

GL9.16 Appendix A

"SAP Oracle Solaris" vs "HANA on IBM Power Systems" - cost model on TIS Server Infrastructure & Oracle Database Software

Part 1 - Infrastructure cash flow (5 yrs)				Annual Cash Flow (in 000's)								Total 2020-2024	Comment
Item Desc	Cost Element	Funding Source	Type	2018	2019	2020	2021	2022	2023	2024	2024		
Current SAP server infrastructure - 22 x Oracle Solaris Servers and 4 x HANA appliances													
Oracle Servers and HANA appliances - refresh	HW	LCM	Capex	500	800	800	800	600	500	800	3,500		
Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex	300	300	340	340	340	340	340	1,700		
Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex	583	583	595	607	619	631	644	3,096		
Total (Capex & Opex)				1,383	1,683	1,735	1,747	1,559	1,471	1,784	8,296		
Total (Capex only)						800	800	600	500	800	3,500		
Total (Opex only)						935	947	959	971	984	4,796		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server													
IBM servers - 3 x E880C and 1 x DR servers	HW	LCM	Capex	500	1,000	500	500	0	1,000	1,000	3,000		
IBM servers - 3 x E880C and 1 x DR servers	HW	SAP	Capex	500							0		
Uplift to 7x24 maintenance & support (for new purchase)	HW Mtce	TIS Op	Opex		40	50	60	60	60	60	290		
Annual maintenance 15% after 3-yr warranty	HW Mtce	TIS Op	Opex				150	300	375	300	1,125		
Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex	300	300	200	0	0	0	0	200		
Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex	583	583	595	0	0	0	0	595		
Total (Capex & Opex)				1,883	1,923	1,345	710	360	1,435	1,360	5,210		
Total (Capex only)						500	500	0	1,000	1,000	3,000		
Total (Opex only)						845	210	360	435	360	2,210		
Delta - New (HANA/IBM) vs Current (Oracle) - Total (Capex & Opex)													
				500	240	-390	-1,037	-1,199	-36	-424	-3,086	Estimated HW & SW savings (Capex & Opex)	
Delta - New (HANA/IBM) vs Current (Oracle) - HW only				500	240	-390	-430	-590	595	220	-585	Estimated HW savings (Capex & Opex)	
Delta - New (HANA/IBM) vs Current (Oracle) - SW only				0	0	0	-607	-619	-631	-644	-2,501	Estimated SW (Oracle) savings (Capex & Opex)	
Delta - New (HANA/IBM) vs Current (Oracle) - Total (Capex only)													
				500	200	-300	-300	-600	500	200	-500	Estimated HW & SW savings (Capex only)	
Delta - New (HANA/IBM) vs Current (Oracle) - Total (Opex only)				0	40	-90	-737	-599	-536	-624	-2,586	Estimated HW & SW savings (Opex only)	
Part 2 - SAP HANA total cash flow (5 yrs) - including SAP HANA enterprise software M&S:													
Current Annual Maintenance cost for BW HANA				301	301	-301	-301	-301	-301	-301	-1,504	-- opex only	
New Cost of Annual Maintenance for HANA Enterprise						511	511	511	511	511	2,556	-- opex only	
Reduction of (TAO, TDMS, SAP PSS) Maintenance				185	185	-185	-185	-185	-185	-185	-924	-- opex only	
Net Increase in M&S (OPEX)						26	26	26	26	26	129	Net increase in SAP software M&S (Opex)	
Net savings - New HANA/IBM (infrastructure & SAP M&S) - Opex only						-64	-711	-573	-511	-598	-2,457	Net savings - Infrastructure & SAP M&S (Opex)	
Part 3 - Net SAP M&S (Termination of current licenses)													
SAP HANA Enterprise Edition License (one time)	Capex											One-time license fee	
SAP HANA Enterprise Edition maintenance for 5 yrs		Opex (5-yr)										Annual maintenance 22%; total 5 yrs	
Less: reduction of TAO, TDMS, and SAP - PSS for 5 yrs												Annual maintenance 22%; total 5 yrs	
Net of conversion of HANA Runtime for BW (one time)												One-time credit/discount for conversion to HANA Ent Ed	
Net of HANA Runtime for BW maintenance for 5 yrs												Annual maintenance 22%; total 5 yrs	
Total Savings (over 5 yrs)						\$957,001	\$129,105					Use this for the Report	
Current Annual Maintenance cost for BW HANA		Opex											
New Cost of Annual Maintenance for HANA Enterprise		Opex (5-yr)											
Net Increase of Maintenance for HANA						-\$300,748	-\$1,503,739						
Reduction of (TAO, TDMS, SAP PSS) Licenses						\$511,288	\$2,556,439						
Reduction of (TAO, TDMS, SAP PSS) Maintenance						\$210,540	\$1,052,701						
Net Increase in M&S						-\$839,633	-\$923,596						
						-\$184,719	-\$923,596						
						\$25,821	\$129,105						

