

Presented by  
@saghul



# CDRTool

CDR mediation and rating engine for OpenSIPS

Tijmen de Mes | @tijmenNL

OpenSIPS Summit 2015

## Hoi!

- @saghul, filling in for @tijmenNL
- AG Projects





#PrayForTijmen



## AG Projects

- SIP infrastructure (SIP Thor)
- Several software projects
  - **CDRTool**
  - **CallControl**
  - MediaProxy
  - OpenXCAP
  - MSRPRelay

# AG Projects

SIP Infrastructure Experts

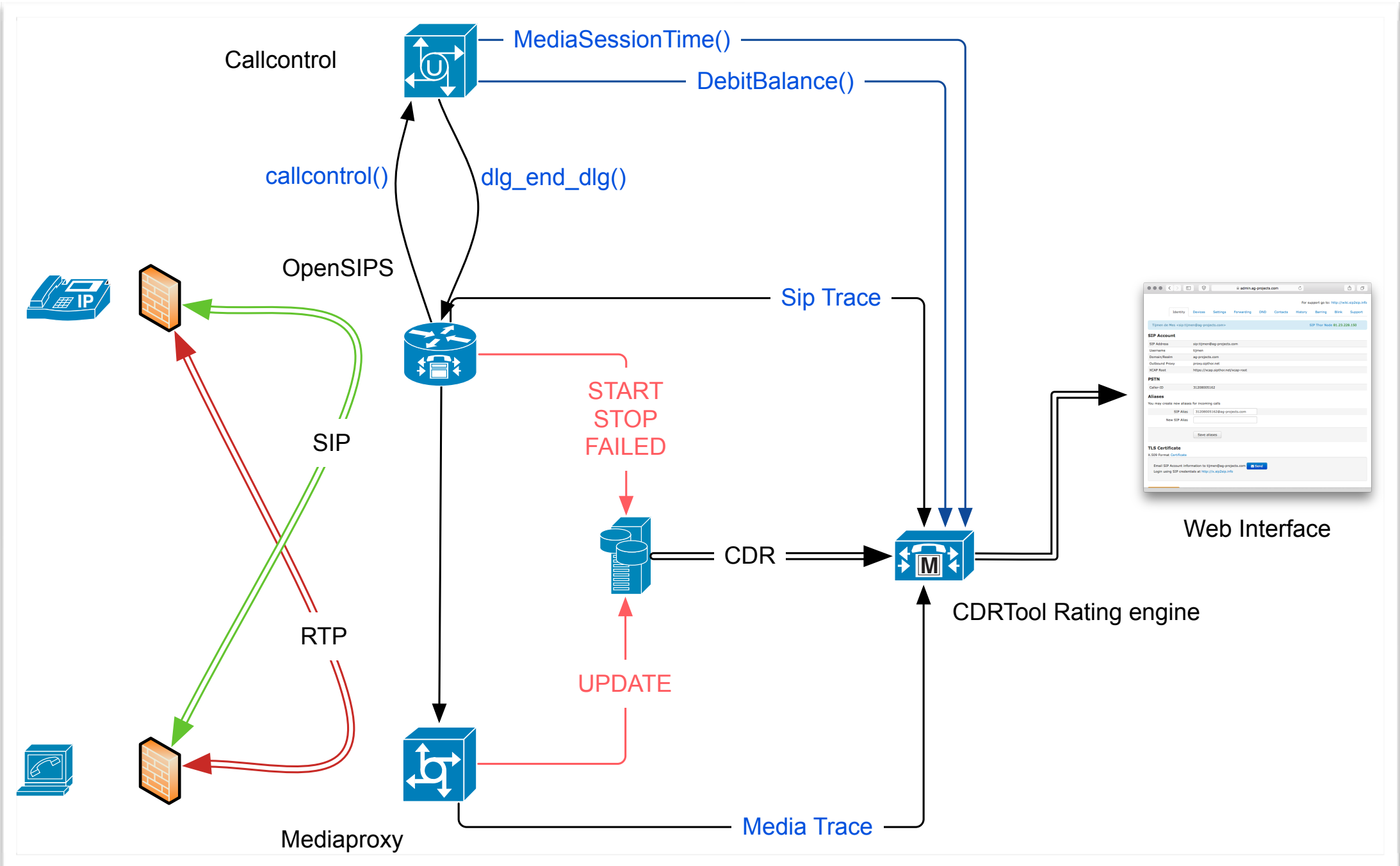
# CDRTool



## Adrian Georgescu



## How does it work?



## What is a CDR

- One record from the *radacct* table
- Contains all call information



# AG Projects

## SIP Infrastructure Experts

Id	Start Time	Flow	SIP Caller	Caller Location	Sip Proxy	Media	SIP Destination	Dur	Price	KBIn	KBOut	Codecs	Status
1N	2015-05-08 14:18:01	outgoing	tijmen@ag-projects.com	Netherlands/Meppel	81.23.228.150	audio	test_number@conference.sip2sip.info	00:09	0.0000	76.40	82.57	Dynamic(113)	Ok (200)

### SIP Signalling

[Click here to show only this call id](#)

