



IIUG 2015

San Diego, CA
USA

Betting on Informix

Ian Kennedy

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Who are we?

1988:	Paddy Power store opens its first shop in Ireland.
1996:	Dial-a-Bet opens its phone lines.
2000:	paddypower.com launches online.
2002:	Paddy Power store opens its first shop in England.
2004:	paddypowergames.com and paddypowercasino.com launch online.
2005:	paddypowerpoker.com launches online.
2006:	paddypowerbingo.com launches online.
2007:	paddypowertrader.com launches online.
2008:	Airtion Risk is created.
2009:	Paddy Power partners with a successful betting firm in Australia.
2009:	Paddy Power expands into France.
2010:	Social Games product launched.
2011:	Launch of Mobile apps
2012:	Paddy Power launches online business in Italy
2013:	You join Paddy Power



Some Numbers

Market
Cap
~~€2.8bn~~
€4bn

In 2012 &
2013, we
hired a
person per
day!

Online is a key
growth driver
and now
accounts for 81%
of group profits

5 Data Centres
with over 4000
servers & 8gb
internet
connections

500 Retail
Shops across
Ireland and
UK

BaU Growth
of 25% Peak
Growth
65%
YoY

4,000 employees
based across
Ireland, UK, Italy,
Australia and
Bulgaria

500+ new roles
will be created
between now and
2015

In 2015
Employee
5000 Hired

Fun & Mischief

PP.



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€250 IN FREE BETS

WE'LL MATCH YOUR FIRST BET UP TO €50

Then give you Free Bets up to €50 based on your average stake after bets 5, 10, 15 & 20!

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SPECIAL OFFER

Get €250 Worth of Free Bets Now!



ATP Paris Masters
Watch Isner v Djokovic now!



NFL
If your first TD scorer scores again!

LIVE BETTING

NEXT 5 RACES

TOP 5 BETS

LIVE Tennis / G Dimitrov v JM Del Potro []



15/8

2/5

LIVE Tennis / F Cipolla v P Starace []



5/4

4/7

LIVE Czech U21 / FC Hradec Kralove U21 v FC Slovaccko U21 [0 - 1]

Suspended

LIVE Greek Cup Matches / Chania FC v Asteras Tripolis [0 - 0]

7/2

5/2

4/6

LIVE Greek Cup Matches / Panetolikos v Kassioi [0 - 0]

4/7

23/10

5/1

[View full live betting schedule](#)
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FOOTBALL MATCHES

