

Contact Center Analytics

Open Source Reporting Practical Examples

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www.infradapt.com – 800-394-2301

Astricon 2009

Introduction

Infradapt[®]
The adaptive infrastructure company.

- Personal call center operations experience.
- Numerous professional contact center deployments.

About Infradapt – The Adaptive Infrastructure Company:

- Enterprise VoIP & Contact Center Solutions
- IT Infrastructure Outsourcing & Management

Infradapt[®]

Contact Center Analytics – Astricon October 2009
www.infradapt.com – 800-394-2301

About Infradapt

Infradapt®

The adaptive infrastructure company.



“Lead The Managed Services Revolution”

“We are living in the midst of a shift in how businesses deal with information.

...

It’s no surprise to Philadelphia-based Infradapt, a services provider that manages complete IT infrastructures for its customers.

...

Services providers, such as Infradapt, are coming up with creative ways to eliminate the burdens associated with IT — allowing businesses to redirect their resources towards achieving business goals.”

Business Solutions, July 2007

Written by: Chris Loring

Infradapt®

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Infradapt's Customers

Infradapt[®]
The adaptive infrastructure company.

- Banks
- Healthcare
- Pharma
- Universities
- Financial Services
- Manufacturing
- Aerospace
- Call Center Outsourcers

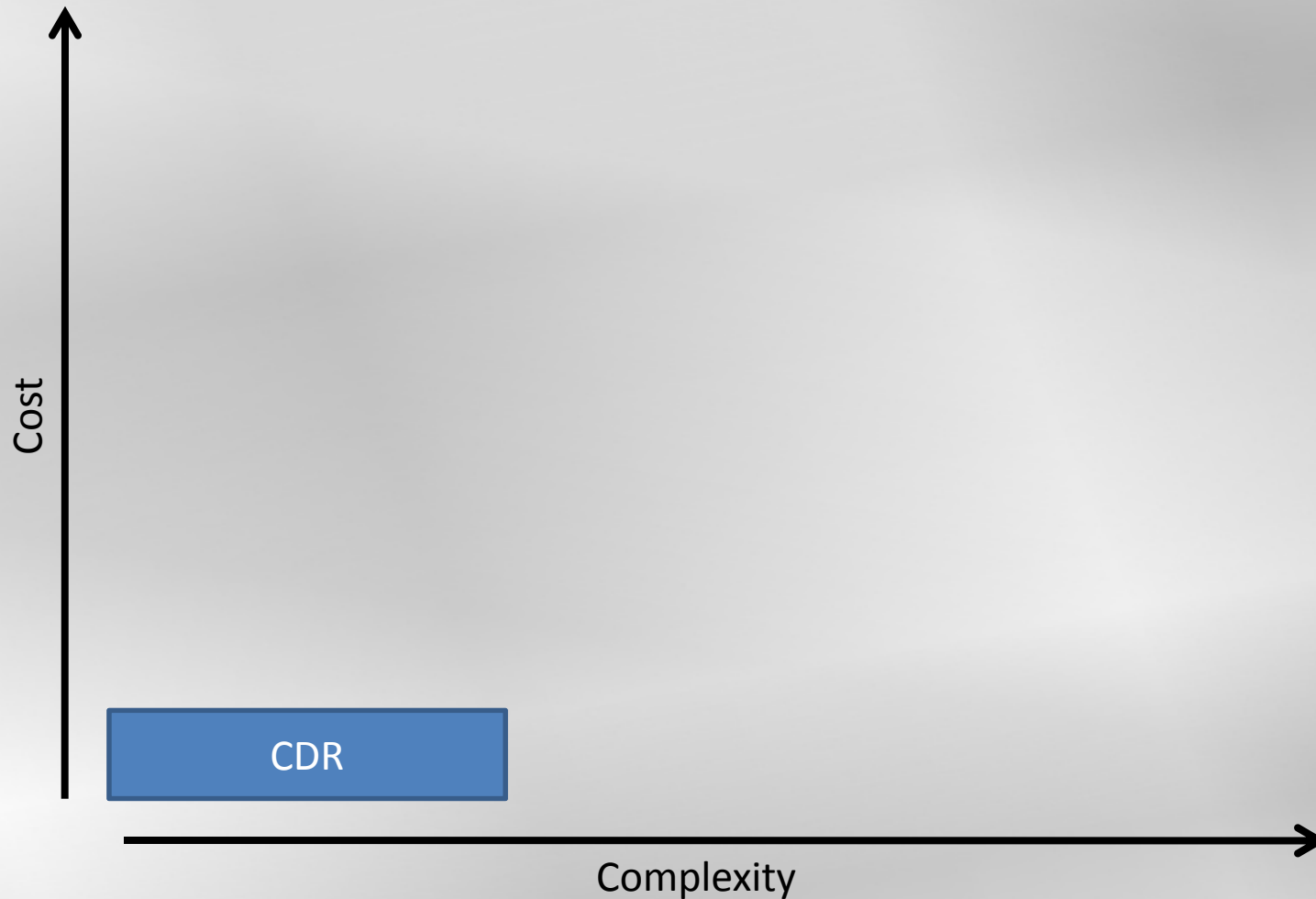
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Agenda

- CDR vs. Contact Center Analytics?
- Typical Analytics Requests
- “Off the shelf” Reporting Solutions
- Custom Analytics
- Jasper Reports How-To

CDR / Analytics



CDR vs. Contact Center Analytics

- CDR
 - “Call accounting” is the primary aim.
 - Calls by source, destination, trunk
 - User accountability, tracking...
 - Accounting codes can be used to capture additional detail.

CDR Data



- <http://www.areski.net/asterisk-stat-v2/>
- Most popular Asterisk CDR reporting tool.
- Free and customizable.
- Enough data for some customers.

CDR Data: Productivity Reporting

- Agents measured by calls placed

17.	2009-10-08 11:49:03	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/18563666603	9:00:00	ANSWERED	00:45
18.	2009-10-08 11:48:04	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/12156388670	9:00:00	ANSWERED	00:21
19.	2009-10-08 11:39:02	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/12675872055	9:00:00	ANSWERED	05:24
20.	2009-10-08 11:37:46	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/14057451100	9:00:00	ANSWERED	00:50
21.	2009-10-08 11:34:01	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/12159471300	9:00:00	ANSWERED	03:05
22.	2009-10-08 11:33:08	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/16108671771	9:00:00	ANSWERED	00:36
23.	2009-10-08 11:29:24	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/16108671771	9:00:00	ANSWERED	00:27
24.	2009-10-08 11:24:51	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/16104460500	9:00:00	ANSWERED	00:38
25.	2009-10-08 11:22:42	SIP/202...	9:00	ANSWERED	Dial	SIP/ewrinf-pbx01/18569620632	9:00:00	ANSWERED	01:24

1 / 2 [Next](#)

TOTAL				
DATE	DURATION	ASTERISK MINUTES		
		GRAPHIC	CALLS	ACT
2009-10-08	85:22	<div style="width: 85%;"></div>	32	02:40
TOTAL	85:22		32	02:40