Call id: YYssBULxXQ.VKiMdVe8RLL4q8JFS.B0B  
[Click here for the SIP trace](#)  
From tag: GHmWz5DqrtbkKpQwnDnXRtkJ-a0USOvY  
To tag: oHsb8vXXsEE27jvBRqObY4PjBpkwCecW  
Start Time: 2015-05-08 14:18:01  
Stop Time: 2015-05-08 14:18:10  
Country: Netherlands/Meppel  
Method: Invite from 109.72.43.104:50070  
From: tijmen@ag-projects.com  
From Header: "Tijmen de Mes" <sip:tijmen@ag-projects.com>  
User Agent: Blink Pro 4.2.1 (MacOSX)  
Domain: ag-projects.com  
To (dialed URI): 3333@ag-projects.com  
Canonical URI: test\_number@conference.sip2sip.info  
Next Hop URI: test\_number@conference.sip2sip.info  
Caller ID: 31208005162  
Billing Party: [tijmen@ag-projects.com](#)  
Reseller: 79

### Media Streams

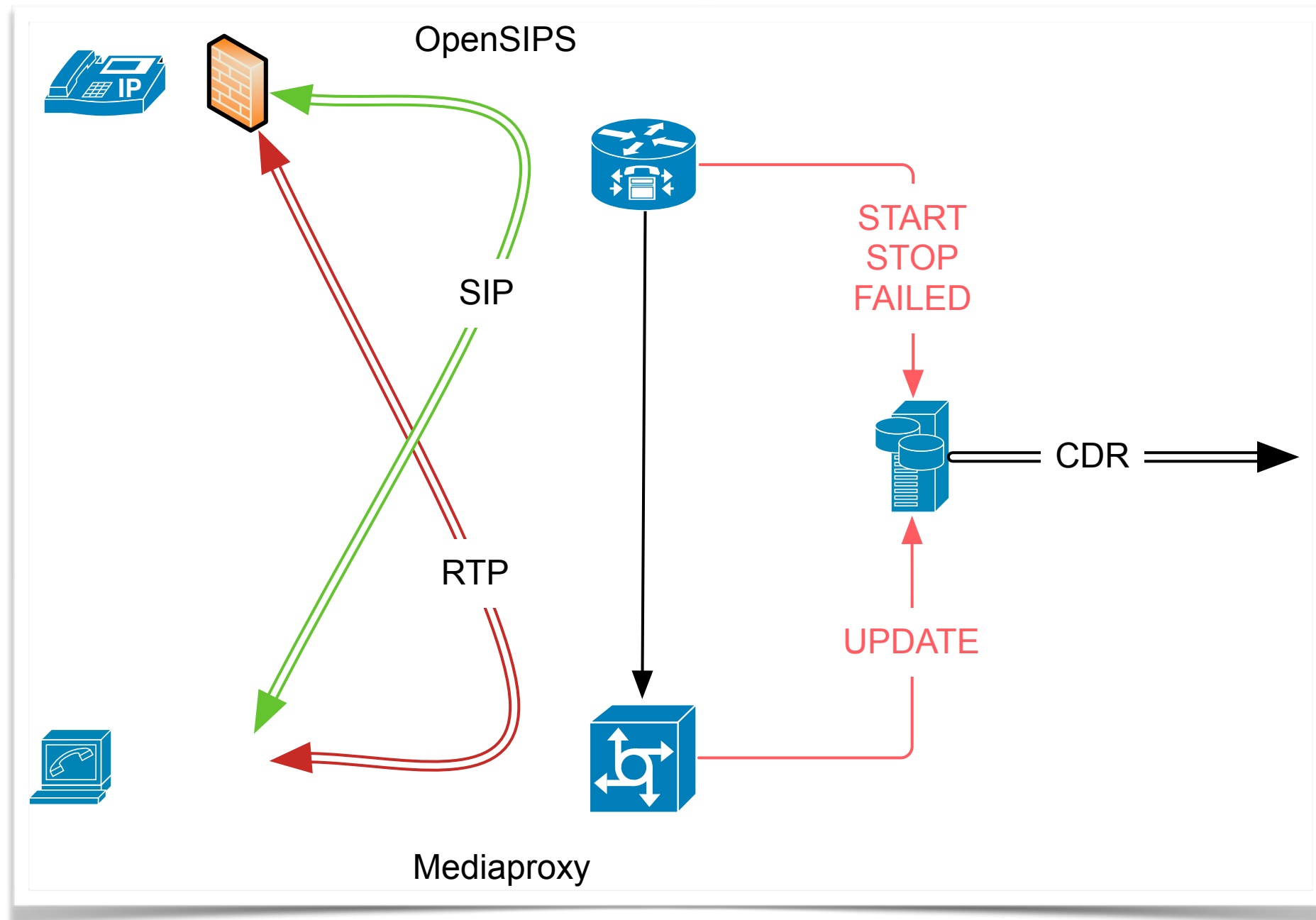
[Click here for media information](#)

Codecs: Dynamic(113)  
Caller RTP: 76.40 KB  
Called RTP: 82.57 KB  
Applications: audio  
Caller SIP UA: Blink Pro 4.2.1 (MacOSX)  
Called SIP UA: SylkServer-2.9.1