31st Oct 2013

Home

Draw

Away

17:00 Slask Wroclaw v Podbeskidzie Bielsko Biala

1/2

11/4

9/2

19:00 Villarreal v Getafe

1/2

3/1

11/2

19:00 Granada v Atletico Madrid

6/1

14/5

1/2

19:30 Jagiellonia Bialystok v Lech Poznan

13/5

21/10

10/11

19:30 Standard Liege v RS Waasland Beveren

1/8

11/2

12/1

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€250 IN FREE BETS

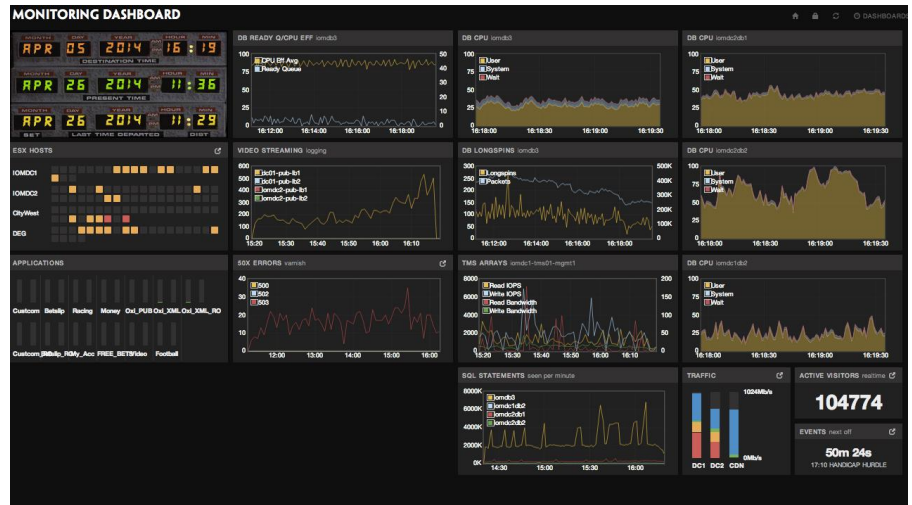
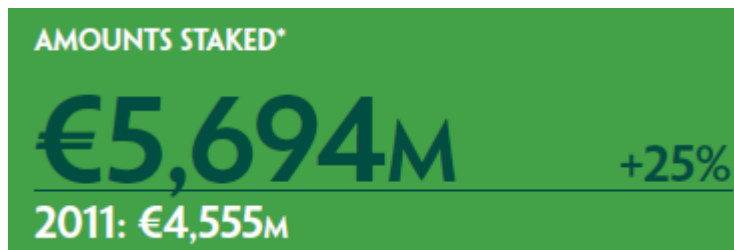
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- 
- A cartoon illustration of a brown donkey with a very wide, open-mouthed grin, showing its teeth and tongue. The donkey has large, wide eyes and a very long, pointed tongue hanging out. Below the donkey's head, the words "STRESSED OUT" are written in a bold, red, stylized font with a black outline.



Paddy Power IT Brief



People are our greatest assets

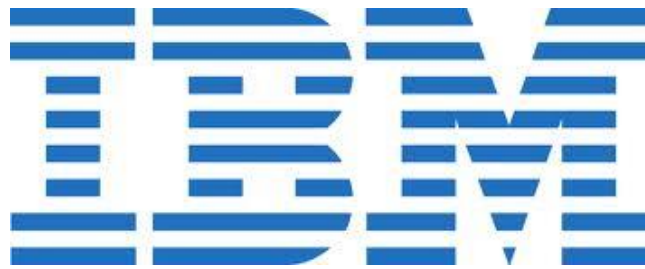


Global Team

PP.

Informix.
software

 **LOGICALIS**



IBM Informix Labs

PP

Features On Demand - Informix

Max Connections from 32,000 to 128,000 (q2 2013)

Load Aware Connection Managers (q4 2013)

Serial to Serial 8 in place alters (q2 2013)

Much More.....

