How To Make Siebel CRM Run Fast – Optimizing Siebel Performance

Collaborate 2008

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Agenda

- Strategy for tuning Siebel.
- Introduction to Siebel log files.
- Finding and fixing problem SQL On Oracle 10G.
- Understanding what in Siebel can be slow and how to spot it.
- Finding and fixing CPU “hogs”.
- Using Siebel SARM.

Robert and Ponder Pro Serve

- Joined Siebel in 1998.
- Specialized in Siebel upgrades and performance tuning while at Siebel.
- World-wide lead Siebel performance red account team for Siebel Professional Services.
- Received extensive training from Siebel Performance & Scalability Engineering Team.
- Currently work for Ponder Pro Serve. Small consulting company with true experts in Siebel.
- Dedicated Oracle Partner interested in making Siebel customers successful.

Background – How Can Siebel be Slow?

- Out of the box (OOTB) Siebel generally runs pretty fast but...
- Your data volumes may be larger than volumes tested internally by Oracle.
- Customizations frequently are the source of performance issues. E.g. eScript, database extensions, misconfigurations, etc.
- May encounter product issues that result in poor performance.
- Work is required to dial-in Siebel for optimal performance. E.g. init.ora parameters.
- Rich functionally sometimes presents performance challenges. E.g. Case insensitive searches, queries involving intersection tables, etc.

Siebel Tuning Approach

- Have to start by identifying what is slow.
- Need to know exactly what is slow and can't just stop with "Siebel is slow".
- There are no silver bullets or magic parameters that suddenly will make Siebel fast - for the most part.
- Fixing performance issues can take a lot of hard work but finding your performance bottlenecks can be straightforward if you know how.
- We want to target tuning that will be noticeable to end users. We don't want to waste time tuning things like buffer cache hit ratio that end users will never notice!
- Fix very specific things that are slow. Might only speed up that single thing or might lead to an improvement that can help performance system wide.