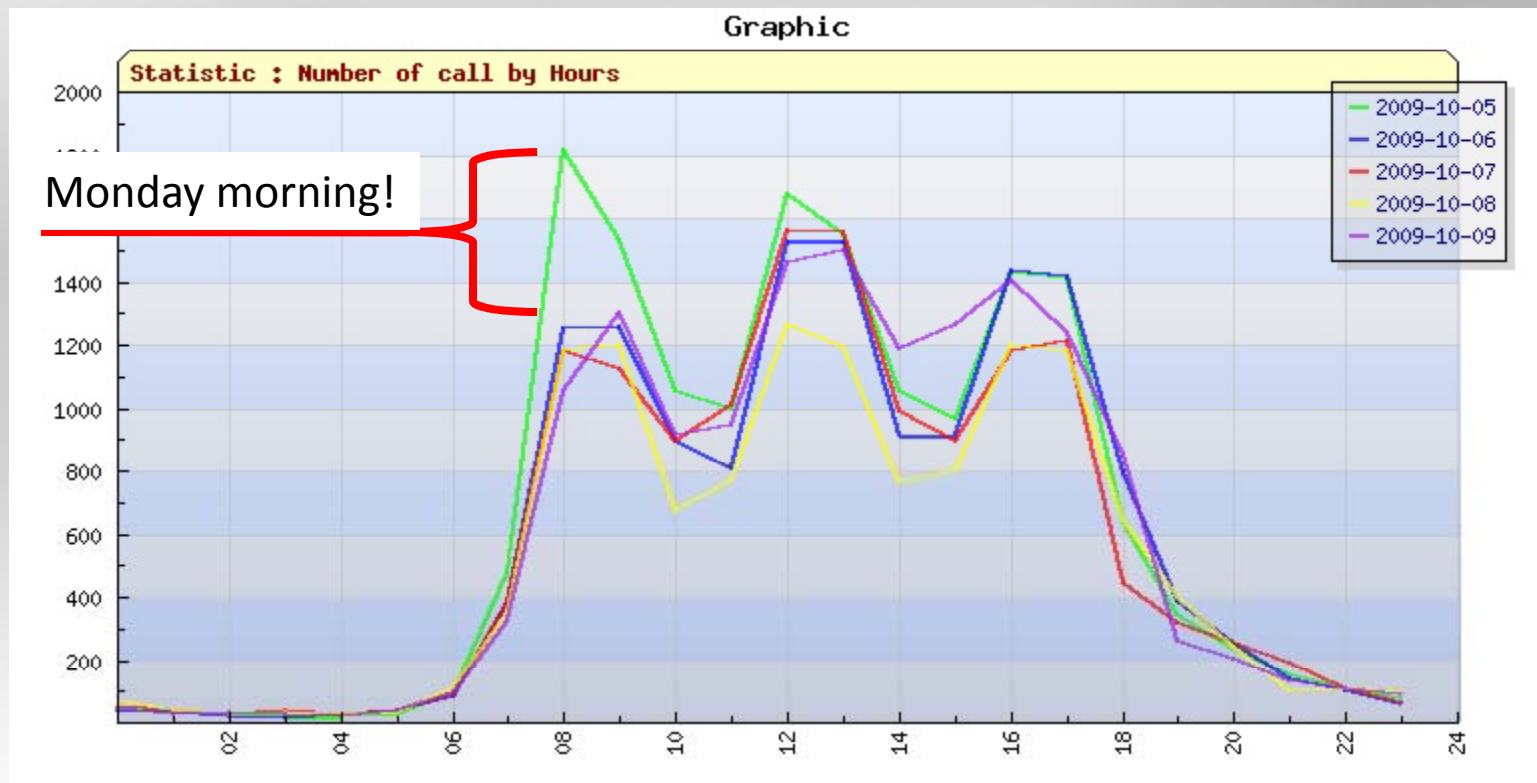
[Export PDF file](#)



[Export CSV file](#)

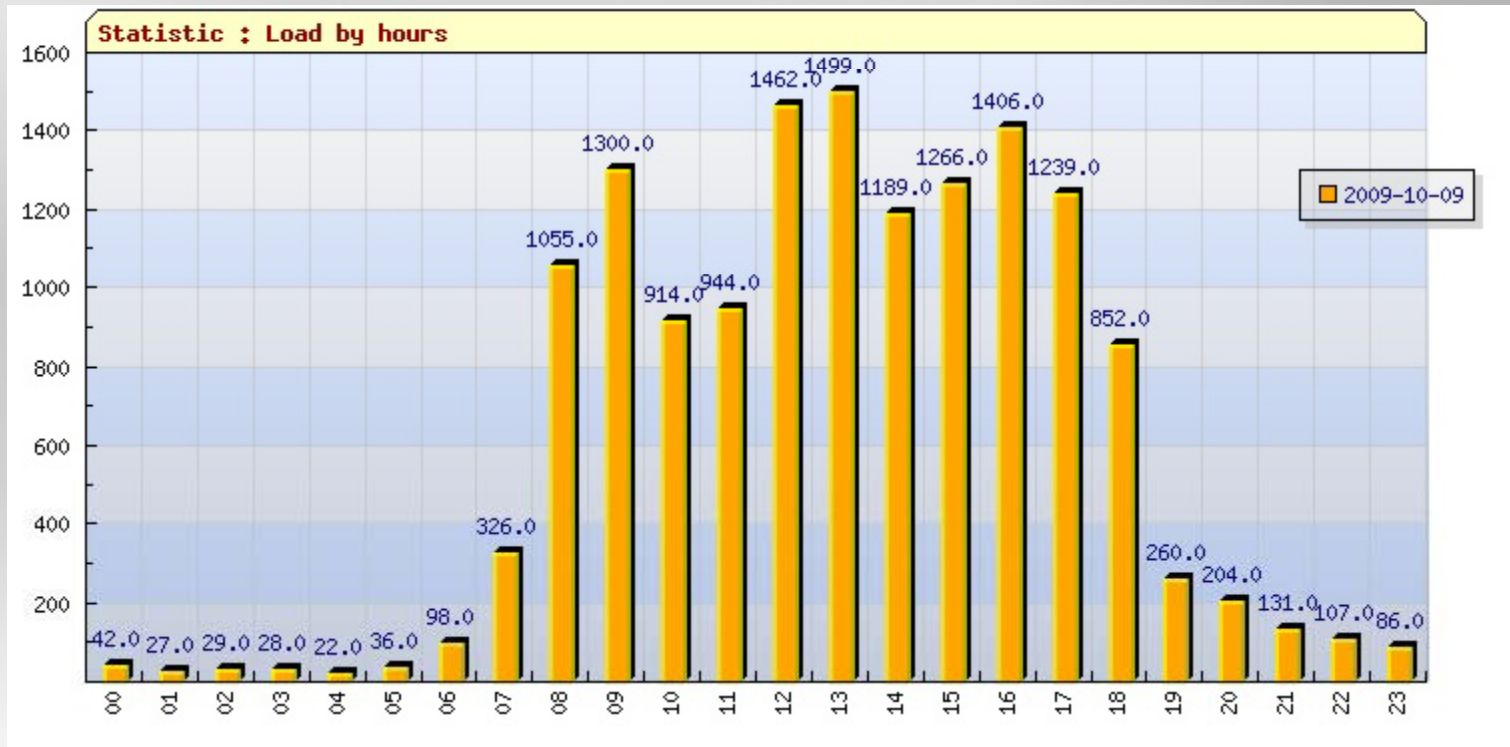
CDR Data: Staff Optimization

- Call volume by day of the week.



