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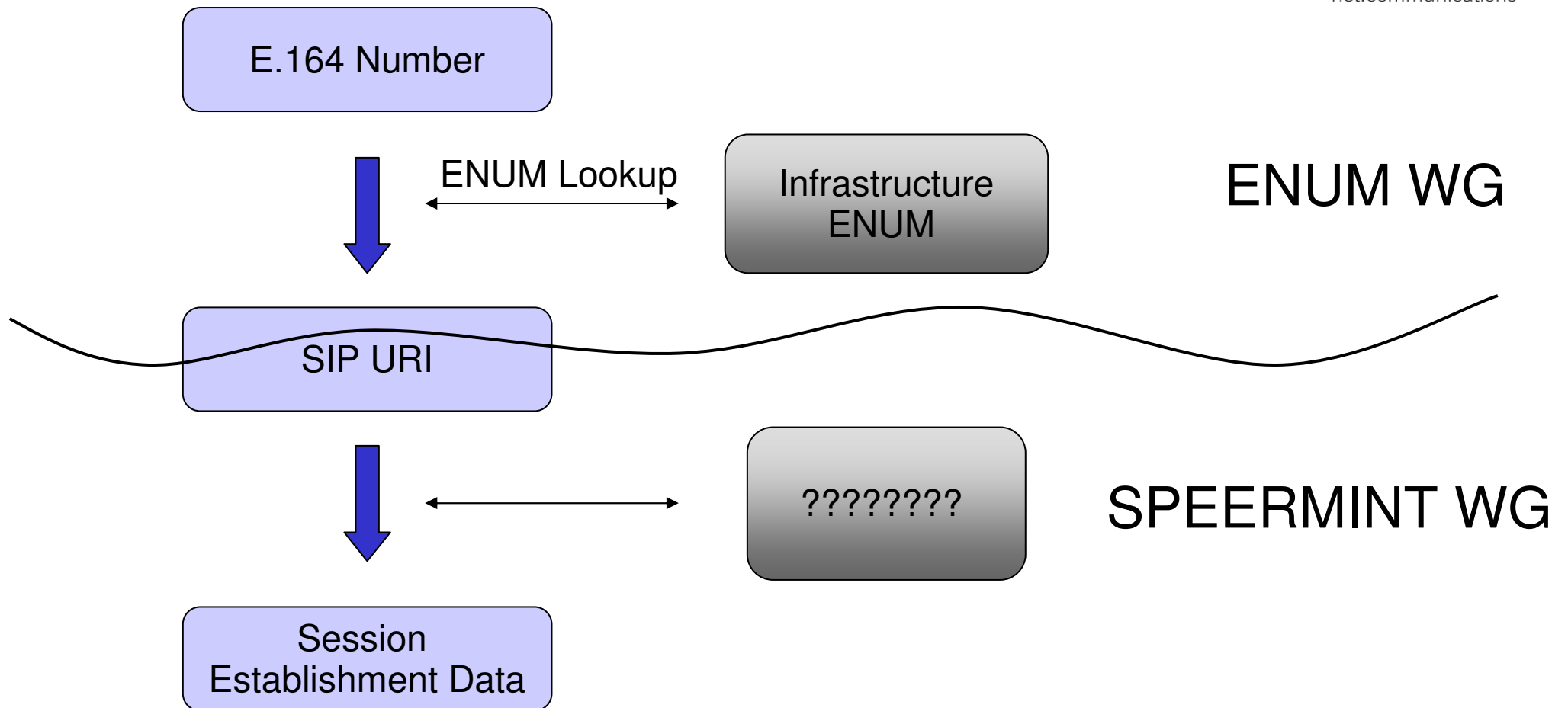
IETF ENUM / SPEERMINT status update

ENUM-Tag

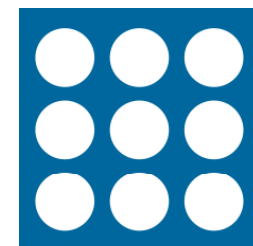
3. September 2007

Otmar Lendl <otmar.lendl@enum.at>

Division of Labor



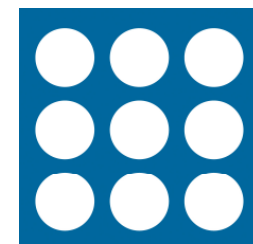
ENUM WG



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- User ENUM is basically done.
- RFC 3761bis
 - Minor updates and clarifications
 - paf & co tried to simplify NAPTRs, integrate U-ENUM / I-ENUM. Rejected due to open numbering plan issues, installed codebase.
 - New editor (Scott Bradner).
- enum-services registration.
 - New process to be designed
- Experiences / unused / Softswitch reqs.