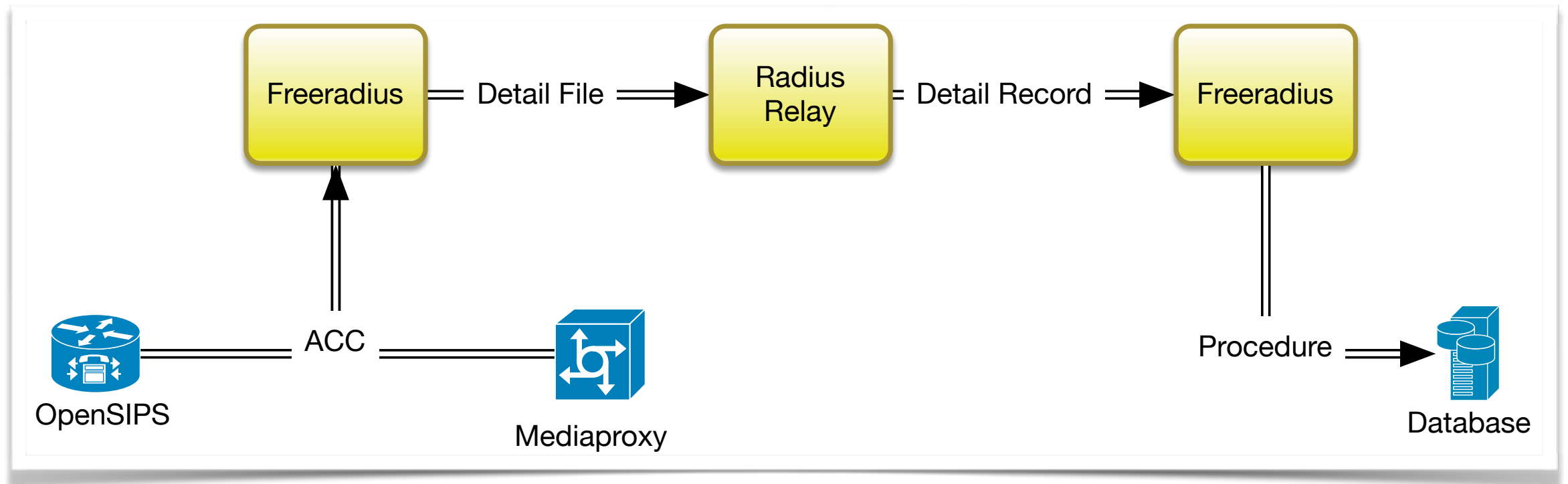
### Rating

Free call

## How do we get CDRs?



## Practical Setup





## INVITE:

```
/usr/sbin/opensips[6504]: ACC: transaction answered:  
timestamp=1431255722;method=INVITE;  
from_tag=QcdHP9jDHKYx9zYCtXZJ57JQ23gRmitP;  
to_tag=2Aq7d1o1bHcKviI2q11cZNG0UIof6y84;  
call_id=12nke0Err-MMtQVBWmdGGzWLKz7w2EoN;  
code=200;reason=OK
```

## BYE:

```
/usr/sbin/opensips[6505]: ACC: transaction answered:  
timestamp=1431255727;method=BYE;  
from_tag=QcdHP9jDHKYx9zYCtXZJ57JQ23gRmitP;  
to_tag=2Aq7d1o1bHcKviI2q11cZNG0UIof6y84;  
call_id=12nke0Err-MMtQVBWmdGGzWLKz7w2EoN;  
code=200;reason=OK
```

## CDRTool Rating

- Prepaid
- Postpaid

## Rating Plan

- Destinations
- Billing parties
  - Source IP
  - Domain
  - Subscriber
- Profiles