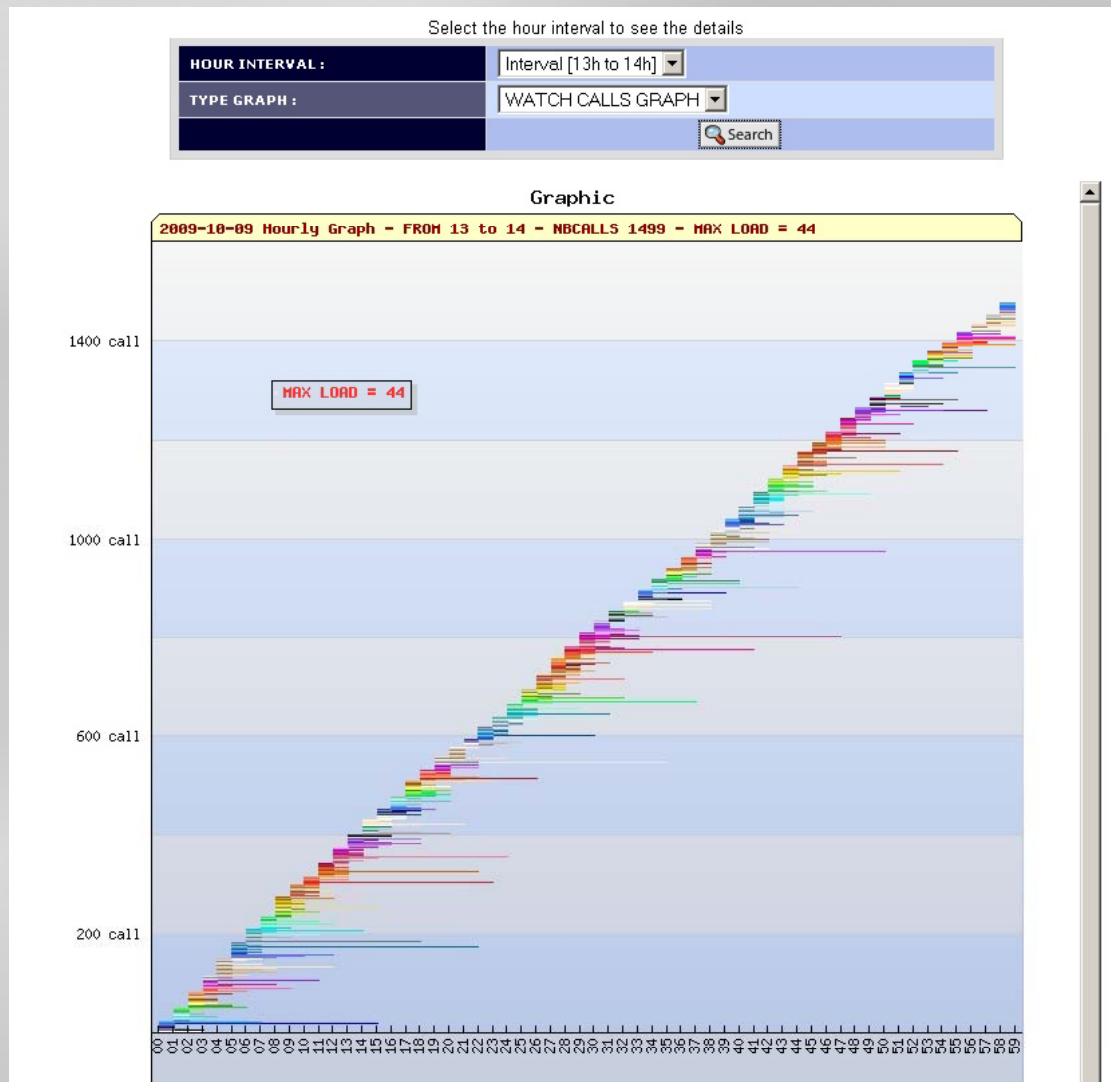
CDR Data: Capacity Planning

- Determine busy day and hour.



CDR Data: Capacity Planning

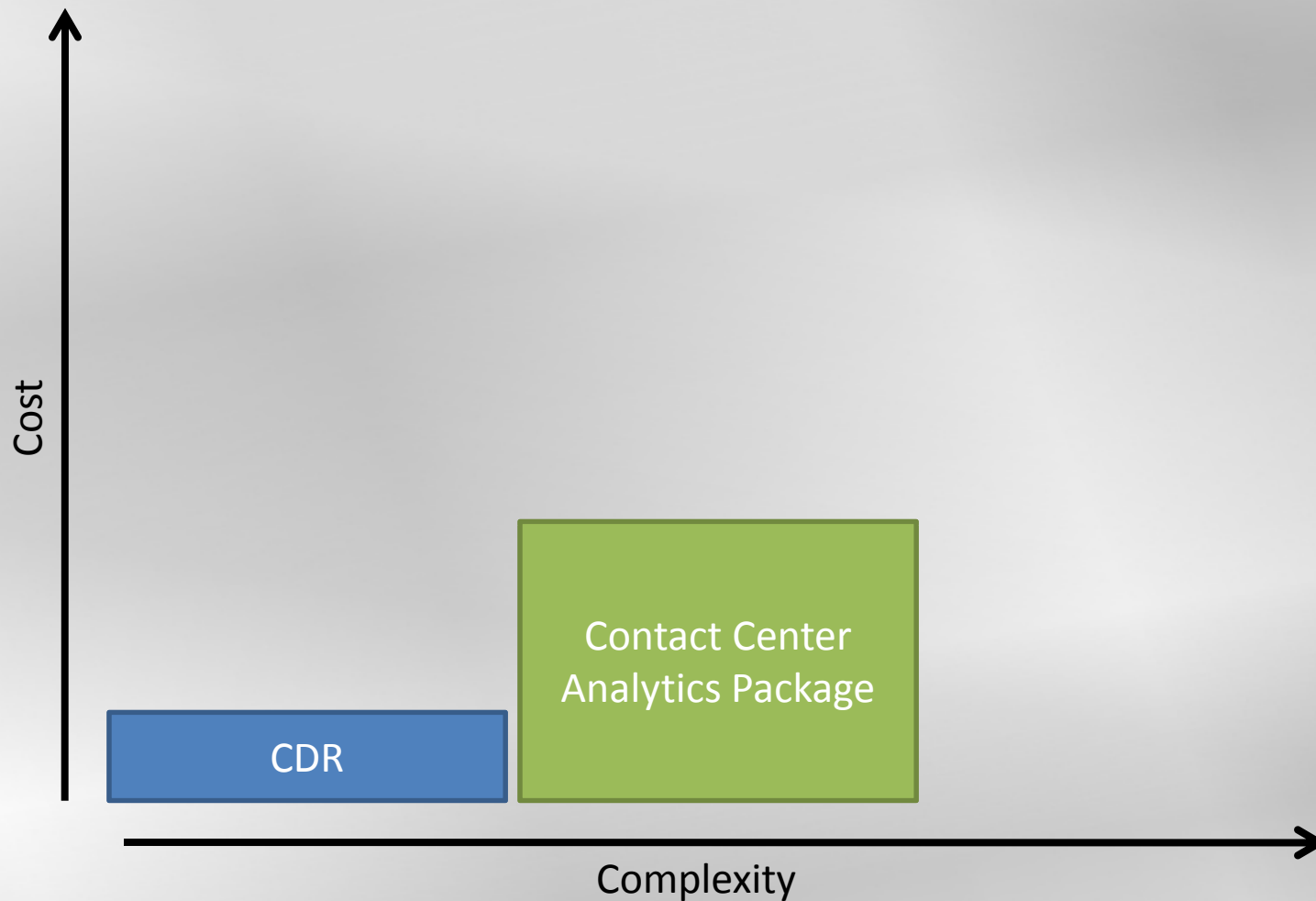
- Busy hour load is 44 call paths.



CDR Data Summary

- Enough data for some customers.
 - 80/20 for SMB
- Painful for generating repetitive reports.
- Not good at illustrating call outcomes.
 - Who is hanging up when/why?
 - Which agent has the most sales/refusals?
- Not a true productivity measure.

CDR / Analytics



Contact Center Analytics

- “Off the shelf” Analytics Packages

- QueueMetrics

- Mature statistics package

- License: ~\$850 USD (600 EUR) to \$5,000+ USD



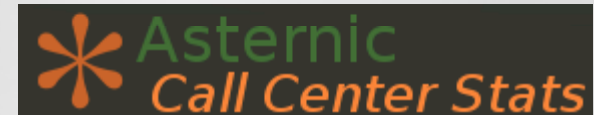
- Asternic

- Free “Lite” Version

- New offering from the creator of the Asterisk Flash Panel.

- License: ~\$500 USD

- www.asternic.biz



QueueMetrics - Analytics

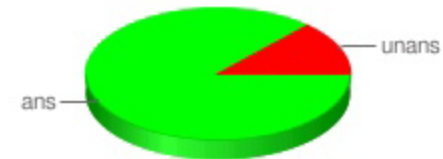
- QueueMetrics Advantages
 - Mature and comprehensive.
 - Re-brandable
 - Good documentation and support.