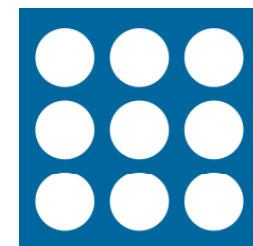
Infrastructure ENUM



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- Who has write permissions to the ENUM domain?
 - User -> User-ENUM (RFC3761)
 - Carrier / Operator -> Infrastructure-ENUM
- Requirements:
 - draft-ietf-enum-infrastructure-enum-reqs
- Long-term solution:
 - draft-ietf-enum-infrastructure
- Interim:
 - draft-ietf-enum-combined

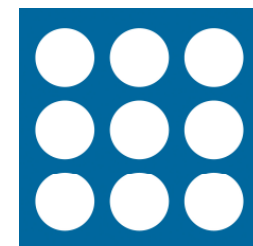
Status I-ENUM



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- IETF vs. ITU:
 - Bad memories from RFC3761 negotiations
 - Pushback against doing it again
- draft-ietf-enum-infrastructure
 - Very generic
 - No apex defined in there
- Still in WG, IESG soon
 - Punt to ITU

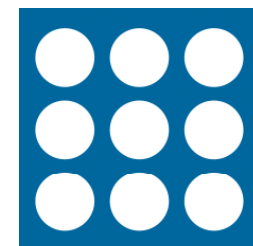
Interim Solution



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- IESG / ITU / ?RIPE? will take time to implement
- What to do in the meantime:
 - Leverage the e164.arpa infrastructure
 - Interoperable per-country opt-in
 - Branch at the Country-Code level
 - draft-ietf-enum-combined
- Examples:
 - 5.0.5.6.1.4.6.1.i.3.4.e164.arpa
 - 1.1.1.1.5.5.5.3.0.2.i.1.e164.arpa
 - ...i.3.5.3.e164.arpa
 - ...i.0.1.8.7.8.e.164.arpa
- Transition
 - i.3.4.e164.arpa. IN DNAME 3.4.<i-enum>.arpa.

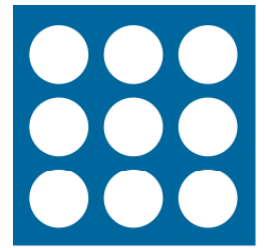
Why public I-ENUM?



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- Requirements:
 - Not country-specific
 - Read-access for all “carriers”
 - Entrance barrier is very low for SIP operators
- Thus:
 - All operators in all countries need access
 - Weakest link in the chain type security
 - Why bother?
- Don't make the information secret, restrict its usefulness.

SPEERMINT



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- Session Peering for Multimedia INTerconnect
 - Active since spring 2006

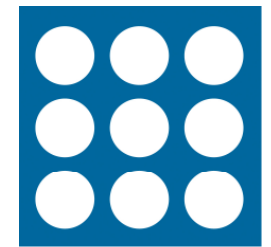
[...]

SPEERMINT focuses architectures to identify, signal, and route delay-sensitive (real-time) communication sessions. These sessions use the SIP signaling protocol to enable peering between two or more administrative domains over IP networks. Where these domains peer, or meet, the establishment of trust, security, and a resistance to abuse and attack are all important considerations.

[...]

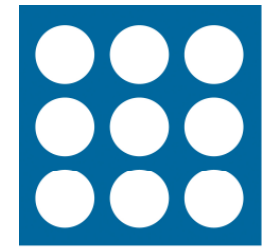
- Drivers?

