Power Virtual Server for Oracle Optimization

Build a hybrid cloud environment with Power Systems Virtual Server to run an off-premises Power stack identical to your existing on-premises Power-based infrastructure for Oracle workloads

- Fully certified stack with PowerVM, AIX, IBM i, SAN-based storage, network adapters, providing full Oracle support
- Meets Oracle's hard partitioning requirements
  - Sub-capacity licensing – License only the CPUs available to Oracle Database and middleware
  - Optimize Oracle licensing to provide reduced TCO, lower than any hyperscale cloud environment
- Full support for Oracle Database, RAC, Fusion Middleware, Applications
- Highest off-prem scalable Oracle DB Single Instance capability
- Superior storage resiliency, enterprise class platform with all flash NVM-E enabled network storage

Run the same Oracle certified solution off-premises as you currently use on-premises

Enterprise class scalability, reliability, performance with best-in-class TCO leveraging Oracle hard partitioning

All Oracle-on-Power offerings:

Oracle Database	PeopleSoft
Oracle RAC	Siebel
GoldenGate	Oracle Retail
E-Business Suite	FLEXCUBE

JD Edwards World and EnterpriseOne

... CC&B, BRM, MDM, Commerce, OEM, et al.

PowerVS Flexible Deployment Model

VM based	Shared Processor Pool	Dedicated Host

← Multitenant Host solution →

- Dedicated Cores
- Shared Capped LPAR
- Shared Uncapped LPAR

- Reserved capacity at single core granularities with no oversubscription of capacity across SPPs
- Pool-based deployment and resource control for simpler workload management

- Exclusive use (all cores and memory available for use)
- Same flexibility as on-premise Power deployments
- Multiple shared processor pools for SW Licensing capping

← Policy Placement →

Up to 3 VPs for any EC<=3 (Power10 only) New
Up to 2 VPs for any EC<=2 (Power9)
Core-to-vCPU ratio of 1:1 when EC>3

Core-to-vCPU ratio of 1:1

Core-to-vCPU ratio of 1:20

Use Cases

- Test / Dev environments
- 1st production environments
- Bare-metal x86 servers / x86 VM Hyperscaler migration

- Cost Optimized Disaster Recovery As a Service
- Reduced Oracle S/W licensing costs by optimizing & limiting processor core usage
- Oracle Database Consolidation Starter & Manual scaling

- Lift and Shift from Power on-prem (P8 EOS, Datacenter Exit, ...)
- Large Oracle database consolidation (thx to CPU Sharing) from x86, Power, Exadata, SPARC, and Cloud
- Co-locate workloads (Oracle, OpenShift, LoP, IBMi, Applications, Database Alternatives ...)

Consistent with Oracle's current hard partitioning guidelines, as long as LPM is not used with those LPARs running Oracle SW: https://www.oracle.com/assets/partitioning-070609.pdf

Shared Processor Pools – License Optimization

- Many software providers charge based on the number of processors
- Reduce license cost by only licensing the cores configured in the pool
- Leverage EC:VP ratio on Power10 for increased virtual processor capacity for virtual servers

Oracle on Power – Lizenzierung Standard Edition 2 (SE2)

Grundprinzip Standard Edition 2

- Standard-Edition wird “Pro Sockel” lizenziert
  - Aktuell wird von Oracle nur noch SE2 unterstützt
- Eine Lizenz pro Sockel, maximal 2 Sockel pro Maschine
- Dual / Multi-Chip-Module zählen als 2 oder mehr Sockel
  - Dieses Problem betrifft alle Architekturen, auch die leistungsstarken x86–Prozessoren von AMD + Intel
- Somit bei Power10 Systemen nur S1014 eligibel für SE2
  - Inkl. speziellem “Oracle Standard Edition” Power Server S1014 mit 24 Cores
- POWER9 Systeme: S922 = Single Chip Module, 2 Sockets, daher 2x SE2 Lizenz erforderlich
  - Keine Subcapacity Lizenzierung bei SE2 (auch wenn nur 1 Core für Oracle genutzt wird)!
  - Achtung: Bei mehreren LPARs darauf achten, dass diese auf demselben System installiert werden, da für jedes physische System 2x SE2 Lizenz erforderlich ist!

