



jibe

The Global Communications Cloud

Jibe Hub

RCS Exchange for Mobile Operators

Anil Sharma

Director, Engineering @ Jibe Mobile

anil@jibemobile.com

- Jibe – Introductions – Who we are
- RCS
 - What is RCS
 - Interconnect - A reason for Hub – not new
- Jibe - RCS Hub
 - Jibe Hub – Solving the interconnection explosion
 - Jibe Hub – Hub Provider’s Value Proposition
 - Scaling to meet the needs
- Jibe Hub Architecture
 - Design Principles
 - Jibe Hub a few key components

Bringing carriers together to deliver the next generation of IP messaging services

- Founded in 2006, with a global presence. Offices in Mountain View, London, Dusseldorf.
- RCS specification pioneer, we were instrumental in evolving the RCS specification.
- Delivering the next generation of messaging services and cloud based infrastructure to the telecommunications market.
- Rapidly connecting carriers to deliver the new consumer experience beyond voice & SMS - video calling, group chat, and sharing (files, video, photos and location).
- www.jibemobile.com



- Rich Communication Services over IP/IMS
 - IM, Group Chat, Image Share, Location Share, Voice, Video Chat, Presence
- RCS is MNO driven
 - Provider: MNO is the RCS provider
 - Not just Data Pipes to OTT providers (Skype, WhatsApp, Viber...)
 - Foundation: Based on IMS (IP Multimedia Subsystem)
 - Standards: GSMA Standards based
 - Move on from SMS & MMS to RCS
 - Allows multiple independent equipment players
 - Interoperability : a key to success
 - My MNO and my friend's MNO can be different
 - And I should be able to talk to Skype & WhatsApp friends too
 - RCS NNI standards by GSMA supports these interoperability needs





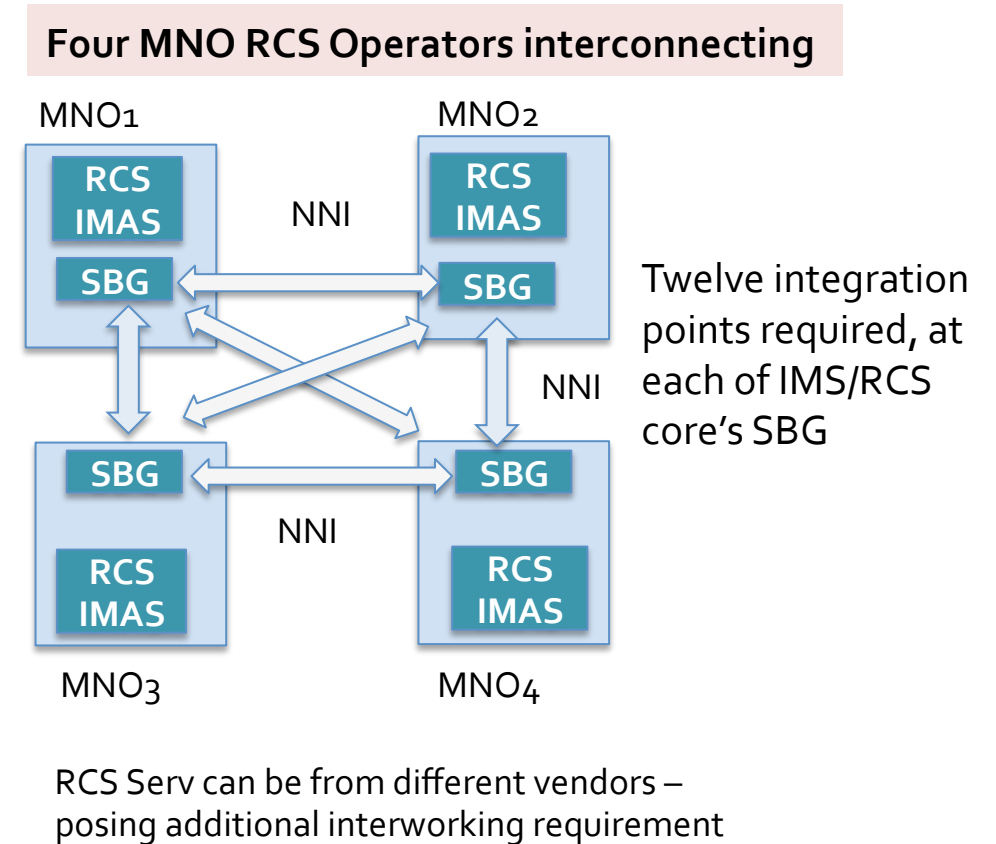
Evolution in the GSMA “Data Services”

