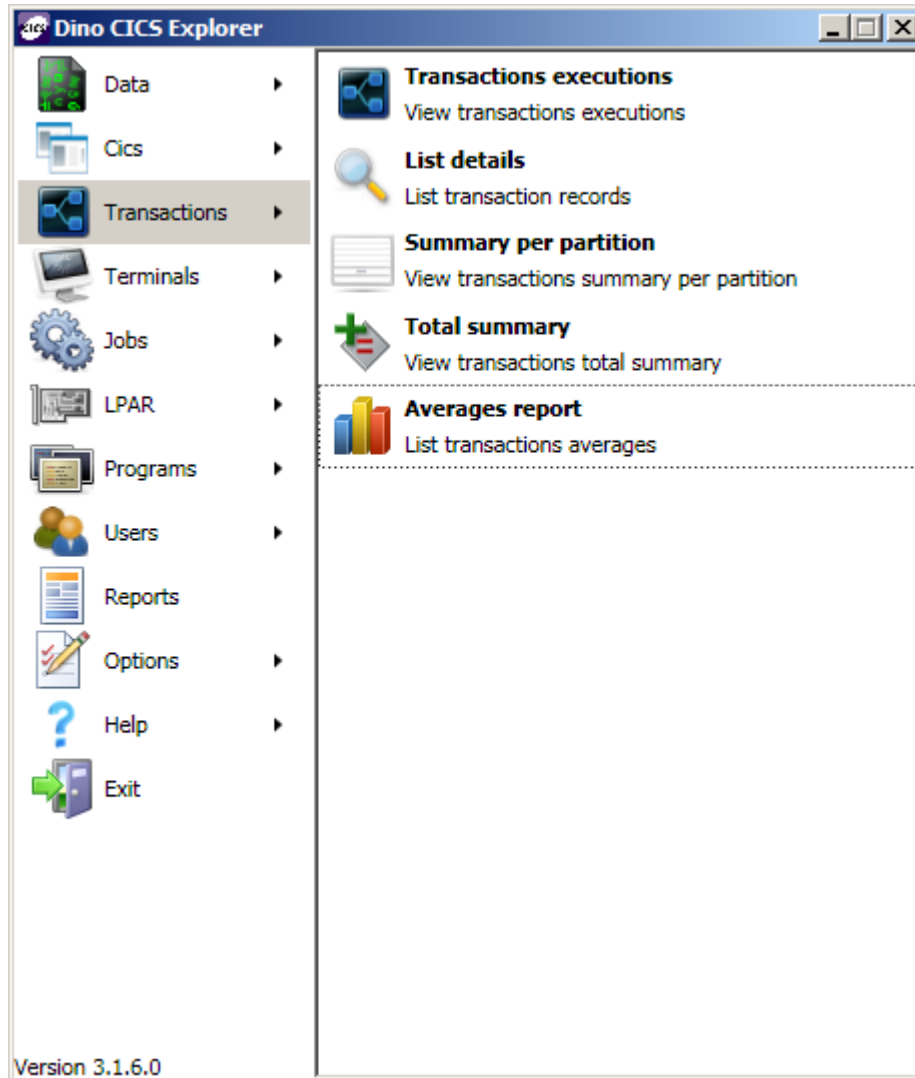


CICS Explorer overview

CICS Explorer



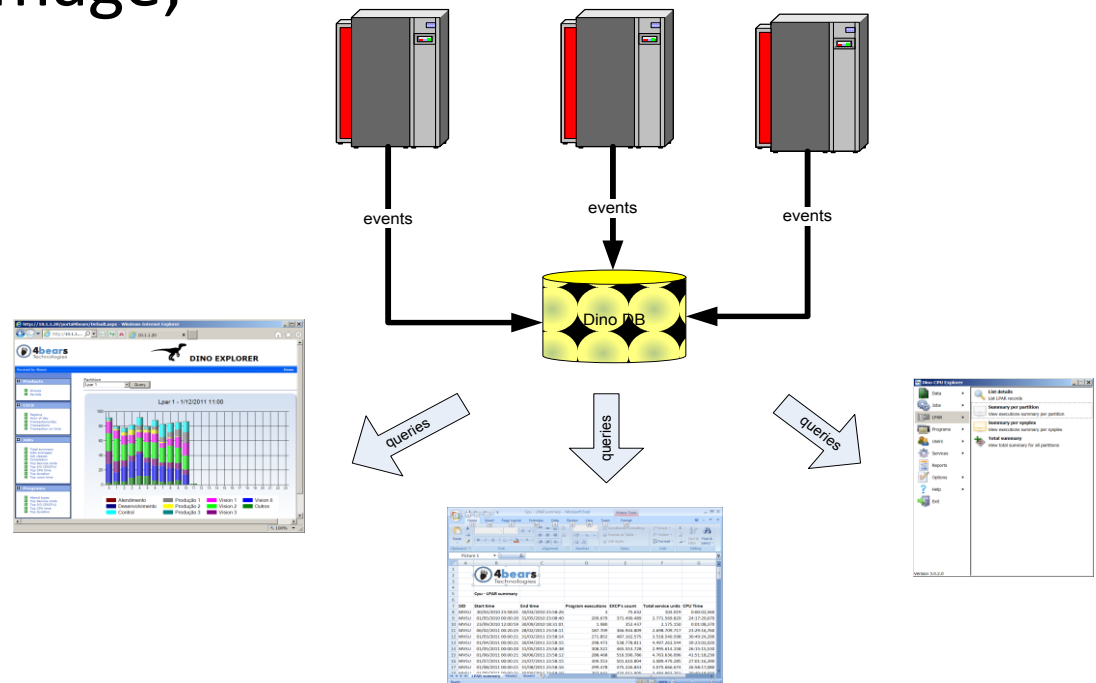
- Process SMF 110 Performance records;