Oracle on Power – Lizenzierung – Enterprise Edition (EE)

Grundprinzip Enterprise Edition

- Alle den Oracle-LPARs zugewiesenen Cores (Anzahl Virtuelle Prozessoren bei “uncapped LPARs”) müssen lizenziert werden
- Eine Lizenz pro Core
- Oracle-LPARs können einem Shared Processor Pool (SPP) zugewiesen werden
  - Höchstgrenze der zu lizenzierenden Cores ist die Größe des SPP (Subcapacity Lizenzierung)
- Auf einem System können mehrere SPPs definiert werden

Oracle on Power – Lizenzkosten-Betrachtung Standard Edition SE2

- Basierend auf offiziellen Listenpreisen: https://www.oracle.com/a/ocom/docs/corporate/pricing/technology-price-list-070617.pdf
- 1x S1014 mit 24 Cores (1 Dual Chip Module, 2 Sockel, SMT-8 = 192 logische Prozessoren (aus Oracle-Sicht = CPU_COUNT)
  - Lizenzkosten (SE2, 3 Jahre): 2 x $17.500 + 3x(2x $3.850 Update & Support) = $58.100
  - Lizenzkosten (EE, 3 Jahre): 24 x $47.500 + 3x(24x $10.450 Update & Support = $1.892.40
- Power Virtual Server:
  - S922 – egal wie viele Cores = identisch wie S1014 da SE2 eligibel, $58.100 für 3 Jahre
  - S1022, E980, E1080 – Lizenzierung pro Core da DCM → EE
  - S1022: SW Lizenzen bereits ab 1 Core für 3 Jahre teurer, da EE erforderlich

Section I — **Prices in USA (Dollar)**

	Oracle Database			
	Named User Plus	Software Update License & Support	Processor License	Software Update License & Support
Database Products				
Oracle Database				
Standard Edition 2	350	77.00	17,500	3,850.00
Enterprise Edition	950	209.00	47,500	10,450.00

Oracle SW licensing cost optimization example

AIX

Without SPP

VM1	VM2	VM3	VM4	VM5
Capped	**Capped**	**Capped**	**Capped**	**Capped**
AIX 7.3	AIX 7.3	AIX 7.3	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
VP = 6	VP = 2	VP = 1	VP = 1	VP = 2

Provision 5 VMs with 12 fixed cores = 12 Oracle licenses required

Oracle Licensing Optimization Benefits

- Enable hybrid cloud environment to run off-premise Oracle workloads
- Reduce the number of SW licenses by putting a limit on the number of processors an uncapped partition can use
- **Meets Oracle's support and hard partitioning requirements**
- Fully certified stack w/ PowerVM, AIX, IBM i, SAN-based storage, network adapters
- Full support for Oracle database, RAC, Fusion middleware, applications
- Option to add and license only 1 incremental core at a time to a SPP

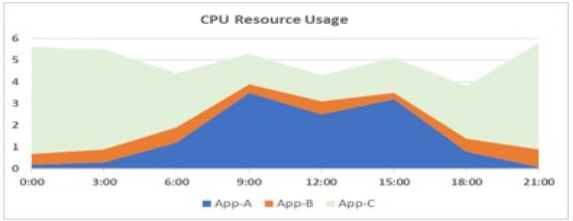
With SPP

VM1	VM2	VM3	VM4	VM5
Uncapped	**Uncapped**	**Uncapped**	**Uncapped**	**Uncapped**
AIX 7.3	AIX 7.3	AIX 7.3	AIX 7.2	AIX 7.3
Oracle DB	**Oracle DB**	**Oracle DB**	**Oracle DB**	**Oracle DB**
Ent. = 5.25	Ent. = 1.25	Ent. = 0.25	Ent. = 0.75	Ent. = 1.5
VP = 6	VP = 2,3	VP = 1,2,3	VP = 1,2,3	VP = 2,3

SPP
Reserved: 9 capped cores

- Create Shared Process Pool with 9 capped cores
- Provision 5 VMs with 9 cores entitled capacity
- 12 virtual processors with 1:1 EC:VP (S922)
- 18 virtual processors with 1:3 EC:VP (up to 50% savings)
- 9 Oracle licenses required