- Early SMSC deployments required, each MNO to establish SMS interconnectivity with all other MNOs
 - This required agreements between international Operators
- SMS Hub as a path changing solution by GSMA in 2006
 - It became a central location for SMSC interconnectivity – Managed by **Hub Providers**
- Hub Providers would provision it as a framework “outside” the operators
 - SMS routing is provided as a managed service to Operators (normally with a per SMS fee to the operator)
 - Reduces complexity for Operators, allowing global and roaming reach.
 - Support Least Cost Routing and Store and Forward - Allows Operators to focus on core

In many ways this is comparable to the handling of RCS Services

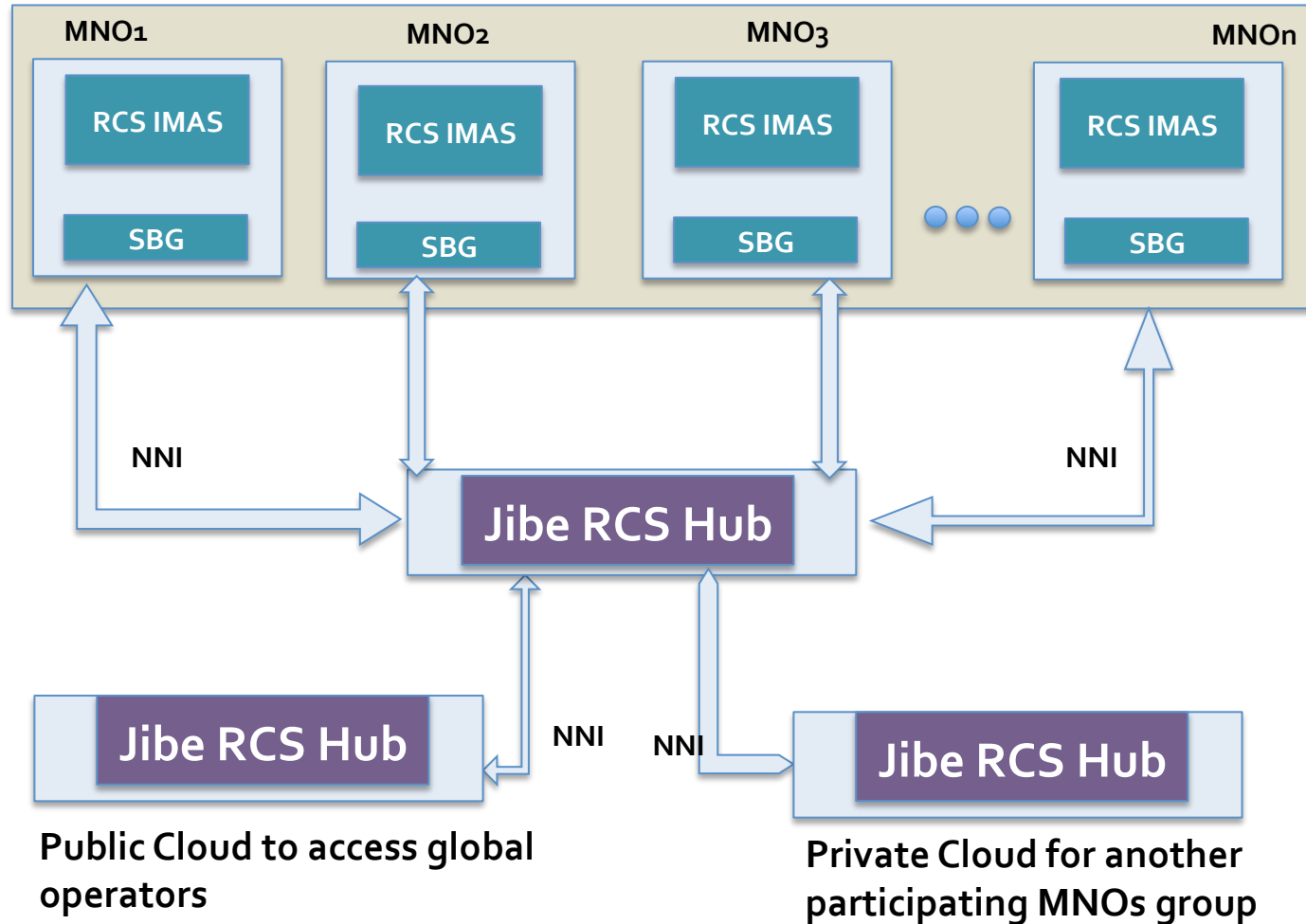
RCS launches – Inter Connection Issues

- With 81 Operators committed to launch RCS by 2015 (source: GSMA)
 - Each NNI needs to be agreed by each Operator
 - **This will require 6400 interfaces to be configured. Managed and maintained – See Picture**
- Interconnectivity has been agreed between individual Operators separately.
- Agreements are generally country wide (e.g. Spain, Germany, South Korea, France)
- **Clearly this is a short term solution, not scalable**