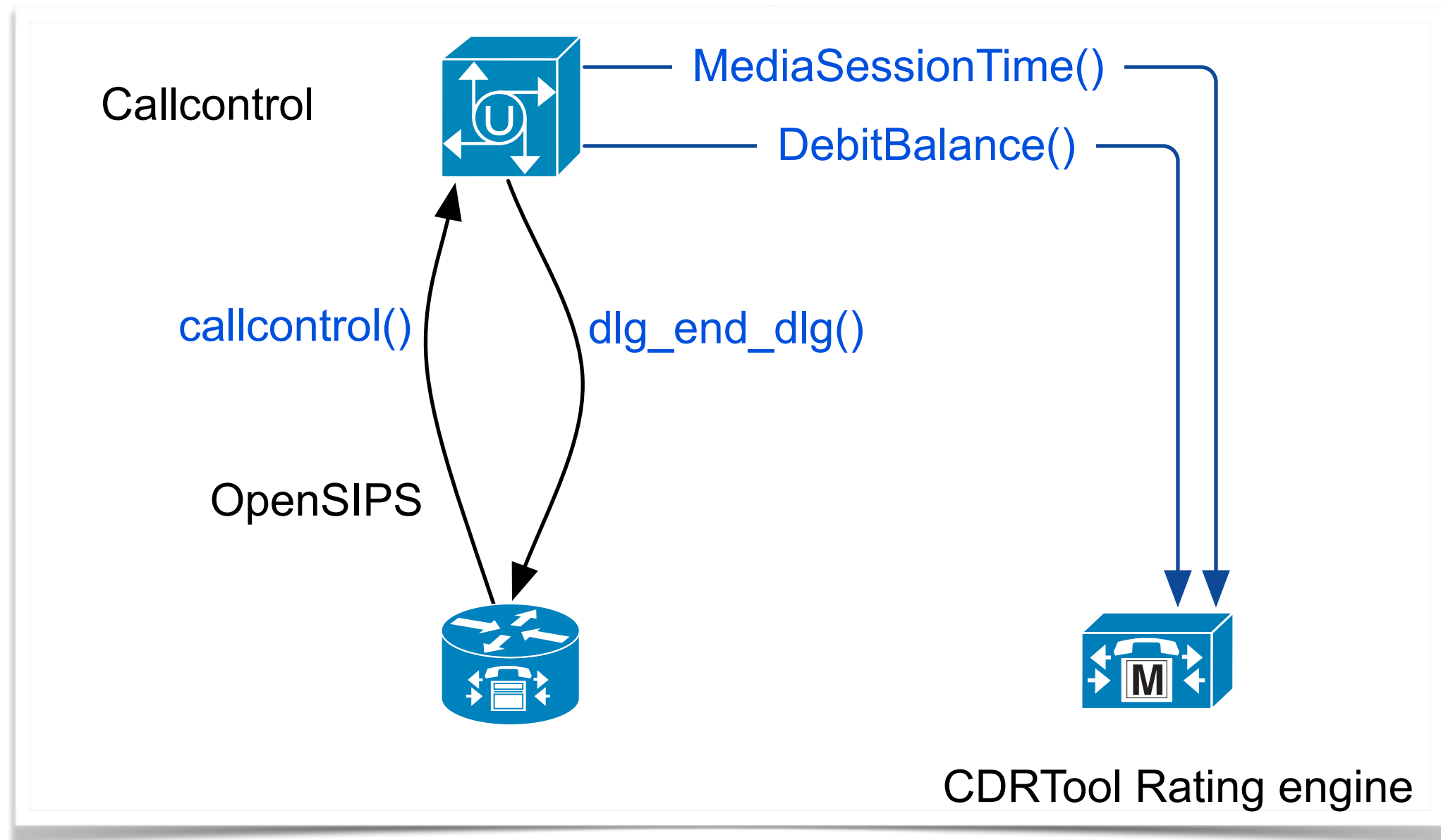
## Normalising

- Set destination to the *right* format
- Calculate duration
- Apply a price

## Prepaid

- Accounts have a balance
- Balance needs to be debited
- Rating Engine returns maximum session time

## CallControl





## CallControl

- Max sessions per account
- Detect duplicate Call-ID
- Parallel sessions, one balance
- Max session duration

## Rating Engine

- Available with a socket interface
  - MaxSession
  - Debit Balance
  - Show Price
  - More (help shows them)

## Quota (Fraud control)

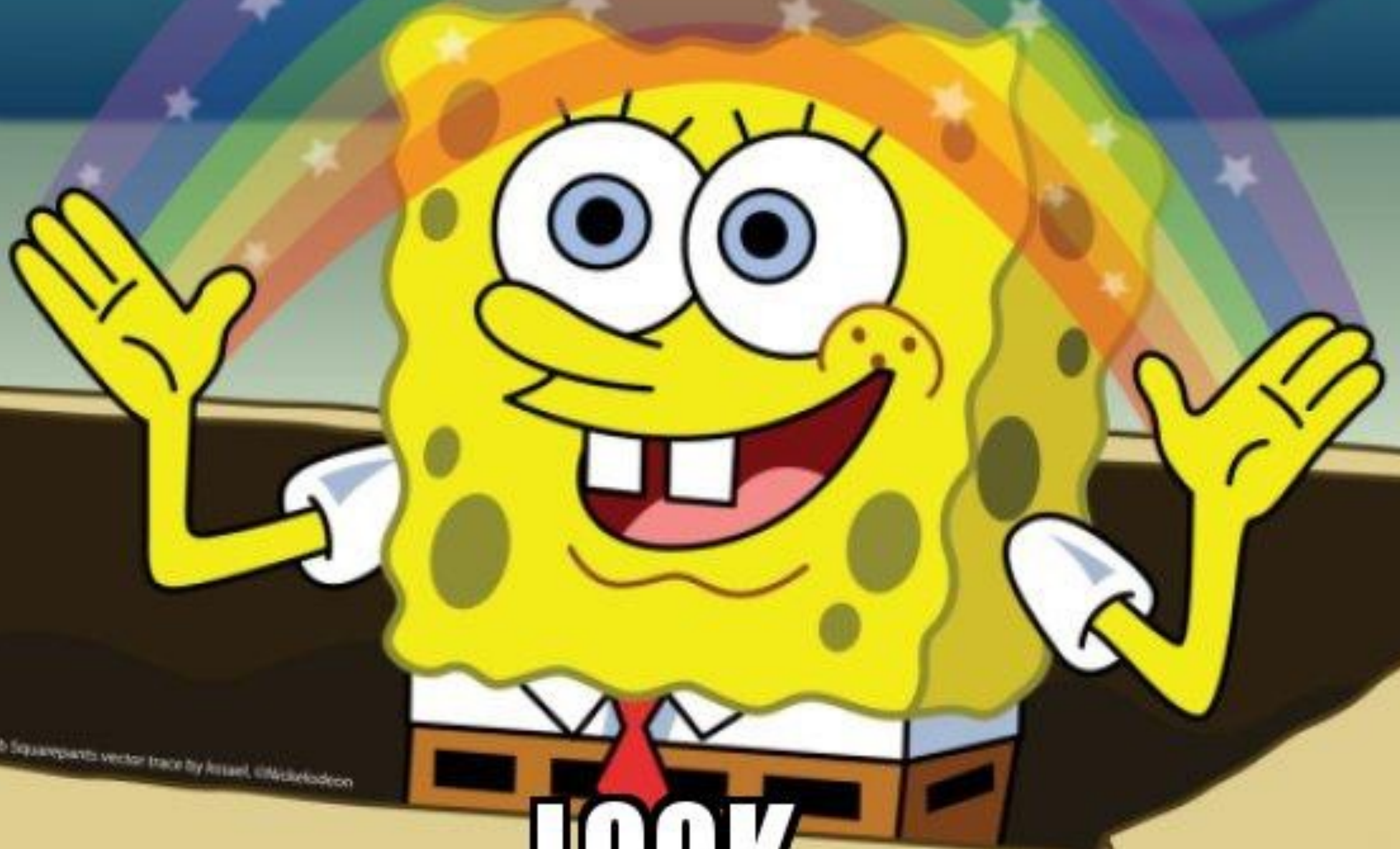
- Monthly
- Daily
- Quota check runs from cron