	Oracle License w/ SPP	Without SPP	License Saving
SPP #1: Oracle DB cores to license	9	12	3



Oracle Production Example (S1022)

AIX

S1022 without SPP

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
VM1	6.00		C	64	AIX	$1,768.78	6	
VM2	2.00		C	48	AIX	$856.28	2	
VM3	1.00		C	32	AIX	$508.15	1	
VM4	1.00		C	32	AIX	$508.15	1	
VM5	2.00		C	48	AIX	$856.28	2	
Total PVS	12.00	0		224		$4,497.65	12	
					with Discount	$2,473.71	$5,225.00	
						Total	$7,698.71	

As-is without SPP

- 12 cores used
- 12 Oracle licenses needed

S1022 with SPP (current pricing)

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
Pool	9		C	0	BYOL	$1,432.24	9	
VM1	5.25	6	S	64	AIX	$1,349.04		
VM2	1.25	2	S	48	AIX	$648.85		
VM3	0.25	1	S	32	AIX	$433.80		
VM4	0.75	1	S	32	AIX	$421.31		
VM5	1.5	2	S	48	AIX	$682.61		
Total PVS	9.00	12		224		$4,967.86		
					with Discount	$2,732.32	$3,918.75	10%
						Total	$6,651.07	

As-is with SPP (without optimizations)

- 9 cores used and licensed for Oracle
- VM price is 10% higher than without SPP
- 33% Oracle license savings (9 cores licensed)

with SPP and core and memory metering optimization

	Cores/EC	VP	Type	Mem	OS	Total	Oracle Licenses	% change
Pool	9		SPP	0	BYOL	$1,432.24	9	
VM1	5.25	6	SPC	64	AIX	$792.21		
VM2	1.25	2	SPC	48	AIX	$516.27		
VM3	0.25	1	SPC	32	AIX	$327.26		
VM4	0.75	1	SPC	32	AIX	$341.77		
VM5	1.5	2	SPC	48	AIX	$523.52		
Total PVS	9.00	12		224		$3,933.27		
					with Discount	$2,163.30	$3,918.75	-13%
						Total	$6,082.05	

SPP = Shared Processor Pool SPC = Shared Processor Core

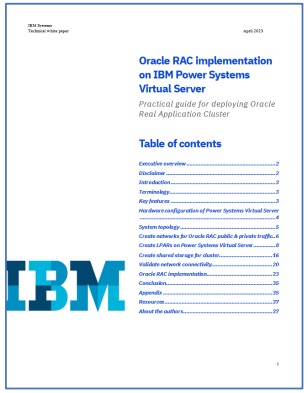
NEW – with SPP pricing optimizations

- **13% improvement** on PowerVS pricing
- 33% Oracle license savings (9 cores licensed for 12 VPs)
- Up to 50% Oracle license savings with 1:3 EC:VP ratio (9 cores licensed for 18 VPs)

Note: Monthly USD prices shown

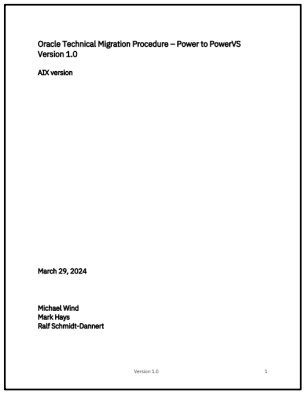
Oracle Database on IBM PowerVS Collaterals

Oracle RAC, Dataguard, Migration …
Implementation Guidance & Experience Feedback



[Whitepaper Oracle RAC implementation on IBM Power Systems Virtual Server]

[Oracle Disaster Recovery on IBM Power Virtual Server]



[Oracle Technical Migration Procedure – Power to PowerVS]

- [Oracle on Power Seismic Startseite]
- [Präsentation Oracle and Oracle RAC on Power Virtual Server (Oktober 2024)]
- [July 31 - Oracle on IBM PowerVS Spotlight - IBM Power Virtual Server Aufzeichnung und Präsentation]
- [IBM Power vs Exadata and Oracle Cloud - Client Deck - 2025.Feb]