For a long term solution, RCS Hubs, as proposed by the GSMA are essential.

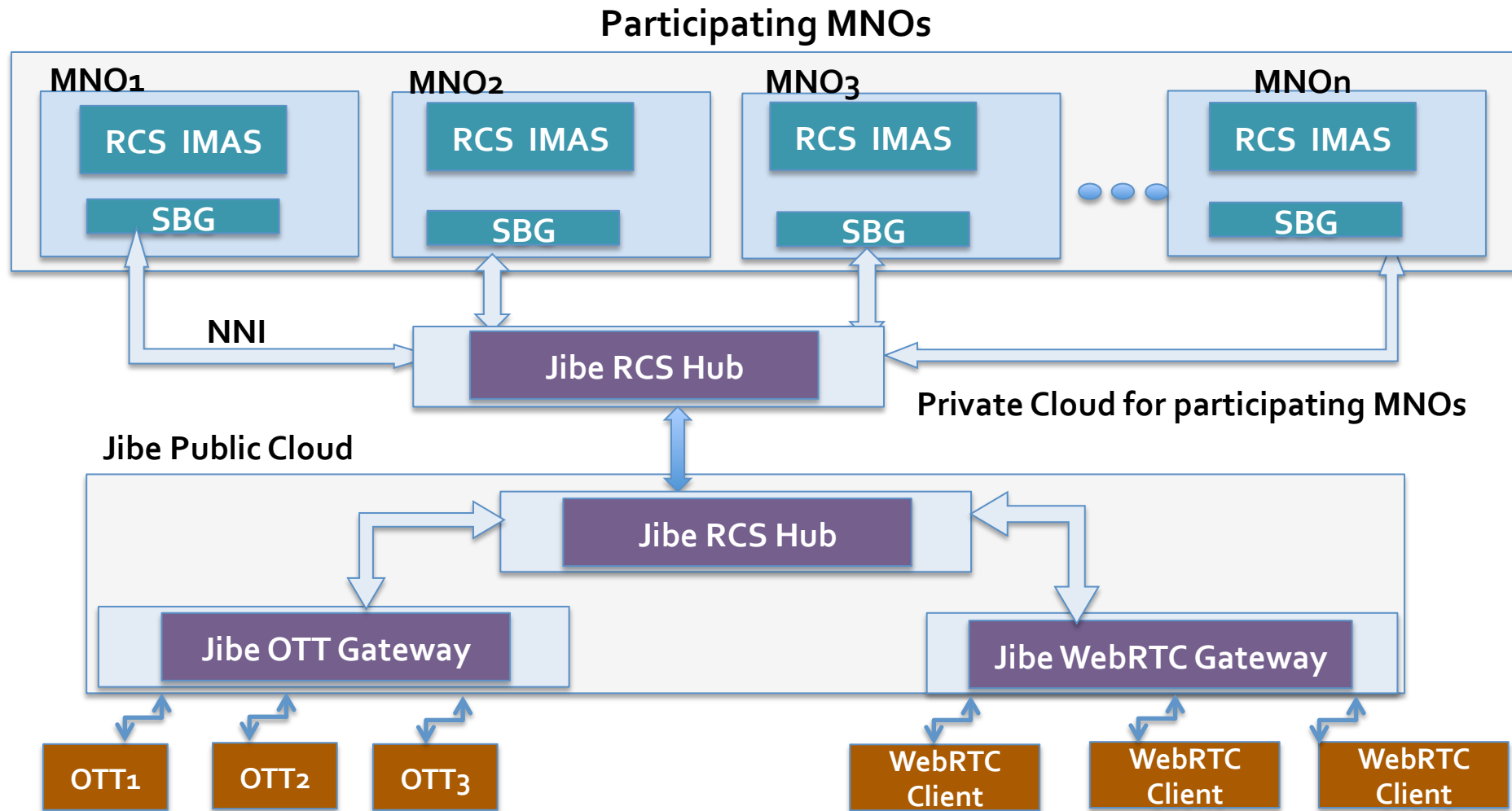
Jibe RCS Hub – Solving the interconnection explosion