QueueMetrics - Analytics

Report Details:

Atomic queue(s) considered:	601 {601}
Period start date:	October 12 2009, 00:00
Period end date:	October 12 2009, 23:59
Total calls processed:	639
	86.4% ans / 13.6% unans



Answered calls

All calls:

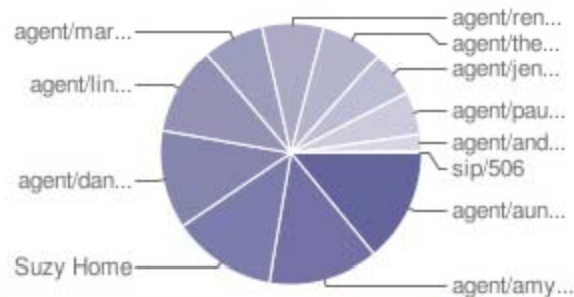
N. calls answered by operators:	552
Average call length:	50.5 s.
Min call length:	0:01
Max call length:	8:51
Total call length:	7.7 H
Average call waiting time:	30.7 s.
Min waiting time:	0:03
Max waiting time:	5:54
Total waiting time:	4.7 H

Calls fully within the given time interval:

N. calls answered by operators:	552
Average call length:	50.5 s.
Min call length:	0:01
Max call length:	8:51
Total call length:	7.7 H
Average call waiting time:	30.7 s.
Min waiting time:	0:03
Max waiting time:	5:54
Total waiting time:	4.7 H

QueueMetrics - Analytics

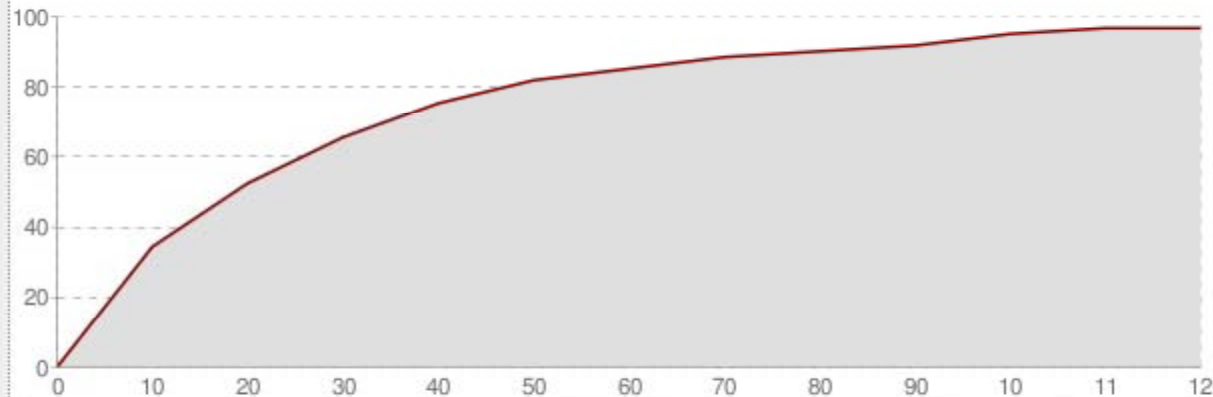
Agents on queue



Agent	N. Calls	...	Total call time	Average call time
agent/amy obrian	75	13.6%	39:43	0:31
agent/andrew brieschaft	11	2.0%	9:04	0:49
agent/aundria mullings	78	14.1%	51:18	0:39
agent/danielle fragile	68	12.3%	1:06:19	0:58
agent/jen miller	32	5.8%	51:30	1:36
agent/linda wenk	61	11.1%	1:06:45	1:05
agent/mary barcnas	42	7.6%	32:33	0:46
agent/paula murray	29	5.3%	28:39	0:59
agent/renee mckinney	42	7.6%	50:35	1:12
agent/theresa mcgrenera	42	7.6%	32:27	0:46
Suzy Home	71	12.9%	35:12	0:29
sip/506	1	0.2%	0:34	0:34

QueueMetrics - Analytics

Service level agreement

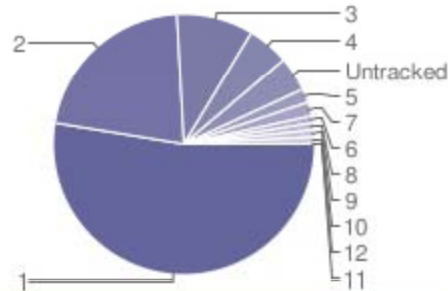


Answer	N. Calls	Delta		...
Within 10 seconds:	188		34.1%	
Within 20 seconds:	291	+ 103	52.7%	
Within 30 seconds:	366	+ 75	66.3%	
Within 40 seconds:	421	+ 55	76.3%	
Within 50 seconds:	455	+ 34	82.4%	
Within 60 seconds:	476	+ 21	86.2%	
Within 70 seconds:	488	+ 12	88.4%	
Within 80 seconds:	501	+ 13	90.8%	
Within 90 seconds:	512	+ 11	92.8%	
Within 100 seconds:	527	+ 15	95.5%	
Within 110 seconds:	536	+ 9	97.1%	
Within 120 seconds:	540	+ 4	97.8%	

Export as...

QueueMetrics - Analytics

Queue position

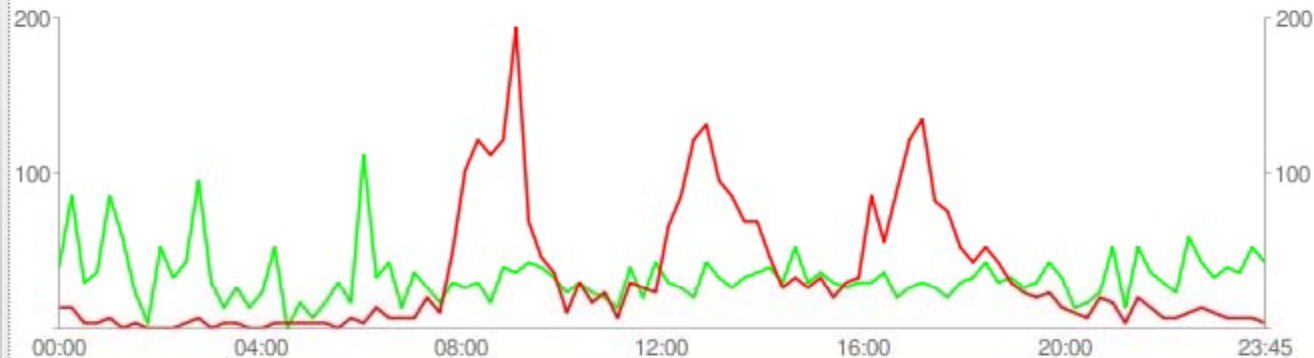


Position at enter	N. Calls		...
Untracked	24	4.3%	
1	288	52.2%	
2	120	21.7%	
3	54	9.8%	
4	27	4.9%	
5	10	1.8%	
6	7	1.3%	
7	8	1.4%	
8	5	0.9%	
9	3	0.5%	
10	3	0.5%	
11	1	0.2%	
12	2	0.4%	

Export as...

QueueMetrics - Analytics

Answered call wait time per hour



Hour	Num	Answered calls	Avg	Min	Max	Avg wait
00:00	13	0.4%	0:40	0:03	2:27	
00:15	13	0.4%	1:24	0:04	4:40	
00:30	3	0.1%	0:28	0:18	0:39	
00:45	2	0.1%	0:36	0:06	1:06	
01:00	5	0.2%	1:26	0:31	2:02	
01:15	1	0.0%	0:59	0:59	0:59	
01:30	2	0.1%	0:24	0:06	0:43	
01:45	1	0.0%	0:04	0:04	0:04	
02:00	1	0.0%	0:52	0:52	0:52	
02:15	1	0.0%	0:33	0:33	0:33	
02:30	4	0.1%	0:42	0:03	1:40	
02:45	5	0.2%	1:34	0:05	3:05	
03:00	1	0.0%	0:30	0:30	0:30	

Contact Center Analytics

- “Off the shelf” Analytics Packages
 - QueueMetrics
 - Mature statistics package
 - License: ~\$750 USD +



Asternic – Analytics

- Asternic Advantages
 - Not Java...
 - Lower license cost.
 - Easy to use.