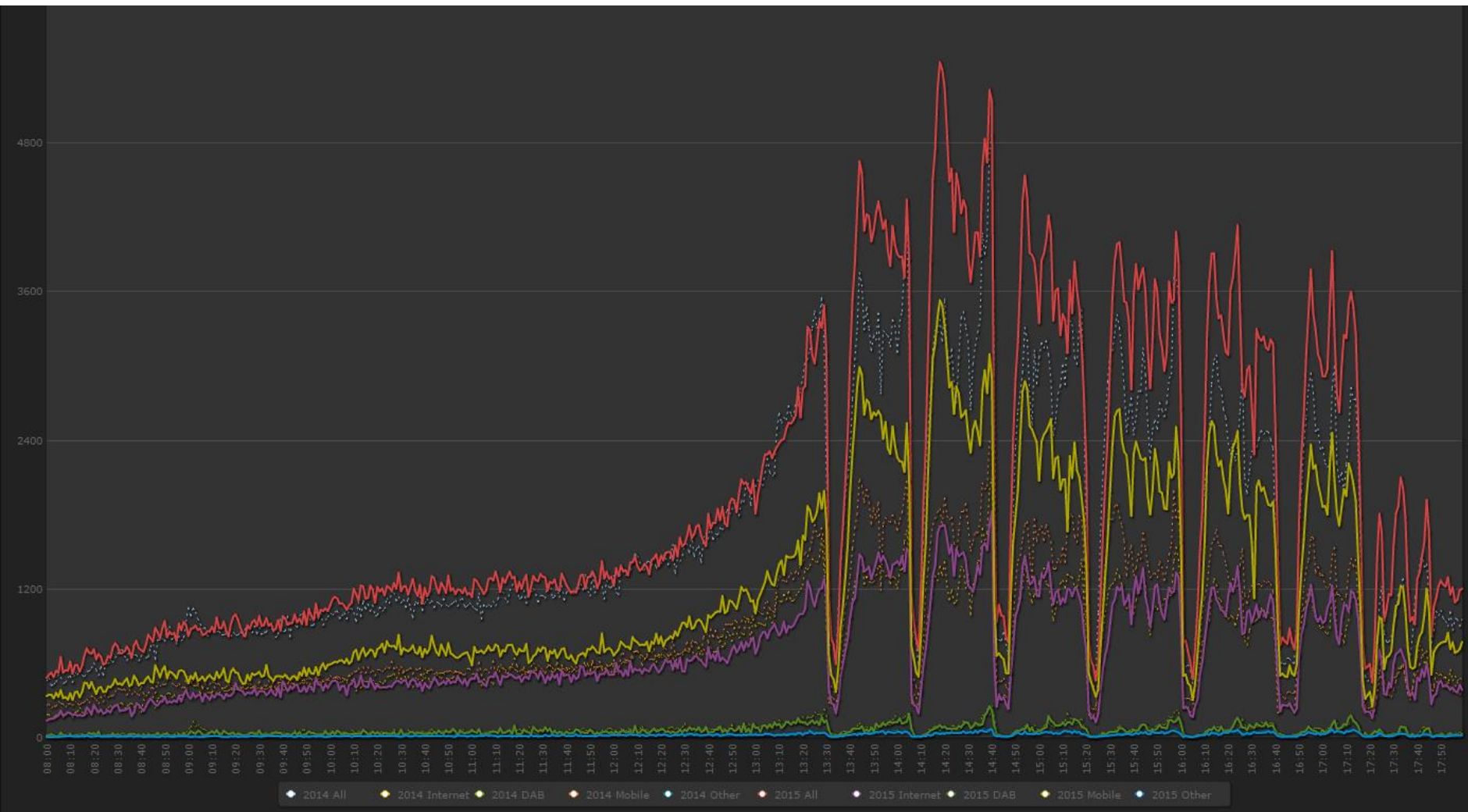


Nick Geib from IBM Kansas is our main Informix Lab Advocate who has provided significant support over the last number of years
Thanks Nick!!