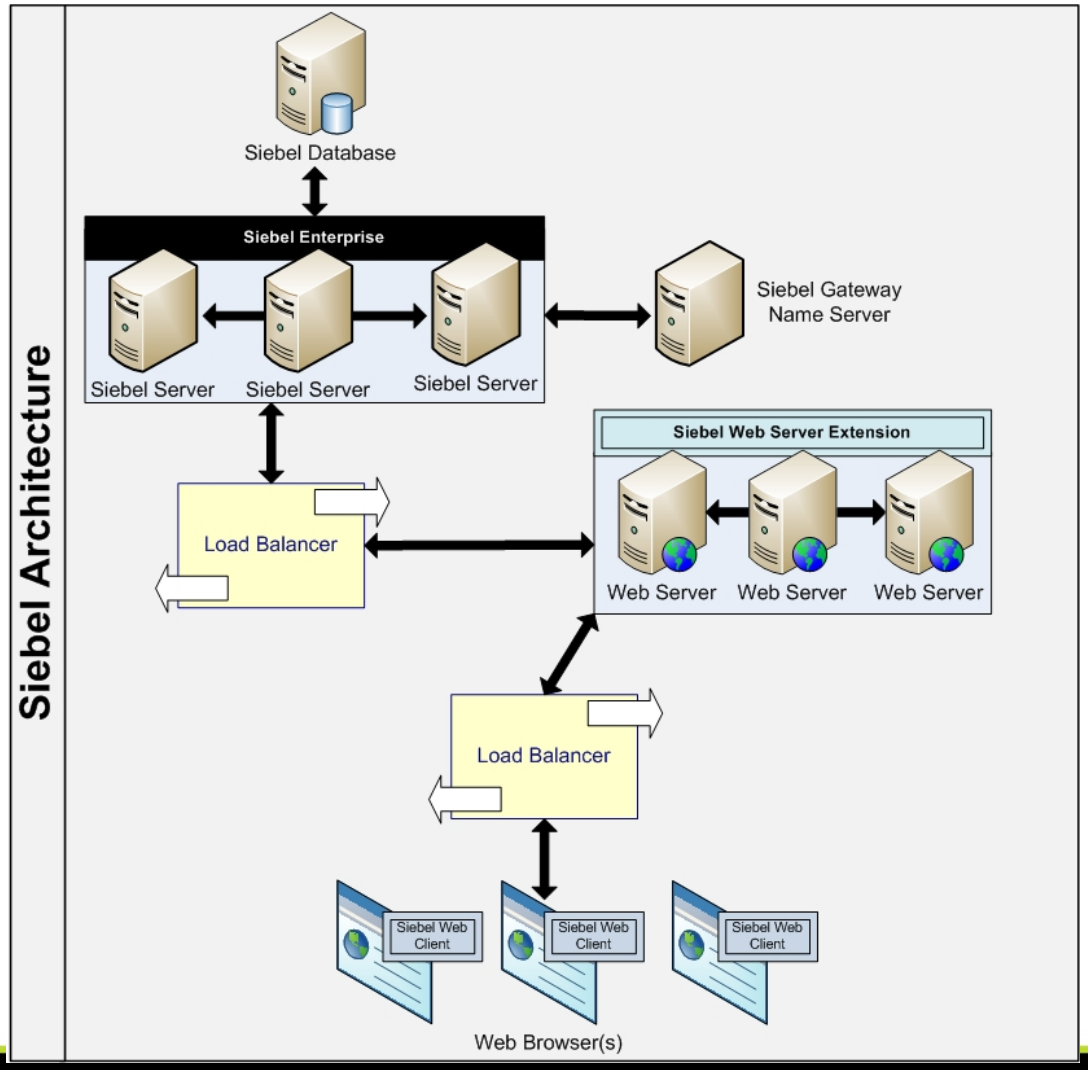
Available Tools and Techniques

- End user feedback.
  - But ... If your Siebel application is slow and you do nothing to help, users will eventually quit complaining.
- Siebel log files.
- Database monitoring and statistics.
- Siebel SARM.
- Oracle Enterprise Manager pack for Siebel.
- O/S utilities such as dstat, permon, etc.
- Profiling tools such as GlowCode.

Finding What is Slow in Siebel

- End user transaction time and transaction composition.
- SQL execute time.
- Workflow performance.
- EAI performance.
- Business service invoke method performance.
- Plus other specific things we notice that are slow.

Understanding Your Architecture



Understanding your Transactions

- How long? How many and what type SQL? Workflow? EAI? Business Services?

	A	B	C	D	E	H	I	J	K	L	N	O	P	Q	R	S	T	U
1	File	User	Type	Object	Action	Duration	Selects	Inserts	Updates	Deletes	Execute	Run Proc	Proc Num	Proc Elapsed	EAI Upsert Count	EAI Upsert Seconds	Invoke Method Count	Invoke Method Seconds
114	PS	seypa01	Applet	XYZ Demande Sommaire	WriteRecord	9	1924	0	1	0	3.453	0	0	0	0	0	56	8.208
115	PS	seypa01	Applet	XYZ Demande Sommaire	WriteRecord	8	1924	2	1	0	3.423	0	0	0	0	0	56	7.505
116	PSCcObjMgr		Applet	XYZ Demande Sommaire	WriteRecord	7	1924	2	1	0	3.154	0	0	0	0	0	56	7.48
117	PSCcObjMgr		Applet	XYZ Demande Identite Autre Paren	WriteRecord	18	1922	0	1	0	8.54	0	0	0	0	0	61	17.768
118	PS	lahge01	Applet	XYZ Demande Retenues Impot	WriteRecord	17	1922	2	1	0	7.759	0	0	0	0	0	56	16.053
119	PSCcObjMgr		Applet	XYZ Demande Prestation Maternite	WriteRecord	15	1922	6	1	0	7.466	0	0	0	0	0	56	15.023
120	PSCcObjMgr		Applet	XYZ Demande Depot Direct	WriteRecord	13	1922	0	1	0	5.253	0	0	0	0	0	59	12.846
121	PSCcObjMgr		Applet	XYZ Demande Prestation Maternite	WriteRecord	13	1922	6	1	0	5.484	0	0	0	0	0	56	12.485
122	PSCcObjMgr		Applet	XYZ Demande Sommaire	WriteRecord	12	1922	4	1	0	4.691	0	0	0	0	0	56	10.733
123	PSCcObjMgr		Applet	XYZ Demande Retenues Impot	WriteRecord	12	1922	2	1	0	4.919	0	0	0	0	0	56	11.567
124	PSCcObjMgr		Applet	XYZ Demande Identite Autre Paren	WriteRecord	12	1922	0	1	0	4.773	0	0	0	0	0	60	11.726
125	PSCcObjMgr		Applet	XYZ Demande Depot Direct	WriteRecord	11	1922	0	1	0	5.134	0	0	0	0	0	62	11.004
126	PSCcObjMgr		Applet	XYZ Demande Renseignements Su	WriteRecord	11	1922	4	1	0	4.684	0	0	0	0	0	56	10.728
127	PSCcObjMgr		Applet	XYZ Demande Identite Autre Paren	WriteRecord	11	1922	1	1	0	5.445	0	0	0	0	0	62	10.923
128	PSCcObjMgr		Applet	XYZ Demande Retenues Impot	WriteRecord	11	1922	2	1	0	4.338	0	0	0	0	0	56	9.99
129	PSCcObjMgr		Applet	XYZ Demande Prestation Paternite	WriteRecord	11	1922	4	1	0	4.557	0	0	0	0	0	56	10.504
130	PSCcObjMgr		Applet	XYZ Demande Renseignements Su	WriteRecord	11	1922	18	1	0	4.895	0	0	0	0	0	56	11.121
131	PS	lahge01	Applet	XYZ Demande Arret Remuneration	WriteRecord	11	1922	3	1	0	4.748	0	0	0	0	0	56	10.562
132	PSCcObjMgr		Applet	XYZ Demande Arret Remuneration	WriteRecord	10	1922	4	1	0	4.103	0	0	0	0	0	56	9.245