Value Proposition

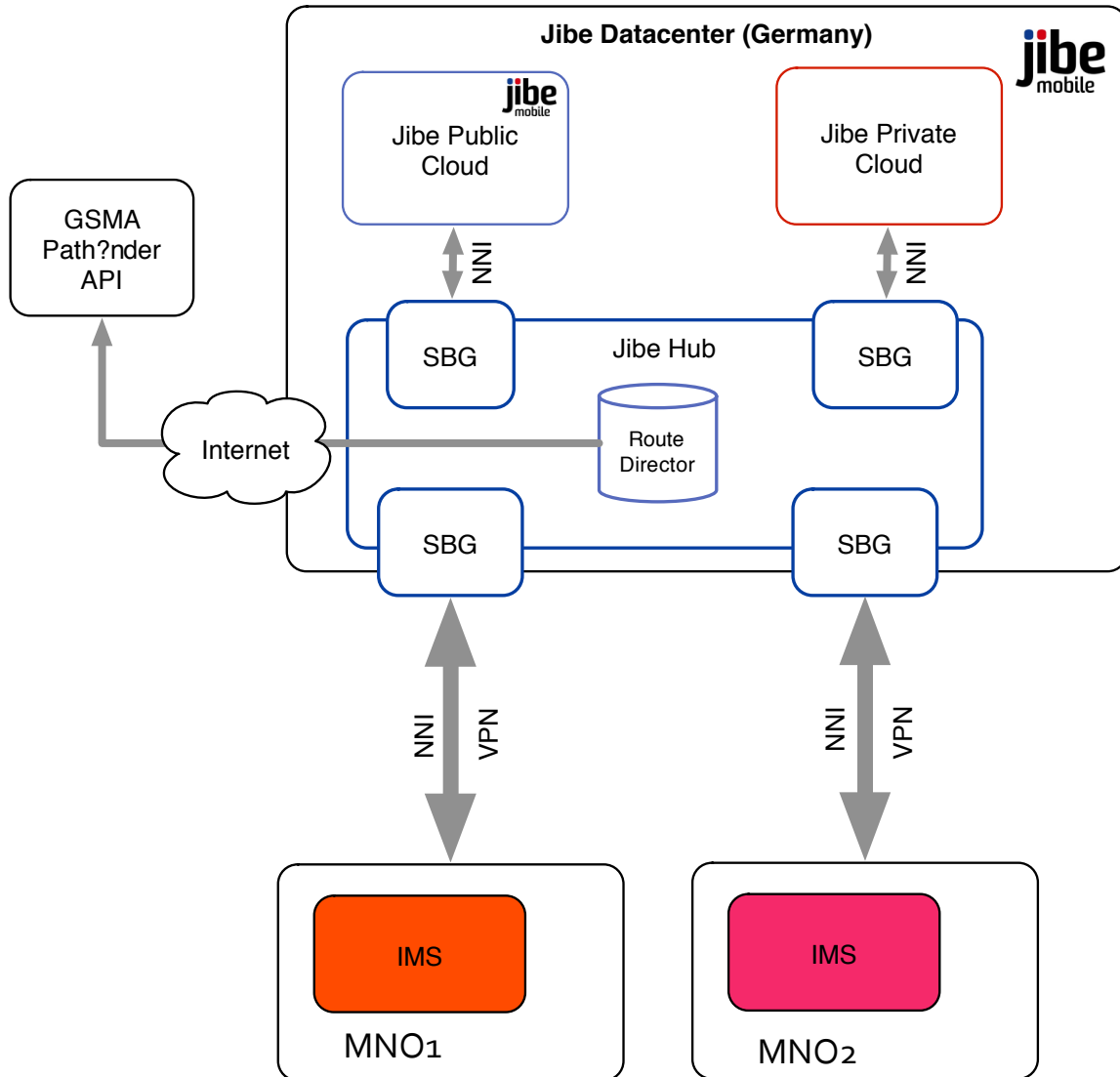
- Reduces the technical complexity of carrier interconnects
 - Carrier performs a single NNI to the Jibe Hub
 - This provides connectivity to all connected service instances – both Jibe clouds and other connected carriers IMS
- Reduces commercial complexity
 - A single agreement with Jibe covers multiple MNOs
- Reduces the complexity of end-to-end service level interworking
 - Harmonized" traffic – managing interoperability
 - Provide reference client and stubs