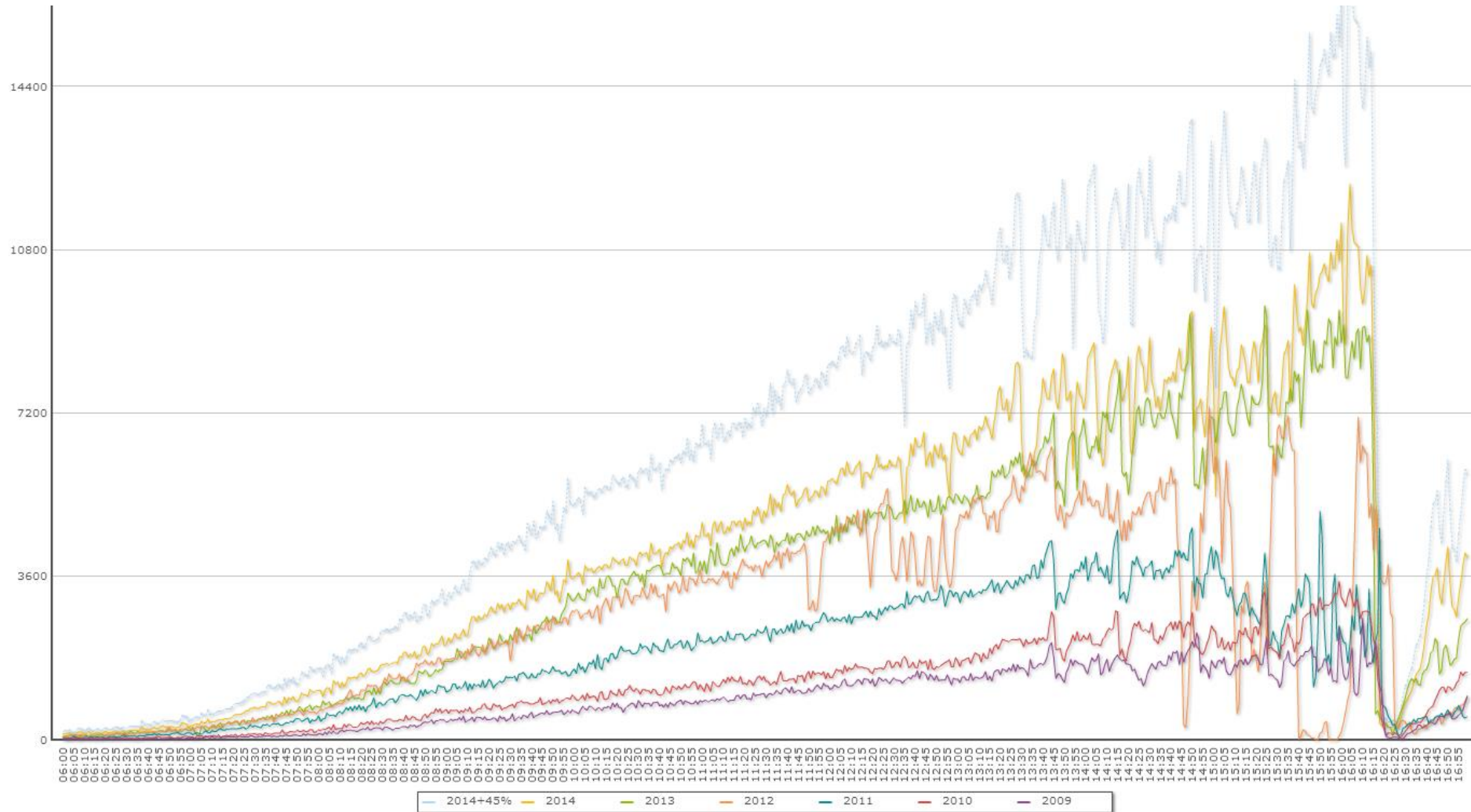
PP Team



Activity Spikes

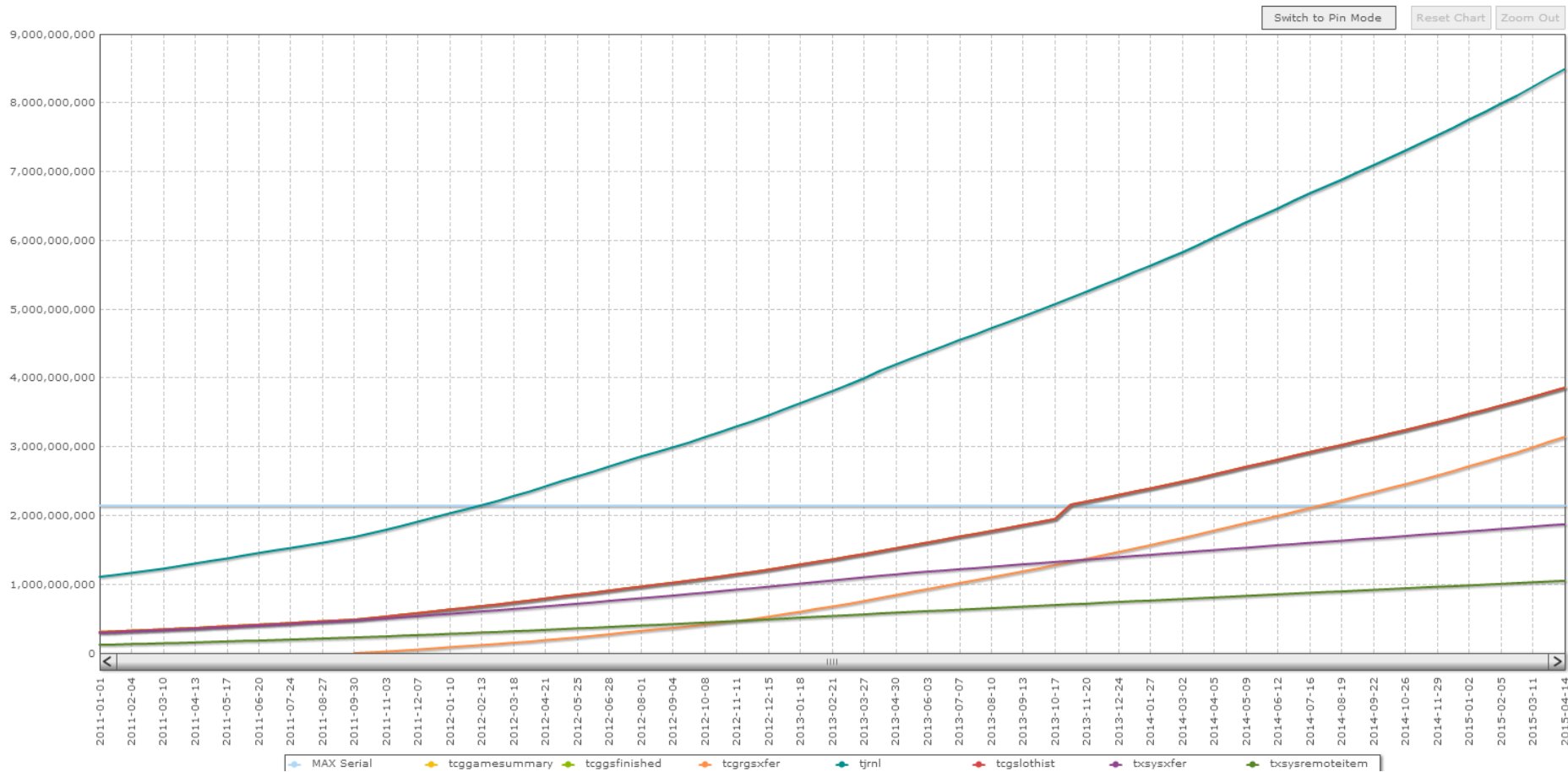


Grand National



Coping with Growth

Daily Serial Number Growth



In Place Serial 8

- Released Summer 2013
- In place alter on data
- Indices are rebuilt (automatically) not altered.
- Implicit Constraints dropped.
- Restructure indices and constraints prior to alter for performance and preservation of constraints

In Place Serial 8

```
create database Serial8Test in dbs01;
create table gameHeader(
game_id serial,
desc      char(30),
primary key (game_id)  constraint game_pk
);

create unique index  igameHeader_pk on gameHeader
      (game_id) using btree ;
alter table tcggamesummary add constraint primary key
      (game_id) constraint cgameHeader_pk ;

create table finished
(
      id serial,
      game_id int,
      when datetime year to second
            default current year to second not null
);

alter table finished add constraint (foreign key
      (game_id) references gameHeader  constraint
      cfinished_f001);

alter table finished modify (id int8);

alter table gameHeader modify(game_id serial8);
```

In Place Serial 8 - Before

```
{ TABLE "informix".gameheader row size = 34 number of columns = 2 index size = 9 }  
  
create table "informix".gameheader  
(  
    game_id serial not null ,  
    desc char(30),  
    primary key (game_id)  constraint "informix".game_pk  
);  
  
revoke all on "informix".gameheader from "public" as "informix";
```

```
{ TABLE "informix".finished row size = 22 number of columns = 3 index size = 9 }  
  
create table "informix".finished  
(  
    id int8,  
    game_id integer,  
    when_datetime year to second  
        default current year to second not null  
);  
  
revoke all on "informix".finished from "public" as "informix";  
  
alter table "informix".finished add constraint (foreign key (game_id)  
    references "informix".gameheader  constraint "informix".cfinished_f001);
```


In Place After - Serial 8

```
{ TABLE "informix".gameheader row size = 40 number of columns = 2 index size = 0 }

create table "informix".gameheader
(
    game_id serial8 not null ,
    desc char(30)
);

revoke all on "informix".gameheader from "public" as "informix";
```

```
> dbschema -d Serial8Test -t finished

DBSCHEMA Schema Utility      INFORMIX-SQL Version 11.70.FC7XOB4

{ TABLE "informix".finished row size = 22 number of columns = 3 index size = 0 }

create table "informix".finished
(
    id int8,
    game_id integer,
    when datetime year to second
        default current year to second not null
);

revoke all on "informix".finished from "public" as "informix";

> █
```