Detail

Ready CAPS

Getting to Know Your SQL

- Need to know each distinct SQL your Siebel application issues. Normally not that many of them.
- Unique SQL = Buscomp Name + Search Spec + Order By.
- Do you have any runaways? E.g. accidentally sort large dataset by clicking list column header.

	A	B	C	D	E	F	G	H	I
1	Business Component	Search Spec	Order By	Count	Min	Max	Avg.	Total	
2	Action Copy 2	((T1.APPT_REPT_REPL_CD IS NULL) AND ((T1.TEMPLATE_FLG != 'Y' AND T1.TEMPLATE_FLG != 'P' OR T1.TEMPLATE_FLG IS NULL) AND (T1.OPTY_ID IS NULL OR T11.SECURE_FLG = 'N' OR T16.OPTY_ID IS NOT NULL)) AND (T1.PRIV_FLG = ? OR T1.PRIV_FLG IS NULL OR T1.OWNER_PER_ID = ?)) AND (T1.NAME LIKE ? AND T2.VAL = ? AND T3.VAL = ?)	ORDER BY T1.COMMENTS_LONG	1	177.9	177.9	177.9	177.9	
3	Action Copy 2	((T1.APPT_REPT_REPL_CD IS NULL) AND ((T1.TEMPLATE_FLG != 'Y' AND T1.TEMPLATE_FLG != 'P' OR T1.TEMPLATE_FLG IS NULL) AND (T1.OPTY_ID IS NULL OR T11.SECURE_FLG = 'N' OR T16.OPTY_ID IS NOT NULL)) AND (T1.PRIV_FLG = ? OR T1.PRIV_FLG IS NULL OR T1.OWNER_PER_ID = ?)) AND (T2.VAL LIKE ? AND T3.VAL LIKE ?)		2	27.2	39.7	33.4	66.9	
4	Action Copy 2	((T1.APPT_REPT_REPL_CD IS NULL) AND ((T1.TEMPLATE_FLG != 'Y' AND T1.TEMPLATE_FLG != 'P' OR T1.TEMPLATE_FLG IS NULL) AND (T1.OPTY_ID IS NULL OR T11.SECURE_FLG = 'N' OR T16.OPTY_ID IS NOT NULL)) AND (T1.PRIV_FLG = ? OR T1.PRIV_FLG IS NULL OR T1.OWNER_PER_ID = ?)) AND (T2.VAL = ? AND T3.VAL = ?)		3	1.5	34.4	22.8	68.3	
5	Action Copy 2	((T1.TEMPLATE_FLG != 'Y' AND T1.TEMPLATE_FLG != 'P' OR T1.TEMPLATE_FLG IS NULL) AND (T1.OPTY_ID IS NULL OR T7.SECURE_FLG = 'N' OR T8.OPTY_ID IS NOT NULL)) AND (T1.OWNER_LOGIN = ? AND T2.VAL = ? AND T3.VAL = ?)		1	19.8	19.8	19.8	19.8	
6	Action Copy 2	((T1.APPT_REPT_REPL_CD IS NULL) AND ((T1.TEMPLATE_FLG != 'Y' AND T1.TEMPLATE_FLG != 'P' OR T1.TEMPLATE_FLG IS NULL) AND (T1.OPTY_ID IS NULL OR T11.SECURE_FLG = 'N' OR T16.OPTY_ID IS NOT NULL)) AND (T1.PRIV_FLG = ? OR T1.PRIV_FLG IS NULL OR T1.OWNER_PER_ID = ?)) AND (T2.VAL LIKE ? AND T3.VAL LIKE ?)	ORDER BY T1.OWNER_LOGIN	2	17.9	18.8	18.3	36.7	
	FS Agreement Item (cc	((T3.NAME NOT LIKE 'SEM0%') AND (T1.PROD_INT_ID IS NULL OR T20.CURR_VER_FLG = 'Y' OR T20.CURR_VER_FLG IS NULL OR T20.RELEASED_FLG = 'N' AND T20.VERSION_NUM = ?)) AND	ORDER BY T31.VAL, T1.EFF_START_DT,	2	16.4	18.3	17.4	34.7	