The Big Picture - Scaling to Connecting OTTs and WebRTC



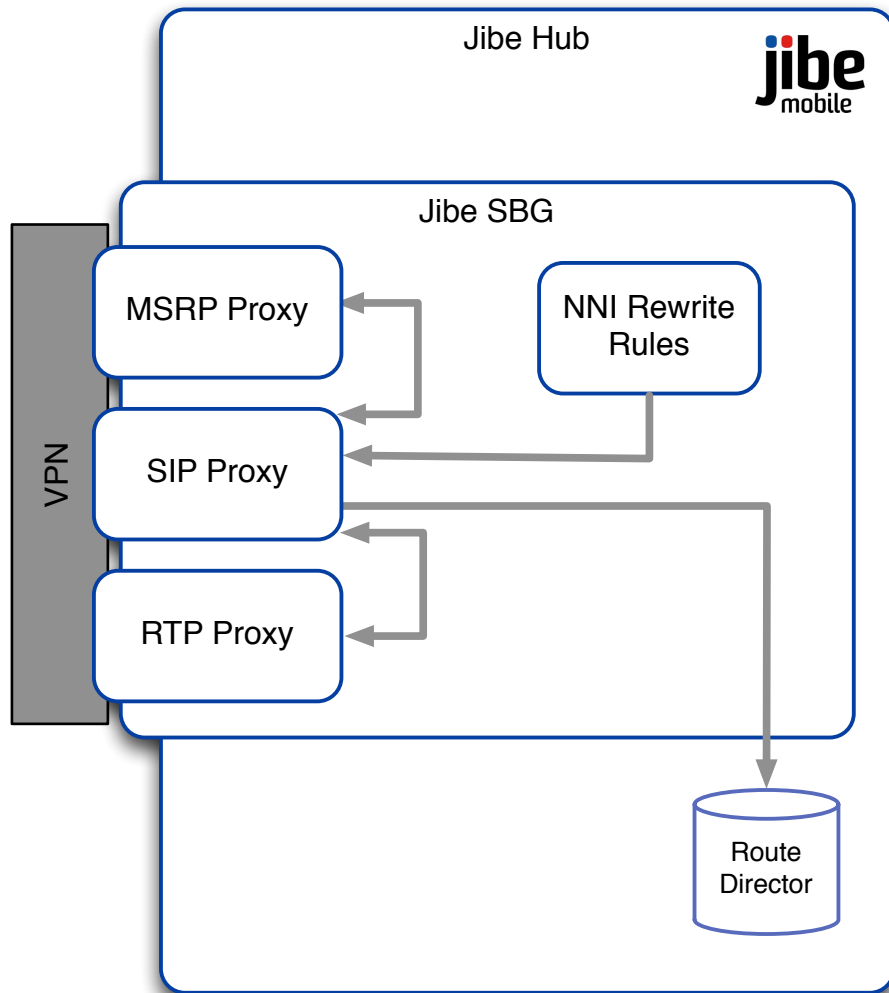
- **One connection to the hub does not affect others**
 - Additional connections can be added and existing ones modified without downtime on any other link
 - Hub is stateless
 - Upgrades of an individual link or the hub infrastructure are not visible to other connected networks (topology hiding)
- **Traffic inside hub is normalized**
 - Session Border Gateways normalize inbound traffic to supported headers/formats / features (“Standard + Jibe extensions”)
 - Cryptography is terminated inside the originating network
 - Traffic inside the hub is not encrypted

