizing Methodologies

- **SAP Quicksizer (User and Quantity Based):**

- CPU
- Capacity
- I/O-Performance

- **IBM Rule of Thumbs:**

- CPU
- Memory
- Capacity
- I/O-Performance

- **Combination of Quicksizer and Rule of Thumbs**

- CPU: RoT, User Based Sizing (SAP QS),
 Volume Based Sizing (SAP QS Throughput Sizing)
- Memory: RoT
- Disk Space: RoT plus SAP QS Results
- I/O Perf.: RoT or SAP QS Results

CPU Sizing for frequently used SAP Components

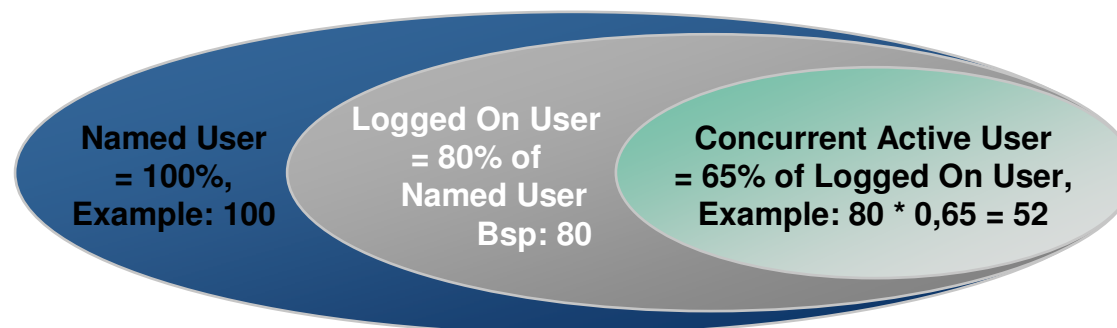
SAP Comp.	Common Sizing Method
ERP	<ul style="list-style-type: none"> - RoT - SAP Quicksizer - User Based Sizing - ISICC Sample Configs
CRM	- SAP Quicksizer – User Based Sizing
BW	<ul style="list-style-type: none"> - SAP Quicksizer – User Based Sizing (rough estimation) - Web-Reporting -> up to 80% of ABAP Load -> JAVA
EP (Portal)	- SAP Quicksizer – User Based Sizing
PI (ehem. XI)	<ul style="list-style-type: none"> - SAP Quicksizer – Volume Based Sizing - based on Number and size of messages
Solution Manager	- T-shirt Sizing (S/M/L)

Rules of Thumb for SAPS (Unicode)

