



Resilient Kamailio Multi-node Infrastructure for Carrier Services

Kamailio World Conference (Berlin - May 9th)

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www.nexVortex.com

Who is nexVortex?



An *Uncommon* Cloud Communications
Service Provider



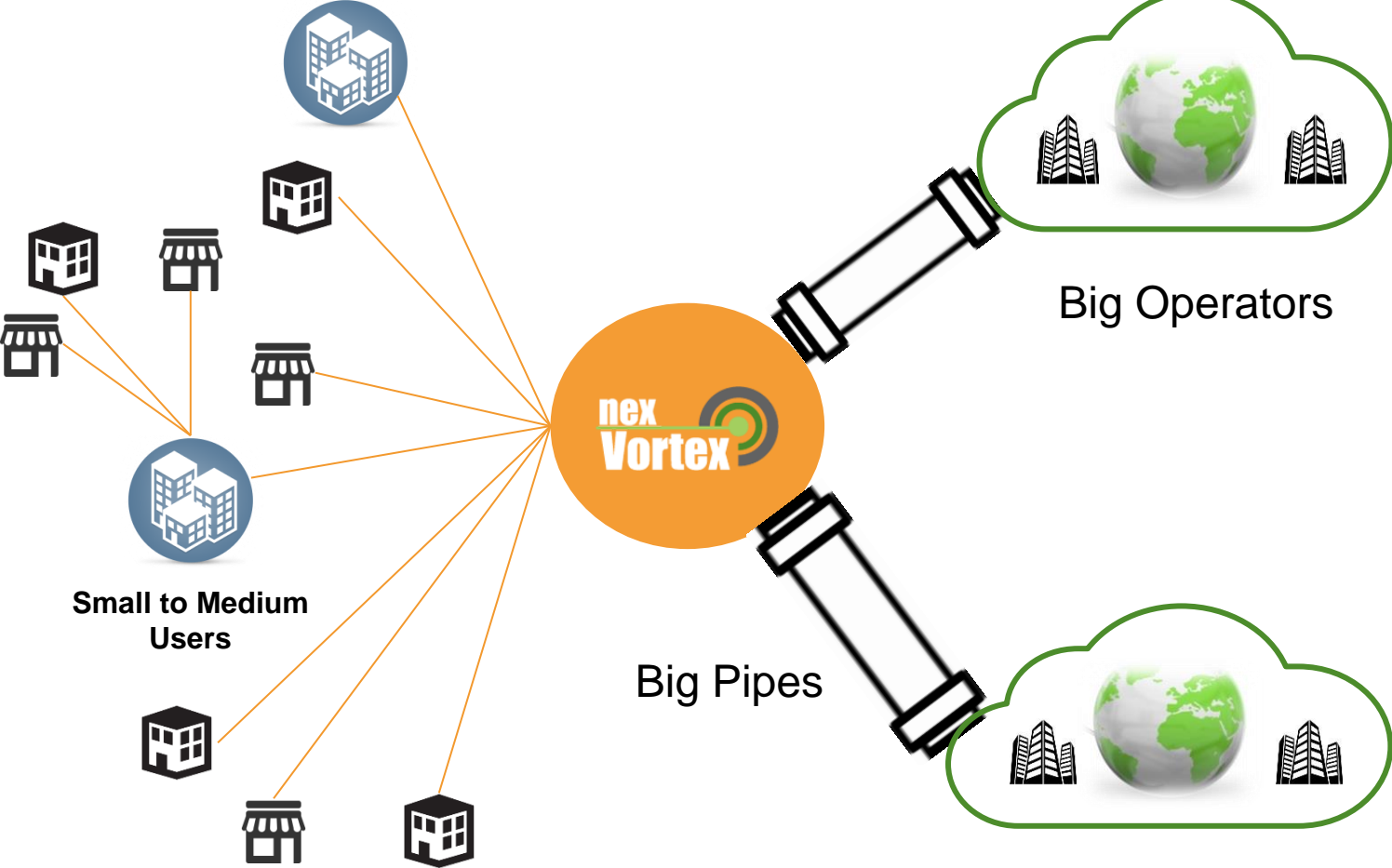
SIP
Trunking

Hosted Contact
Centers

Hosted
PBX

Customized
Solutions

What Does nexVortex Do?



Why nexVortex?