Asternic – Analytics

Home | User Access | Setup | Logout | Welcome Admin

Select Queues

Available	Selected
	6
	600
	601
	700

Select Agents

Available	Selected
	Agent/100
	Agent/101
	Agent/102
	Agent/103
	Agent/104
	Agent/105

Select Date Range

Shortcuts
[Today](#) | [This week](#) | [This month](#) | [Last 3 months](#)

Start Date: 14 | October | 2009
End Date: 14 | October | 2009

Select Time Frame

From: 00 | 00 | hs
To: 23 | 59 | hs

Page processed in 0.1521 seconds Licensed to Infradapt

Asternic Call Center Stats

Asternic – Analytics

Report Info

Queue:	6,600,601,700
Start Date:	2009-08-15
End Date:	2009-08-30
Hour range:	00:00 - 23:59
Period:	16 days

Total Calls

Number of Connected Calls:	31643 calls
Number of Answered Calls:	17319 calls
Number of Unanswered Calls:	14324 calls
Abandon Rate:	45.27 %
Transferred Calls:	880 calls
Agent Login:	0
Agent Logoff:	0

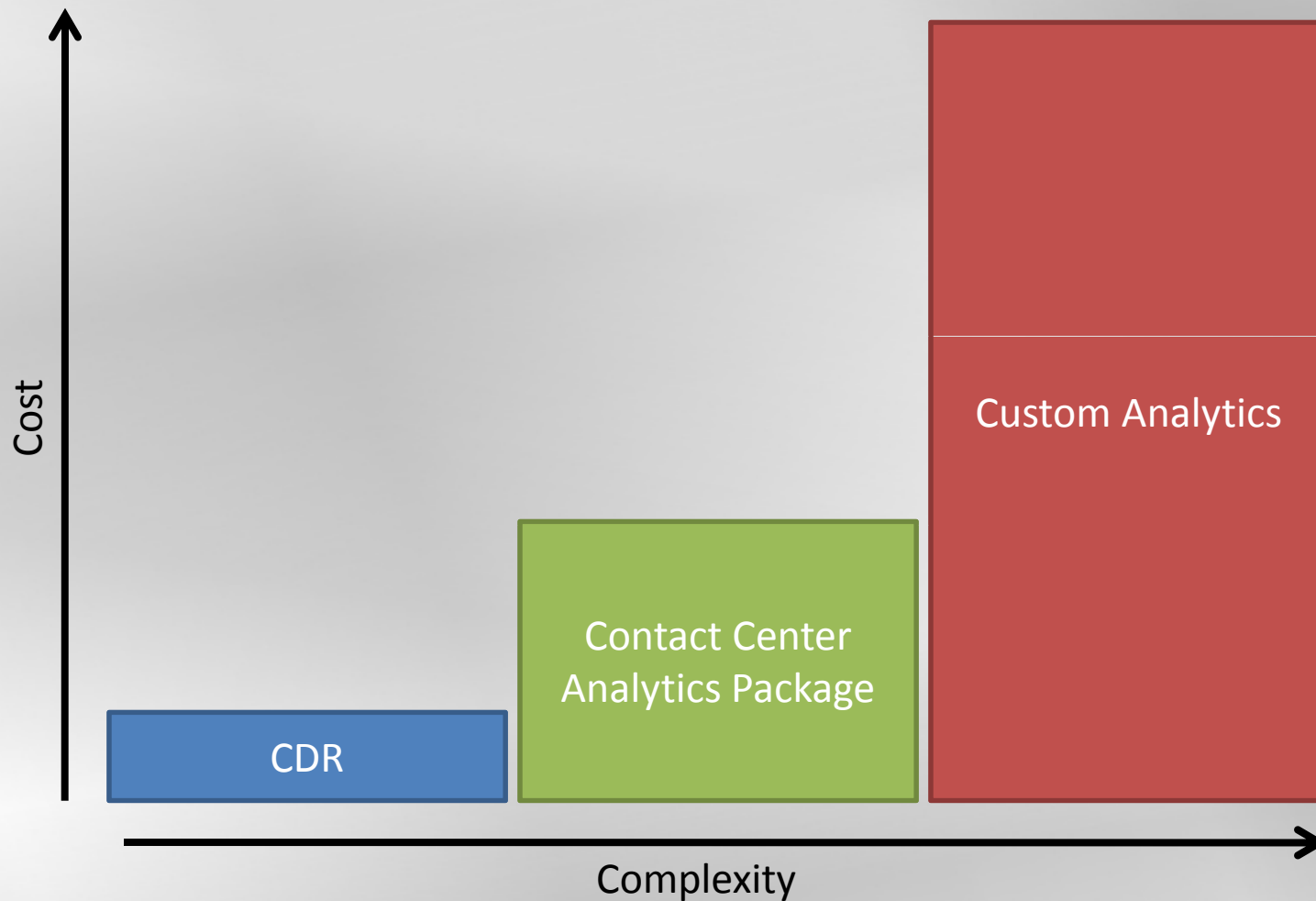
Call Distribution per queue

Queue	Received	Answered	Unanswered	Transfers	% Answ	% Unansw	Avg Durat.	Avg Wait
6	209	35	170	4	17.07 %	82.93 %	2:10 min	28 secs
600	23458	11329	11568	561	49.48 %	50.52 %	0:45 min	14 secs
601	8574	5922	2337	315	71.70 %	28.30 %	0:52 min	41 secs
700	282	33	249	0	11.70 %	88.30 %	1:48 min	23 secs
Total	32523	17319	14324	880	54.73 %	45.27 %		

Call Distribution per month

Month	Received	Answered	Unanswered	Transfers	% Answ	% Unansw	Avg Durat.	Avg Wait	Logins	Logoff
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CDR / Analytics

