

SIP Peering solutions using Open Source Software

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AG Projects

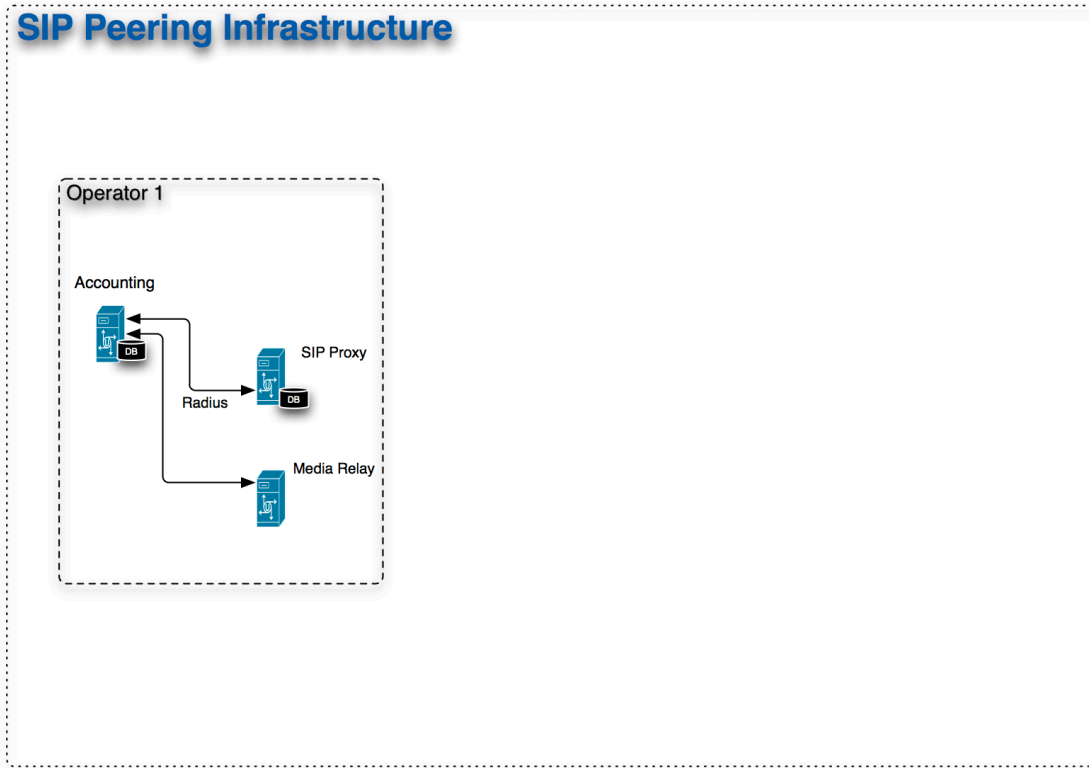
Our core business

DELIVERY AND SUPPORT OF SCALABLE SIP INFRASTRUCTURES

AG Projects

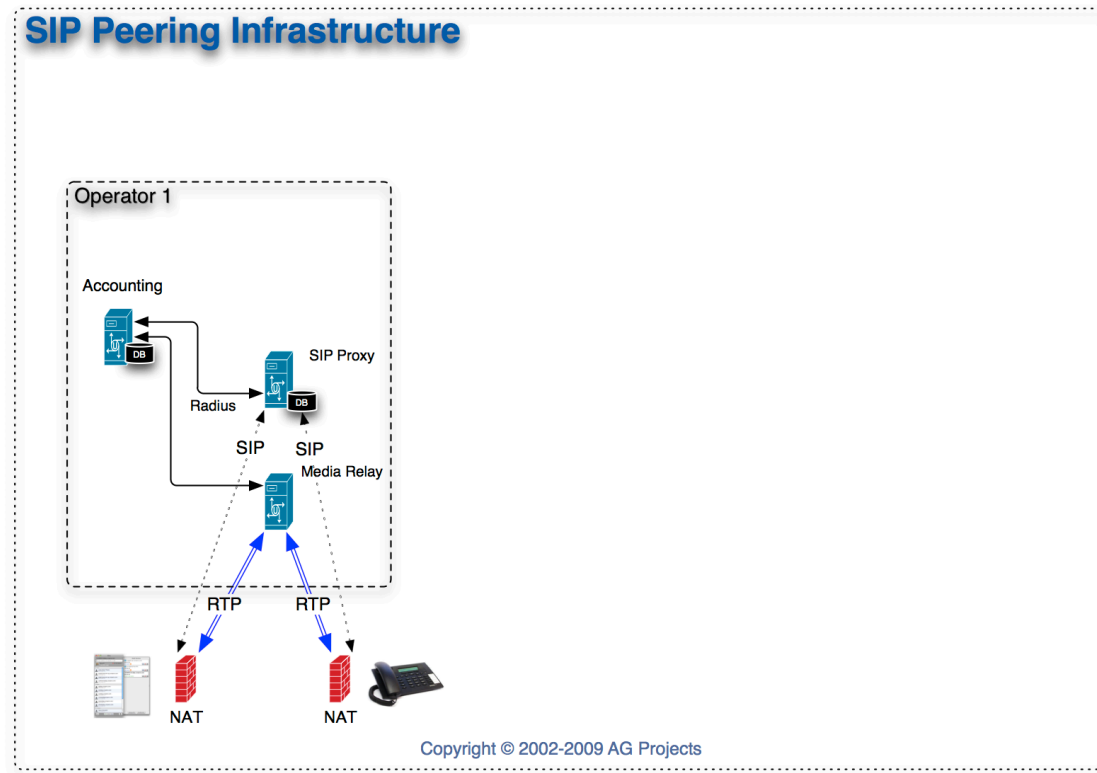
Portfolio

**OPENSIPS, MEDIA-PROXY, CDRTOOL, OPENXCAP,
CALLCONTROL, MSRP-RELAY, BLINK, SYLKSERVER**