- Transaction details:
 - Duration, CPU times
 - LU, program, IP address

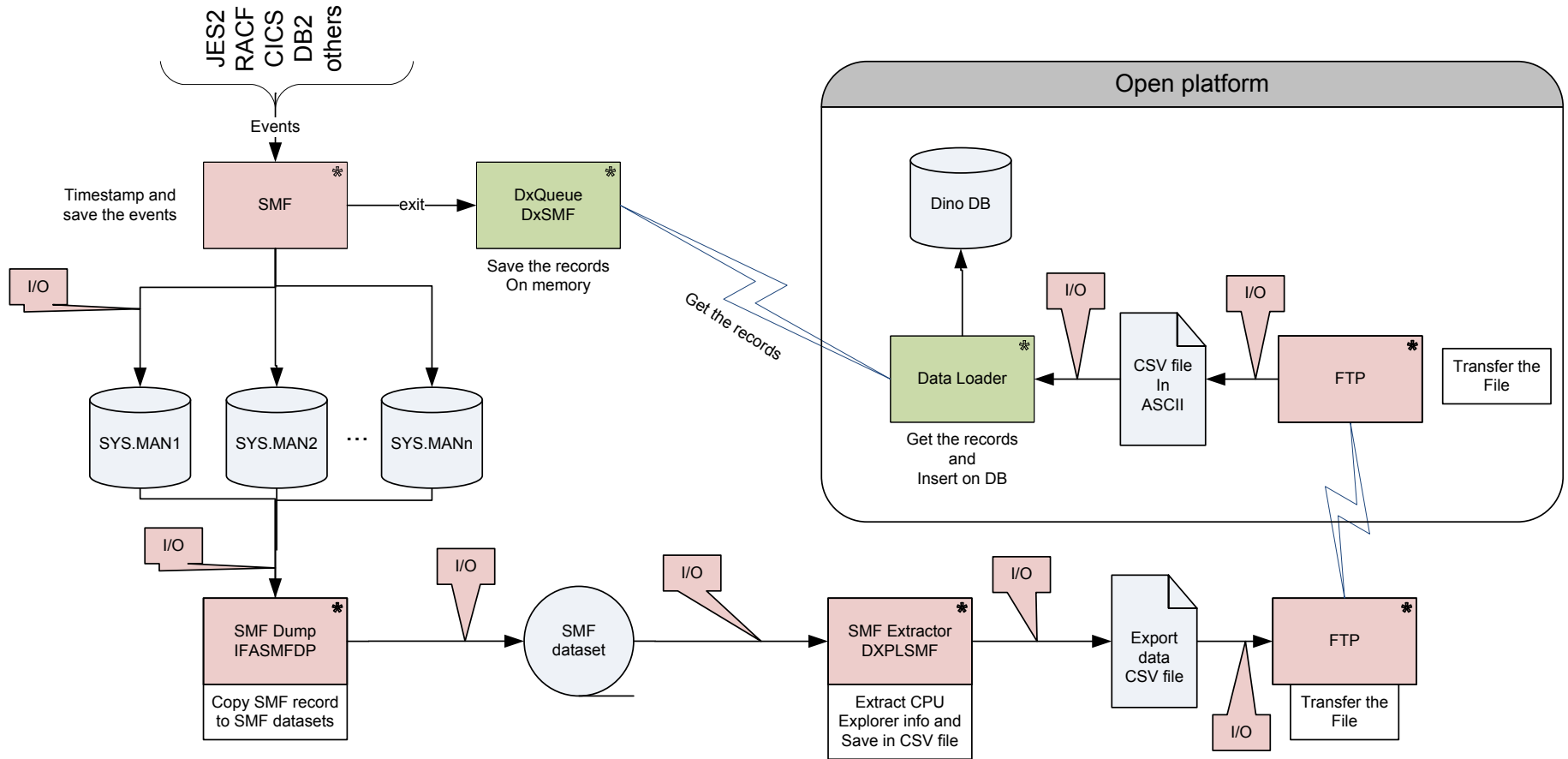
- May discard the records before written to SYS.MAN

Dino Architecture

- The transaction details are downloaded asynchronously in a continuous process;
- There is an independent messaging process for each z/OS image;