## Postpaid

- Rated after call completes
- Rated by normalising process

**HOW DOES IT**



**LOOK**

# Web Interface

**CDRTool** CDR Rating Prepaid Quota Network Sessions Usage Replication Provisioning Accounts Logs Tijmen de Mes

### SIP Thor

<b>Data Source</b>	SIP Thor	Table:	201505
<b>Start Time</b>	2015-05-08	Time:	15:10
<b>Stop Time</b>	2015-05-08	Time:	23:55
<b>SIP Call Id / Source IP</b>	/ Sip Proxy		
<b>User Agent / Media Codecs</b>	Codec:		
<b>SIP Billing Party (Username)</b>	Begins with	@	Tech prefix:
<b>SIP Caller Party (From URI)</b>	Begins with		
<b>SIP Destination (Canonical URI)</b>	Begins with	Exclude:	
<b>Application / Call Flow</b>	Any Call Flow	Any Application	Media Info:
<b>Duration / Status</b>	All calls	Any Status	Any Status Class
<b>Order by / Group by</b>	Id	Descending	Group by Max results per page 15 ReNormalize <input type="checkbox"/>

Search

# Rates

The screenshot shows a web browser window with the URL `node10.mdns.siphor.net`. The page title is "CDRTool" and the navigation menu includes: CDR, Rating, Prepaid, Quota, Network, Sessions, Usage, Replication, Provisioning, Accounts, Logs. The user is logged in as "Tijmen de Mes".

### Rating tables

8004 records found. | [Rating engine running at 127.0.0.1:9024](#) | [Rating documentation](#)

Id	Reseller	Trusted peer	Domain	Subscriber	Destination	Region	Description	Incr	Min Dur	Max Dur	Max Price	Action
Use _ to match one character and % to match any. Use > or < to find greater or smaller values.												
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> Destinations <input type="button" value="Search"/>
												<input type="button" value="Insert"/>
1.	1545477	0			1		United States	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
2.	1533721	0			10		Local Extension	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
3.	1517301	0			1204		Canada - 204 Manitoba	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
4.	1517305	0			1226		Canada - 226 Ontario	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
5.	1517309	0			1236		Canada - 236 British Columb	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
6.	1515365	0			1242		Bahamas	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
7.	1515661	0			1242357		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
8.	1515581	0			1242359		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
9.	1515577	0			1242375		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
10.	1515573	0			1242376		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
11.	1515569	0			1242395		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
12.	1515565	0			1242421		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
13.	1515561	0			1242422		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
14.	1515557	0			1242423		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>
15.	1515553	0			1242424		Bahamas Mobile	6	6	0		<input type="button" value="Update"/> <input type="button" value="Delete"/>



# Quota

CDRTool CDR Rating Prepaid Quota Network Sessions Usage Replication Provisioning Accounts Logs Tijmen de Mes

### Rating tables

1688 records found. | Rating engine running at 127.0.0.1:9024 | [Rating documentation](#)

[Export quotausage.csv](#)

	<b>Id</b>	<b>Reseller</b>	<b>Datasource</b>	<b>Subscriber</b>	<b>Domain</b>	<b>Quota</b>	<b>Blocked</b>	<b>Notified</b>	<b>This Month</b>	<b>Today</b>	<b>Action</b>
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="Quota usage"/> <input type="button" value="Search"/>
1.	540743	<input type="text" value="79"/>	<input type="text" value="sipthor_tes"/>	<input type="text"/>	<input type="text" value="test.sip2sip.info"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0343"/>	<input type="text" value="0.0343"/>	
2.	550719	<input type="text" value="79"/>	<input type="text" value="sipthor_tes"/>	<input type="text"/>	<input type="text" value="test.sip2sip.info"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.2222"/>	<input type="text" value="0.2222"/>	
3.	550721	<input type="text" value="79"/>	<input type="text" value="sipthor_tes"/>	<input type="text"/>	<input type="text" value="test.sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
4.	599729	<input type="text" value="79"/>	<input type="text" value="sipthor_tes"/>	<input type="text"/>	<input type="text" value="test.sip2sip.info"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
5.	1372057	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
6.	1372061	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
7.	1372065	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
8.	1372069	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
9.	1372073	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
10.	1372077	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
11.	1372081	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
12.	1372085	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
13.	1372089	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	
14.	1372093	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.1885"/>	<input type="text" value="0.0000"/>	
15.	1372097	<input type="text" value="79"/>	<input type="text" value="sipthor"/>	<input type="text"/>	<input type="text" value="sip2sip.info"/>	<input type="text" value="50"/>	<input type="text" value="0"/>	<input type="text" value="0000-00-0"/>	<input type="text" value="0.0000"/>	<input type="text" value="0.0000"/>	