Connection Managers

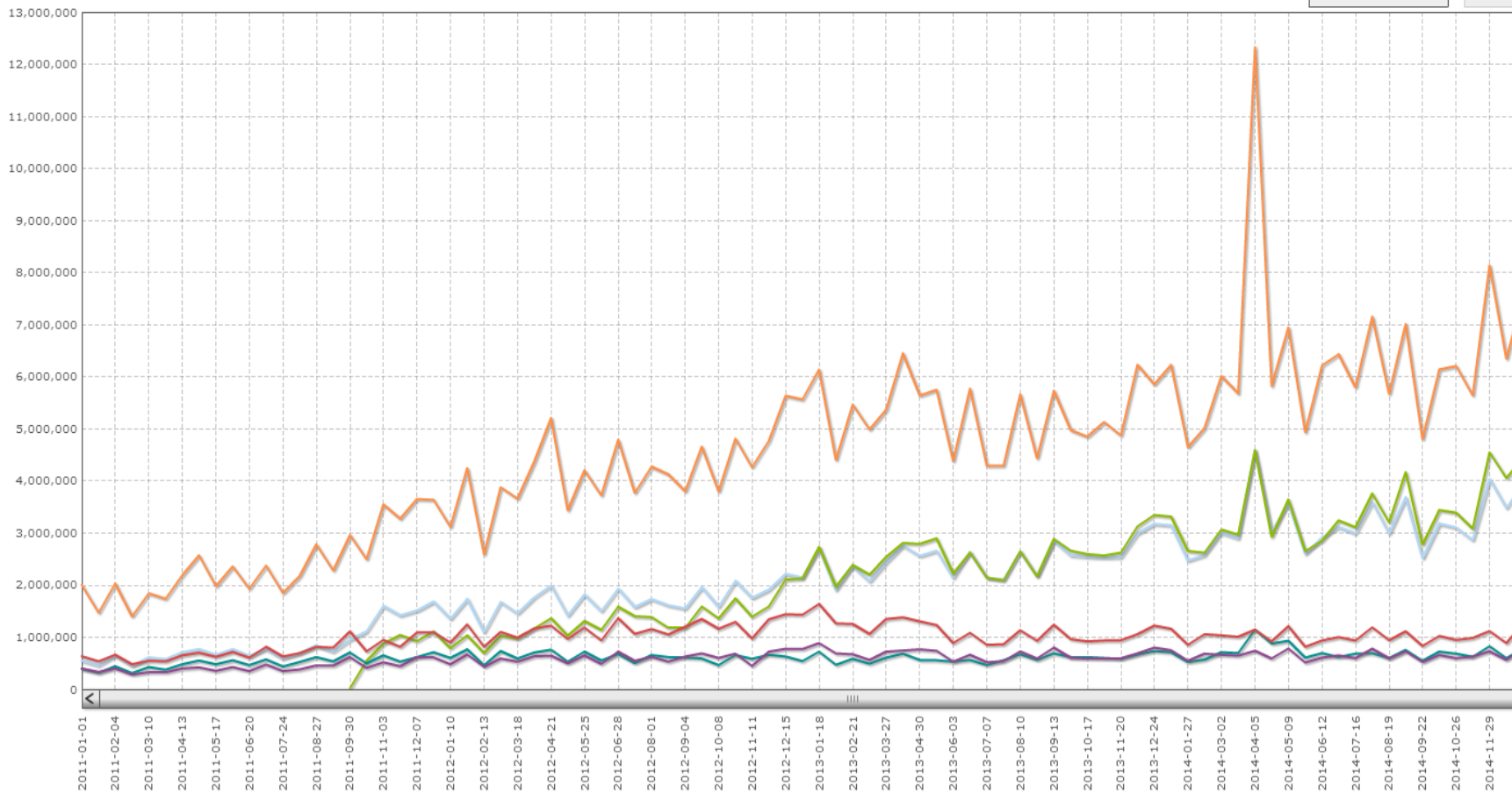
- Redirect v Proxy
- Active Arbitrator – Split Brain Risk
- Set debug mode in CM Config
- ONCONFIG : HA_FOC_ORDER HDR