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Part 1 - Infrastructure cash flow (5 yrs)

Infrastructure	Item Desc	Cost Element	Funding Source	Type	Annual Cash Flow (in 000's)							Total 2018-2024	Total 2020-2024	Comment		
					2018	2019	2020	2021	2022	2023	2024					
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Servers and HANA appliances - refresh	HW	LCM	Capex	500	800	800	800	600	500	800	4,800	3,500	LCM cost ~\$3.5M for each refresh cycle. HANA appliances (600k), Oracle servers (2.9M)		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	IBM servers - 3 x E880C and 1 x DR servers	HW	LCM	Capex	500	1,000	500	500	0	1,000	1,000	4,500	3,000	LCM 2nd cycle starts at 2023. Initial server purchase includes 3 yr standard warranty. SSD on SAN factored in the cash flow.		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	IBM servers - 3 x E880C and 1 x DR servers	HW	SAP	Capex	500							500	0	\$500k funded by SAP project in 2018 purchase. Average annual HW maintenance \$300k-340k. New server mtce is 12%. Non-prod server moving to lower cost third party support.		
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex	300	300	340	340	340	340	340	2,300	1,700			
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex	583	583	595	607	619	631	644	4,263	3,096	Annual 2% uplift starting in 2020.		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Uplift to 7x24 maintenance & support (for new purchase)	HW Mtce	TIS Op	Opex		35	54	73	92	94	96	444	409	Annual uplift 2% for 7x24 support (starts with new server)		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Annual maintenance 15% after 3-yr warranty	HW Mtce	TIS Op	Opex				133	265	405	547	1,350	1,350	Standard Support (15%) after 3-yr warranty		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex	500	1,000	150	0	0	0	0	1,650	150	Solaris servers co-exist with Power/VM in 2018-2020. Decomm 8 Solaris DB servers by 2019 YE. Decomm 10 Oracle App server by 2020 YE.		
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex	500	0	0	0	0	0	0	500	0	drop all SAP Oracle database licenses and maintenance		
Delta - New (HANA/IBM) vs Current (Oracle) - Total					383	119	-161	-148	716	-29	-173	707	205	Estimated HW & SW savings		
Delta - New (HANA/IBM) vs Current (Oracle) - HW					-700	-465	-756	-755	97	-661	-817	-4,056	-2,891	Estimated HW savings		
Delta - New (HANA/IBM) vs Current (Oracle) - SW					1,083	583	595	607	619	631	644	4,763	3,096	Estimated SW (Oracle) savings		
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Servers and HANA appliances - refresh	HW	LCM	Capex												
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex												
Current SAP server infrastructure - 20 x Oracle Solaris Servers and 4 x HANA appliances	Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	IBM servers - 3 x E880C and 1 x DR servers	HW	LCM	Capex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	IBM servers - 3 x E880C and 1 x DR servers	HW	SAP	Capex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Uplift to 7x24 maintenance & support (for new purchase)	HW Mtce	TIS Op	Opex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Annual maintenance 15% after 3-yr warranty	HW Mtce	TIS Op	Opex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Oracle Servers and HANA appliances - maintenance	HW Mtce	TIS Op	Opex												
New SAP HANA on IBM Power Systems - 3 x E880C (3 system nodes/server) and 1 x DR server	Oracle Database Software License Maintenance	SW Mtce	TIS Op	Opex												