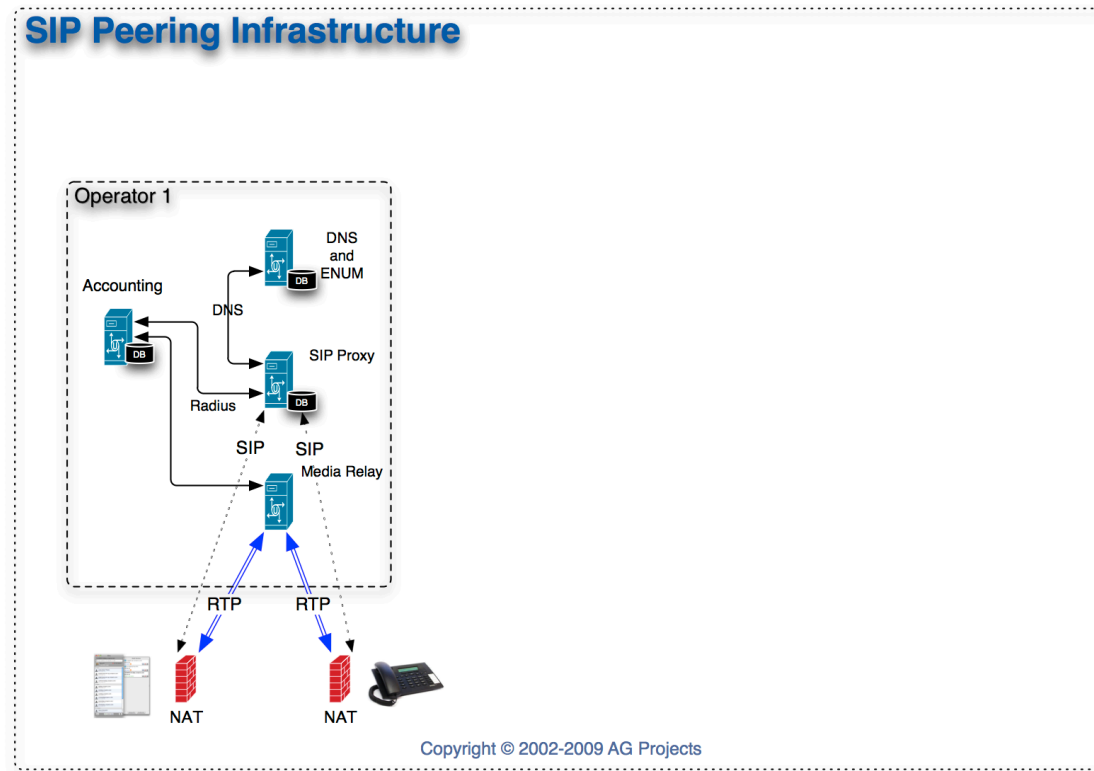
One Operator VoIP infrastructure

A SIP server and a Media Server, calls usually terminate to a PSTN gateway



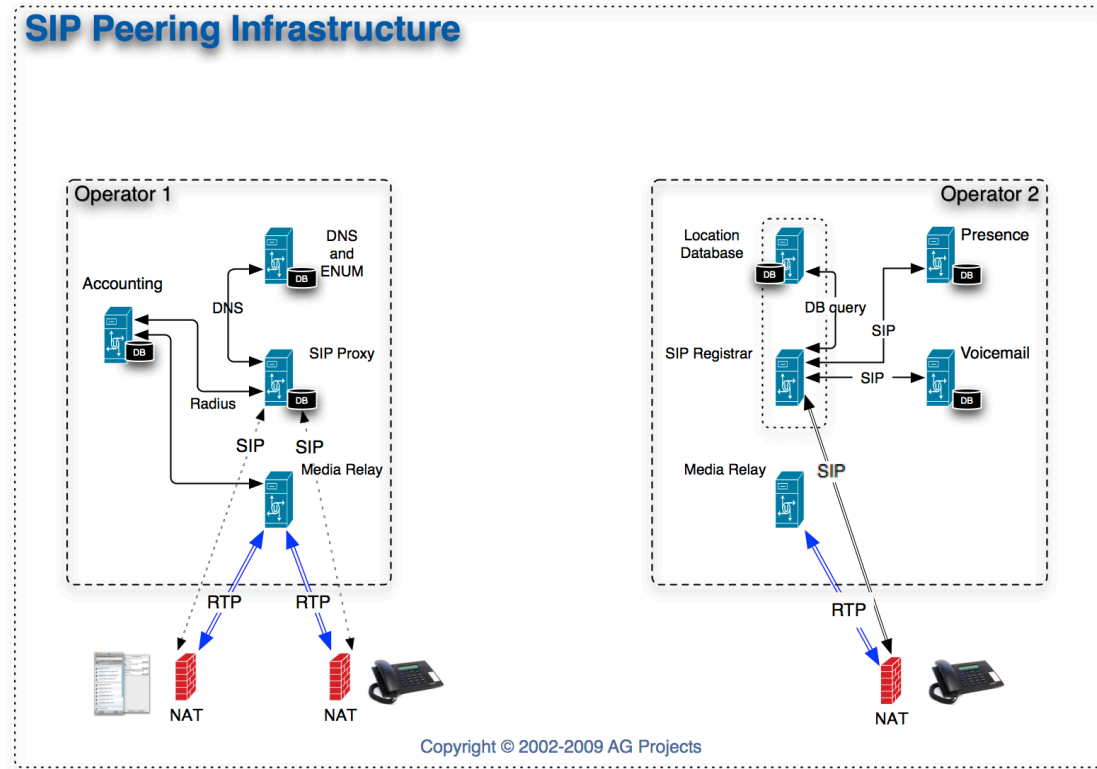
One Operator closed network

All signaling and media go through the operator server



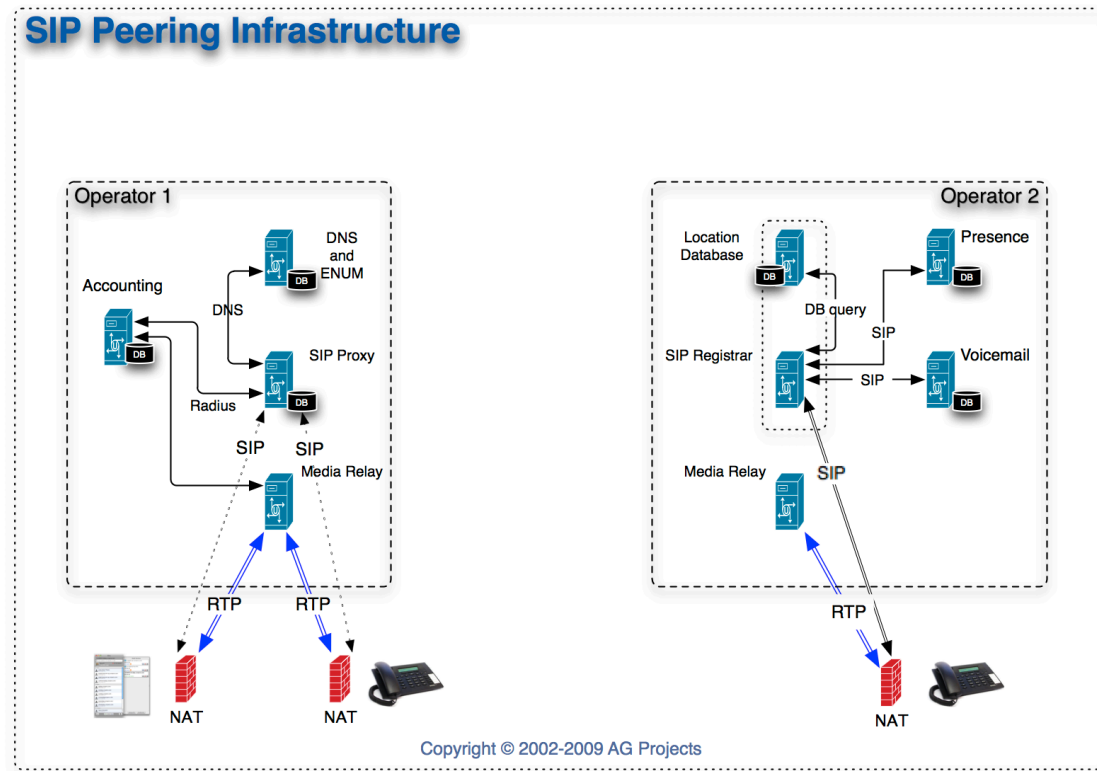
Internal Address Resolution

Hardwired configuration into the switch, local dial plan, SQL database, some use DNS and ENUM



Two Operators, classic SIP trapezoid model

Operators must open the gates for outside parties. This is called Peering



SIP Peering advantages

SIP Peering allows best quality and applications beyond VoIP between operators. Getting rid of PSTN legacy gateways and their associated costs

Robustness of Operator network border elements is key

Most commercial PBX or soft-switch product are not ready

Open Source software on the other hand is mature, Internet ready with many years in service exposed to public Internet connectivity and associated threats

Another alternative is purchasing an SBC. SBCs are also mature, as a rule of thumb they cost an order of magnitude more than their open source counterpart