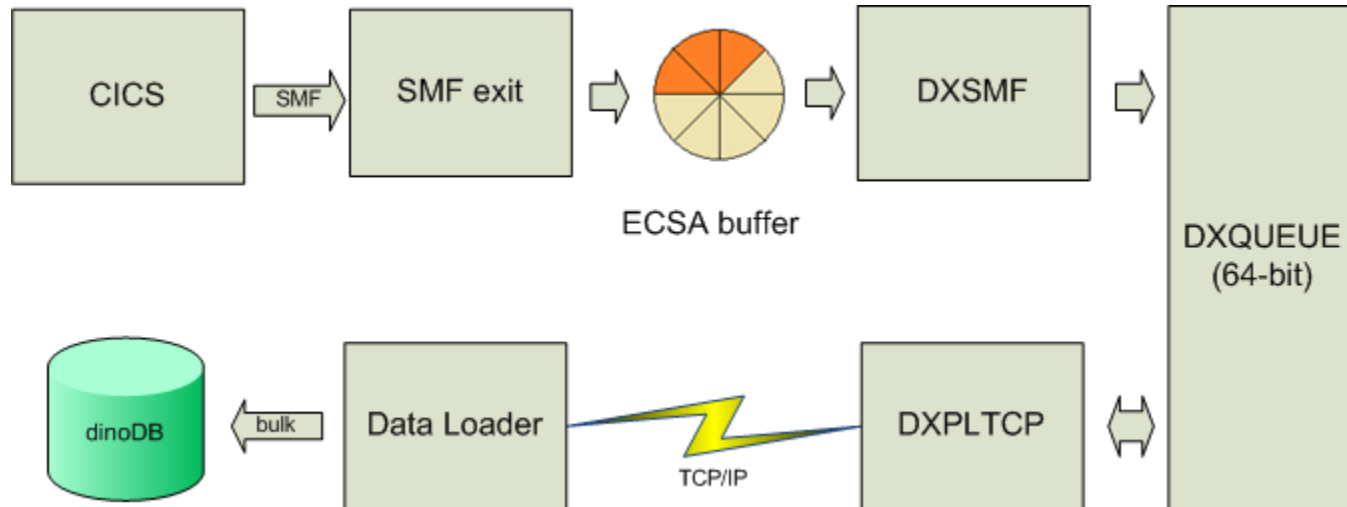
Dino Messaging



- Dino Messaging – Real Time
- Batch Collector – File Transfer

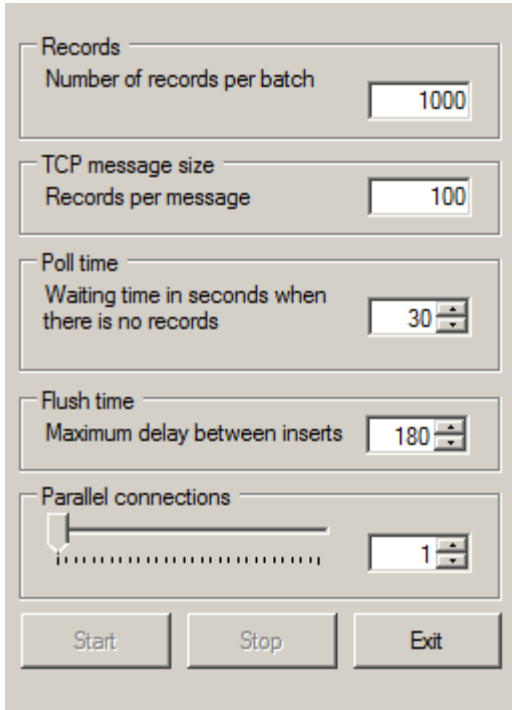
Note: SMF Discard option embedded

Data flow



- The records are processed asynchronously on the DXSMF address space and saved on the DXQUEUE for delivery;
- If we stop polling records, they are automatically paged-out;
- Once restored, they are paged-in.

Throughput controls



The screenshot shows a control panel with five sections, each with a title and a description:

- Records**: Number of records per batch, with a text input field containing the value 1000.
- TCP message size**: Records per message, with a text input field containing the value 100.
- Poll time**: Waiting time in seconds when there is no records, with a spin button set to 30.
- Flush time**: Maximum delay between inserts, with a spin button set to 180.
- Parallel connections**: A slider bar and a spin button set to 1.

At the bottom of the panel are three buttons: Start, Stop, and Exit.

You can control:

- Number of parallel sessions
- How many records per bulk insert
- TCP/IP message size
- Resting time when the messaging is faster
- Maximum time the events are kept in memory

One record per transaction

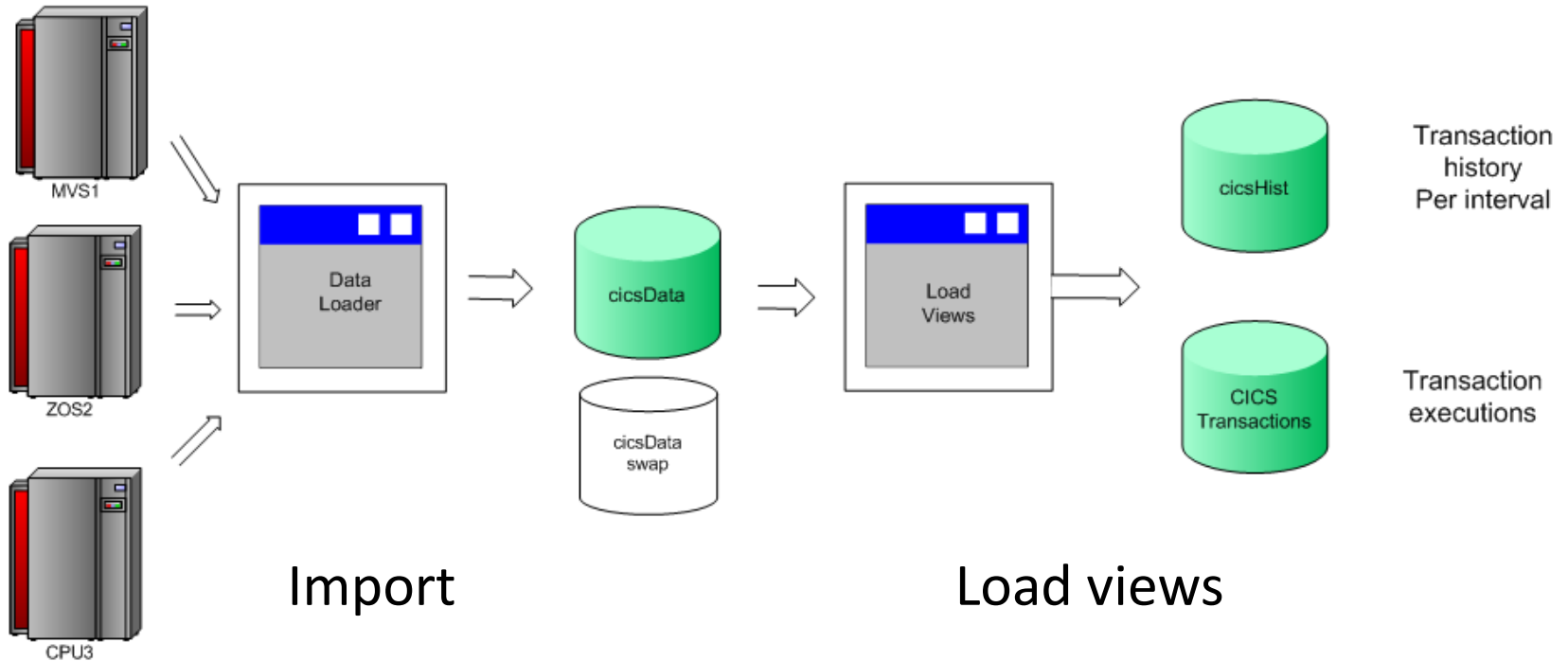
Start time	SID	CICS name	TRX	Type	RACF username	Program name	LUNAME	Terminal	Unit-of-Work ID	Origin IP	Duration time	CPU time
07/05/2013 17:49:24	BE12	CICSTS41	CQRY	S	CICSUSER	DFHQRY	SCOTCP06	CP06	CB534B8D918A4003	10.1.1.10	0:00:00,106	0:00:00,013
07/05/2013 17:49:24	BE12	CICSTS41	CSGM	S	CICSUSER	DFHGMM	SCOTCP06	CP06	CB534B8DAC744002	10.1.1.10	0:00:00,074	0:00:00,010
07/05/2013 17:49:25	BE12	CICSTS41	CSAC	TO	CICSUSER	DFHACP	SCOTCP06	CP06	CB534B8E71D0F000	10.1.1.10	0:00:00,008	0:00:00,005
07/05/2013 17:49:28	BE12	CICSTS41	BEAR	TO	CICSUSER	CICSTEST	SCOTCP06	CP06	CB534B90C76D0000	10.1.1.10	0:00:02,958	0:00:00,027
07/05/2013 17:49:31	BE12	CICSTS41	CSAC	TO	CICSUSER	DFHACP	SCOTCP06	CP06	CB534B9465BE6000	10.1.1.10	0:00:00,007	0:00:00,004
07/05/2013 17:49:46	BE12	CICSTS41	BEAR	TO	CICSUSER	CICSTEST	SCOTCP06	CP06	CB534BA24C4AA000	10.1.1.10	0:00:01,129	0:00:00,011
07/05/2013 17:49:48	BE12	CICSTS41	CSAC	TO	CICSUSER	DFHACP	SCOTCP06	CP06	CB534BA4B572E000	10.1.1.10	0:00:00,006	0:00:00,003
07/05/2013 17:49:51	BE12	CICSTS41	BEAR	TO	CICSUSER	CICSTEST	SCOTCP06	CP06	CB534BA759DC7000	10.1.1.10	0:00:00,634	0:00:00,013
07/05/2013 17:49:55	BE12	CICSTS41	BEAR	TO	CICSUSER	CICSTEST	SCOTCP06	CP06	CB534BAAF31C5000	10.1.1.10	0:00:00,649	0:00:00,012
07/05/2013 17:49:57	BE12	CICSTS41	BEAR	TO	CICSUSER	CICSTEST	SCOTCP06	CP06	CB534BAD21A55000	10.1.1.10	0:00:00,665	0:00:00,010