Oracle Database Software - annual maintenance

DIVISION	CSI	CRO	PURCHAS E_DATE	DESCRIPTION	DB_PROD ?	QTY	2014 - 0% uplift	2015 Full Year	2015 - 2% uplift	2016 - 2% uplift	2017 - 0% uplift	2018 - 0% uplift	2019 - 0% uplift	2020 - 2% uplift	2021 - 2% uplift	Reason for Increase	Other Info
SAP-CC	15943407	8345999	unknown	Diagnostics - Named User Plus	YES	100	\$1,233.05		\$1,233.05	\$1,257.71	\$1,257.71	\$1,257.71	\$1,257.71	\$1,282.86	\$1,308.52	RUN	
SAP-CC	15943407	8345999	unknown	Database Enterprise Edition - Named User Plus	YES	100	\$16,196.79		\$16,520.73	\$16,851.14	\$16,851.14	\$16,851.14	\$16,851.14	\$17,188.16	\$17,531.93	RUN	
SAP-CC	16401094	8427521	unknown	Diagnostics - Named User Plus	YES	425	\$5,023.18		\$5,123.64	\$5,226.12	\$5,226.12	\$5,226.12	\$5,226.12	\$5,330.64	\$5,437.25	RUN	
SAP-CC	16401094	8427521	unknown	Diagnostics - Named User Plus	YES	690	\$8,155.29		\$8,318.40	\$8,484.76	\$8,484.76	\$8,484.76	\$8,484.76	\$8,654.46	\$8,827.55	RUN	
SAP-CC	16401094	8427521	unknown	Diagnostics - Processor	YES	8	\$4,752.41		\$4,847.46	\$4,944.41	\$4,944.41	\$4,944.41	\$4,944.41	\$5,043.30	\$5,144.16	RUN	
SAP-CC	16401094	8427521	unknown	Database Enterprise Edition - Named User Plus	YES	690	#####		\$111,451.61	\$113,680.64	\$113,680.64	\$113,680.64	\$113,680.64	\$115,954.25	\$118,273.34	RUN	
SAP-CC	16401094	8427521	unknown	Database Enterprise Edition - Named User Plus	YES	75	\$11,876.76		\$12,114.30	\$12,356.58	\$12,356.58	\$12,356.58	\$12,356.58	\$12,603.71	\$12,855.79	RUN	
SAP-CC	16401094	8427521	unknown	Partitioning - Named User Plus	YES	60	\$2,373.30		\$2,420.77	\$2,469.18	\$2,469.18	\$2,469.18	\$2,469.18	\$2,518.56	\$2,568.94	RUN	
SAP-CC	16401094	8427521	unknown	Tuning Pack - Named User Plus	YES	690	\$8,155.29		\$8,318.40	\$8,484.76	\$8,484.76	\$8,484.76	\$8,484.76	\$8,654.46	\$8,827.55	RUN	
SAP-CC	16401094	8427521	unknown	Tuning Pack - Processor	YES	75	\$886.45		\$904.18	\$922.26	\$922.26	\$922.26	\$922.26	\$940.71	\$959.52	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Database Enterprise Edition - Processor	YES	24	#####		\$135,983.82	\$138,703.50	\$138,703.50	\$138,703.50	\$138,703.50	\$141,477.57	\$144,307.12	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Diagnostics - Processor	YES	24	\$13,570.48		\$13,841.89	\$14,118.73	\$14,118.73	\$14,118.73	\$14,118.73	\$14,401.10	\$14,689.12	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Tuning Pack - Processor	YES	24	\$13,570.48		\$13,841.89	\$14,118.73	\$14,118.73	\$14,118.73	\$14,118.73	\$14,401.10	\$14,689.12	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Partitioning - Processor	YES	4	\$5,379.47		\$5,487.06	\$5,596.80	\$5,596.80	\$5,596.80	\$5,596.80	\$5,708.74	\$5,822.91	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Real Application Clusters - Processor	YES	32	\$86,071.57		\$87,793.00	\$89,548.86	\$89,548.86	\$89,548.86	\$89,548.86	\$91,339.84	\$93,166.64	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Database Enterprise Edition - Named User Plus	YES	365	\$40,549.52		\$41,360.51	\$42,187.72	\$42,187.72	\$42,187.72	\$42,187.72	\$43,031.48	\$43,892.10	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Diagnostics & Tuning Pack - Named User Plus	YES	525	\$5,908.44		\$6,026.61	\$6,147.14	\$6,147.14	\$6,147.14	\$6,147.14	\$6,270.08	\$6,395.49	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Diagnostics & Tuning Pack - Named User Plus	YES	975	\$10,972.81		\$11,192.27	\$11,416.11	\$11,416.11	\$11,416.11	\$11,416.11	\$11,644.43	\$11,877.32	RUN	