IETF 69 – speermint documents

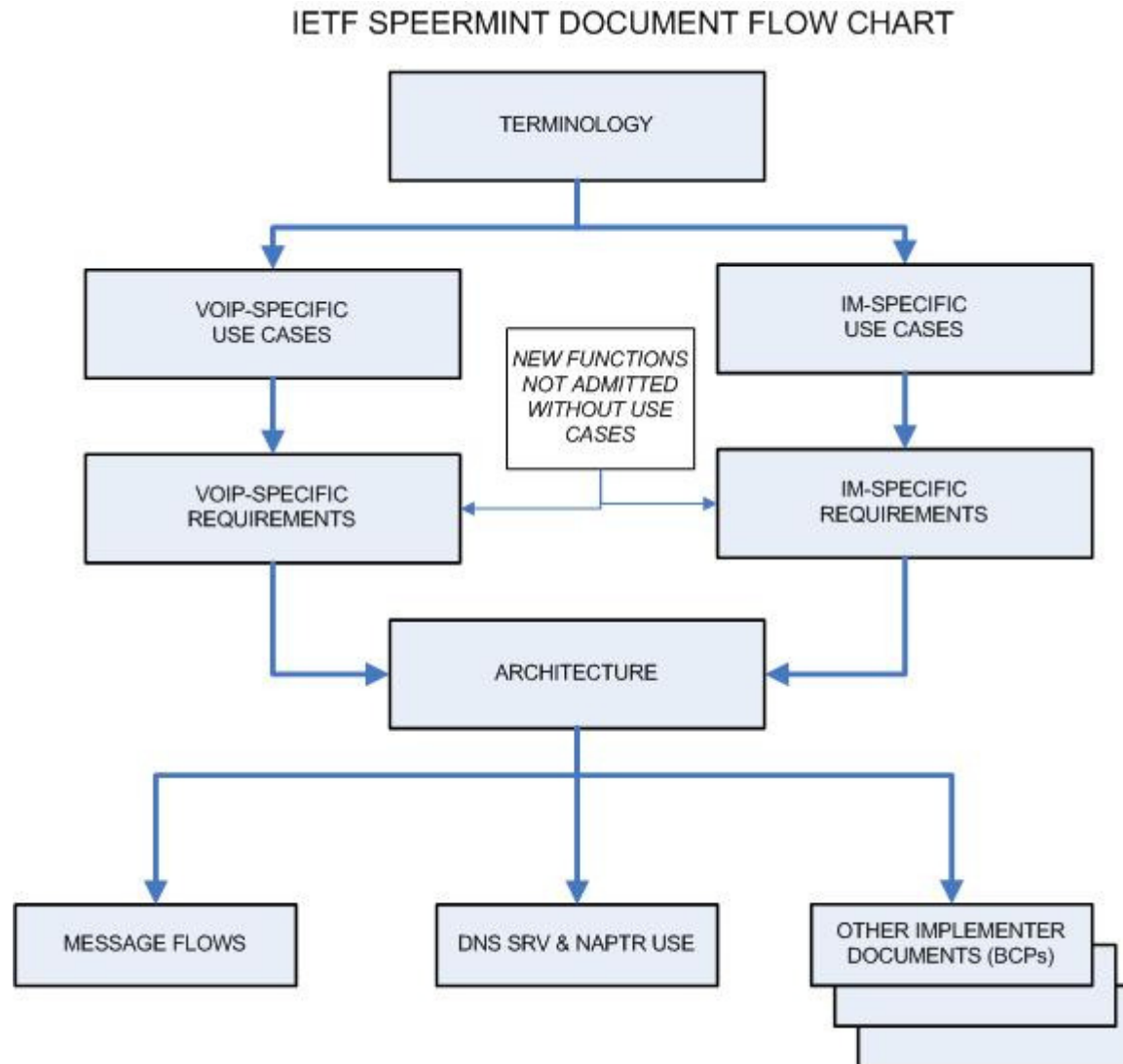


#	Date	Item	Status
1	Apr 2007	Submit SPEERMINT terminology I-D (Informational)	4 months behind; new lead editor
2	Aug 2007	Submit SPEERMINT IM-specific use cases I-D (Informational)	WGLC complete
3	Aug 2007	Submit SPEERMINT VoIP-specific use cases I-D (Informational)	In final phase of doc tweaks – WGLC soon
4	Jan 2008	Submit SPEERMINT architecture I-D (Informational)	On-track
5	Feb 2008	Submit SPEERMINT minimum requirements for SIP-based VoIP interconnection. (BCP)	On-track
6	Feb 2008	Submit SPEERMINT DNS SRV and NAPTR use I- D (BCP)	On-track
7	Feb 2008	Submit SPEERMINT message flows I-D (Informational)	On-track

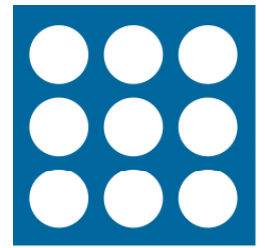
Flow chart



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The good

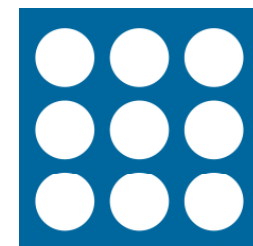


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- The IETF noticed that there is work to do regarding inter-provider SIP

- IM Use cases are a step forward
 - Scaling issues with current protocols
 - Esp. with cross-provider buddy-lists

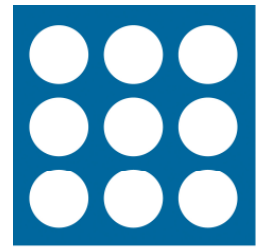
The bad



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- Use-cases for VoIP:
 - Status Quo?
 - Visions?
- Requirements
 - Requirements on operators vs. requirements on a speermint solution
- Vague Ideas
 - “Federation”
 - “Policy”

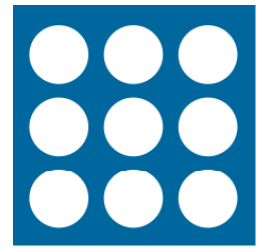
The Ugly



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- Do we know what we want?
- Gap analysis is missing.
- Varying expectations:
 - Netheads vs. Bellheads
 - end-to-end vs. transit
 - carriers vs. enterprises
- Architecture done in Q1 2008
 - WTF?

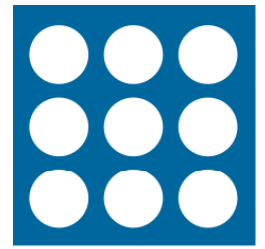
Prospects



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- Some hope that the terminology – use-cases – requirements – architecture process works.
- I have this nagging feeling that this group does not know what it needs to do.
- So let's move a step back and let me unpack my crystal ball:
 - Disclaimer applies.

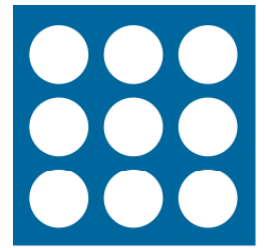
Speermint Goals



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- No call originating on IP and terminating on IP should have to traverse the PSTN.

Status Quo



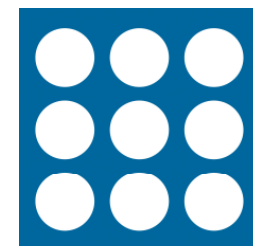
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- No technical hurdles for universal VoIP Interconnection
 - RFC 3261 / 3263 exist
 - SIP has failed here
 - # of phones using SIP
 - # of phones reachable via SIP (from other SPs)
- VoIP Islands
 - The open Internet is not a friendly place
 - Operators want to keep control on who they talk to
- Lots of interconnection is happening
 - Private arrangements
 - Commercial Peering Services

What went wrong?

- RFC 3263 SIP implies the email model
 - Destination needs to accept calls from anybody to get worldwide reachability.
 - Pre-arranged peerings are optional.
 - No termination fees
 - Fear of SPIT
 - No QoS guarantees
 - DoS protection
 - Caller-ID regulations
 - Legal requirement
- Carriers don't **want** to talk to everybody!
- If not the email model, then what?