Users Want:

- Troubleshooting
- Number porting
- Demystifying VoIP



Big Operators:

- Mass channels
- Cookie cutter
- Troubleshooting minimized



nexVortex:

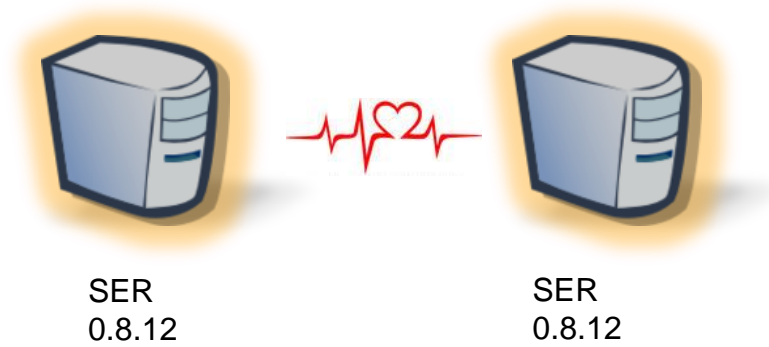
- Uncommon service
- Solutions approach
- Happy to help!

Brief History

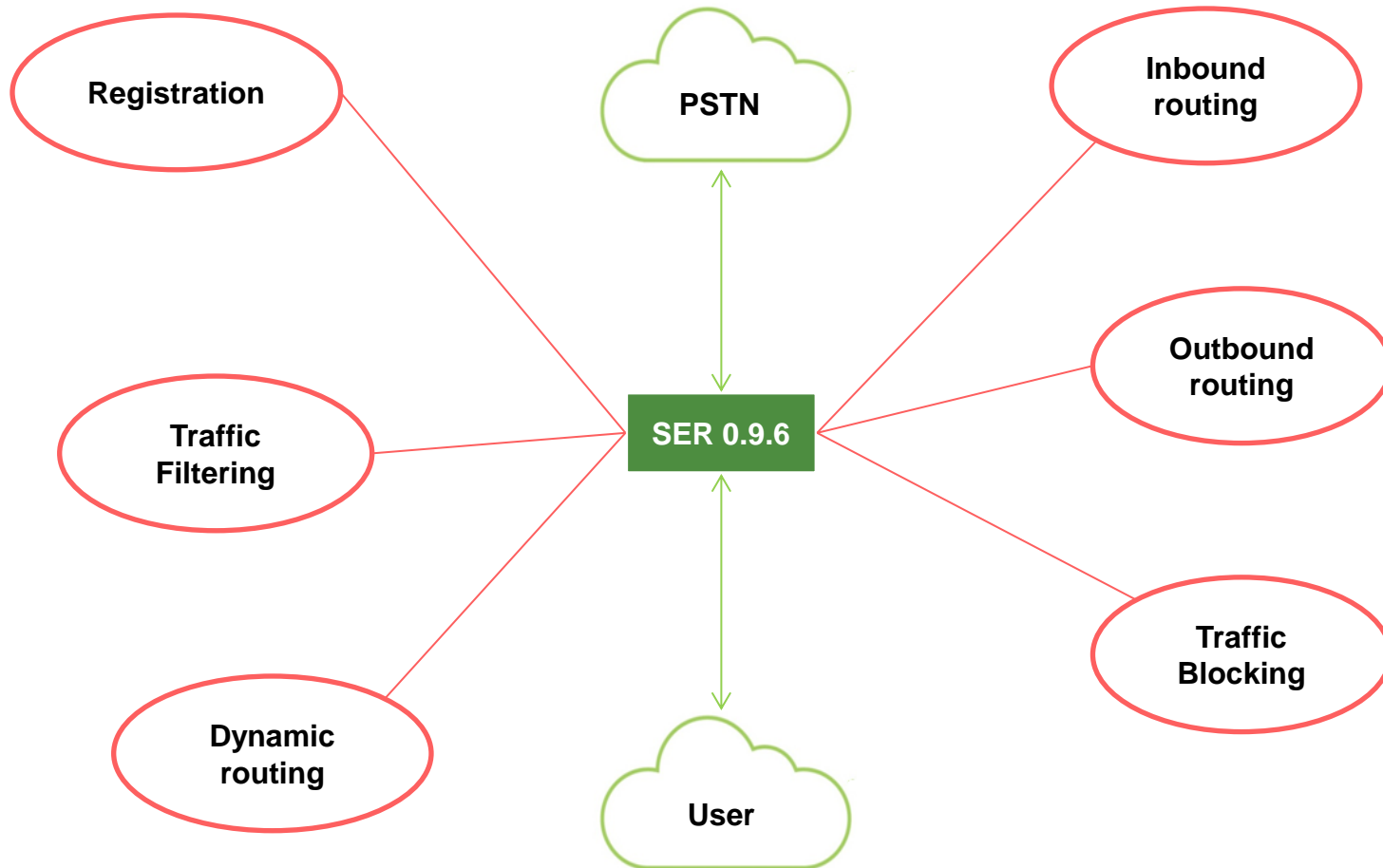