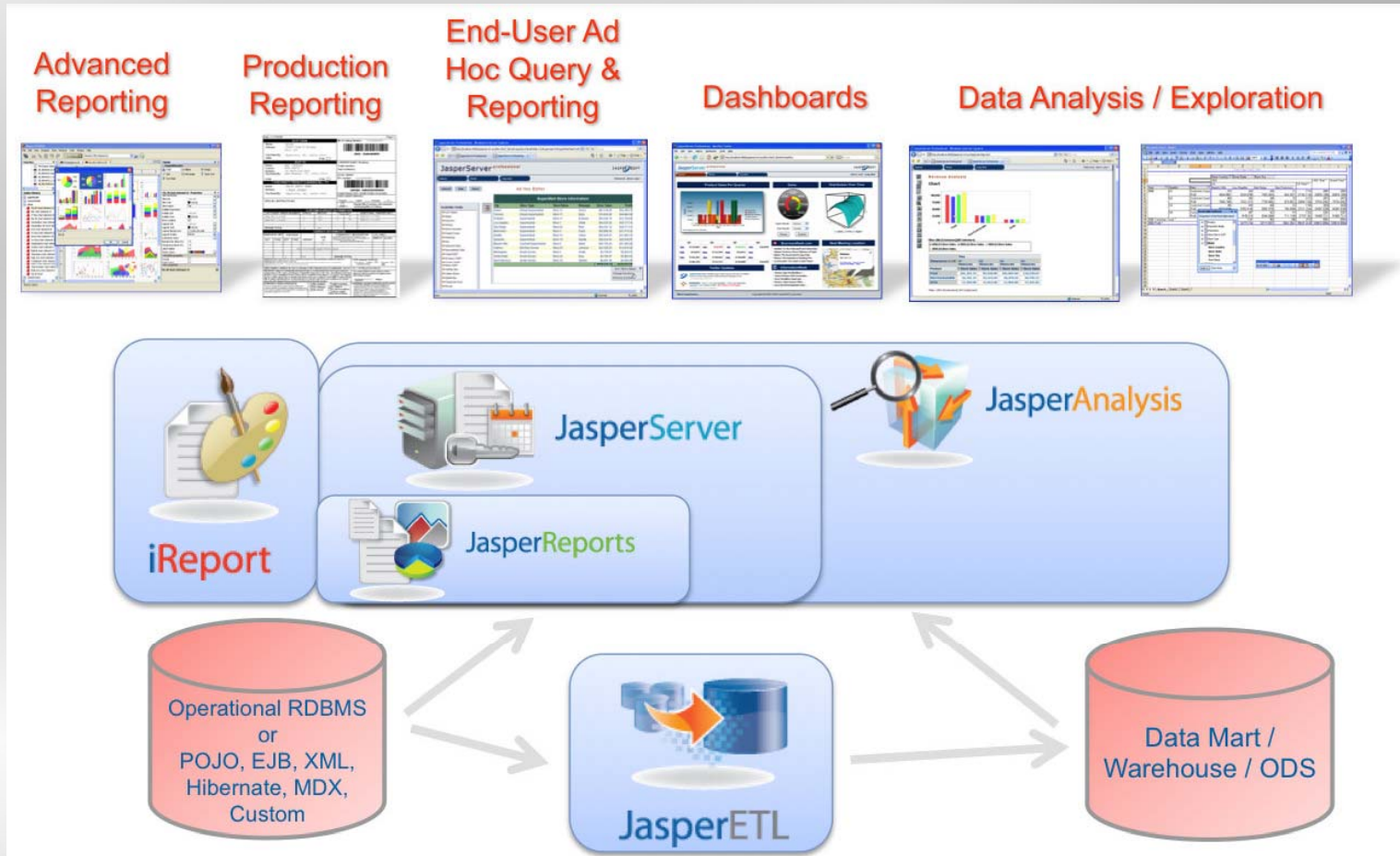


Custom Analytics

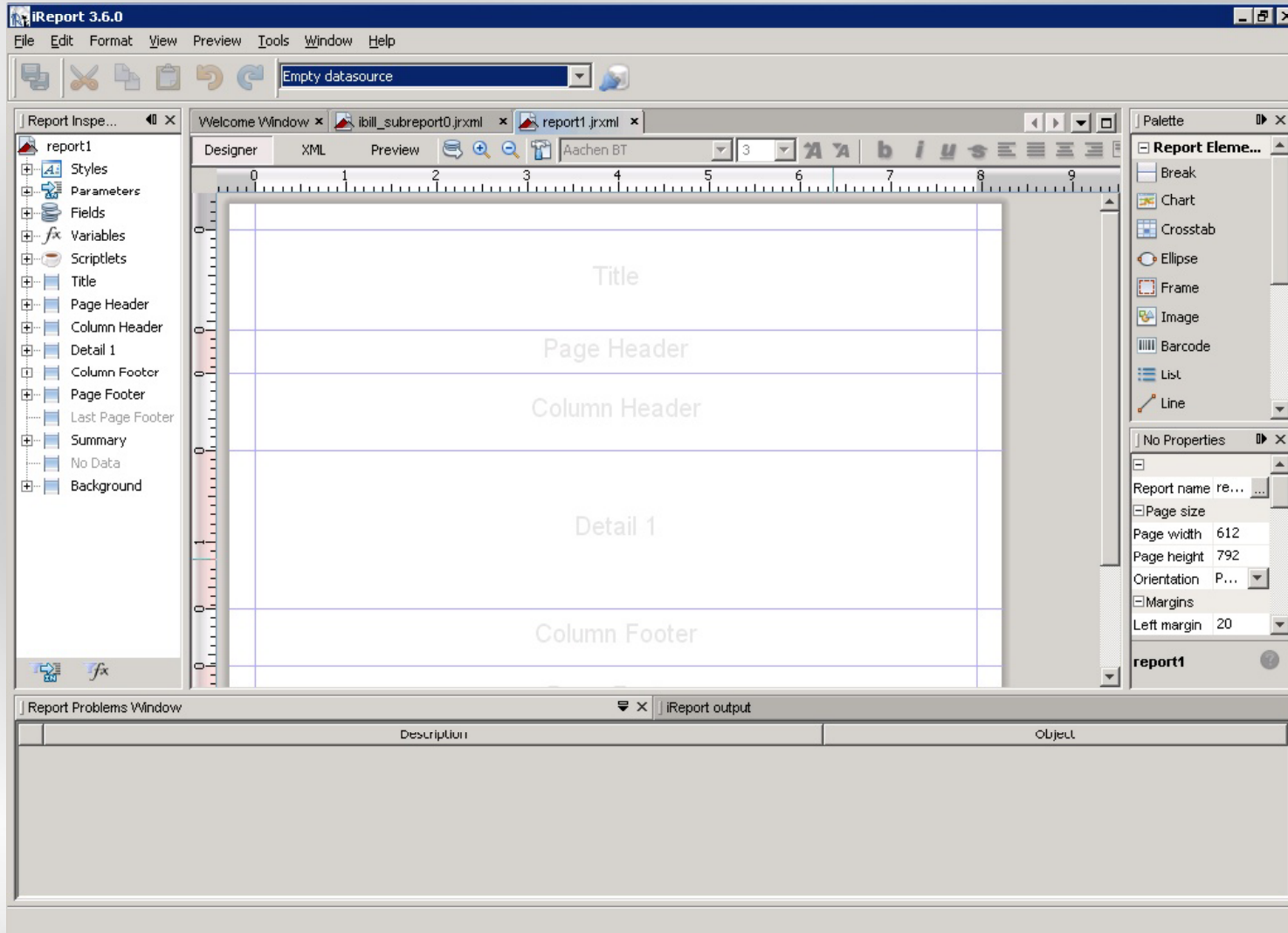
- “Off the shelf” vs. Custom Analytics...
 - 80/20 Rule
 - QueueMetrics / Asternic provide good data.
- “Connecting the dots...”
 - Data synthesis from multiple sources and applications.
- Crystal Reports / Jasper Reports

