

Title: Features CInsightC 3.0



Functional Overview and Roadmap CInsightC - Draft

Release 3.0

1 Management Summary

Being responsible for CA Clarity and guaranteeing a stable and well-performing system to CA Clarity users can be a real challenge. Many Application Managers face huge difficulties in their day-to-day responsibilities. The demanding users at one side of the desk and the out-of-control technical department at the other side of the desk can give a real headache.

ITIL is implemented in many organizations, and as a result of this Service Level Agreements are created. But what is the value of Service Level Agreements since there are no real statistics of availability and performance? Which arguments can be provided to the user community about **usage**, **availability** and **performance**? Which CA Clarity functionalities are used? How often was CA Clarity offline because of system failure? Who is taking action when the system is down? Are you taking proactively action, or are the users taking action to you?

In many cases there are no real facts available about usage, stability and performance of CA Clarity. CInsightC R3 monitors the system frequently and provides all the necessary facts to professionalize the Application Management of CA Clarity more and more.

2 Functional Overview and Roadmap

Release	Feature	Status	Edition
V1.0	Application Error Log Analysis	Available	Enterprise
V1.0	Background Error Log Analysis	Available	Enterprise
V1.0	Email Notifications on Application Log Errors	Available	Enterprise
V1.0	Email Notifications on Background Log Errors	Available	Enterprise
V1.0	Email Notifications on Failing Application Nodes	Available	Enterprise
V1.0	Email Notifications on Failing Databases	Available	Enterprise
V1.0	Uptime Statistics	Available	Enterprise
V1.0	Garbage Collection Logging Analysis (Memory)	Available	Enterprise
V1.0	Access Logging Analysis	Available	Enterprise
V2.0	Session Statistics Analysis	Available	Enterprise
V2.0	Session Details Analysis	Available	Enterprise
V2.5	SQLTrace Analysis	Available	Enterprise
V1.0	Portlets	Available	Enterprise
V2.0	System Statistics (CPU / Memory)	Available	Enterprise
V2.5	Response Time Measurement	Available	Enterprise
V3.0	Monitoring Website	Available	Enterprise
V3.0	(optional) Embedded Database	Available	Enterprise

This diagram lists the functionalities on headlines:

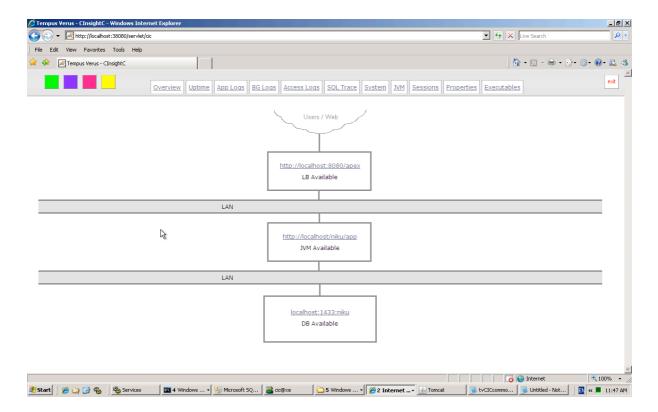
CInsightC is supported on all CA Clarity Architectures. Please read the CA Clarity Product Architecture Stack for details.

Enterprise Edition

The Enterprise Edition is a full version where a License Fee is needed. Contact <u>sales@tempusverus.com</u> for licensing details. This edition is recommended for all major CA Clarity sites. CInsightC Support is currently only available in Europe.

Overview Page

The overview page in the Web Client displays real-time status information about the CA Clarity infrastructure.



Error Logging

Error Logging reads the Logfiles of CA Clarity and stores all the loglines in a table in the database. This gives a clear overview of all the data being written to the CA Clarity Logfiles at any time. Once a Logfile entry is written to the database, it will not be deleted. This gives some historical statistics in the origin of errors.