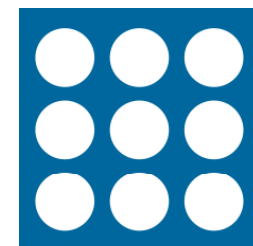
Observations



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- VoIP Interconnect differs from SS7 or BGP
- Not only point to point links
 - That changes the provisioning
- Could be zero settlement
 - That changes the provisioning even more
 - On-demand peering possible
- Information flows are not bound to peering relationships
 - Lookup functions can be independent

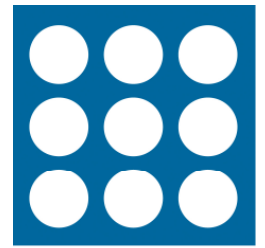
Let's be realistic



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- Nothing speermint can do will cause universal peering:
 - RFC3261/3263 would be enough
 - There is no solution to SPIT if you assume that anybody can connect to anybody
 - This is business and not techie territory
 - For now, the PSTN provides reachability
- So let's just aim for making peering as easy and flexible, and thus as widespread as possible.

Transit

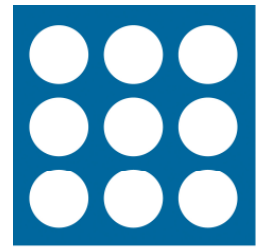


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- Not every pair of SPs will talk to each other
- We need worldwide reachability (just relying on the PSTN won't cut it in the long term)
- Trying to convince SPs to open their ingress elements to the world is a fool's hope.

- We need transit

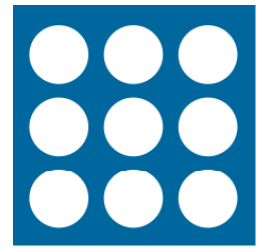
Routing



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- Corollary:
- The moment we accept transit as necessary, we have a text-book routing problem.
 - Find a way
 - Find the best way
 - Potentially even more dynamic than BGP
- RFC3263 won't cut it any more.

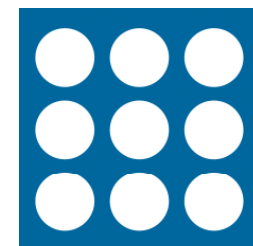
Route on what?