▪ RoT when not using the SAP QS

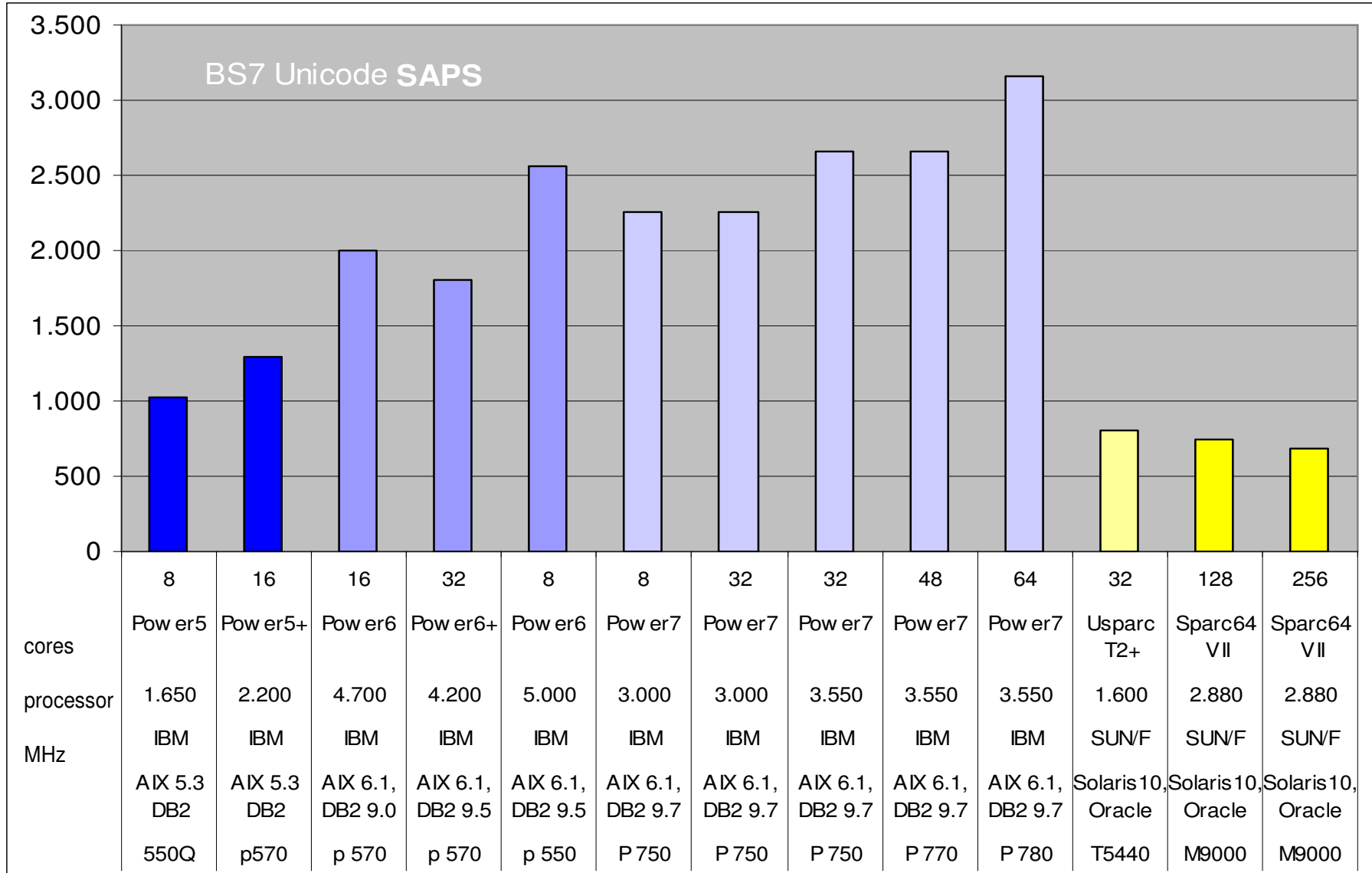
- 1 concurrent active ERP user = 10 SAPS
- 1 concurrent active CRM, BW user = 20 SAPS
- Complex application mix
(incl. EP, PI, BW, ERP)= 22 SAPS (ISICC Sample Configs)

ASCII = Unicode minus 20% CPU capacity.