Jibe Hub Architecture



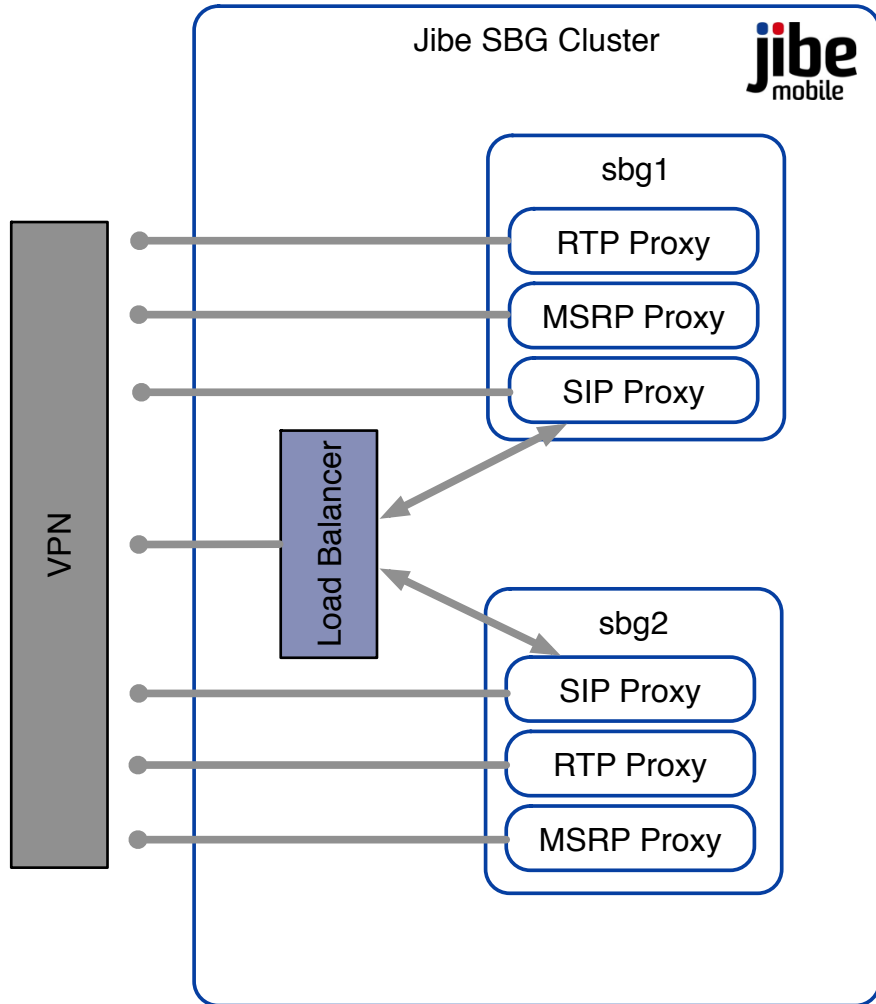
- **Hub treats all connected networks the same**
 - Central Routing Service provides back-end for all routing decisions
 - Look-ups for non-Jibe users are performed via the GSMA Pathfinder API
 - Jibe cloud user data populates Jibe's Route Director to reduce external lookups
 - Routing mandates Tel URI addressing throughout Hub and for NNIs
- **Hub Security**
 - All external traffic into hub is VPN protected
 - No media or signaling is carried across the public internet in the clear
- **Hub Availability**
 - 99.99+% availability
 - Automatic failover for all nodes in the system.

Jibe Session Border Gateway (SBG)