The loglines written to the database are having enough metadata like timestamp in milliseconds, name of the originating Logfile, severity, etc. This gives the opportunity to do thorough analysis with regards to accidents. This screenshot displays the Application Logging information stored in the tables by CInsightC. It is possible to filter on a very specific time scope or text string.

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Screenshot using CInsightC Web Client:

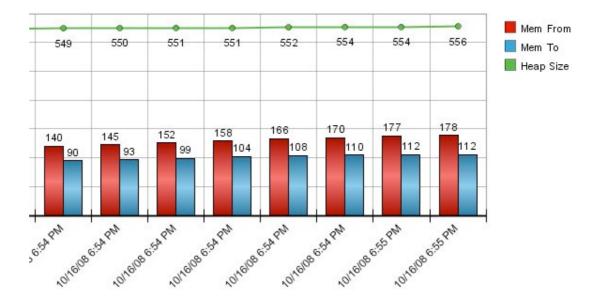
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2011-02-16 14:08:56	ERROR	[http-80-Processor2] xql2.xbl (admin:5003436 59d75a93:security.loginAction) admin Logged in.	c:/clarity/clarity1206/logs/app-niku.log	admin	security.loginAction	
2011-02-16 14:01:41	SYS	[Niku Job Scheduler] niku.union (scheduler:5003422 59d75a93:none) SQLTrace enabled. Output directory: C:\clarity\clarity1206\logs\sqltrace\	c:/clarity/clarity1206/logs/app-niku.log	scheduler	none	
2011-02-16 14:01:39	SYS	[Niku Job Scheduler] njs.SchedulerImpl (scheduler:500342259d75a93:none) Clarity 12.0.6.5471 Job Scheduler app@clarity1 initialized	c:/clarity/clarity1206/logs/app-niku.log	scheduler	none	
2011-02-16 14:01:36	SYS	[Event Interest Registration Thread] niku.union (none:none:none) Event registration completed. Event manager started succesfully.	c:/clarity/clarity1206/logs/app-niku.log	none	none	
2011-02-16 14:01:36	SYS	[WrapperStartStopAppMain] niku.union (none:none:none) Clarity 12.0.6.5471 ready.	c:/clarity/clarity1206/logs/app-niku.log	none	none	
2011-02-16 14:01:33	SYS	[WrapperStartStopAppMain] niku.union (none:none:none) Initializing: itl.init	c:/clarity/clarity1206/logs/app-niku.log	none	none	
2011-02-16 14:01:33	SYS	[WrapperStartStopAppMain] niku.union (none:none:none) Initializing: pma.init	c:/clarity/clarity1206/logs/app-niku.log	none	none	
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GC Logging

GC Logging stands for Garbage Collection Logging. In short terms, Garbage Collection is an internal java routine to delete all unused memory objects. The statistics of this Garbage Collection Routine can be written to a GC Logfile. CInsightC can interpret this GC Logfile as well. This data gives the single most important impression about usage and load of the CA Clarity system. By analysing these statistics, situations like OutOfMemory and other crashes can be predicted and prevented.

The next screenshot displays the Portlet TV GC Graph. This shows the Memory details of the Java Virtual Machine (the Clarity engine). The

Heap Size line is the amount of memory allocated from the Operating System. The 'Mem To' column shows the used memory after a garbage collection takes place - the real used memory. 'Mem From' is the amount of memory before a garbage collection takes place - this is the sum of the real used memory and the obsolete / unused memory objects.



Screenshot using CInsightC Web Client:

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2011-02-16 14:10:51	c:/clarity/clarity1206/logs/gc-app.log	GC	175207	130504	514624	.0704767
2011-02-16 14:10:45	c:/clarity/clarity1206/logs/gc-app.log	GC	169517	128295	518528	.0804862
2011-02-16 14:09:59	c:/clarity/clarity1206/logs/gc-app.log	GC	168948	122413	516928	.0442931
2011-02-16 14:09:55	c:/clarity/clarity1206/logs/gc-app.log	GC	166734	118196	520192	.0193883
2011-02-16 14:09:48	c:/clarity/clarity1206/logs/gc-app.log	GC	165337	115790	519296	.0384565
2011-02-16 14:09:44	c:/clarity/clarity1206/logs/gc-app.log	GC	164410	113305	519872	.015372
2011-02-16 14:08:45	c:/clarity/clarity1206/logs/gc-app.log	GC	164190	112122	519936	.0134036
2011-02-16 14:07:43	c:/clarity/clarity1206/logs/gc-app.log	GC	164047	111646	519744	.011489
2011-02-16 14:06:40	c:/clarity/clarity1206/logs/gc-app.log	GC	163635	111247	520320	.0118973
2011-02-16 14:05:38	c:/clarity/clarity1206/logs/gc-app.log	GC	163338	110579	519936	.0053925
2011-02-16 14:04:56	c:/clarity/clarity1206/logs/gc-app.log	GC	163795	110026	520320	.0156867
2011-02-16 14:04:37	c:/clarity/clarity1206/logs/gc-app.log	GC	163451	110227	520512	.0094302
2011-02-16 14:04:24	c:/clarity/clarity1206/logs/gc-app.log	GC	163103	109627	520640	.0118078
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Uptime Statistics

CInsightC measures the availability of CA Clarity and the related database. These statistics are stored in the database. Besides the

real availability figures of CA Clarity it gives the opportunity to use this data for recognition of a pattern of unavailability.

Example 1: database administrators have the bad habit to restart database without notifying the CA Clarity administrators. CInsightC detects this immediately and stores the results of the database probing in a csv-file (since the database is unavailable, it must be stored elsewhere).

Example 2: CA Clarity is always crashing after 4 pm on certain days. The statistics of CInsightC gives more information and it is possible to see it is always on the first Wednesday of the month. By having this indicator, it is possible to relate the crash to a user who generates extra load on the CA Clarity system by generating monthly reports. By optimizing the monthly reports, the crashes are avoided.

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Screenshot Uptime Statistics (Graph):

Email Notifications

CInsightC is able to send email notifications to an unlimited customizable list of administrators. CInsightC will send an email when either CA Clarity or the Database is unavailable or when one of these doesn't have finished the probing action within 5 seconds (which is classified as an extreme delay). CInsightC will also send an email notification to an unlimited customizable list of administrators based on a list of keywords. If one of these keywords occurs in the Logfile, the administrators will be notified. This enables the administrators to take immediately

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action when e.g. an OutOfMemory message is written to the CA Clarity Logfile, or a certain Oracle Message (ORA-{code}). An example is given in the next screenshot. The content of the message is adjustable using an xml template.

	To:	administrator@myorganization.com
	Cc:	
	Bcc:	
≡▼	Subject:	app-niku.log: Serious error found: ORA-12505 Connection refused

Dear Administrator,

This error has been catched from the logfile:

ORA-12505 Connection refused

Please take action!

Regards,

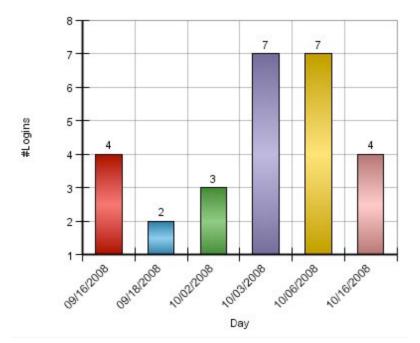
CInsightC

Session Statistics

CInsightC is able to detect all the user-sessions of CA Clarity and to relate them to one of the CA Clarity instances in case of a Cluster Setup. When there are issues in CA Clarity, it is possible to detect the affected users and to inform them. The session statistics data is also stored in the database tables of CInsightC; these will keep the usage of CA Clarity stored. This information can be used for numerous appliances. The next screenshot displays the TV Sessions Portlet, which displays the active and inactive sessions.