Detail / Summary / Graphs

Ready

Workflow Process Can be Slow Too!

- These are easy to find.
- Once found look to each step to find your bottleneck.
- Might be a slow SQL you have already seen or a slow EAI call.
- Watch for too many conditional run time events on WFPs. Firing 49 WFP's that fail the prebranch logic is much slower than an eScript case statement.
- Should we run WFP inside the OM process or outside?

	G	H	I	J	K
1	Action	Workflow Process Name	Executions	Seconds	
7	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	12.782	
8	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	12.734	
9	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	11.766	
10	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.766	
11	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.625	
12	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.578	
13	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.563	
14	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.422	
15	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.406	
16	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.219	
17	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.078	
18	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	10.047	
19	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.89	
20	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.812	
21	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.562	
22	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.5	
23	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.437	
24	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.359	
25	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	9.219	
26	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	8.937	
27	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	8.906	
28	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	8.812	
29	EventMethod_CallCreateDemandeCC	Transaction - CrÃ©er une nouvelle demande	1	8.75	

Detail | Summary | Graph

Ready

Business Services Can Be Slow As Well

- Very useful performance info in both log files and SARM for business service invoke method.
- Also useful to track down crashes. Which Bus Service did you enter but not leave before the crash?

	D	E	F
1	**Business Service**	**Method**	**Seconds**
2	ServiceInfoEmploiSoap	DemndInfoEmploi	67.064
3	EAI HTTP Transport	SendReceive	67.034
4	Report Business Service	ExecuteReport	55.418
5	Report Business Service	ExecuteReport	47.721
6	Report Business Service	ExecuteReport	43.906
7	Report Business Service	ExecuteReport	43.881
8	Report Business Service	DownloadReport	43.289
9	ActuateSoapPort	getFileDetails	43.153
10	Report Transport Service	getFileDetails	43.151
11	EAI HTTP Transport	SendReceive	43.149
12	Report Business Service	ExecuteReport	42.636
13	Report Business Service	ExecuteReport	41.252
14	Report Business Service	ExecuteReport	40.746
15	EAI Siebel Adapter	Upsert	40.138
16	Report Business Service	DownloadReport	38.998
17	ActuateSoapPort	getFileDetails	38.774
18	Report Transport Service	getFileDetails	38.77
19	EAI HTTP Transport	SendReceive	38.766
20	ActuateSoapPort	getFileDetails	38.751
21	Report Transport Service	getFileDetails	38.748
22	EAI HTTP Transport	SendReceive	38.745
23	ActuateSoapPort	getFileDetails	38.647

Detail / Summary / Graph

Ready

Keep an Eye on SRM

- Server Request Manger (SRM) used to make calls to other Siebel components.
- Slow Siebel File System shows up here.