[Next →](#)

# Prepaid

The screenshot shows a web browser window with the URL `node10.mdns.siphor.net`. The application is CDRTool, with a navigation menu including CDR, Rating, Prepaid, Quota, Network, Sessions, Usage, Replication, Provisioning, Accounts, and Logs. The user is identified as Tijmen de Mes.

### Rating tables

271900 records found. | Rating engine running at 127.0.0.1:9024 | [Rating documentation](#)

[Export prepaid.csv](#)

Use `_` to match one character and `%` to match any. Use `>` or `<` to find greater or smaller values.

	Id	Reseller	Subscriber	Balance	Active Sessions	Max Sessions	Action
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Prepaid accounts <input type="text"/> <input type="button" value="Search"/>
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Insert"/>
1.	654957	<input type="text" value="79"/>	<div style="background-color: #cccccc; width: 100%; height: 100%;"></div>	<input type="text" value="44.0867"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
2.	803673	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
3.	803669	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
4.	802369	<input type="text" value="79"/>		<input type="text" value="19.8897"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
5.	803665	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
6.	803661	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
7.	803657	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
8.	803653	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
9.	803649	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
10.	803645	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
11.	803641	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
12.	410577	<input type="text" value="79"/>		<input type="text" value="14.0788"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
13.	803637	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
14.	803633	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>
15.	803629	<input type="text" value="79"/>		<input type="text" value="0.0000"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/> <input type="button" value="Delete"/>

# SIP Trace









node10.mdns.siphthor.net

**CDRTool SIP trace** SIP session YYssBULxXQ.VKiMdVe8RLL4q8JFS.B0B

URLs for this trace: [HTML](#) | [TEXT](#)

Click on each packet to expand its body content

[Click here for RTP media information](#)

Packet	Size	Time	node11:5060 (Trace)	node04	node10
1/16	1829 bytes	14:17:59	 UDP port 5060	INVITE sip:3333@ag-projects.com Contact: 109.72.43.104:50070 audio->192.168.1.52:51657 ICE UDP port 5060	
2/16	632 bytes	14:17:59	 UDP port 5060	407 Proxy Authentication Required for INVITE UDP port 5060	
3/16	2028 bytes	14:17:59	 UDP port 5060	INVITE sip:3333@ag-projects.com Contact: 109.72.43.104:50070 audio->192.168.1.52:51657 ICE UDP port 5060	
4/16	465 bytes	14:17:59	 UDP port 5060	100 Trying for INVITE UDP port 5060	
5/16	2061 bytes	14:17:59		INVITE sip:test_number@conference.sip2sip.info Contact: 109.72.43.104:50070 audio->81.23.228.129:55396 ICE UDP port 5060	 UDP port 5060
6/16	852 bytes	14:17:59		100 Trying for INVITE UDP port 5060	 UDP port 5060
7/16	1020 bytes	14:17:59		180 Ringing for INVITE Contact: 81.23.228.139:5060 UDP port 5060	 UDP port 5060
8/16	930 bytes	14:17:59	 UDP port 5060	180 Ringing for INVITE Contact: 81.23.228.139:5060 UDP port 5060	

## Media Trace

node10.mdns.siphthor.net

### CDRTool Media Trace

Media Session YYssBULxXQ.VKiMdVe8RLL4q8JFS.B0B


#### Media Information

Call duration 9  
Media relay 81.23.228.129



#### Media Streams

	Audio
Status	closed
Caller codec	Dynamic(113)
Post dial delay	1.124251127243
Callee codec	Dynamic(113)
Start time	0
Caller bytes	78230
Callee bytes	84551
Caller packets	495
Callee remote	81.23.228.139:50090
End time	9
Caller remote	109.72.43.104:51657
Media type	audio
Callee local	81.23.228.129:55396
Timeout wait	0
Caller local	81.23.228.129:55450
Callee packets	497

#### Stream Succession

audio  9

#### Legend

-  Session data
-  Timeout period

# Media Sessions

## Media sessions

### SIP Thor (MediaProxy 2)

	Address	Version	Uptime	Relayed traffic	Sessions	Streams	Status
1	node11	2.6.0	349h35'30"	287.97kbps	3	audio 2	Active
2	node07	2.6.0	436h05'48"	0bps	2		Active
3	node04	2.6.0	1411h37'44"	145.83kbps	3	audio 1	Active