- You can see all the transactions on a single view independently where it was executed;

Two phase

Mainframe data

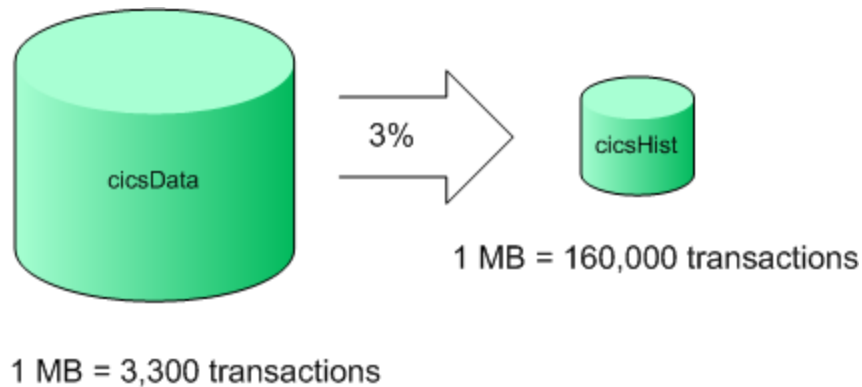
Views



- You can see the transactions a few seconds after their execution

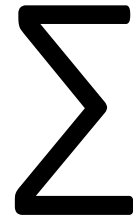
Transaction History

The transactions are summarized on intervals and grouped by key fields:



Transaction code
CICS name
SID
LUNAME
Username
Program name
Abend code
IP address
Terminal
WLM class
Trx class
Trx type

History counters



Number of transactions
Duration time
CPU time
Chars sent/received
OO calls
CPU mode times (K8, X9...)

We save:

- totals;
- Interval (start and end times);
- and the quantity of transactions

So,

average = total/qty

in any interval

Total and Averages

Transaction code	Start time	End time	Transactions	Duration time	CPU time
CSMI	11/01/2010 17:32:23.33	11/01/2010 23:59:57.15	255.480	00:17:02.173283	00:03:44.668944
CSMI	12/01/2010 00:26:45.57	12/01/2010 13:50:19.59	640.990	01:16:06.101773	00:17:03.550688
CSMI	30/06/2010 23:59:21.30	30/06/2010 23:59:57.91	282	00:00:03.314091	00:00:00.148368
CSMI	01/07/2010 00:17:11.19	01/07/2010 23:59:59.60	2,220.558	05:30:37.976602	00:26:17.732992
CSMI	02/07/2010 00:12:06.17	02/07/2010 23:59:59.50	1,145.181	03:30:59.359312	00:10:03.643872
CSMI	03/07/2010 00:04:54.74	03/07/2010 23:59:59.00	1,420.958	01:40:27.814981	00:09:57.947968