Opening up the garden

Exposing the core infrastructure to the public Internet brings up new risks

DOS and DDOS attacks for signaling and media

Account credential theft, illegitimate calls from trusted peers

Automated toolkits exploiting weak passwords

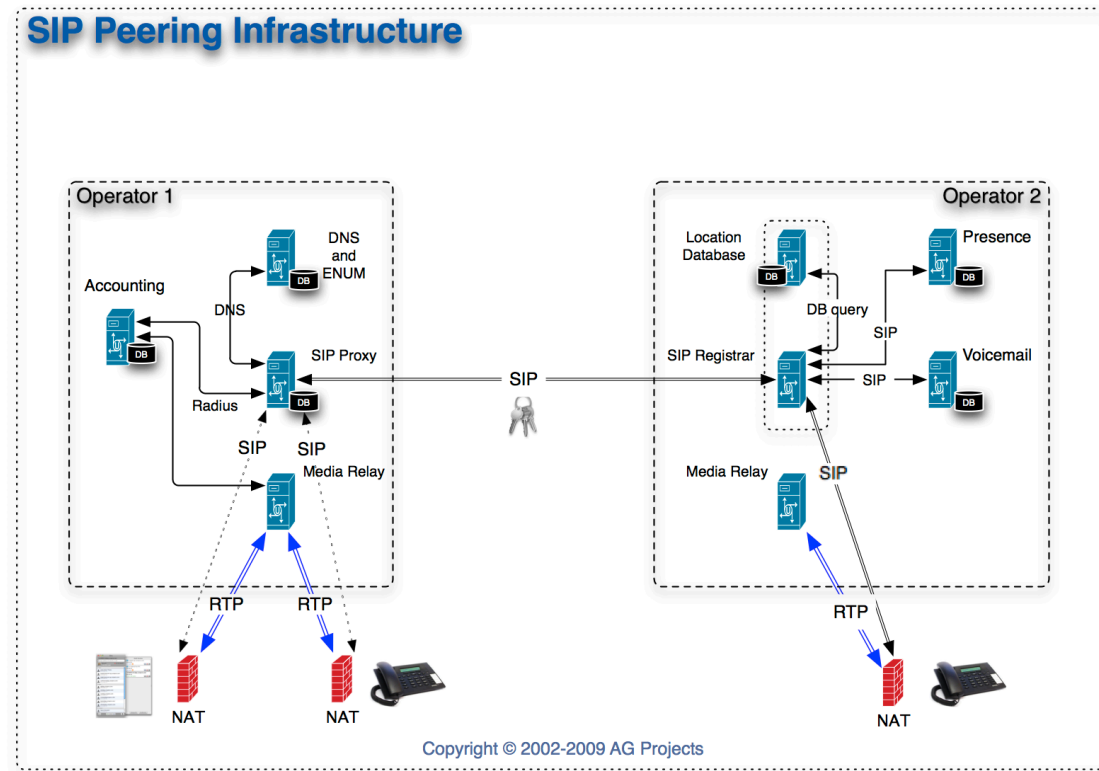
DNS poisoning, routing calls elsewhere

Soft-switch bug exploits, REFER, media timeout, no BYEs

Peering Risks

Open Source have seen it all, commercial soft-switches are sitting ducks.