Coping With Growth

Rows Inserted per Day

Switch to Pin Mode

Reset



Coping with Growth

partnum	dbspace	table	tot_space	gbspace	no_of_exts
18874502	db02	ijrnl_x1	39439395	150.45	44.0
27263025	db06	ijrnl_x3	34243118	130.63	20.0
16777273	db01	ijrnl_ax1	22333324	85.19	27.0
20971612	db03	ijrnl_x4	21099168	80.49	17.0
24117328	db10	ijrnl_x4	17590580	67.10	13.0
28311691	idx02	ijrnl_x4	14468109	55.19	16.0
26215350	db11	ijrnl_x3	14049731	53.60	11.0
30408781	db12	ijrnl_x4	11489587	43.83	7.00
25165909	db05	ijrnl_x3	9236903	35.24	7.00
23068681	db04	tjrnl	8976185	34.24	9.00
19922984	db08	tjrnl	8877719	33.87	8.00
25166178	db05	tjrnl	8823686	33.66	10.0
26214481	db11	tjrnl	8790408	33.53	10.0
20971537	db03	tjrnl	8737454	33.33	10.0
16777272	db01	tjrnl	8716275	33.25	10.0
31457860	db13	tjrnl	8542349	32.59	9.00
22020104	db09	tjrnl	8496656	32.41	10.0
24117930	db10	tjrnl	8488206	32.38	8.00
23068702	db04	ijrnl_x3	8320579	31.74	8.00
30408845	db12	tjrnl	8238267	31.43	9.00
17825914	db07	tjrnl	8192000	31.25	10.0
18874501	db02	tjrnl	8177238	31.19	11.0
27263024	db06	tjrnl	8004019	30.53	9.00
17825915	db07	ijrnl_x1	7008674	26.74	4.00
23068682	db04	ijrnl_x1	6745784	25.73	23.0
20971540	db03	ijrnl_ax1	4538953	17.31	11.0
18874503	db02	ijrnl_ax1	4538953	17.31	6.00
total_gb					
1244.21					

Coping with Growth

```
create unique index "openbet".ijrnl_x1 on "openbet".tjrnl (jrnل_id,  
    line_id) using btree  
fragment by expression  
    partition part1 (jrnل_id > 2060000000 ) in dbs02,  
    partition part2 (jrnل_id > 1040000000 ) in dbs04,  
    partition part3 (jrnل_id <= 1040000000 ) in dbs07;
```

- Problem with Fragmentation Strategy?
- Risks on Index of this size?

Coping with Growth

- Serial8 In-place alters
- Defrag
- Repack, Shrink, Compress on Indices (V12)
- IPL Builds

Private CPU VP Memory

- VP_MEMORY_CACHE_KB
- Memory Usage
- Static v Dynamic
- Memory leak?

Private CPU VP Memory

```
$ grep VP_MEMORY_CACHE_KB $INFORMIXDIR/etc/$ONCONFIG
# VP_MEMORY_CACHE_KB - Specifies the amount of private memory
VP_MEMORY_CACHE_KB 1638400
$ ./vpCacheUsage.sh
3.10
$ onstat -g vpcache | more

IBM Informix Dynamic Server Version 11.70.FC7XOB4 -- On-Line (Prim) -- Up 12 days 16:15:26 -- 258737216 Kb

CPU VP memory block cache statistics - 4096 byte blocks

Number of 4096 byte memory blocks requested for each CPU VP:409600
CPU VP memory block cache mode : Dynamic

vpid      pid      Blocks held  Hit percentage  Free cache
1         9765024   40122       99.3 %         99.3 %

Current VP total allocations from cache: 12125663, Total frees: 12210502

  size  cur blks  tgt blks  alloc  miss  free  drain  draintime
1      828     1493   10289942 65418 10342470 52619  Sun Apr 26 01:42:01 2015
2    22068    22128   1408896 0     1426468 13527  Sun Apr 26 01:42:06 2015
3        6     396   135850 4890   137032 1185   Sun Apr 26 01:38:42 2015
4       36     57    50428 3439   53183 2748   Sun Apr 26 01:42:13 2015
5        0    8192   1247 3593   1247 0       Thu Jan 1 00:00:00 1970
```

Private CPU VP Memory

```
#!/bin/bash
vpcacheblks=0
vpcache=(`onstat -g vpcache | grep -E '%' | awk '{ print $3 }'`)
for ((i=0; i<${#vpcache[*]}; i++)); do
    vpcacheblks=`expr $vpcacheblks + ${vpcache[$i]}`
done
vpcachemb=`echo 'scale=2; '${vpcacheblks}' / 262144' | bc`
echo $vpcachemb
```