Transaction code	Start time	End time	Transactions	Duration time	CPU time
CSMI	11/01/2010 17:31:34.95	11/01/2010 23:59:57.15	255.480	00:00:00.004000	00:00:00.000864
CSMI	12/01/2010 00:00:01.98	12/01/2010 13:50:19.59	640.990	00:00:00.007123	00:00:00.001584
CSMI	30/06/2010 23:58:04.84	30/06/2010 23:59:57.91	282	00:00:00.011752	00:00:00.000512
CSMI	01/07/2010 00:00:00.31	01/07/2010 23:59:59.60	2,220.558	00:00:00.008933	00:00:00.000704
CSMI	02/07/2010 00:00:01.25	02/07/2010 23:59:59.50	1,145.181	00:00:00.011054	00:00:00.000512
CSMI	03/07/2010 00:00:00.45	03/07/2010 23:59:59.00	1,420.958	00:00:00.004242	00:00:00.000416

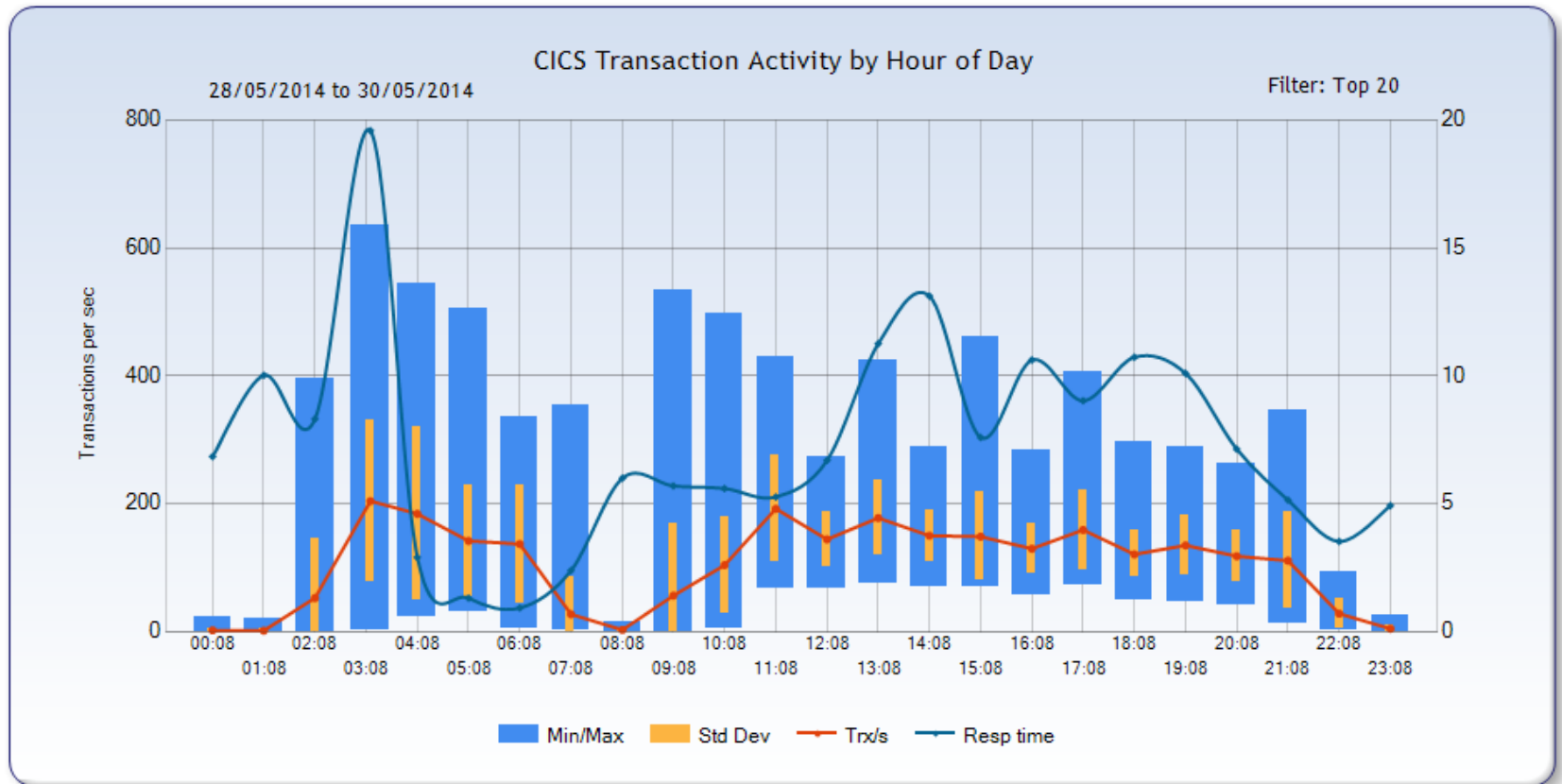
- The averages are nice to see changes in behaviour (application)
- The totals are good for charge-backing

Customized dashboards



- Any report can become a real-time report on a web portal

CICS Activity (TPS)