SER
0.8.12

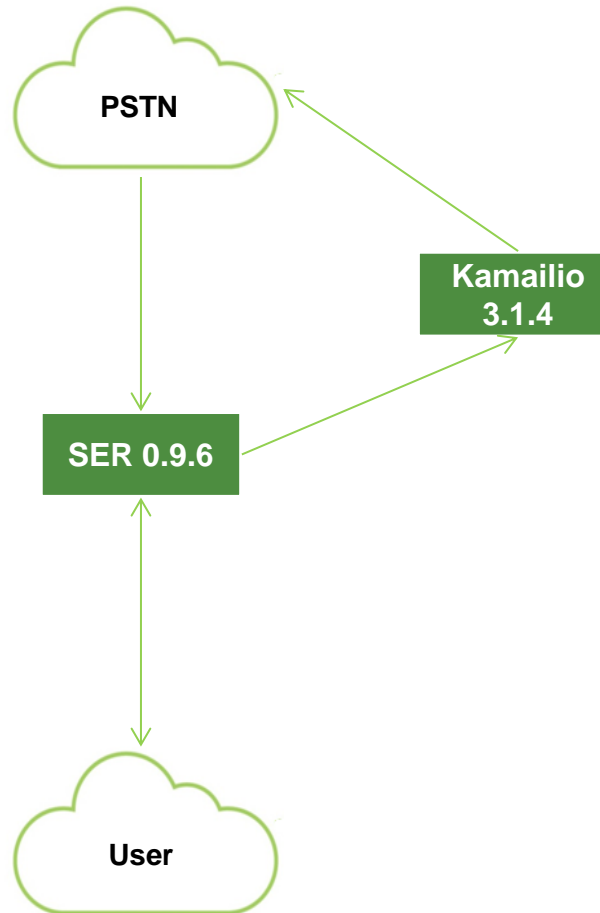
Brief History



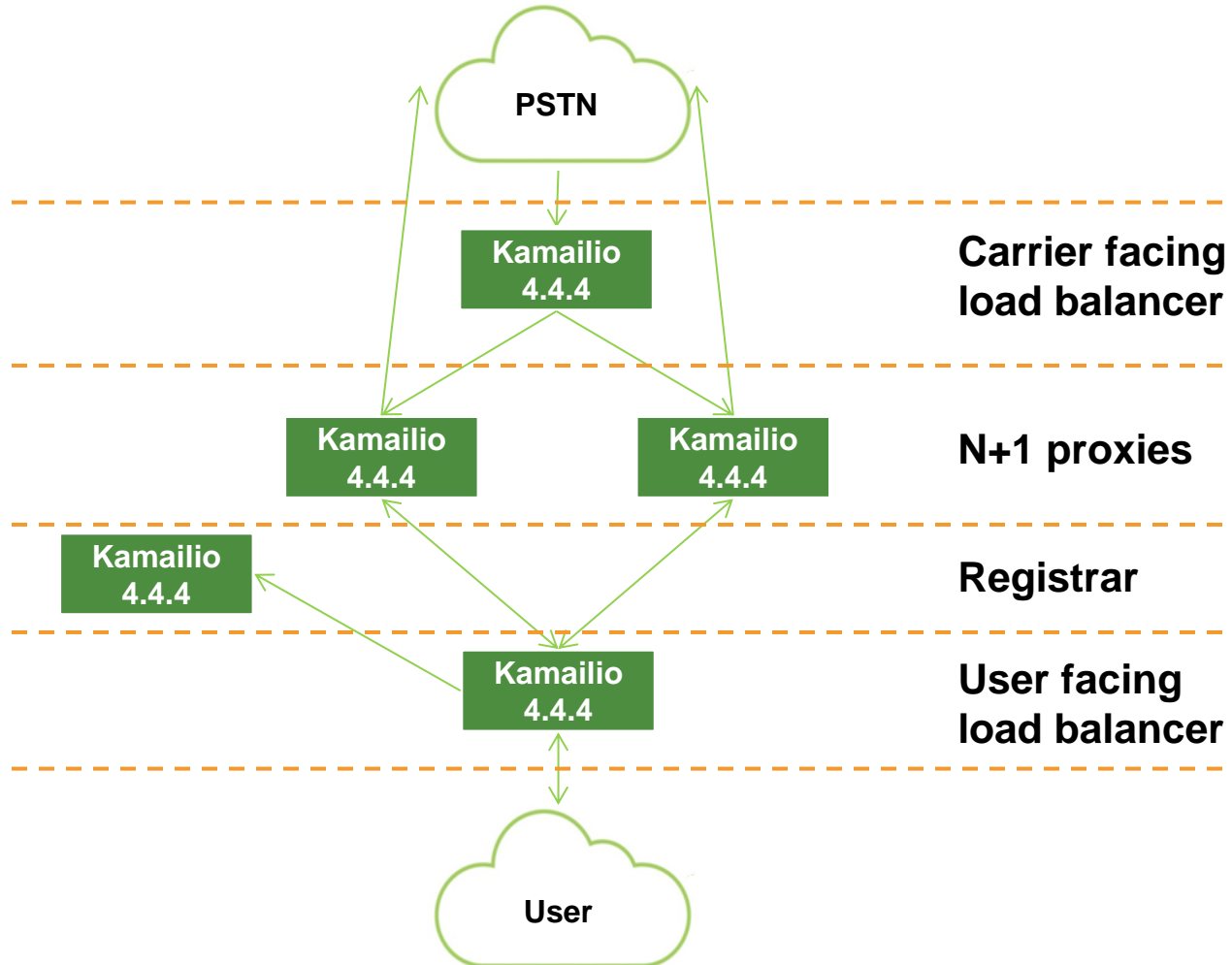
Brief History



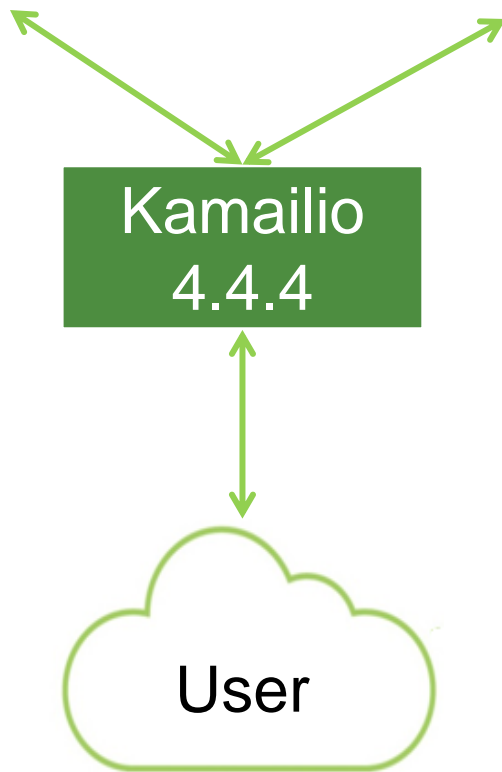
Brief History



Segregation of Responsibilities

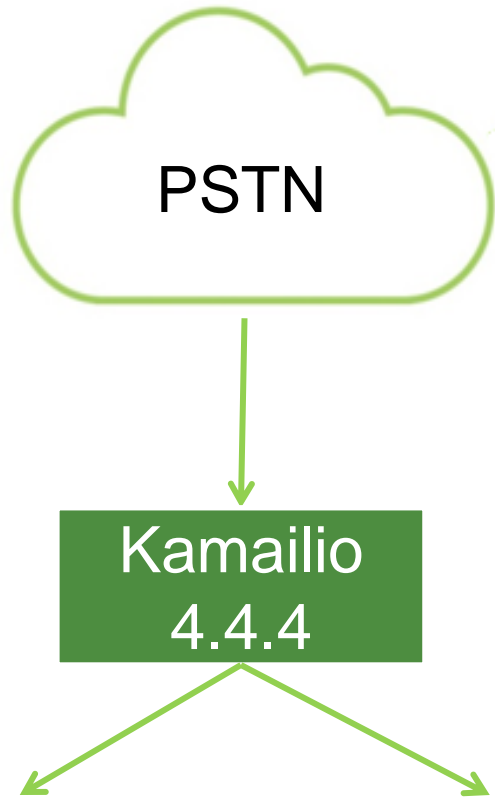


User Facing Load Balancer



- User landing point
- Delivers traffic between multiple proxies based on load and method
- SIP bursts detection/blockage
- User transport protocol selection (TCP/UDP)
- Verifies the RURI format

Carrier Facing Load Balancer



- Carrier landing point
- Number status verification
- SIP bursts detection/blockage
- Load balance towards proxies