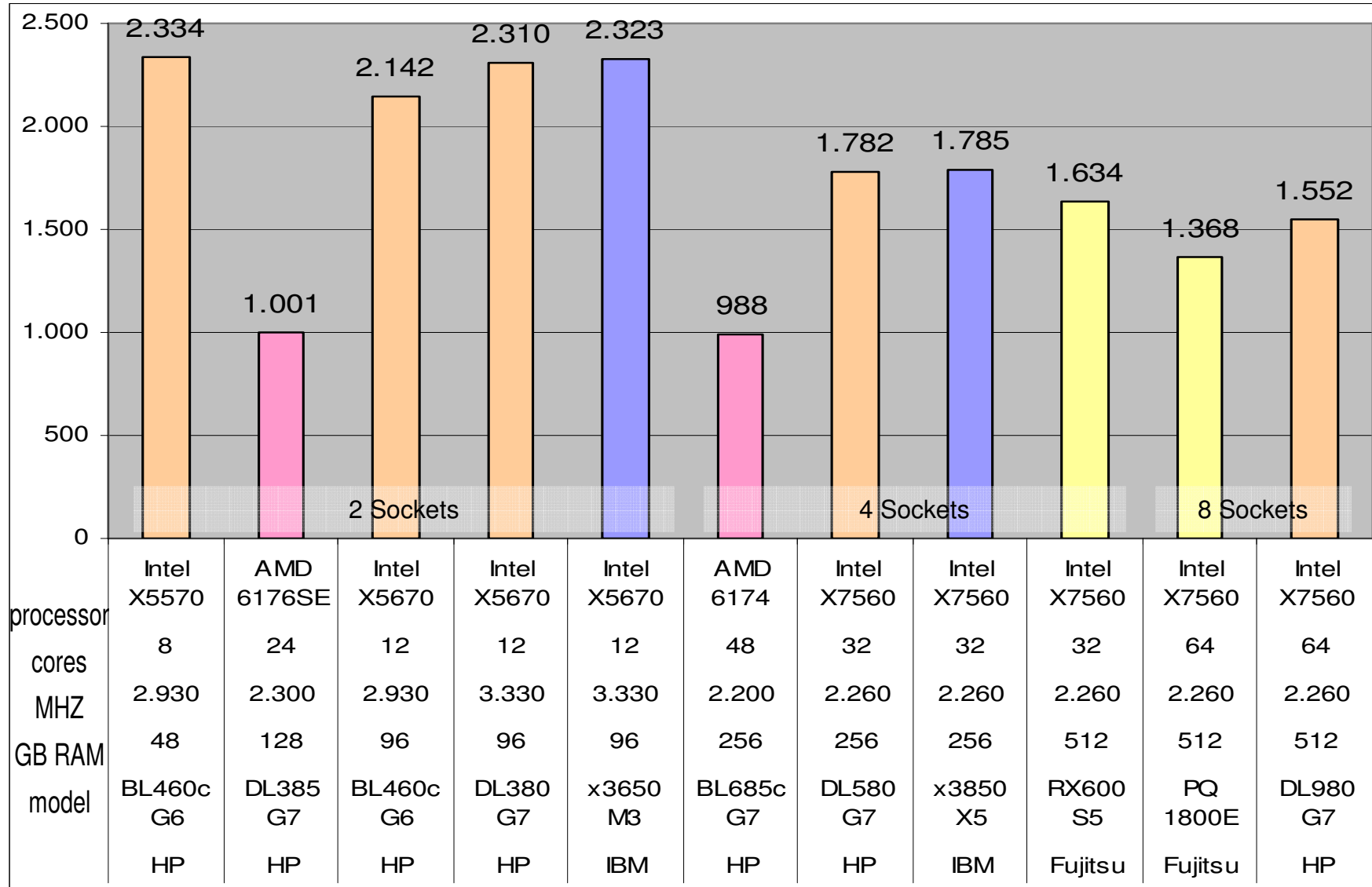


BS7 POWER SAPS/core overview

<http://www.sap.com/solutions/benchmark/sd2tier.epx>



BS7 x86 SAPS/core overview



Power6 vs. Power7 – SAPS/Core

Prozessor Technologie	Modell/Taktrate	SAPS/Core
POWER6	520 4.2 GHZ	1.700
	4.7 GHZ	1.885
	550 3.5 GHZ	1.520
	4.2 GHZ	1.820
	5.0 GHZ	2.160
	570 4.7 GHZ	2.140
	5.0 GHZ	2.265
POWER7	720 3.0 GHZ	2.327
	740 3.7 GHZ	2.670
	750 3.3 GHZ	2.348
	770 3.5 GHZ	2.725
	780 3.8 GHZ	2.781
	780 Turbo	3.145

SAP Sizing – CPU Rules of Thumb

- Per previous charts, we can conclude :
 - 1 **concurrent** / active user requires 12 SAPS Backend (ECC)
 - + 10 SAPS (EP, PI, BI)
 - = 22 SAPS SAP NW landscape
 - 1 **named** SAP NW user requires 11 SAPS
- Now it's easy to map this to CPUs and Models
 - tbd. (~2000-3000) SAPS/core for ECC 6.0 for POWER7 systems
 - tbd. (~1000-2350) SAPS/core for ECC 6.0 for Intel/AMD based systems

Named Users	Concurrent Users	SAPS NetWeaver	CPUs min. Intel/AMD	CPUs min. POWER	Smallest Model Intel/AMD	Smallest Model POWER
100	52	1144	1	1		
300	156	3432	2... 3	2		
500	260	5720	3...4	2...3		

Old Memory RoT (ABAP)

- **POWER5** at least 10 GB / Core
- **POWER5+** at least 12 GB / Core
- **POWER6** at least 16 GB / Core
- **POWER7** at least 16 GB / Core

Remarks:

The values given are valid for 1 SAP instance. Each additional SAP instance will require at least 3 GB more memory

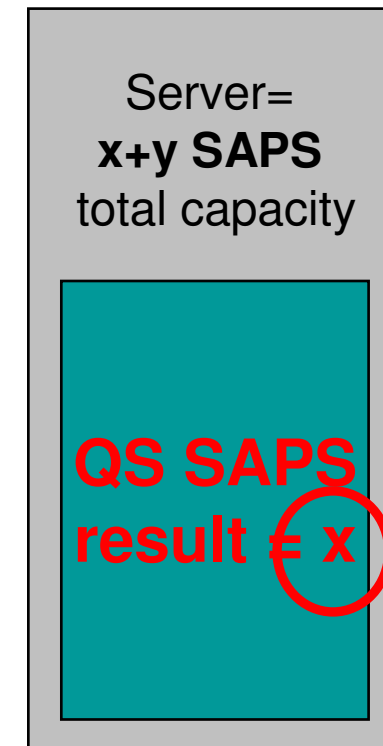
The values given are valid for a SAP typical load