Jasper Reports Introduction

- Jasper Product Overview



iReport - Interface

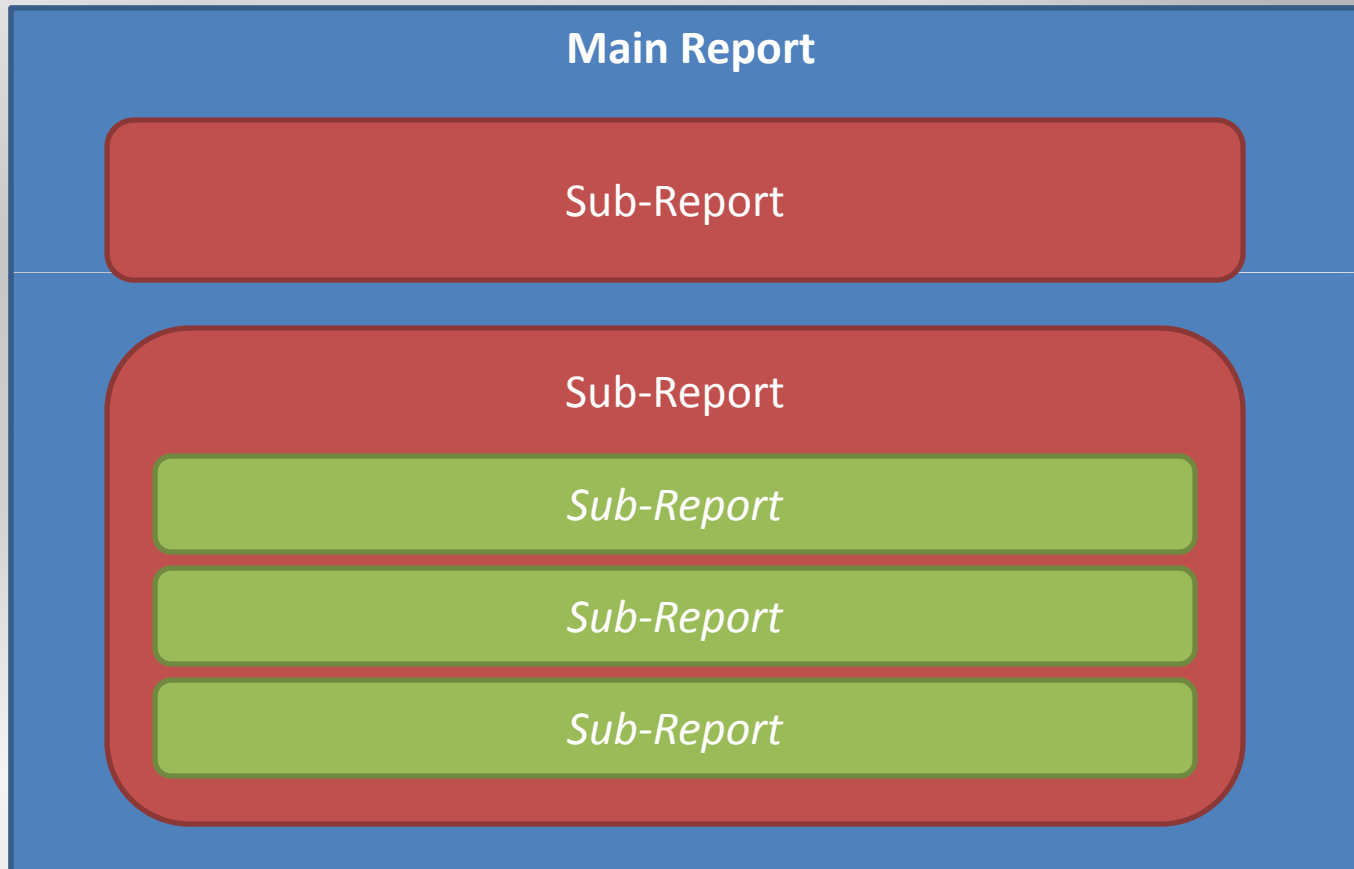


iReport – Report Architecture

- Query
- Report Bands
 - Title
 - Page Header
 - Column Header
 - Detail 1
 - Column Footer
 - Page Footer
 - Last Page Footer
 - Summary
 - No Data
 - Background

iReport – Report Architecture

- Sub-Reports



iReport – Report Example

- *Our example:*
A daily report to show calls to/from each extension, including total calls per extension.

Daily Calls Report

Extension xxx

date, time, call details

Total Calls for extension xxx: xx

[repeat]

iReport – Report Example

- Asterisk 'cdr' table structure

Field	Type	Null	Key	Default	Extra
uniqueid	int(11)	NO	PRI	NULL	auto_increment
userfield	varchar(255)	NO			
accountcode	varchar(20)	NO			
src	varchar(80)	NO			
dst	varchar(80)	NO			
dcontext	varchar(80)	NO			
clid	varchar(80)	NO			
channel	varchar(80)	NO			
dstchannel	varchar(80)	NO			
lastapp	varchar(80)	NO			
lastdata	varchar(80)	NO			
calldate	datetime	NO		0000-00-00 00:00:00	
duration	int(11)	NO		0	
billsec	int(11)	NO		0	
disposition	varchar(45)	NO			
amaflags	int(11)	NO		0	

iReport – Report Example

- Our Query

```
SELECT
  src,
  dst,
  clid,
  calldate,
  duration,
  time(calldate) as calltime,
  IF(LENGTH(dst)=3,dst,src) AS extension
FROM cdr WHERE
  date(calldate) = $P{reportdate}
  AND (length(src) = 3 or length(dst) = 3)
ORDER BY extension, calldate;
```

iReport – Report Example

- Our Report

The screenshot shows an iReport report design with a ruler at the top and left. The report content is as follows:

- Page Header:** `new java.lang.String("Daily Calls Report for " + $P{reportdate})`
- Section Header:** `new java.lang.String("Calls for extension " + $F{extension})`
- Table:**

<u>Date / Time</u>	<u>Caller ID</u>	<u>Source</u>	<u>Destination</u>	<u>Length</u>
<code>\$F{calltime}</code>	<code>\$F{clid}</code>	<code>\$F{src}</code>	<code>\$F{dst}</code>	<code>\$F{duration}</code>
- Summary:** `Total calls for extension: $V{ext_totalcalls}`
- Page Footer:** `"Page " + $V "" + $V`

iReport – Report Example

The screenshot shows a report design with several sections. On the left, a vertical ruler indicates the vertical position of each section. The sections are:

- Title Band:** Contains the code `new java.lang.String("Daily Calls Report for " + ...)`.
- Group Header:** Contains the code `new java.lang.String("Calls for extension " + $F{extension})`.
- Group Details:** A table with columns `Date / Time`, `Caller ID`, and `Source`. The first row contains the code `$F{calltime}`, `$F{clid}`, and `$F{source}`.
- Group Footer:** Contains the text `Total calls for extension: $V{extension}`.
- Page Footer:** Contains the text `"Page " + $V{page} " of " + $V{pages}`.

- Title Band
- Group Header
- Group Details
- Group Footer
- Page Footer

iReport – Report Example

- Our Report (behind the scenes - JRXML)

```
        </textElement>
        <textFieldExpression class="java.lang.String"><![CDATA[new java.lang.String("Ca.
</textField>
<staticText>
    <reportElement x="1" y="35" width="82" height="15"/>
    <textElement>
        <font size="9" isBold="true" isUnderline="true"/>
    </textElement>
    <text><![CDATA[Date / Time]]></text>
</staticText>
<staticText>
    <reportElement x="83" y="35" width="217" height="15"/>
    <textElement>
        <font size="9" isBold="true" isUnderline="true"/>
    </textElement>
    <text><![CDATA[Caller ID]]></text>
</staticText>
<staticText>
    <reportElement x="300" y="35" width="73" height="15"/>
    <textElement>
        <font size="9" isBold="true" isUnderline="true"/>
    </textElement>
    <text><![CDATA[Source]]></text>
```

iReport – Report Example

- Our Report!

report2.pdf - Adobe Acrobat Professional

File Edit View Document Comments Forms Tools Advanced Window Help

Create PDF Combine Files Export Start Meeting Secure Sign Forms Review & Comment

1 / 8 100% Find

Daily Calls Report for 2009-09-22

Calls for extension 110

<u>Date / Time</u>	<u>Caller ID</u>	<u>Source</u>	<u>Destination</u>	<u>Length</u>
08:57:02	"Joan" <138>	138	110	62
09:13:53	"Fran" <126>	126	110	22
09:28:03	"Karen" <118>	118	110	38
09:54:06	"Joan" <138>	138	110	44
11:59:05	"Front Desk 1B" <141>	141	110	36
12:15:09	"Front Desk 1B" <141>	141	110	23
14:19:18	"Karen" <118>	118	110	42
15:33:19	"Front Desk 1B" <141>	141	110	11
15:36:08	"Bev" <112>	112	110	18
16:11:46	"Sally" <139>	139	110	79
16:36:14	"Joan" <138>	138	110	21
16:49:29	"Front Desk 1B" <141>	141	110	14