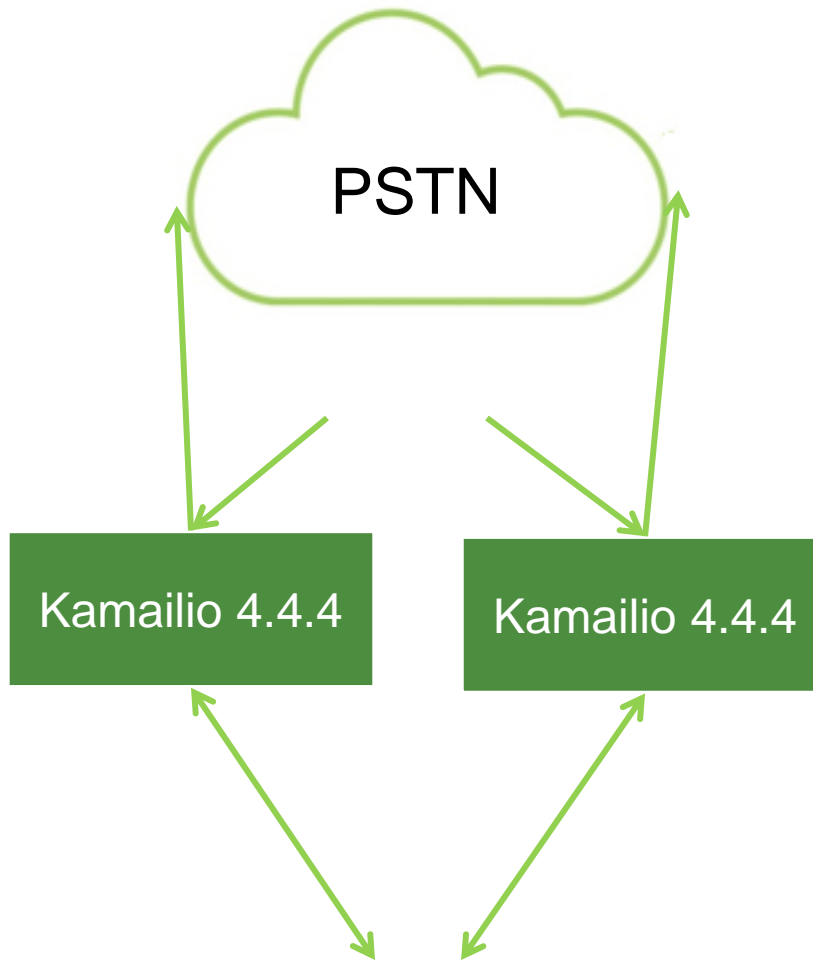
Registrar

Kamailio
4.4.4



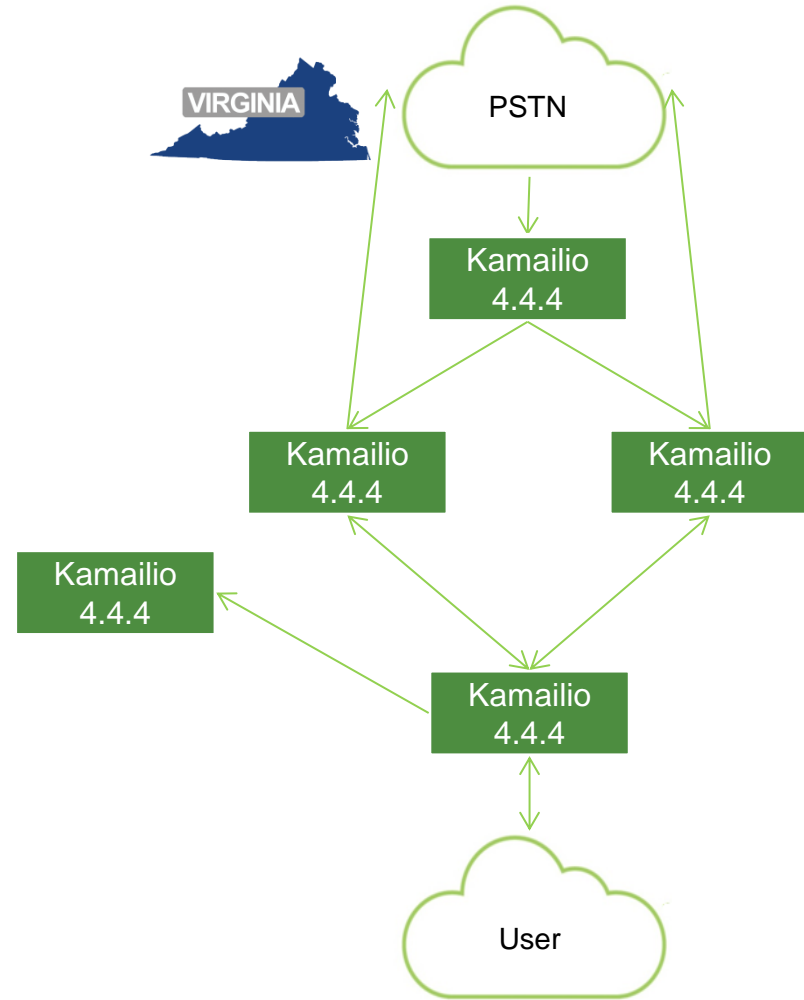
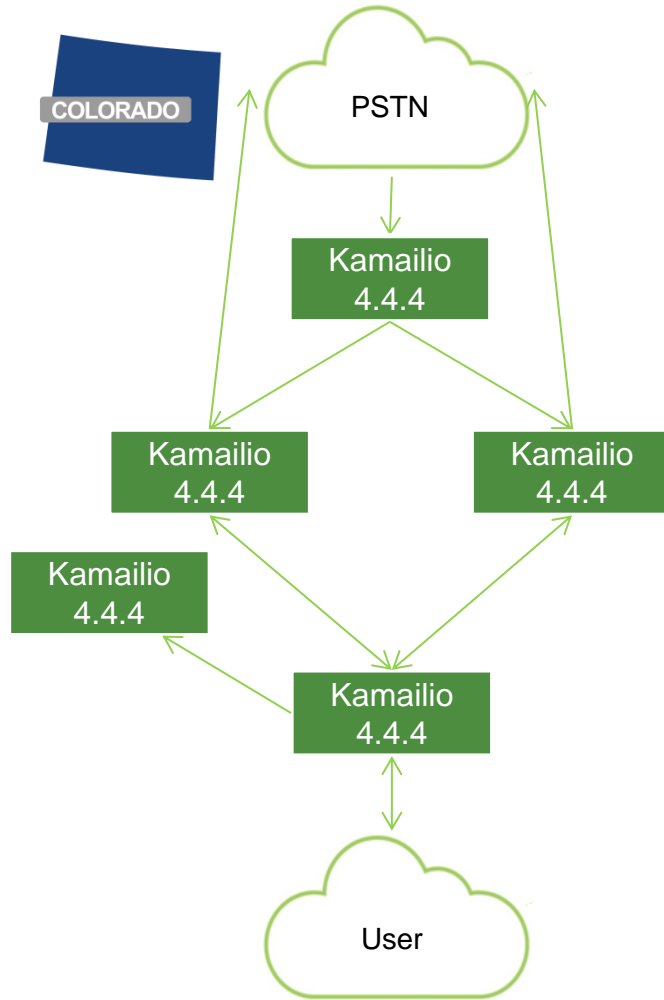
- User authentication system
- Records and manages users' location
- Replicates to other authentication entities.