## Sessions

Callers (8)	Phones		Media Streams								
			Caller address	Relay caller	Relay callee	Callee address	Status	Type/Codec	Duration	Bytes Caller	Bytes Called
From: [redacted] To: [redacted]	?	?	Unknown	node04:57064	node04:57066	Unknown	closed	audio -	0'00"	0	0
From: [redacted] To: [redacted]	?		Unknown	node04:56728	node04:56730	Unknown	closed	audio -	0'00"	0	0
			Unknown	node04:57328	node04:57330	Unknown	closed	audio -	0'00"	0	0
From: [redacted] To: [redacted]			[redacted]	node04:54420	node04:54422	[redacted]	active	audio G711u	29'57"	15.99M	15.98M
From: [redacted] To: [redacted]	?	?	Unknown	node07:50762	node07:50764	Unknown	closed	video -	400h44'09"	0	0
			Unknown	node07:50758	node07:50760	Unknown	closed	audio -	400h44'09"	0	0
From: [redacted] To: [redacted]	?	?	Unknown	node07:50692	node07:50682	Unknown	closed	audio -	0'00"	0	0
From: [redacted] To: [redacted]			[redacted]	node11:55294	node11:55312	[redacted]	active	audio Dynamic(108)	57'00"	27.40M	27.50M



# AG Projects

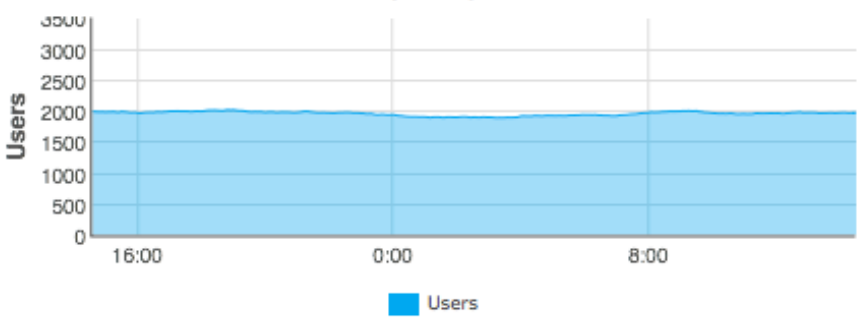
SIP Infrastructure Experts

# Traffic

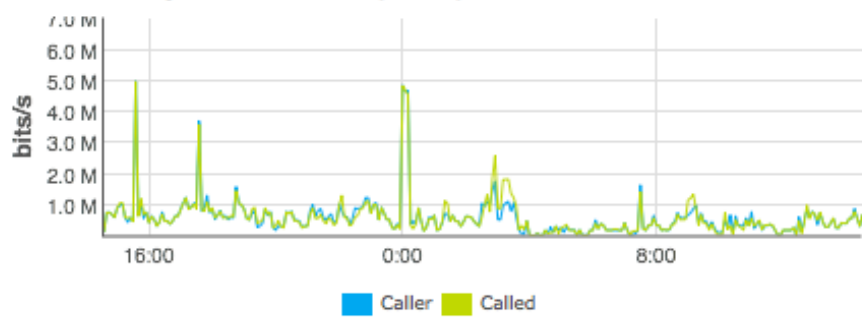
## Platform usage

May 7, 2015 14:32:45 - May 8, 2015 14:32:45

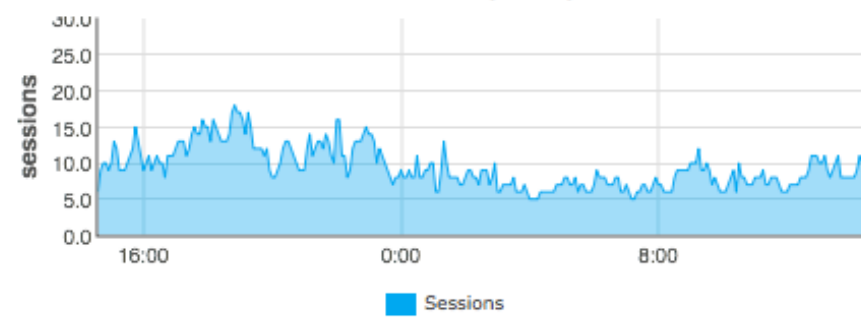
Total SIP Accounts online (MRTG)



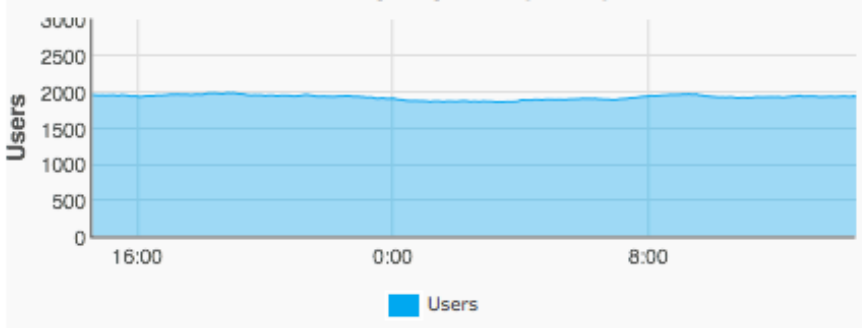
Total relayed RTP traffic (MRTG)