SAP-CC	18298186	8631349	Nov. 2011	Partitioning - Named User Plus	YES	240	\$6,454.97		\$6,584.07	\$6,715.75	\$6,715.75					Transform	Migrated to Full use, CSI - 21424067
SAP-CC	18298186	8631349	Nov. 2011	Real Application Clusters - Named User Plus	YES	480	\$25,824.30		\$26,340.79	\$26,867.60	\$0.00					Transform	Migrated to Std user, CSI - 20629840
SAP-CC	18568435	8674957	May, 2012	Partitioning - Named User Plus	YES	1260	\$32,684.40		\$33,338.09	\$34,004.85	\$34,004.85	\$34,004.85	\$34,004.85	\$34,684.95	\$35,378.65	RUN	
SAP-CC	18568435	8674957	May, 2012	Partitioning - Processor	YES	28	\$36,314.32		\$37,040.61	\$37,781.42	\$37,781.42	\$37,781.42	\$37,781.42	\$38,537.05	\$39,307.79	RUN	
Total									\$ 594,931	\$ 606,829	\$ 579,962	\$ 573,246	\$ 573,246	\$ 584,711	\$ 596,405		
Total - net of HST recovery (1.76%)									\$ 605,401	\$ 617,509	\$ 590,169	\$ 583,335	\$ 583,335	\$ 595,002	\$ 606,902		
DIVISION	CSI	CRO	PURCHAS E_DATE	DESCRIPTION	DB_PROD ?	QTY	2014 - 0% uplift	2015 Full Year	2015 - 2% uplift	2016 - 2% uplift	2017 - 0% uplift	2018 - 0% uplift	2019 - 0% uplift	2020 - 2% uplift	2021 - 2% uplift	Reason for Increase	Other Info
PPFA/TIS	14460583	8199068	unknown	Database Enterprise Edition - none standard	YES	100	\$19,039.15		\$18,419.93	\$19,808.33	\$0.00					Transform	Migrated to Std user, CSI - 20629840
PPFA/TIS	14460583	8199068	unknown	Database Standard Edition - Processor	YES	4	\$12,663.99		\$12,917.27	\$13,175.62	\$13,175.62					Transform	Migrated to E2/EE, CSI# 21424067
PPFA/TIS	14460583	8199068	unknown	Partitioning - Processor	YES	2	\$4,221.20		\$4,305.62	\$4,391.74	\$4,391.74	\$4,391.74	\$4,391.74	\$4,479.57	\$4,569.16	RUN	
TIS	14460583	8147008	unknown	Advanced Security - Processor	YES	7	\$16,062.78		\$16,384.04	\$16,711.72	\$16,711.72	\$16,711.72	\$16,711.72	\$17,045.95	\$17,386.87	RUN	
TIS	14460583	8147008	unknown	Database Enterprise edition - Named User Plus	YES	1400	#####		\$288,414.04	\$294,182.32	\$294,182.32	\$294,182.32	\$294,182.32	\$300,065.96	\$306,067.28	RUN	
TIS	14460583	8147008	unknown	Database Enterprise edition - Processor	YES	51	#####		\$640,460.75	\$653,269.97	\$653,269.97	\$653,269.97	\$653,269.97	\$666,335.37	\$679,662.08	RUN	
TIS	14460583	8147008	unknown	Diagnostics - Processor	YES	13	\$12,004.03		\$12,244.11	\$12,488.99	\$12,488.99	\$12,488.99	\$12,488.99	\$12,738.77	\$12,993.55	RUN	
TIS	14460583	8147008	unknown	Partitioning - Processor	YES	7	\$21,545.68		\$21,976.59	\$22,416.13	\$22,416.13	\$22,416.13	\$22,416.13	\$22,864.45	\$23,321.74	RUN	
TIS	14460583	8147008	unknown	Tuning Pack - Processor	YES	13	\$12,004.03		\$12,244.11	\$12,488.99	\$12,488.99	\$12,488.99	\$12,488.99	\$12,738.77	\$12,993.55	RUN	
Total									\$ 1,028,366	\$ 1,048,934	\$ 1,029,125	\$ 1,015,950	\$ 1,015,950	\$ 1,036,269	\$ 1,056,994		
Total - net of HST recovery (1.76%)									\$ 1,046,466	\$ 1,067,395	\$ 1,047,238	\$ 1,033,831	\$ 1,033,831	\$ 1,054,507	\$ 1,075,597		