N+1 proxies

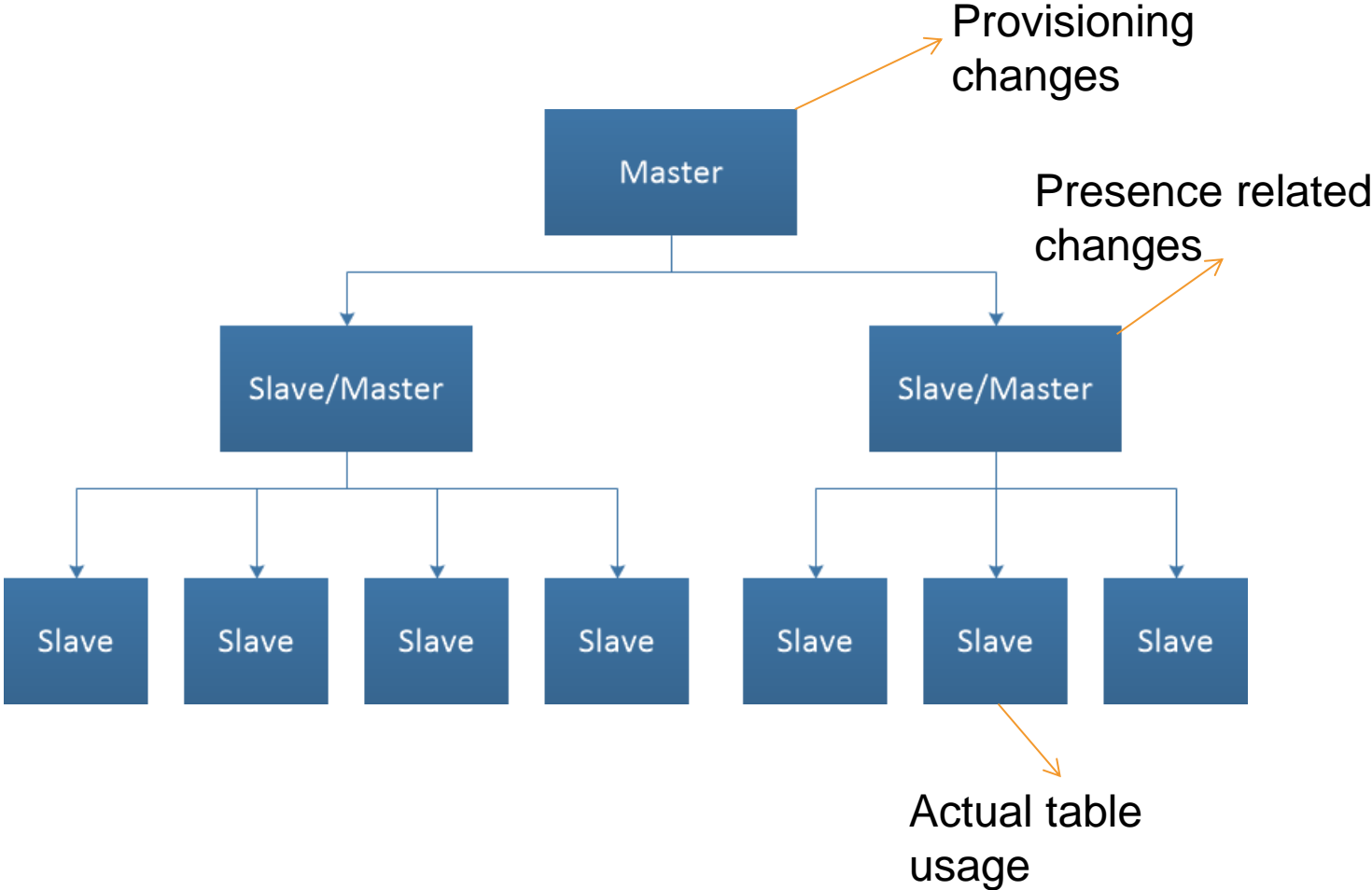


- User authentication and authorization
- Routes towards the PSTN (outbound)
- Fraud detection/blockage
- E911 headers preparation
- Prepares RURI for the user (inbound)
- Handles user to user traffic
- Alternate routing based on error codes

Geographic redundancy




Database Infrastructure Overview



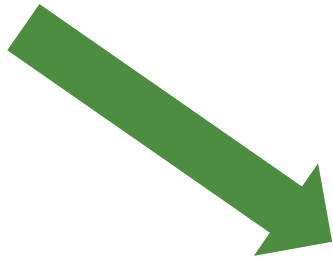
Provisioning

Platform		Configuration	Monitoring
Bare Metal	Container		
VMWare ESXI	Git Repository	Git Repository	PRTG
Ansible Playbooks	Ansible Playbooks	Ansible Playbooks Home brewed scripts	Specialized Scripts