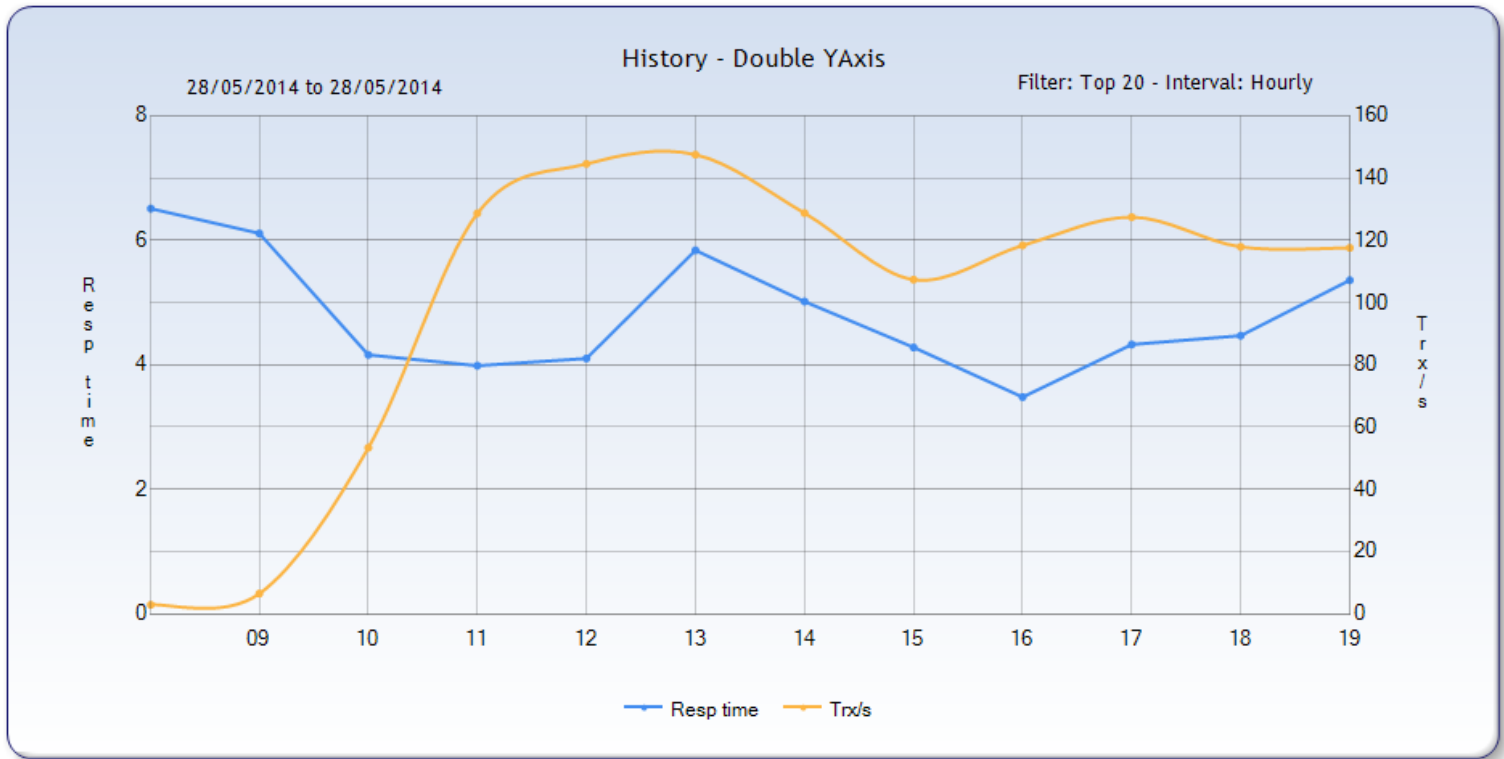


- Average and peak transaction activity per hour of day and average response time (ms).

Double axis charts

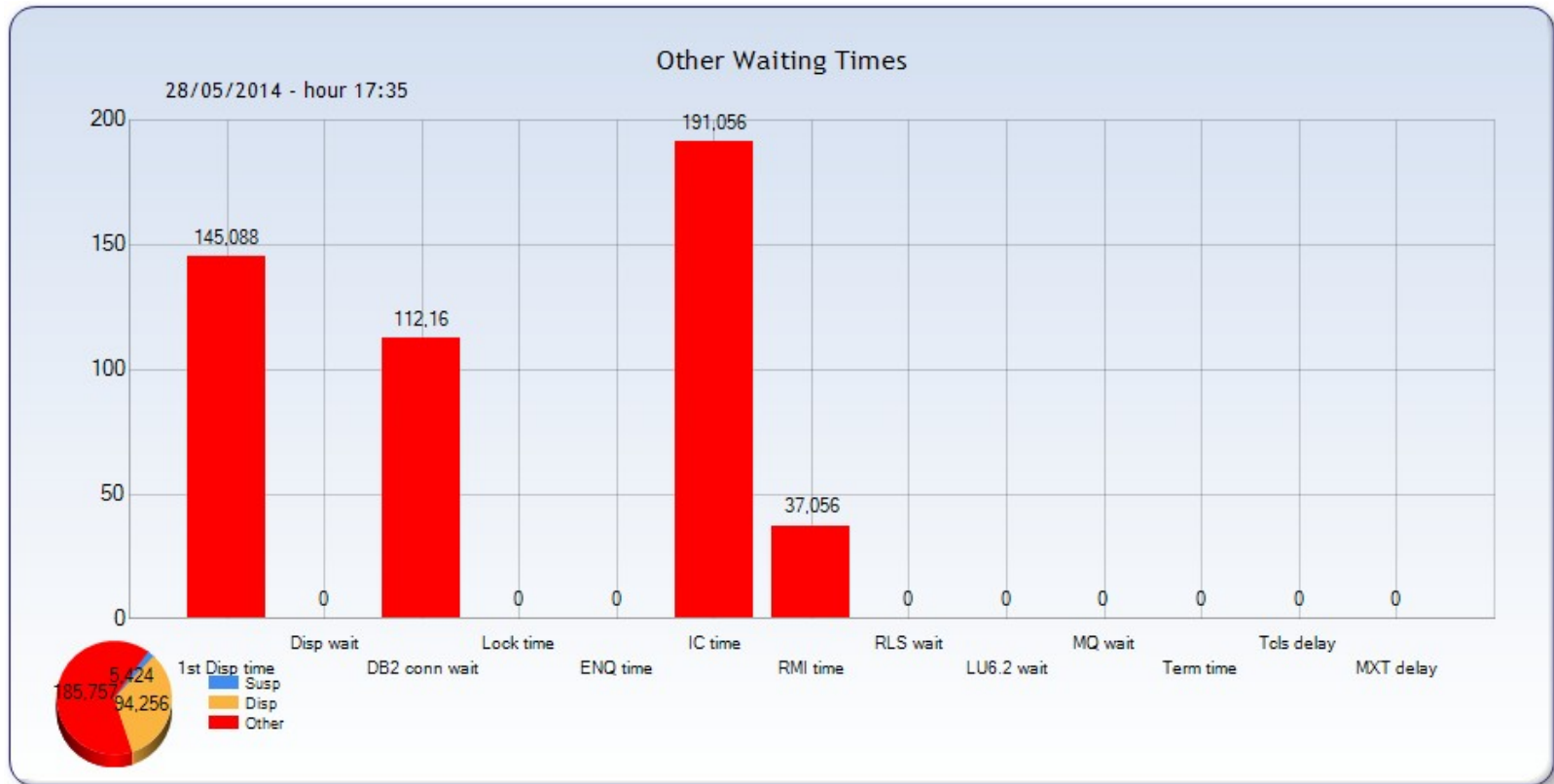
Start time: 28/05/2014 08:00:00
End time: 28/05/2014 20:00:00
Parameter: [empty]
Filter: Top 20
Field to chart: Resp time
Field to Y-Axis2: Trx/s
Interval: Hour interval Minute interval
Query