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5,000,007	admin	c:\clarity\clarity81\logs\app-niku.log	10/16/	08 6:50 PM	10/16/08 6:58 PM
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Another Portlet, which displays statistical Session information, is the TV Logins (graph) Portlet. It displays the number of sessions per day.



Session Details

CInsightC stores all the session information in the database. This
enables Administrators to browse through all kind of session
information using out-of-the box or customized Portlets.
Administrators can analyze exactly what users are doing in CA
Clarity, and analyze every button-click. A non-exhausting list of
applications is:
- What is user X doing right now?
- User Y has an error. Which steps should the admin take to reproduce
the problem?

- Which users are accessing the baseline functionalities?

The next screenshots display respectively: 1. Session details for a session of the admin user on 2009-11-28 2. All sessions 3. The actions a user is doing in a session

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clarity/clarity1206/logs/app- access-2011-02-16.log	admin	127.0.0.1	5003436	2011-02-16 14:08:56	null	60
clarity/clarity1206/logs/app- access-2011-02-03.log	<u>t</u>	127.0.0.1	5001701	2011-02-03 20:52:12	2011-02-03 20:52:37	60
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clarity/clarity1206/logs/app- access-2011-02-03.log	22	127.0.0.1	5001617	2011-02-03 15:13:21	2011-02-09 15:49:54	60
clarity/clarity1206/logs/app- access-2011-02-03.log	<u>cc</u>	127.0.0.1	5001614	2011-02-03 15:10:52	2011-02-03 15:13:17	60
clarity/clarity1206/logs/app- access-2011-02-03.log	admin	127.0.0.1	5001582	2011-02-03 14:48:39	2011-02-03 15:10:34	60
clarity/clarity1206/logs/app- access-2011-01-31.log	admin	127.0.0.1	5001079	2011-01-31 19:15:07	2011-02-03 14:49:27	60
clarity/clarity1206/logs/app- access-2011-01-31.log	admin	127.0.0.1	5001071	2011-01-31 19:09:14	2011-01-31 19:15:03	60

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2011-02-03 20:52:13	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	npt.overview	200
2011-02-03 20:52:23	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	mainnav.about	200
2011-02-03 20:52:25	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	mainnav.about	200
2011-02-03 20:52:33	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	mainnav.work	200
2011-02-03 20:52:35	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	personal.settings	200
2011-02-03 20:52:37	c:/clarity/clarity1206/logs/app-access-2011-02-03.log	127.0.0.1	5001701	security.logoutAction	302

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Access Logs

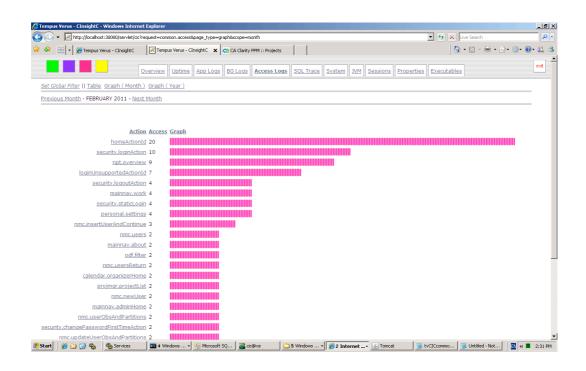
CInsightC is also equipped to read and interpret the CA Clarity Access Loggings. This gives information on which parts of CA Clarity are actually used at what time. Every line in the Access Logs is related to a session. This enables full transparency in the CA Clarity usage figures.

The next screenshot is a Portlet showing a selection from the Access Logs. Filtering using various criteria's allows zooming in on a very specific level. In this screenshot is data selected for the year 2009, month 05, day 25, hour 07 and minute 50:

TV Acce	ss Lo	gs V3											[Actions]
Filter [-	Selec	:t]	•										[Collapse Filter]
			Year	200	09						Actio	n	
			Month	05							IP Addres	5	
			Day	25	25					HTTP Cod	e		
			Hour	07							UR	L	
			Minute	50							Logfi	e	
			Second								Power Filte	er [Build Power Filter]	
× Filter	Sho	ow All	Sav	e Filte	er C	ear							
Timesta	amp	Year	Month	Day	Hour	Minute	Second		Action	HTTP Code	IP Address	URL	
5/25/09	6:50 AM	2009	05	25	07	50	16	timeadn	nin.addTimesheetTaskMore	302	134.27.235.116	/niku/app?action=timeadmin.addTim	nesheetTaskMore&id=6568478
5/25/09	6:50 AM	2009	05	25	07	50	16	timeadn	nin.selectTimesheetTaskReturn	200	134.27.235.116	/niku/app?action=timeadmin.selectT	imesheetTaskReturn
5/25/09	6:50 AM	2009	05	25	07	50	22	timeadn	nin.addTimesheetTaskMore	302	134.27.235.116	/niku/app?action=timeadmin.addTim	nesheetTaskMore&id=6568478
5/25/09	6:50 AM	2009	05	25	07	50	22	timeadn	nin.selectTimesheetTaskReturn	200	134.27.235.116	/niku/app?action=timeadmin.selectT	imesheetTaskReturn
5/25/09	6:50 AM	2009	05	25	07	50	29	timeadn	nin.addTimesheetTaskMore	302	134.27.235.116	/niku/app?action=timeadmin.addTim	nesheetTaskMore&id=6568478
5/25/09	6:50 AM	2009	05	25	07	50	29	timeadn	nin.selectTimesheetTaskReturn	200	134.27.235.116	/niku/app?action=timeadmin.selectT	imesheetTaskReturn
5/25/09	6:50 AM	2009	05	25	07	50	33	timeadn	nin.selectTimesheetTaskOpt	200	134.27.235.116	/niku/app? action=timeadmin.selectTimesheetT	askOpt&wbssort=0&page=1
5/25/09	6:50 AM	2009	05	25	07	50	43	timeadn	nin.addTimesheetTask	302	134.27.235.116	/niku/app?action=timeadmin.addTim	nesheetTask&id=6568478
5/25/09	6:50 AM	2009	05	25	07	50	43	timeadn	nin.editTimesheet	200	134.27.235.116	/niku/app?action=timeadmin.editTim	nesheet&id=6568478
Total Resu	lts: 9												

Another out-of-the-box available Portlet is 'TV Access Logs Graph V2'. This Portlet displays the accessed pages in order of usage. The most used Page is on top, the less used page at the end of the Portlet:

timeadmin.editTimesheet				4996
npt.overview			2768	
n eadm in .tim esh eet BrowserReturn		2272		
tim eadmin.saveTim esheet		1877		
home Action Id	1598			
security.loginAction	1487			
security.staticLogin	1195			
n eadmin.selectTimesheetTaskOpt	1174			
schedulers.session Valid	879			
tim eadmin.sa ve Tim eshe et Exit	774			
projm gr.project Properties	752			
time admin.tim eshe etAdd Task	710			
odf.filter	614			

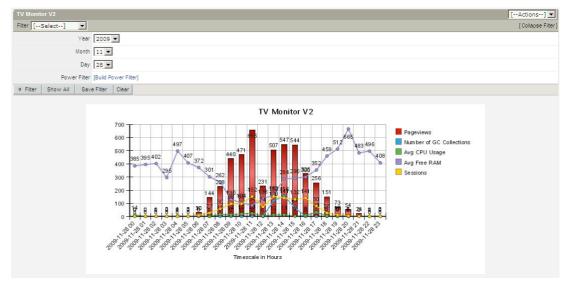


Performance Statistics

CInsightC measures CPU and Memory statistics of your application servers. Measuring points are (per machine):

- Percentage Processor Time
- System Up Time
- Available MB Memory
- Total Physical Memory

The next screenshot is based on the above-mentioned figures in combination with Garbage Collection figures, Access Logs (Page views) and Sessions.



Response Time Measurement

CInsightC is able to perform response time measurement. It walks through a number of pages and stores the response time per page in the database. The pages to be measured are configurable. This functionality is not general available yet, but can be used on special request.