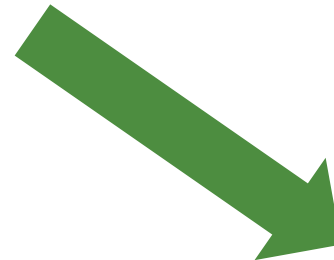


Coordinated Reloading

Master Database
Entry



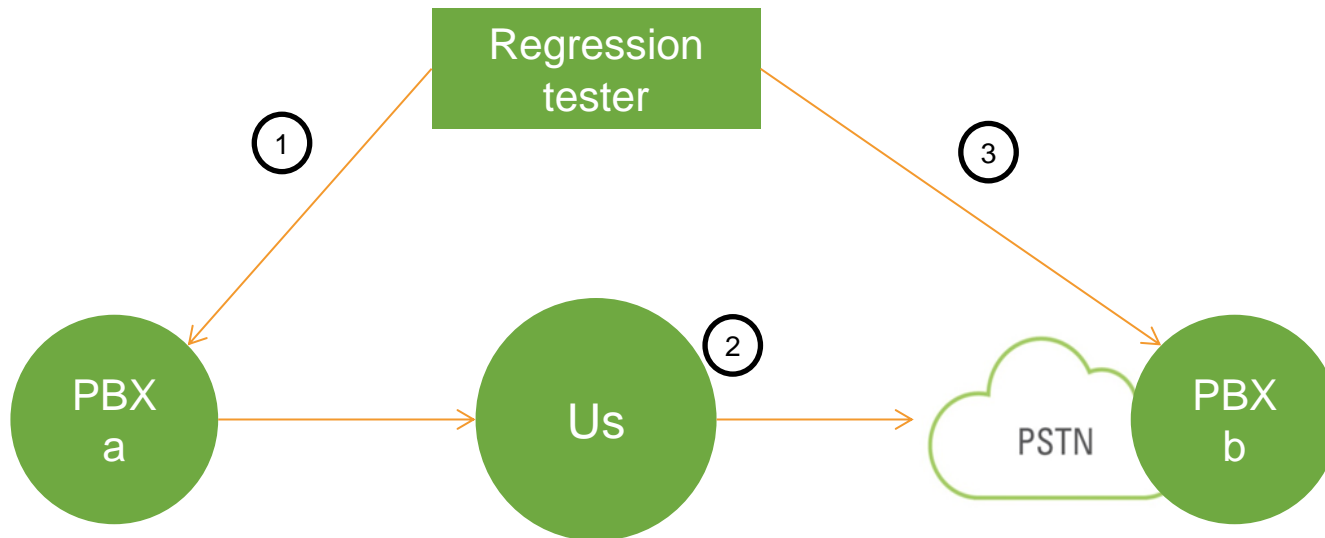
Ansible playbook push



Across-the-board module reloading

Regression Testing

- Run multiple scenarios
- Coordinate various nodes



E911

Our responsibility: make sure an E911 call is delivered containing a PAI header with a valid 11 digit US registered number; a registered number is directly associated to a physical address.

Based on the ***module AVPops***, a relationship between what the user presents and a valid PAI header towards emergency centers is created.

The following values are verified (ordered by hierarchy):

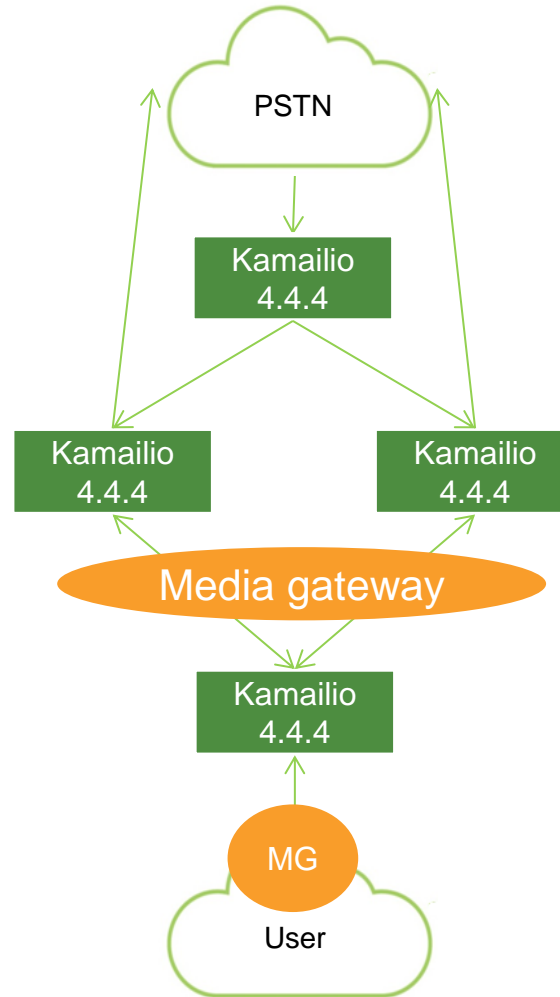
- PAI header
- PPI header
- FROM header
- Source IP address
- Credentials

Disaster Recovery & Forwarding

Disaster recovery: when a user is unreachable or delivers a specific error message, a second attempt (another location or a PSTN number) is made. Heavily dependent on the *alias module*.

Forwarding: Strange phenomenon – it was not designed! It born after forcing calls into disaster recovery.

Media Gateways



QoS rating - Erlang

Each media gateway is an Erlang node

The rating score is calculated independently on a per call basis

Calculation is done using a proprietary algorithm

Summary

Our infrastructure as a Kamailio study case

Start contributing back to the community - glad to share!

Please feel free to send: questions, comments, thoughts to our distro **kamailio[at]nexvortex[dot]com**



Thank - You

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