Chart | Data grid | Tips



- Select the fields to chart

Waiting times



- Drill-down functionality to show why the response time is high.

Transaction behavior

Month Day Hour
 26/10/2010

Partition:

Filter:

Top field:

Max. Quant.:

---	24/10/2010			25/10/2010			24/10/2010 x 25/10/2010		26/10/2010		
Trans	Qt. Trans	MIPS	MIPS/K	Qt. Trans	MIPS	MIPS/K	%exe	%mips	Qt. Trans	MIPS	MIPS/K
Total	5.361.757	1.010,68	2.314,54	9.332.625	1.821,86	685,67	74,06	80,26	14.306.165	3.731,54	2.012,50
PSSW	17.840	13,68	0,77	766.708	507,88	0,66	4.197,69	3.613,12	771.756	627,98	0,81
CSMI	2.431.599	151,03	0,06	5.906.429	419,56	0,07	142,90	177,80	8.048.048	599,32	0,07
IFIF	1.113.531	360,01	0,32	760.768	299,58	0,39	-31,68	-16,78	743.717	323,18	0,43
DE02	16.101	6,45	0,40	0	0,00	0,00	-100,00	-100,00	573.562	224,11	0,39
INBW	52.375	62,44	1,19	0	0,00	0,00	-100,00	-100,00	85.160	212,40	2,49
INBY	122.915	41,73	0,34	641.026	191,26	0,30	421,52	358,28	573.864	174,28	0,30
A401	22.900	15,62	0,68	0	0,00	0,00	-100,00	-100,00	198.267	128,67	0,65

- Comparing the top transaction with the latest months

Correlating transactions

Currently supported fields:

Start time	LUNAME	Ori Ip address	Pre Netid
End time	Terminal	Ori Port	Ori Correlat
SID	Transaction class	Ori Facility	Ori Time
CICS name	WLM Class	Ori Trx	Pre Time
Job name	WLM Report	Pre Trx	trxNum
Transaction code	Unit-of-Work ID	Ori Applid	Ori Number
Type	User Data 1	Pre Applid	Pre Number
RACF username	User Data 2	Ori Netid	Hop count
Program name	User Data 3		
Ip address	User Data 3		

- You can use any combination of these fields on filters to find the related transactions

User Data

Start time	SID	CICS name	Jobname	Trx code	Type	Pgm name	Unit-of-Work ID	Application	Status	BIN	Duration time	CPU time
07/05/2013 12:00:40	LPR1	CICSTS41	CICSA	RE01	U	RETIRA01	CB5340AEE0DE3002	WITHDRAW	APPROVED	420061	0:00:00,084	0:00:00,016
07/05/2013 13:03:16	LPR1	CICSTS41	CICSA	EX01	U	EXTRAT01	CB5340AF071A8001	STATEMENT	REJECTED	376520	0:00:00,046	0:00:00,001
07/05/2013 11:10:02	LPR1	CICSTS41	CICSA	EM01	U	EMPRES01	CB5340AF07A7A001	LOAN	TIMED OUT	515590	0:00:00,045	0:00:00,003
07/05/2013 16:30:55	LPR1	CICSTS41	CICSA	IB01	U	INTBAN01	CB5340AF01E5C000	INT.BANKING	RISK	422091	0:00:00,478	0:00:00,014
07/05/2013 17:00:46	LPR1	CICSTS41	CICSA	BR01	U	AGENCI01	CB5340AF048CD001	BRANCH	ERROR	476608	0:00:00,603	0:00:00,026

You can add your own application fields:

- ❑ EXEC CICS MONITOR command
- ❑ Supports up to 4 fields
- ❑ See CMG 2013 paper: “Empowering CICS Logs”

Contact



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alexey@4bears.com.br

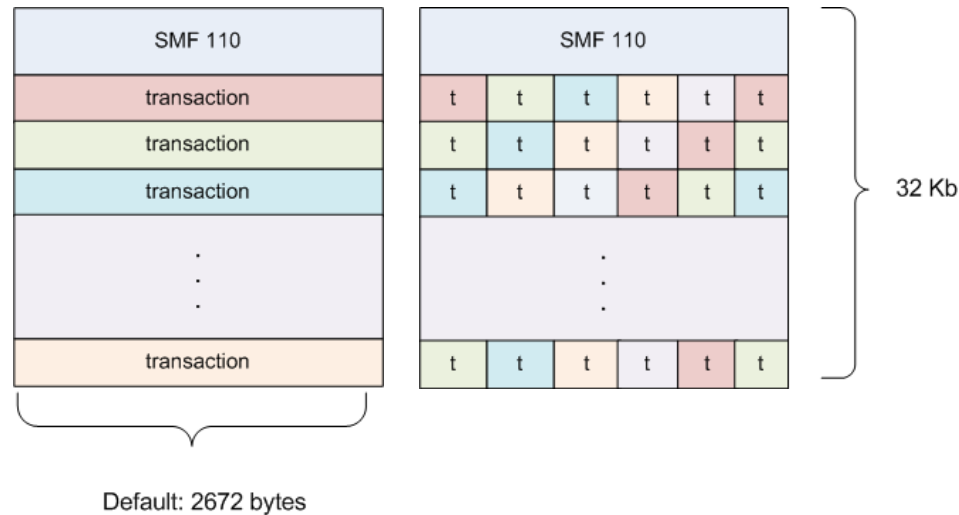
Phone: +55-11-5102.4685

Celphone: +55-11-99760.2242



□ BACKUP SLIDES

SMF 110 format



- Each 110 record has as many transactions as fits on 32 KB record;
- The size of each transaction data and the fields logged depend on the MCT configuration