	B	C	D	E	F	G
1	View	Applet	Action	Buscomp	Seconds	Count
2	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	100	1
3	Solution Resolution Documents View	SR Resolution Item List Fram Read Only	Drilldown	SR Resolution Item	88	1
4	Correspondence List	Correspondence Template Pick Applet	PickRecord	SSAId	75	2
5	Visible Contact List View	New View - No Applet Yet	No Action	Batch Job Action	73	1
6	Correspondence List	Correspondence Template Pick Applet	PickRecord	Action	66	2
7	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	63	2
8	Correspondence List	C	OnGenerateHTML	Broadcast Message	57	2
9	No View Yet - Application Start	No Applet Yet - Application Start	No Action	Repository Repository	55	1
10	Find View	Search Selection Applet	CloseSearchCenter	Responsibility Attachment	55	3
11	Service Request Solution View	Comm Template Pick Applet	PostChanges	Comm Package Item	54	3
12	Correspondence List	XYZ ABC Correspondence Attachment	ShowPopup	Action Attachment	53	1
13	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	52	2
14	Correspondence List	XYZ ABC Correspondence Attachment	ShowPopup	Action Attachment	52	1
15	Solution Resolution Documents View	SR Resolution Item List Fram Read Only	Drilldown	SR Resolution Item	50	1
16	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	50	2
17	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	50	2
18	Visible Contact List View	New View - No Applet Yet	No Action	Batch Job Action	50	1
19	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	49	2
20	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	48	2
21	Correspondence List	XYZ ABC Correspondence Attachment	ShowPopup	Action Attachment	48	3
22	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	48	2
23	Correspondence List	C	OnGenerateHTML	Broadcast Message	47	2
24	Correspondence List	Correspondence Template Pick Applet	PickRecord	PickList Sales Document	47	2
25	Correspondence List	Correspondence Template Pick Applet	PickRecord	SSAId	47	2

OMLogParser_SRMDetail

Ready CAPS

Running Siebel CRM on Oracle CBO

- Need to understand how CBO does its math and understand cost and cardinality. Be able to identify when math is obviously wrong!
- Goal is minimal/no stored outlines and to have CBO pick the plans you want on its own
- vsql, vsql_plan, v$sql_plan_statistics.
- Must issue four alter sessions before doing EP or run to match Siebel OM.
- We like relying on buffer gets for tuning instead of just elapsed time since cached pages can mislead.
- Need good stats and don't want auto histograms. Method opt = All columns size 1. Histograms are the default in 10G.
- Need system statistics populated or we will get some strange plans.
- Like to treat stats, system stats and init.ora changes just like build and test thoroughly before moving into prod.

Oracle CBO Parameters

Parameter	PPS Recommendation	Notes
optimizer_index_cost_adj	10	Siebel recommendation of 1 produces plans where index used to avoid sort when another index could satisfy where clause that would return just one or a few rows.
_optimizer_max_permutations	100	No longer mentioned in the Siebel documentation but still needed in order to avoid high cpu during long first parse times.
_b_tree_bitmap_plans	FALSE	Siebel OLTP should not do bitmap index conversions. Also needed along with OMP to significantly reduce long first parse times.
_optim_peek_user_binds	TRUE	Needed to improve like queries but has the draw back that if hard parse encounters "unlucky" first bind (%Smith%) then bad plan gets selected. See LWBAE for full solution.
_like_with_bind_as_equality	TRUE	Fixes issue with Siebel like on columns such as LAST_NAME. Causes index on LAST_NAME to always be selected regardless of first bind variable value. Produced the lowest total buffer gets on like queries in all our tests regardless of actual bind variable on first parse.
optimizer_index_caching	10	Needed to workaround bug 5240607. Symptom is multicolumn index not used and where clause is equality test on first column (.e.g S_CONTACT.LAST_NAME) in multicolumn index.

- Set as directed by Siebel/Oracle and then apply our recommendations.
- Don’t set in production without first testing!!!