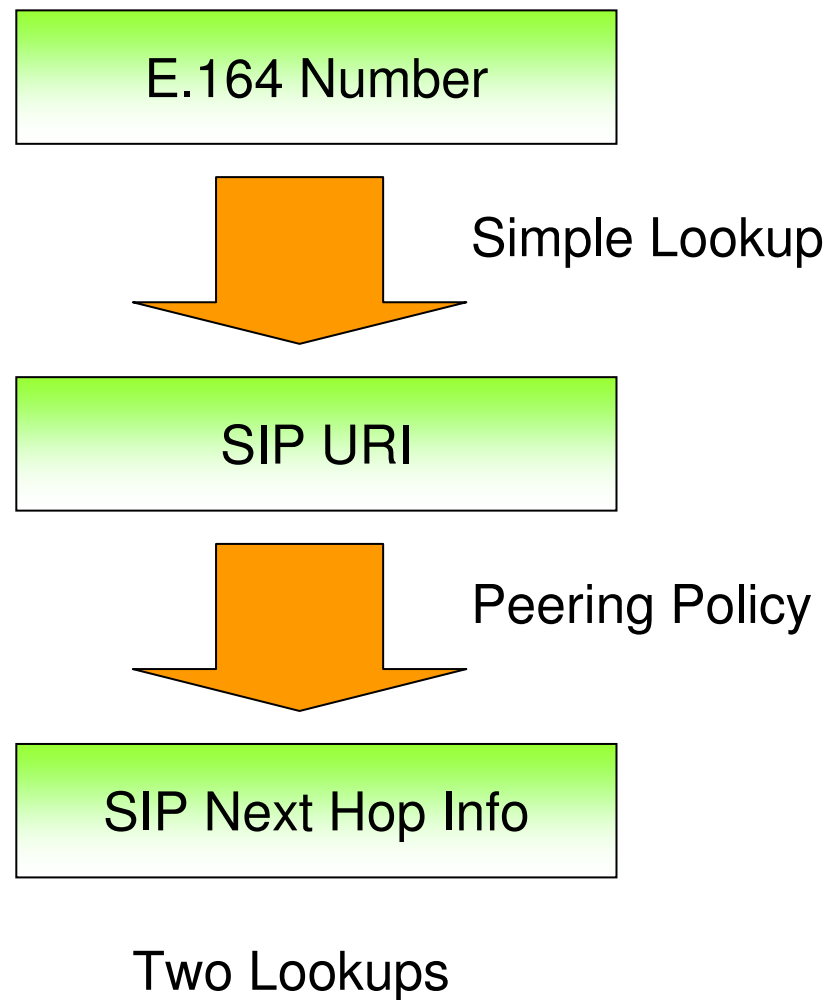
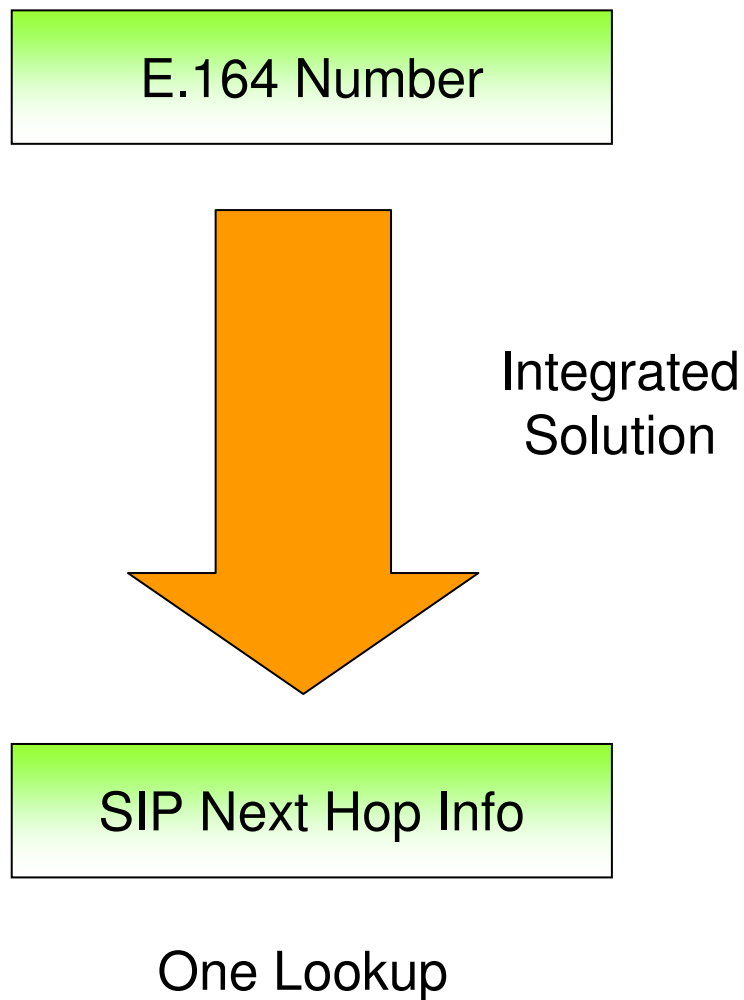
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- Telephone numbers?
 - Aggregation properties are getting worse every day.
 - Routing table size is *huge*
 - Been tried (TRIP)
 - How to cope with non-E.164 numbers?
- Domains (from SIP URIs)?
 - No aggregation
 - # of domains?
- Something else?

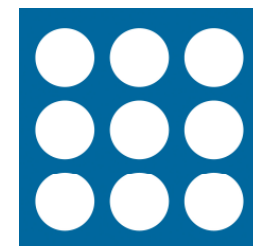
Current schemes



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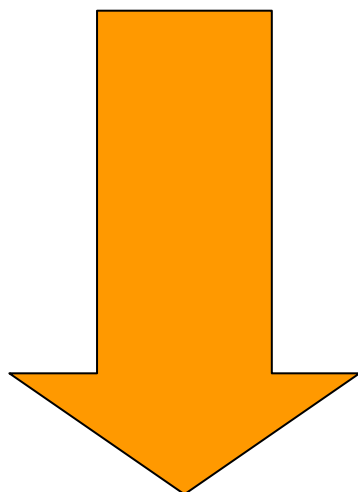


What about layering?