SQLTrace Analysis

CInsightC is able to read the CA Clarity SQLTraces and stores all details in the database. Information like session, user, start time, finish time, duration are stored in the database. This gives the opportunity to filter for long running pages etc...

The next screenshots display respectively:

- 1. Top 10 longest running queries
- 2. Total time Database resource consumption per session
- 3. Total time Database resource consumption per user
- Queries which takes the most resources regardless the user / session.
- 5. Details for a query. The bind-variables are substituted by the real values, which simplifies analysis.

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bal Filter Table Top 10 SQL	Overview Uptime Time per Session SQ	1 1 1	Access Logs SOL Trace System JVM Sessi	ons Properties	Executables	
			Back			
Timestamp	<u>User Name</u>	Action	Statement	Non-SQL Time (ms.)	Execute Time (ms.)	Open Time (ms.)
2011-02-01 14:10:14	null	null	nmc.deleteJobRunLog	31	241142	241845
2011-02-03 14:28:03	admin	npt.overview	njs.updateJobRunProperties	188	51844	51937
2011-02-03 14:29:40	admin	npt.overview	nis.updateJobPropertiesCompleted	468	938	16469
2011-02-03 14:31:34	admin	npt.overview	njs.updateJobRunProperties	47	1235	8500
2011-02-03 14:27:37	admin	npt.overview	nis.updateJobProperties	160713048	1438	7562
2011-02-16 14:01:56	null	null	njs.setConcurrentWaitingJobs	47	6172	6188
2011-02-04 18:08:38	null	null	nis.insertJobRunLogProperties 1	0	2641	5578
2011-02-03 14:46:06	admin	npt.overview	service.selectRootNodes	2594	4593	4593
2011-02-15 13:56:05	null	null	nis.insertJobRunProperties	406	266	4297
2011-02-04 09:20:12	null	null	service.selectMultipleGroupsSTMT at Fri Feb 04 09:20:12 CET 2011	188	312	4187

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Set Global Filter Table Top 10 SQL Time per Session SQL Time per User Most Consuming Queries	

			Back		
User Name	Session Id	Login	Logout	Total SQL (sec.)	Total (sec.)
admin	5001582	2011-02-03 14:48:39	2011-02-03 15:10:34	44	46
admin	5003436	2011-02-16 14:08:56	null	10	12
admin	5001699	2011-02-03 20:50:59	2011-02-03 20:52:06	1	2
tt	5001701	2011-02-03 20:52:12	2011-02-03 20:52:37	0	1
сс	5001617	2011-02-03 15:13:21	2011-02-09 15:49:54	0	0
admin	5001079	2011-01-31 19:15:07	2011-02-03 14:49:27	0	0

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<u>User Name</u>	Total SQL (sec.)	Total (sec.)	
admin	55	60	
tt	0	1	
сс	0	0	
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Global Filter Table Top 10 SQL Time per	r Session SQL Time per User Most Consum	ing Queries		
		Back		
Query Name	Number of Executions	Total SQL (sec.)	<u>Total (sec.)</u>	
nmc.deleteJobRunLog	1935	260	270	
njs.updateJobProperties	4690	78	108	
njs.updateJobRunProperties	2344	82	102	
njs.updateJobPropertiesCompleted	2344	36	62	
njs.insertJobRunLogProperties_1	2346	31	53	
njs.insertJobRunProperties	2346	28	50	
njs.setConcurrentWaitingJobs	4690	31	49	
njs.insertJobRunLogProperties_2	2344	28	42	
union.getNotificationSubscriptionUsers	2344	13	22	
njs.resetConcurrentWaitingJobs	2344	12	21	