Understating SQL Cost

- Oracle CBO calculates cost of different access paths and picks the one with the lowest cost.
- Can see optimizer do this work if we enable trace 10053.
- Main inputs to cost calculations.
  - Table, index and column statistics.
  - System statistics (CPU speed, IO speed, etc.).
  - Init.ora settings.
  - SQL statement.
- Explain plan cost should be low. Anything below a total cost of around 30 is normally OK.
- See Jonathan Lewis' book for formulas used by Oracle to calculate cost.

How to Tune Problem SQL

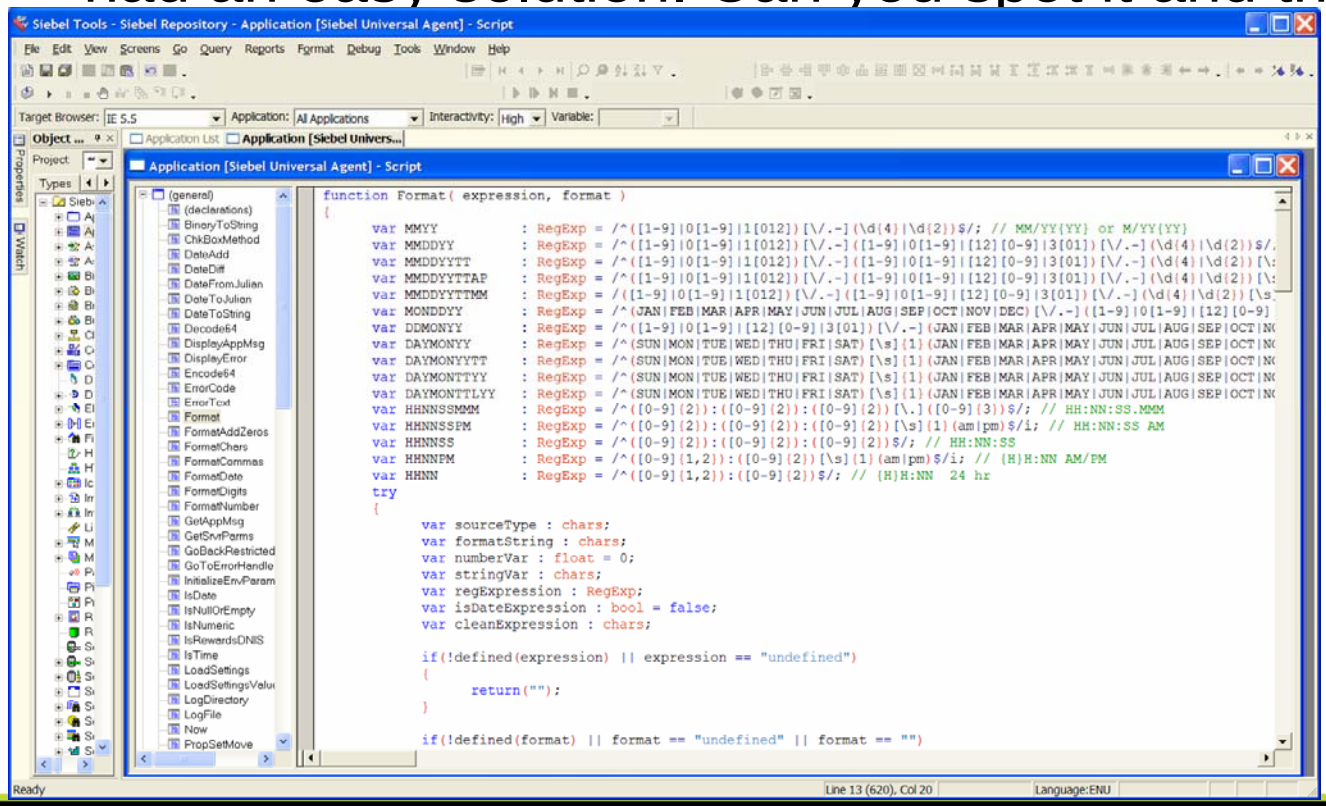
- Issue four alter session parameters to match Siebel OM and one to collect statistics
  - ALTER SESSION SET OPTIMIZER_MODE = FIRST_ROWS_10 ;
  - ALTER SESSION SET "_OPTIMIZER_SORTMERGE_JOIN_ENABLED" = FALSE ;
  - ALTER SESSION SET "_OPTIMIZER_JOIN_SEL_SANITY_CHECK" = TRUE;
  - ALTER SESSION SET "_HASH_JOIN_ENABLED" = FALSE;
  - ALTER SESSION SET STATISTICS_LEVEL = ALL;
- If using TOAD can't run in threads.
- Have to leave bind variables in SQL text and not manually substitute.
- Run SQL and look in v$ fixed tables to see what really happens when you run that statement
  - vsql, vsql_plan, v$sql_plan_statistics and v$sql_plan_statistics_all
- Normally look for operations that perform a large number of buffer gets.