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E.164 Number

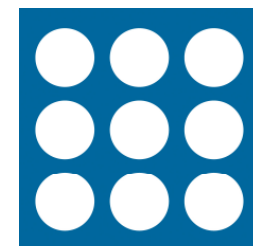


Integrated
Solution

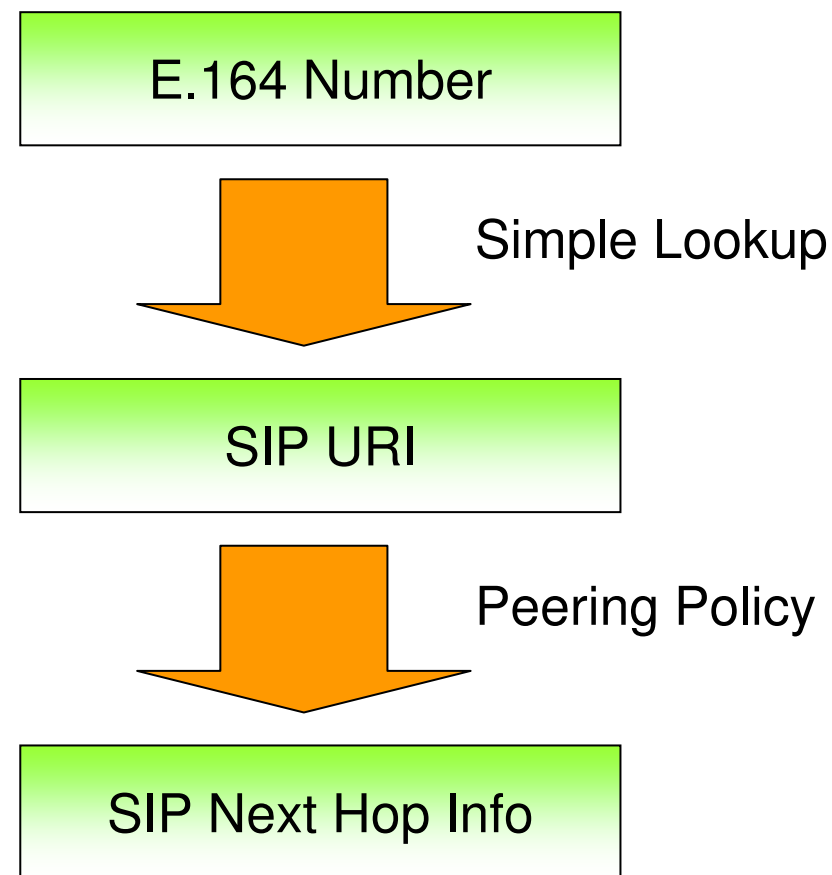
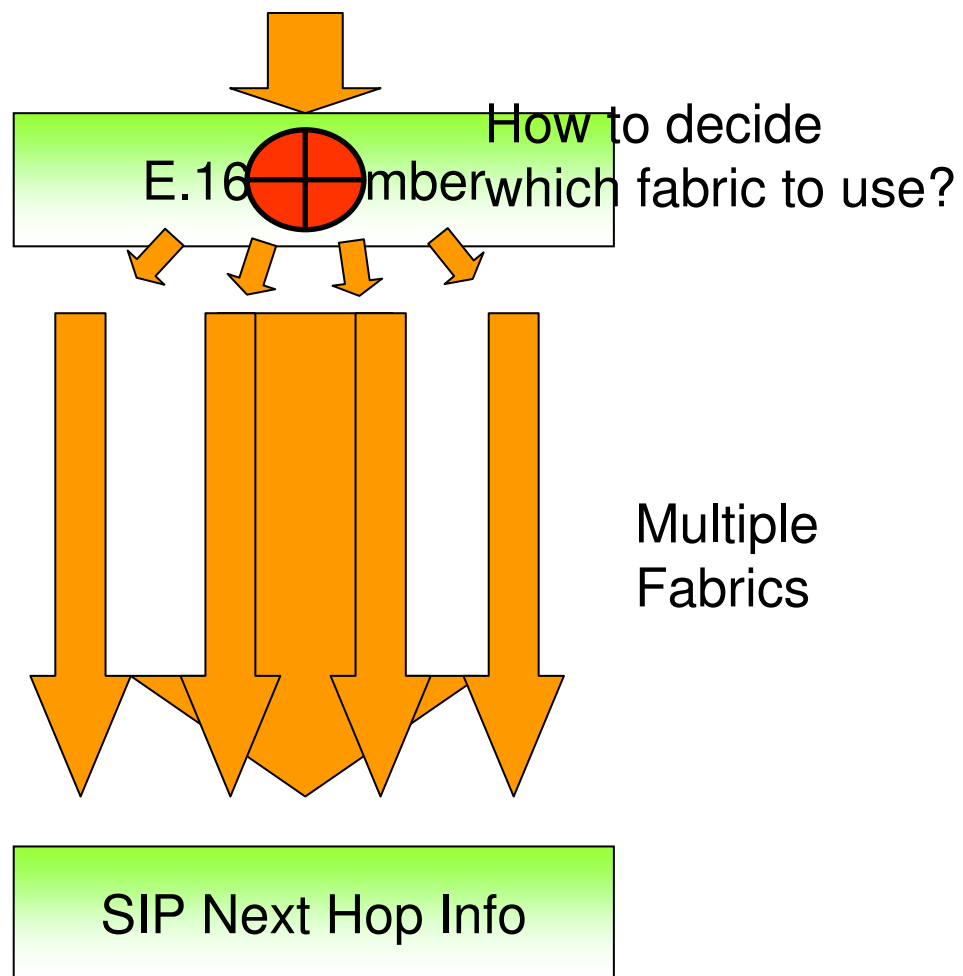
SIP Next Hop Info