SAP Sizing – Some **Memory** Rules of Thumb

- **Memory Recommendations**

- 6...8 GB per 1000 SAPS (Quick)sizer output
- assumes an ABAP and Java mix (80%:20%)
- Consequently, server capacity is MEMORY bound

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- Above values are OK for a single SAP instance on a server/LPAR.
- Add a minimum of 2 GB for each instance in case you consolidate several SAP instances on a single server / partition.
- Consider some additional memory for virtualization features – see separate chart



Virtual I/O Server Design – Basic recommendations

- Two Virtual I/O Server partitions are required for production load
 - resilience against failure or misconfiguration
 - planned maintenance for VIO server

- In shared pools assign minimum 10% CPU power to the VIO Server+Clients

- Sample Virtual I/O Server partition configuration
 - 1 GB Memory (min=512MB max= 4GB)
 - Uncapped Micropartitions with Capacity Entitlement = 0,5
 - 2 Virtual CPUs, SMT enabled

Memory RoT (Java)

- Java Basic Setup 3 GB

- Guideline for additional memory requirements depending on SAPS value of Java application environments (first assumptions, subject to change).

Additional 3 GB Memory per:

- PI: approx. 600 SAPS (high memory footprint for large message sizes)
- BW: approx. 400 SAPS
- EP: approx. 800 SAPS

Disk Space RoT

- Basis: 50 GB for OS, 100 GB for ,empty' SAP system
- Use SAP QS results for capacity growth
 - User based sizing: per year
 - Throughput sizing: per retention period
- SAP QS results assumes single byte encoding, for Unicode apply approx. +50%
- temp Space

small installations	(up to 1,000 SAPS)	50 GB
medium installations	(up to 5,000 SAPS)	70 GB
large installations	(greater than 5,000 SAPS)	150 GB

Former Approach - I/O calculation

- Number of I/O per second required
 - 0.4 I/O per second / SAPS (ERP, PI)
 - 0.6 I/O per second / SAPS (BW)
 - 0.2 I/O per second / SAPS, (assumption for SAP Components with low I/O requirements, e.g. EP, CRM, SolMan)

- I/O throughput
 - 100 I/O per second (15k RPM drives)
 - >1000 I/O per second (SSD drives, predominantly read)

- Example (15k RPM drives)

– 7,500 SAPS for ERP, PI	approx. 3,000 I/O	approx. 30 Drives
– 2,000 SAPS for BW	approx. 1,200 I/O	approx. 12 Drives
– 1,500 SAPS for EP	approx. 300 I/O	approx. 3 Drives

SAP Sizing – Basic I/O Rules of Thumb

- **2,5 SAPS (DB+App-Sv) generate 1 I/O operation per second**
- 1 concurrent SAP NW user generates ~9 I/Os per second
- A single 15k rpm disk is capable to support a maximum of **200 I/Os per second**
 - in other words: per 22 concurrent SAP users configure one disk drive
 - resultingly, disk configuration is **not capacity, but I/O driven**
- Disk Controller
 - RAID mechanisms have impact on aggregate I/O rates of storage subsystem.
 - e.g., RAID 10 increases READ throughput (reads from 2 disks) but WRITE is reduced
- Adapters
 - SCSI, FC, SATA, NAS, iSCSI
- Storage Sizing Guide available at:
 - <http://w3-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS3409>

SAP Sizing –DB-centric I/O Rules of Thumb (as of 2010) QS Approach

- **0,3 DB-Server SAPS generate 1 I/O operation per second**

- **New SAP I/O sizing approach for situations where DB-SAPS portion is well defined**
 - Previous RoT is considered to result in too high I/O estimates for newer SAP modules.
 - Reason: more SAPS are consumed on App-Server side relative to DB
 - SAP Quicksizer now explicitly shows SAPS split between the two instances.
- **Variation of DB-SAPS : App-SAPS is significant for different SAP modules**
 - e.g., 1:3 for ERP = OK versus 1:15 for CRM = too high I/O load for DB-Server

 - Their number is defined as own DB-Server SAPS requirement in SAP Quicksizer result section

Fragen



Danke für Ihre Aufmerksamkeit !