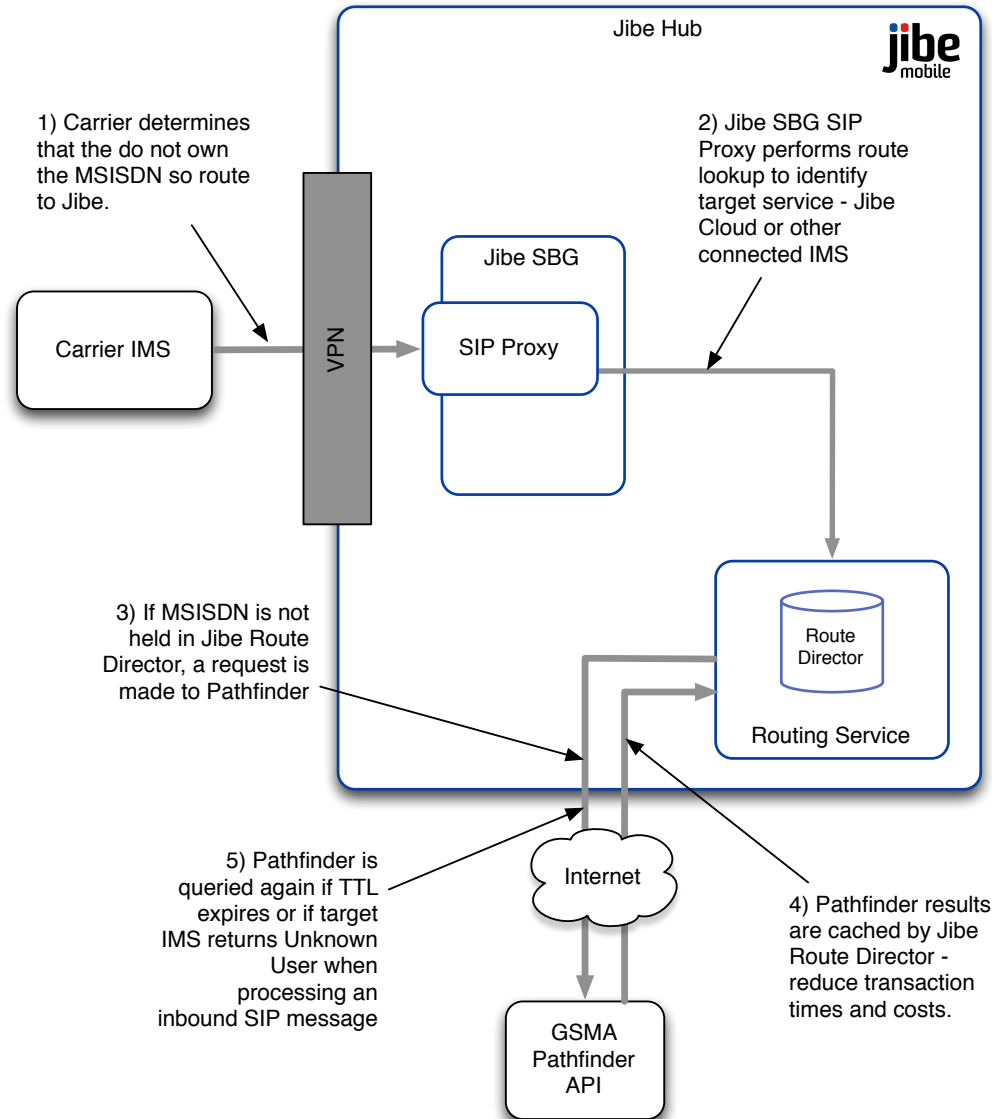


- Aligns features for outbound traffic
 - Removes tags based on interconnect rules
- Shapes messages
- Routes traffic to destination SBG
- SIP routing decisions based on Route Director lookup
- Terminates media
- Can provide stats about an individual NNI