Compressing history

The screenshot shows the 'Compress Historic Data' window with three tabs: 'Actions', 'Options', and 'Messages'. The 'Options' tab is active. It contains several sections: 'Product' with a dropdown menu set to 'Cics'; 'Target view' with a dropdown menu set to 'CicsHist'; 'Scope event' with radio buttons for 'Finished at' (selected), 'On the period', and 'Intervals'; 'Source query' with radio buttons for 'From Actions' and 'From History' (selected); and 'Limit the period' with 'From' and 'To' input fields.

The screenshot shows the 'Compress fields' window with the instruction: 'Select fields that may be added on "group by" clause at compress.' Below this is a list of fields with checkboxes, all of which are checked: 'Abend', 'Cur abend', 'Ip address', 'LUNAME', 'Tcp service', 'Transaction class', 'Type', 'WLM Class', and 'WLM Report'.

- ❑ Re-group your history with fewer fields
- ❑ Re-group in a larger interval: daily, weekly or montly
- ❑ You can get impressive results (97% reduction) just taking a few fields out, such as IP address, LUNAME and Terminal

Monitors uses XMNOUT exit

- The real-time monitors use this facility to get transaction execution details;
- Is invoked before a performance class monitoring record is written to the performance record buffer;
- You can use this exit to examine the record, to suppress its output to SMF, or to change the data it contains;
- Examples: CA-Sysview, OMEGAMON for CICS, BMC MainView and IBM CICS Performance Monitor.

Dino x Monitors (XMNOUT)

- XMNOUT is invoked at least once per transaction execution;
- CICS customization is required to activate the XMNOUT exits;
- CMF fulfills a 32 Kb record with information from many transactions and calls the SMF exit;
- The SMF activity is highly reduced compared to XMNOUT activity (roughly 20 times).

CICS TS 4.2 New Fields

New fields to tracking the transaction:

- ❑ Transaction group ID (TRNGRPID);
- ❑ Origin Transaction identification;
- ❑ Previous hop: chain of transactions;
- ❑ User correlation data (XAPADMGR exit);

Note: Not valid for SNA interconnection

User Correlation

1. You can create your own transaction ID up to 64 bytes;
2. Inform it on the first transaction executed (point of origin) through the XAPADMGR global exit;
3. All the other transactions in the chain will kept the same ID.

Transaction Execution

Start time	Tcp service	Link count	Ori Trx	MS CPU time	Suspend time
End time	Chars rec.	XCTL count	Pre Trx	L8 CPU time	1st Disp time
SID	Chars sent	Load count	Ori Applid	J8 CPU time	Disp wait
CICS name	OO calls	Socket count	Pre Applid	S8 CPU time	DB2 thread wait
Job name	Unit-of-Work ID	IC count	Ori Netid	Key 8 CPU time	DB2 conn wait
Transaction code	Trx. Flags	TS count	Pre Netid	Key 9 CPU time	Ch.mode wait
Type	User Data 1	Web send count	Ori Correlat	L9 CPU time	QR mode wait
RACF username	User Data 2	Web count	Ori Time	J9 CPU time	RMI time
Program name	User Data 3	Web bytes	Pre Time	RO CPU time	RMI suspend
LUNAME	User Data 3	Max User Below	trxNum	X8 CPU time	RLS wait
Terminal	Ori Ip address	Max CICS Below	Ori Number	X9 CPU time	LU6.2 wait
Transaction class	Ori Port	Max CICS Above	Pre Number	Transient time	MQ wait
WLM Class	Ori Facility	Max Pgm Storage	Hop count	Non-RLS time	Term time
WLM Report	Transient count	Max Pgm Below	Duration time	RMI total	Tcls delay
Abend	Browse count	DB2 count	Dispatch time	Lock time	
Cur abend	FC count	IMS count	CPU time	ENQ time	
Ip address	BMS count	MQ count	QR CPU time	IC time	

- ❑ One record for each transaction
- ❑ You can apply filters to the loading process

CICS History - Fields

Start time	Cur abend	Load count	Dispatch time	Non-RLS time	LU6.2 wait
End time	Ip address	Socket count	CPU time	RMI total	MQ wait
SID	Tcp service	IC count	QR CPU time	Lock time	Term time
CICS name	Trx. Flags	TS count	MS CPU time	ENQ time	Tcls delay
Job name	Ori Facility	Web send count	L8 CPU time	IC time	MXT delay
Transaction code	Ori Ip address	Web count	J8 CPU time	Suspend time	
Type	Ori Port	Max User Below	S8 CPU time	1st Disp time	
RACF username	Transactions	Max CICS Below	Key 8 CPU time	Disp wait	
Program name	OO calls	Max CICS Above	Key 9 CPU time	DB2 thread wait	
LUNAME	Transient count	Max Pgm Storage	L9 CPU time	DB2 conn wait	
Terminal	Browse count	Max Pgm Below	J9 CPU time	Ch.mode wait	
Transaction class	FC count	DB2 count	RO CPU time	QR mode wait	
WLM Class	BMS count	IMS count	X8 CPU time	RMI time	
WLM Report	Link count	MQ count	X9 CPU time	RMI suspend	
Abend	XCTL count	Duration time	Transient time	RLS wait	

New: 1 minute interval