Total calls for extension: 12

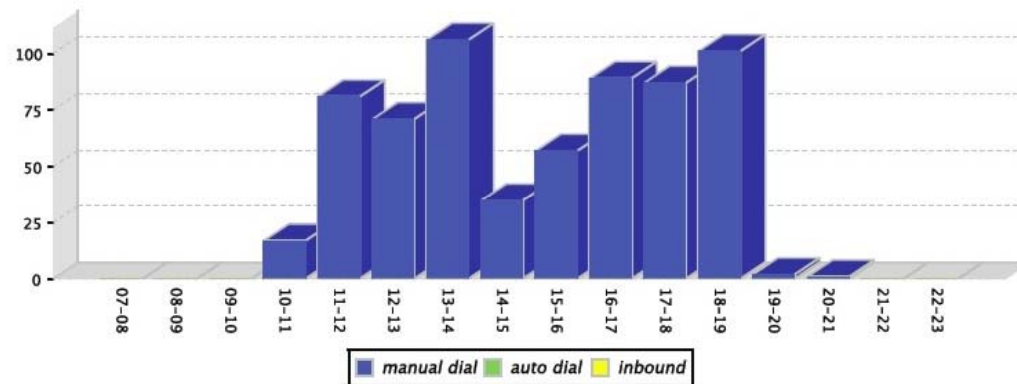
Calls for extension 112

<u>Date / Time</u>	<u>Caller ID</u>	<u>Source</u>	<u>Destination</u>	<u>Length</u>
09:08:04	"Kim" <137>	137	112	77
10:44:42	"Fran" <126>	126	112	27
11:06:33	"Michelle" <144>	144	112	25
14:17:05	"Michelle" <144>	144	112	89
14:21:22	"Kati" <127>	127	112	29
16:25:19	"Tiffany" <116>	116	112	32

Jasper Reports – More Examples

Daily Agent Calls Report for Group: Leaf LA
2008-12-15

Hourly Breakdown



Hour	Inbound	Manual Dial	Auto Dial	Total
7 AM to 8 AM	0	0	0	0
8 AM to 9 AM	0	0	0	0
9 AM to 10 AM	0	0	0	0
10 AM to 11 AM	0	17	0	17
11 AM to 12 PM	0	81	0	81
12 PM to 1 PM	0	71	0	71
1 PM to 2 PM	0	106	0	106
2 PM to 3 PM	0	35	0	35
3 PM to 4 PM	0	57	0	57
4 PM to 5 PM	0	89	0	89
5 PM to 6 PM	0	87	0	87
6 PM to 7 PM	0	101	0	101
7 PM to 8 PM	0	2	0	2
8 PM to 9 PM	0	1	0	1
9 PM to 10 PM	0	0	0	0

Jasper Reports – More Examples

Report for Express Capital

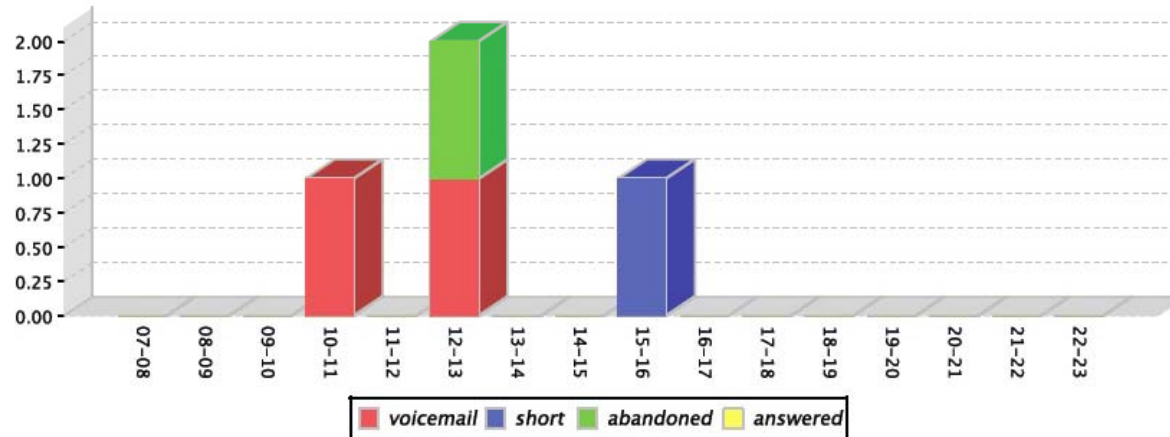
(866) 615-7713

Totals

Entered	Answered	Voicemail	Abandoned	Short Calls	Abd. Pct.
4	0	2	1	1	25.0 %

Entered = Call received from PSTN.; Answered = Agent handled call.; Voicemail = Calls answered by voicemail.; Abandoned = Caller hung up at some point not in queue.; Short Call = Caller hung up while queued for agent.

Hourly Breakdown



Hour	Entered	Answered	Voicemail	Short Calls	Abandoned
7 AM to 8 AM	0	0	0	0	0
8 AM to 9 AM	0	0	0	0	0
9 AM to 10 AM	0	0	0	0	0
10 AM to 11 AM	1	0	1	0	0
11 AM to 12 PM	0	0	0	0	0
12 PM to 1 PM	2	0	1	0	1
1 PM to 2 PM	0	0	0	0	0

Jasper Reports – More Examples

Infradapt
The adaptive infrastructure company.

PO Box 20665
Lehigh Valley, PA 18002

VOIP USAGE

DATE PRINTED 10/01/2009
PERIOD FROM 2009-09-01
TO 2009-10-01

CUSTOMER:

1100 Center
1001 A Highway Blvd
Allentown PA, 18106

USAGE SUMMARY

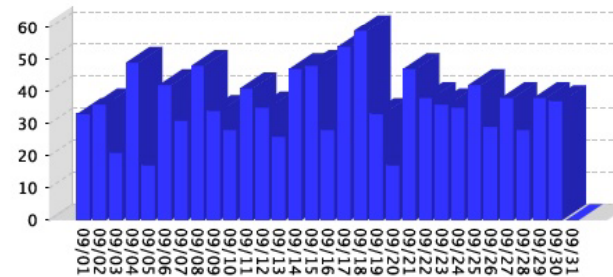
Calling Plan : 2500 Min US Calling Pack

In-Plan Minutes Used : 1,842

Included Minutes : 2,500

Non-Plan Minutes Used : No Minutes Used

DAY	CALLS	DAY	CALLS	DAY	CALLS
09/01	33	09/11	41	09/21	47
09/02	36	09/12	35	09/22	38
09/03	21	09/13	26	09/23	36
09/04	49	09/14	47	09/24	35
09/05	17	09/15	48	09/25	42
09/06	42	09/16	28	09/26	29
09/07	31	09/17	54	09/27	38
09/08	48	09/18	59	09/28	28
09/09	34	09/19	33	09/29	38
09/10	28	09/20	17	09/30	37



Customer DID's Summary

(484) 334-8000

(484) 334-8100

Infradapt

Contact Center Analytics – Astricon October 2009

www.infradapt.com – 800-394-2301

Jasper Reports – Next Steps

- Jasper Server
 - Ad hoc reports
 - Automated Reports (Daily, Weekly, Monthly, Scheduled)
 - Multiple Output Formats (PDF, HTML, XLS, RTF, etc)
 - Community and Professional Versions

Conclusion

- E-mail to request presentation and examples.



The image shows a business card for Infradapt. The card is split into two main sections: a white left side and a blue right side. On the white side, the Infradapt logo is prominently displayed in blue, with the tagline 'The adaptive infrastructure company.' underneath. Below the logo, contact information for two offices is provided: Philadelphia (2 Penn Center Plaza, Suite 200, Philadelphia, PA 19102) and Lehigh Valley (2912 William Penn Hwy, Easton, PA 18045). The blue side of the card features the name 'Corey S. McFadden' and his title 'MANAGING PARTNER'. Below this, his email address 'c.mcfadden@infradapt.com' is listed. A list of phone numbers follows: direct/fax (484-546-2010), toll-free (800-394-2301), Philadelphia (215-525-7000), and Lehigh Valley (484-546-2000). At the bottom of the blue section, the website 'www.infradapt.com' is printed.

Infradapt
The adaptive infrastructure company.

philadelphia
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lehigh valley
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