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			Back				
				Non-SQL Time	Execute Time		
Timestamp	User Name	Statement	Query	<u>(ms.)</u>	<u>(ms.)</u>	Open Time (ms.)	
			SELECT mi.id id, action.id action, action.action_code code,				
			action.policy_id, action.is_system, ac.name, 0 page_id, "				
			page_name, mi.parent_menu_id parent, mi.menu_item_level				
			level_index, mi.position position, " space_code FROM				
			cmn_portlets portlet, cmn_menu_items mi, cmn_captions_nls ac,				
			cmn_actions action WHERE portlet.portlet_code =				
			'union.appLeftNav' AND portlet.portlet_type_code = 'SYSTEM'				
			AND portlet.portlet_view_type_code = 'toc' AND mi.container_id				
			= portlet.id AND mi.action_id = action.id AND mi.item_type_code				
			= 'MENU' AND ISNULL(mi.is_hidden, 0) != 1 AND action.page_id =				
			'0' AND action.principal_type = 'SYSTEM' AND action.principal_id =				
			'0' AND ac.pk_id = action.id AND ac.table_name =				
			'CMN_ACTIONS' AND ac.language_code = 'en' UNION SELECT				
2011-02-03		mi.id id, action.id action, action.action_code code,				_	
14:48:45	admin	union.getMenuItems	action.policy_id, action.is_system, ac.name, page.id page_id,	5562	1266	1266	
			pc.name page name, mi.parent menu id parent,				
			mi.menu_item_level level_index, mi.position position,				
			page.space code FROM cmn pages page, cmn captions nls pc,				
			cmn_menu_items mi, cmn_portlets portlet, cmn_captions_nls ac,				
			cmn_actions action WHERE portlet.portlet_code =				-
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Filters

Besides the page filters, a global filter can be set. When the global filter is enabled, all pages will only display data in range of the filter applied. This filter can be set from all pages. This global filter will help you in limiting the data to eg. 15 minutes to trace a specific issue.

4 Implementation Overview

An implementation of CInsightC can be just an installation, but also a longer process. The extra time it might take is in defining information requirements and generating Portlets. Building a mid-size CA Clarity Portlet takes about 1 day. Any CA Clarity Portlet Specialist can do this.

Installation: 1 day. Average development time per Portlet: 1 day.

It is recommended to redefine the information requirements often to get maximum value out of CInsightC.

5 From the field

Koen Gryson - Experienced CA Clarity Technical Consultant

As a technical consultant, (a part of) my job is to identify, analyze and fix problems, which occur mostly at random. The 'tools' at my disposal are usually large log files (if they exist), vague descriptions of non-repeating performance problems, unknown crashes, portlet failures, etc.

The following questions are quite common:

"Last week a user experienced an error while saving a project. Could you have a look?" "On Fridays, it seems CA Clarity is slower. It seems that when users submit their timesheets, it impacts the entire system. Should we increase our infrastructure?" "The Background Engine sometimes stops running, impacting posting and other jobs. As we only recognize this problem after 1 or 2 days, how can we avoid this?" "This specific page is very slow in our system. How can we improve

performance?"

CA Clarity provides some useful methods of investigating this (like SQLTrace and extra logging through the NSA), but a CA Clarity administrator does not have the time/will or skills to look into these problems in depth. Also, a problem can appear to be a simple application error while a database error is the root-cause. I have had multiple occasions when the Oracle and Websphere team have been playing email discussions over and over to find the cause when the root-cause was a simple mistake in a NSQL query.

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Running **CInsightC** in your CA Clarity infrastructure lets you identify 80% of the problems <u>in real time</u>, and even notifies you on errors or when a part of the infrastructure is down.

It also stores all data (logfiles, garbage collection, SQLTrace data, access logs, etc.) in the CInsightC database for future reference. Nothing gets lost. It allows you to make a link between a user action, a slow query, an error and even the memory usage at that time.

Koen Gryson co-developed CInsightC with the thought of making the life of CA Clarity administrators and technical consultants easier. Tempus Verus B.V. Grasstraat 1 3572 TV Utrecht The Netherlands attn: D. Bos. For sales inquiries: <u>sales@tempusverus.com</u> +31 6 388 944 67

For support inquiries: support@tempusverus.com