Other core components – meeting Scalability and Redundancy needs

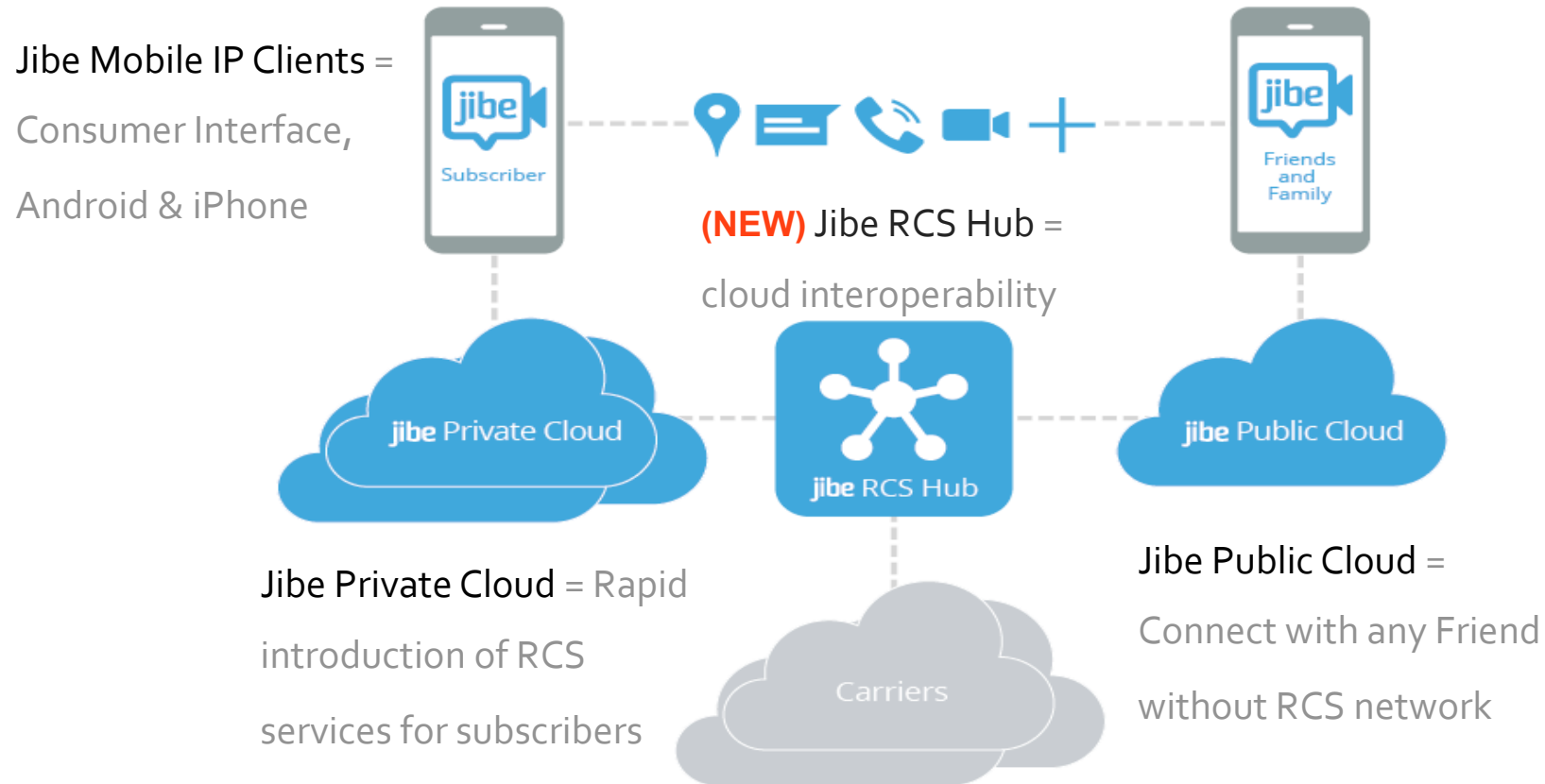


- SIP traffic is load balanced via external IP
 - Each inbound SIP message is handed to a Serving SIP Proxy
 - Serving SIP proxy handles a single SIP dialog
- All SIP proxies must be reachable across NNI
- Media endpoints are exposed directly via public IPs of the individual SBGs to support media termination.
 - Failure of an SBG node will affect media sessions in progress on that SBG.
- SIP Proxies are OpenSIPS



- Determines destination domain/NNI for SIP messages based on configurable routing rules
 - Mappings for Jibe subscribers are populated by individual cloud instances
 - Home network of unknown/non-Jibe subscribers is determined via a Pathfinder query and the correct routing is applied
 - Individual NNIs in the same country can be configured with “short circuit” routes to avoid external queries to Pathfinder
- High performance name-value cache maintains subscriber<>target domain mappings

Jibe Hub: Helping MNO's move from SMS to RCS



Thank you OpenSIPS !



- OpenSIPS is a phenomenal product
 - Modular
 - Scalability and clustering
 - Performance
 - Extremely easy and flexible to define routing rules based on available framework
 - Very helpful community
 - Experience with deploying public and private clouds
- Jibe RCS HUB and Jibe RCS Cloud use OpenSIPS as SIP proxy servers.
- We have experienced and used its
 - Enterprise grade scalability
 - Configuration Ease
 - Support for Load Balancing
 - Easy extensions for Billing Mediation

- GSMA NNI : <http://www.gsma.com/network2020/wp-content/uploads/2013/10/IR.90-v6.o.pdf>
- RCS Blackbird Spec : <http://www.gsma.com/network2020/wp-content/uploads/2014/01/joyn-Blackbird-PDD-V3-o.pdf>
- [RFC 2119] “Key words for use in RFCs to Indicate Requirement Levels”, S. Bradner, March 1997. Available at <http://www.ietf.org/rfc/rfc2119.txt>
- [RFC 3326] “The Reason Header Field for the Session Initiation Protocol (SIP)”, H. Schulzrinne, D. Oran, G. Camarillo, December 2002. Available at <http://www.ietf.org/rfc/rfc3326.txt>
- [PRD IR.74] IR.74.1.4 - Video Share Interoperability Specification <http://www.gsma.com/newsroom/ir-74-1-4-video-share-interoperability-specification>
- Whitepapers – Openmind, IMS World Forum Presentations : <http://www.slideshare.net/OpenmindNetworks/rcs-hub-solving-rcs-interconnect-now?related=1>
- [RFC 3840] “Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)”, J. Rosenberg, H. Schulzrinne, P. Kyzivat, August 2004.
- <http://www.ietf.org/rfc/rfc3840.txt>
- <http://www.jibemobile.com/technology/telecom-ip-standards/>

Thank you
Anil Sharma
anil@jibemobile.com