SQL Tuning Example

- Slow statement
- EP before
- v$sql_plan_all before
- Problem identification and solution
- Stats on new index
- EP after
- v$ after

Finding and Fixing CPU Hogs

- What does a CPU hog look like? Not always obvious.
- Here is an example of a very serious CPU hog that had an easy solution. Can you spot it and the fix?



Using SARM to Find CPU Hogs

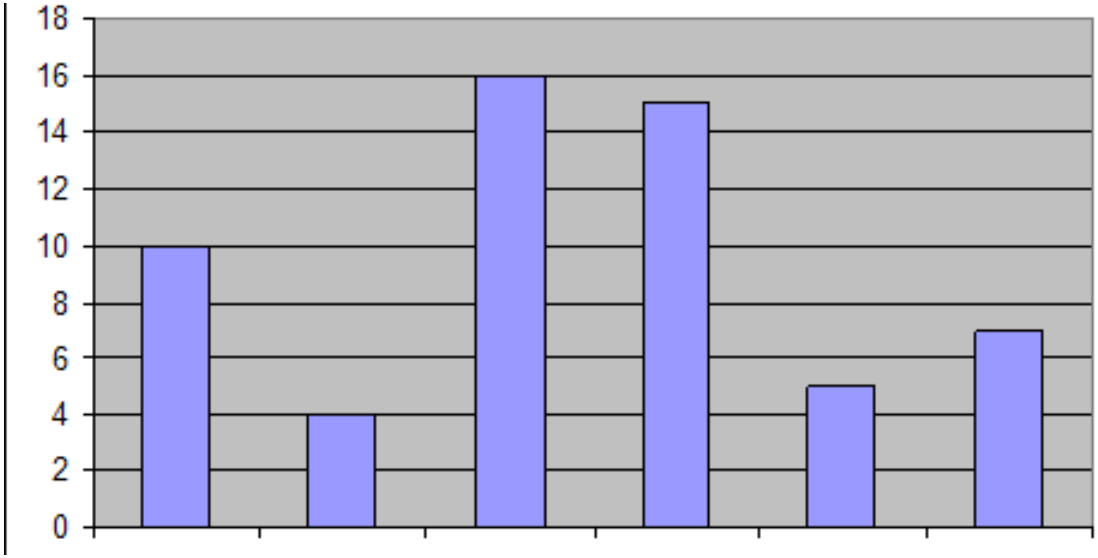
- As we saw most CPU hogs are related to eScript but how do you find them?
- Need to know CPU and elapsed time spent in various parts of our custom eScript code.
- sarmanalyzer.exe -f SCCOM_T200707021845_P016701_N0001.sarm -o SCCOM_T200707021845_P016701_N0001.csv -d csv
- Then simply sort output CSV file by CPU usage and only look at items at lower level such as business service calls, etc.

Sample SARM Output

- Add sample SARM output here

Some Performance Issues Can't be Fixed – Have to Work Around

- Sometimes performance issues can't be fixed but we still can make Siebel run acceptably fast.
- In this example a heavily eScripted Siebel application run horribly slow on certain hardware. Could not use that hardware. No way to make up for bad performance of planned new hardware. Had to use different hardware.
- Implications for dev vs. prod hardware.



Questions & Answers

Resources

- Siebel Performance Tuning Guide.
- Siebel Applications Administration Guide.
- Configuring Siebel Business Applications.
- Cost-Based Oracle Fundamentals by Jonathan Lewis.
- Optimizing Oracle Performance by Cary Millsap and Jeffrey Holt. Also Hotsos.com.
- Oracle CBO and Siebel Business Applications (Doc ID 478028.1).

Contact Info

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To-Do

- Need sample SQL tuning
- Need SARM output for slide 19.