Best defense embedded into open source SIP routers



Exchanging SIP Signaling

Border SIP signaling elements of the operator are exposed to the outside world

Non-SIP means VPN (layer 2 or 3) – safest but does not scale

Source IP address

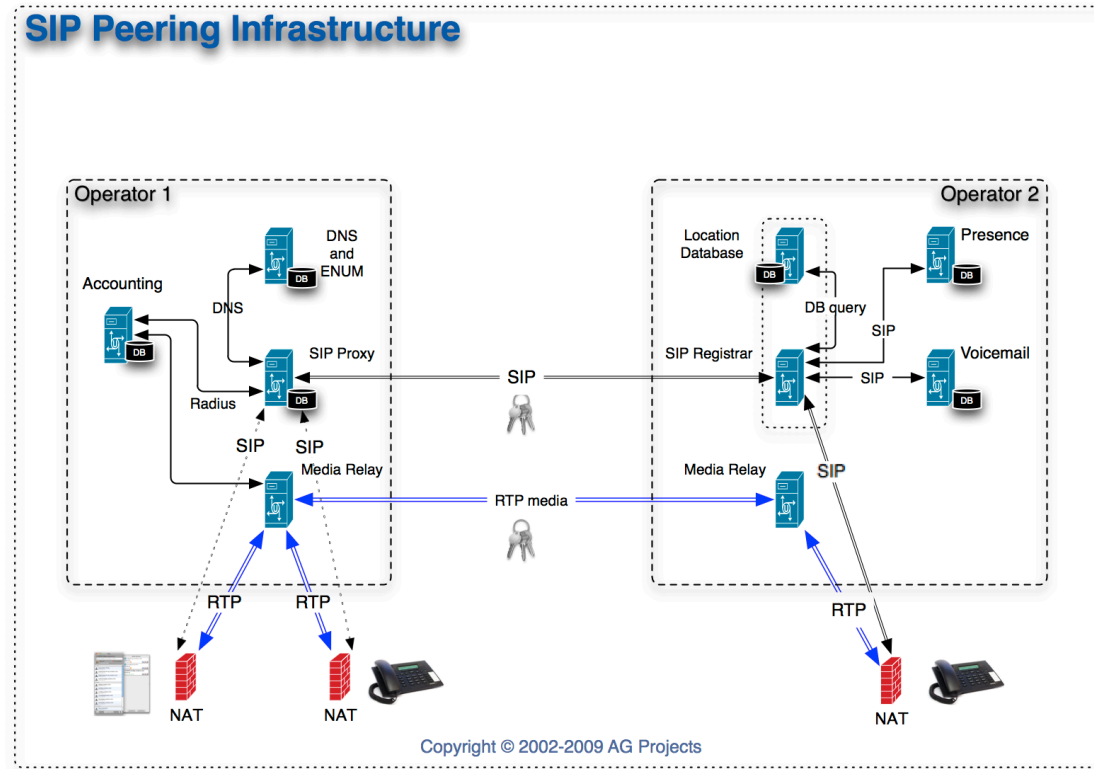
Using TCP and TLS certificates

Using SIP identity by signing the SIP packets

Filtering by SIP Method or various SIP Headers

Authenticating Peering partners

Open source solutions are the most versatile when it comes to authentication and authorization rules for incoming SIP traffic



Media Relays

Both parties must negotiate a common codec. If an SBC is in the path is up to the SBC, otherwise it depends on the end-points

Accommodating HD Audio, Fax and Video

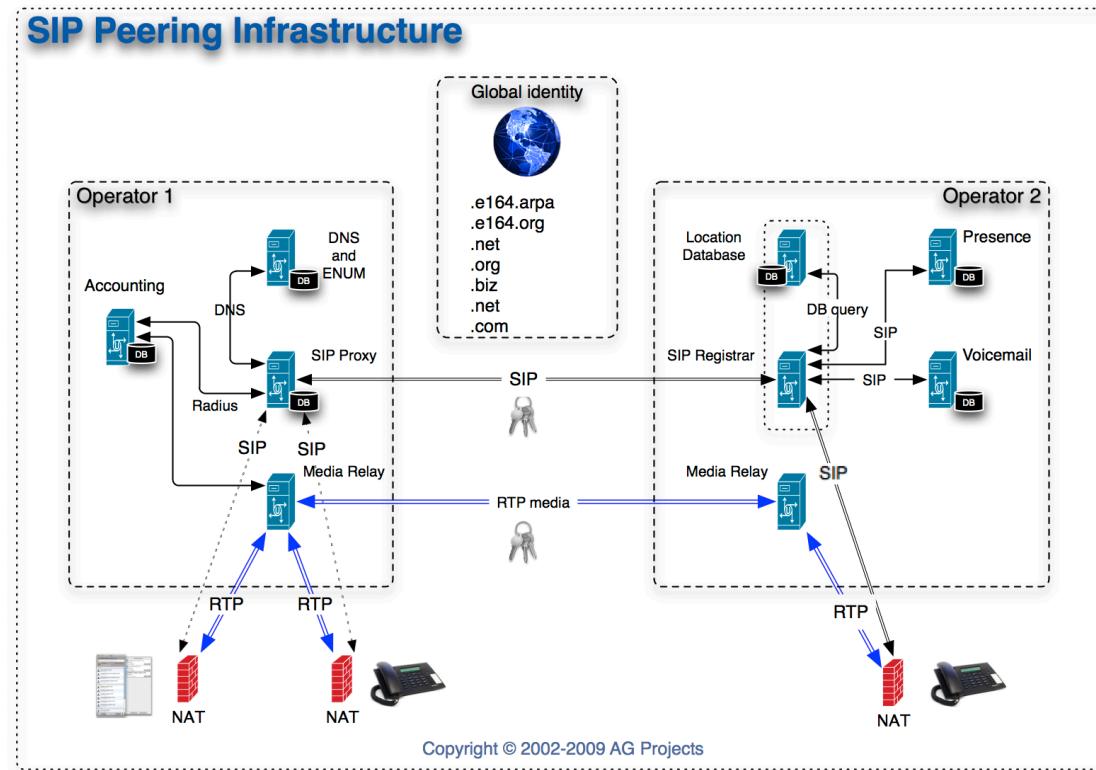
Dealing with end-to-end NAT traversal

Generating accounting records

Scalability and resilience are key

Exchanging Media

Open Source RTP relays full fill all requirements at minimum cost, for example MediaProxy can relay 2K calls on a 500\$ chassis



Addressing and Numbering

Locating remote servers must be done using DNS, any other method does not scale well and is not future proof. DNS can be distributed, shared or centralized according the Operator policy