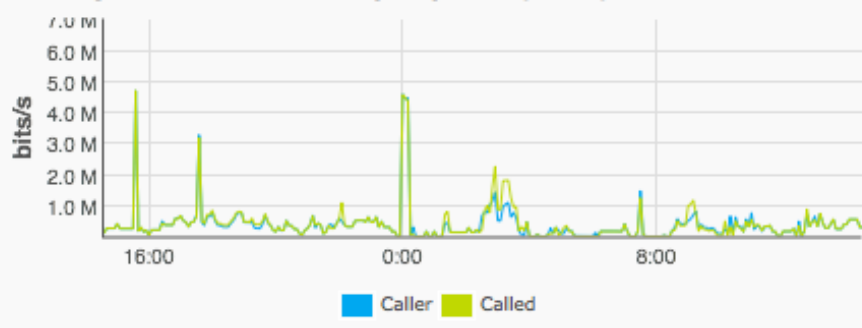
Total active RTP media sessions (MRTG)



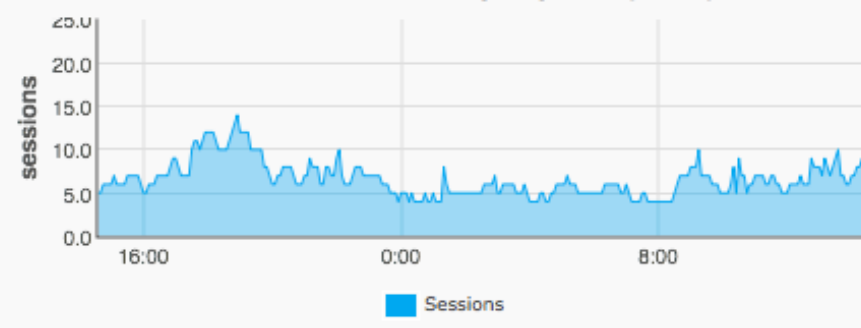
Online SIP accounts on sip2sip.info (MRTG)



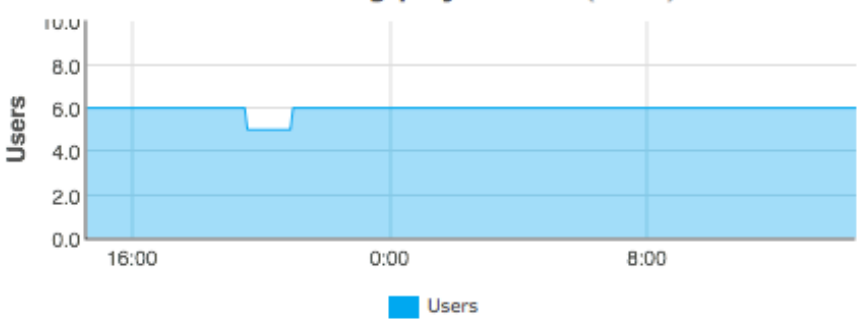
Relayed RTP traffic for sip2sip.info (MRTG)



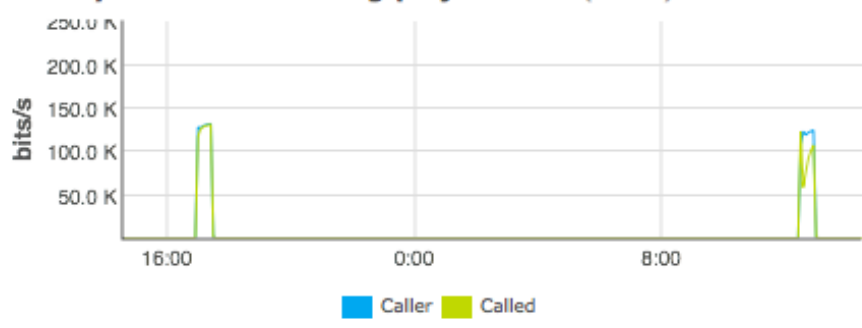
Active RTP media sessions for sip2sip.info (MRTG)



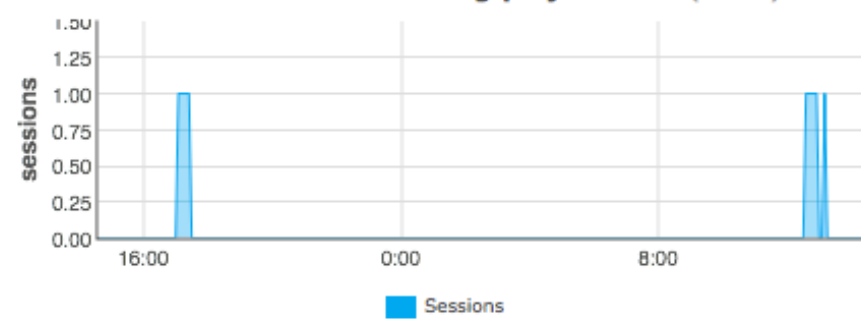
Online SIP accounts on ag-projects.com (MRTG)



Relayed RTP traffic for ag-projects.com (MRTG)



Active RTP media sessions for ag-projects.com (MRTG)



## Commercial features

- Integration in P2P network SIP Thor
- Provisioning interface



**ENOUGH TALK**

**SHOW ME A  
DEMO!!!**





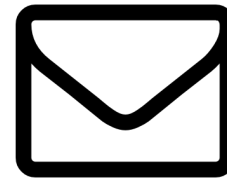
Questions?

# AG Projects

SIP Infrastructure Experts



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