Engine or Apps?

```
-topas nmon—5=Top-by-I/O-use—Host=ic-123-3—Refresh=2 secs—22:47.40—
CPU-Utilisation-Small-View      EntitledCPU=  3.00 UsedCPU=  2.999
Logical  CPUs      0-----25-----50-----75-----100
CPU User%  Sys% Wait% Idle%|          |          |          |
 0  55.0   14.5   0.0  30.5|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 1  98.0    2.0   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 2  96.0    4.0   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 3 100.0    0.0   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 4  86.5    2.0   0.0  11.5|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 5  12.5   23.0   0.0  64.5|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 6  14.0   29.0   0.0  57.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 7  99.5    0.5   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 8  97.0    3.0   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
 9  38.5   11.0   0.0  50.5|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
10  99.5    0.5   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
11  97.5    2.5   0.0   0.0|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
EntitleCapacity/VirtualCPU +-----+-----+-----+-----+
EC  88.7    5.9   0.0   5.3|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
VP  88.7    5.9   0.0   5.3|UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU>
EC= 100.0%  VP= 100.0%    +--No Cap---+-----+-----+100% VP=3 CPU+
```

Engine or Apps

```
-topas nmon—m=Memory—Host=ic-113453—Refresh=2 secs—13:36.23—
CPU-Utilisation-Small-View—EntitledCPU= 4.00 UsedCPU= 0.667—
Logical CPUs 0-----25-----50-----75-----100
CPU User% Sys% Wait% Idle%| | | |
 0 25.0 3.0 0.0 72.0|UUUUUUUUUUUUUs > |
 1 0.0 0.0 0.0 100.0| > |
 2 0.0 0.0 0.0 100.0| > |
 3 0.0 0.0 0.0 100.0| > |
 4 16.5 0.5 0.0 83.0|UUUUUUUUU > |
 5 0.0 0.0 0.0 100.0| > |
 6 0.0 0.0 0.0 100.0|> |
 7 0.0 0.0 0.0 100.0|> |
 8 7.5 2.0 0.0 90.5|UUUs > |
 9 0.0 0.0 0.0 100.0| > |
10 0.0 0.0 0.0 100.0| > |
11 0.0 0.0 0.0 100.0|> |
20 7.0 1.5 0.0 91.5|UUU > |
21 0.0 0.0 0.0 100.0| > |
22 0.0 0.0 0.0 100.0|> |
23 0.0 0.0 0.0 100.0|> |
EntitleCapacity/VirtualCPU +-----+-----+-----+-----+
EC 7.5 1.3 0.0 7.9|UUUiii-----+
VP 7.5 1.3 0.0 7.9|UUUiii-----+
EC= 16.7% VP= 16.7% +---No Cap---|-----|-----100% VP=4 CPU+
```


Engine or Apps

```
database sysmaster;
select first 15 p.tabname[1,20], seqscans, ti_nrows, bufreads
  from sysptprof p, systabinfo ti
  where ti.ti_partnum = p.partnum
        AND seqscans <> 0 and dbsname = '{DATABASE_NAME}'
        and ti_nrows > 2000
        and seqscans > 5
  ORDER BY 2 desc;
```

tabname	seqscans	ti_nrows	bufreads
tevunstl	6444	9790	219142718
tevmktprimary	6002	7944	1145258
tcggamesupplier	5450	2821	11194748
tarchivehorsesearch	2591	286287	42824
tevmkt	2496	46348321	671211037
ttoken	663	14232	583273
tnews	648	5293	3489038
tevtype	431	23502	175624259
tvrfcustqueue	380	4216	105625
tevmktrule4	359	118231	120554
tadminuser	308	4871	488077
tev	171	4614480	1223215806
tevmkttag	130	1283398	2715123
systables	113	3134	37638561
tautostlblocks_aud	106	9468	22344

Recommendations

- Engage with Informix Team
- Raise PMR's!!!
- Review Request features and vote
- Review new release features, based on product feedback
- Build a benchmark for comparison
- False Negatives – (Corrupt Indices)



IIUG 2015

San Diego, CA
USA

Questions?