- speermint is not about E.164 numbers.
- URI dialing is not possible.
- Mix of enum and speermint work.
- Is that really simpler?

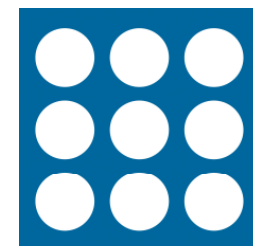
Scaling



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Proposed Overall Architecture

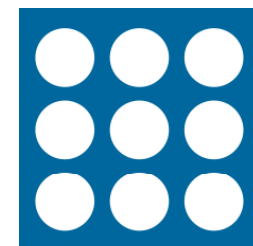


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- I-ENUM:
 - Mapping of E.164 number to SIP AoR
 - This URI is not necessarily resolvable using RFC 3263 and reachable via the public Internet

- Speermint:
 - Resolve this AoR to a SIP-layer next hop
 - SIP profile for Caller-ID, ...

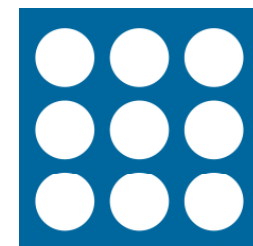
Three steps (David Schwartz)



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- Three (logical) steps:
 - Lookup step
 - Map number to who owns the number
 - Policy step
 - Can I directly peer?
 - Do I need to go via transit SP?
 - Not reachable?
 - Location function
 - How do I determine the IP-address/port/TLS-setting of my next hop?

Summary



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- I-ENUM is on track
 - Interim solution is ready to deploy
- Speermint is a train-wreck right now
- There is a real word problem it needs to solve
- For that, some of the IETF mantras need to be re-thought
- Alternatives to the email-model and the PSTN model

- Have a look at:
 - `draft-lendl-speermint-background`
 - `draft-lendl-domain-policy-ddds`
 - `draft-lendl-speermint-federations`
 - `draft-lendl-speermint-technical-policy`