ENUM, the most reliable and simple translation mechanism

Given an E.164 Number – what is the correspondent SIP address

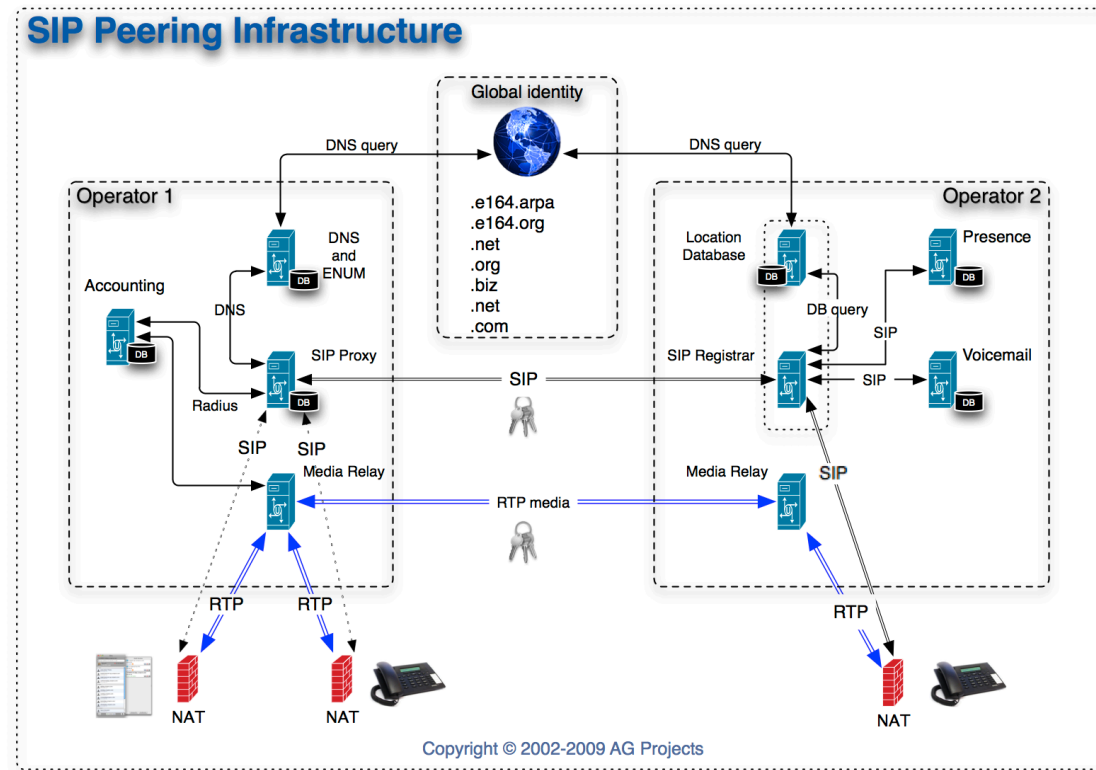
Fast Query/Response mechanism before actual call setup

Cost effective routing database, increasingly used for LNP

ENUM is distributed and scalable

Carrier ENUM

Open Source adopted Carrier ENUM from its early days while commercial vendors still struggle to add it to their product



Carrier ENUM

Carrier ENUM is the best methodology to locate a phone number on somebody's else SIP network

Knowing the phone number is not enough

Dialed Number, Request URI, Canonical URI, Next hop URI

Many more flows Outgoing, Incoming, Diverted, On-net, Off-net for trusted peers

Which ENUM TLD has been used for resolving the next hop

CDR mediation for sessions with no Media or no BYE

Accounting for SIP Peering traffic

Accounting is the most relevant part of the VoIP business, ask your vendor for their support on this matter before your deploy

OpenSIPS – SIP Proxy and B2BUA <http://opensips.org>

MediaProxy – RTP relay <http://mediaproxy-ng.org>

FreeRadius – Accounting <http://freeradius.org>

PowerDNS – Carrier ENUM <http://powerdns.com>

CDRTool – CDR Mediation <http://cdrtool.ag-projects.com>

Best of breed recommended software

The choice for open source SIP software is wide, results are consistent no matter what you chose because of their maturity

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