Act now to implement RCS
A number of implementation options exist for RCS including entry-level and variable cost options. The following slides describe the different options and provide examples of vendors who support each option.

Some definitions are necessary to explain the differences between ‘functional’ and ‘physical’ architectures:

- **‘functional’ architectures** – this means they define functional elements and the reference points that exist between them. However, in some implementations, some of these functional elements can be clustered together into a single box (or physical element) and the interfaces between those functions are realised internally.

- **‘physical’ architectures** – the actual physical elements and the interfaces between those elements that are implemented in a network build.

- For IMS, it is widely acknowledged that the Functional architecture defined by 3GPP (3GPP TS 23.228) can be simplified in various ways when building a physical implementation.
IMS functional architecture - basics

Home Subscription Server (HSS)
- Database storing subscription profiles for customers. Profiles are downloaded to S-CSCF after Authentication.

Application Servers (AS)
- IM-AS: Provides chat & file transfer intelligence and advanced billing
- Options-AS: Enables multi-device
- Handset notifications AS: Enables the handset asynchronous notification
Other AS's may also be included in the IMS domain e.g. VoLTE, Video Telephony.

Access Session Border Controller (ASBC)
- Controls the edge of the IMS network.

Interconnect Session Border Controller (ISBC)
- Manages in-coming and out-going traffic from and to the IMS domain, and protects IMS from external attack.

Call Session Control Functions (CSCF)
- Proxy CSCF – performs access control
- Interrogating CSCF – top level authentication of the customer
- Serving CSCF – service control and integration
Implementation Options - Cost Reduction

There are two approaches to cost reduction (not mutually exclusive!)

- **Geographic centralisation** – the sharing of some or all of the IMS functions between more than one operation. Options include:
  - AS centralisation
  - Multi-operation hub and spoke
  - Third party hosted IMS

- **Physical consolidation** – clustering together functional elements into different physical implemented boxes. Options include:
  - ‘RCS in a box’
  - ‘IMS in a box’
  - Edge-controlled IMS
Application Services are consolidated into a centralised location and accessed by each local IMS domain to deliver service. Offers greater economy of scale on AS and greater commonality in service implementation.
Hub and Spoke – all elements owned by one ‘Group’ Operator, Local Networks being national operations of the Group.

3rd Party Hosted – 3rd Party owns and operates centralised Hub; Local networks from different operators (could be all in one country or internationally diverse).

**Hub and Spoke / 3rd party hosted**

**Geographic centralisation options (deployment options)**

- **IMS Hub** serving multiple local operator ‘spokes’. Consolidation of IMS functionality allows IMS to scale rapidly. Over time, more Hubs can be introduced to serve greater customer numbers.

- **HSS** can be local or centralised. Some regulators require customer data to be stored within the country of residence of the customer which implies a local HSS deployment.

- **ASBC** deployed locally to enable Lawful Intercept requirements to be met – local network required to be SIP

- **Common interconnect** ensures consistent NNI. May have to route locally for regulatory reasons.
‘RCS in a box’

Example suppliers of ‘RCS in a box’ solutions

<table>
<thead>
<tr>
<th>Supplier Name</th>
<th>Contact</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crocodile</td>
<td>John Parr</td>
<td><a href="mailto:john.parr@crocodile-rcs.com">john.parr@crocodile-rcs.com</a></td>
</tr>
<tr>
<td>Interop Technologies</td>
<td>Bipin Patel</td>
<td><a href="mailto:bipin.patel@interoptechnologies.com">bipin.patel@interoptechnologies.com</a></td>
</tr>
<tr>
<td>Mavenir</td>
<td>Amir Mahmood</td>
<td><a href="mailto:amir@mavenir.com">amir@mavenir.com</a></td>
</tr>
<tr>
<td>Nable Communications</td>
<td>Kang Seong Heon</td>
<td><a href="mailto:sales@nablecomm.com">sales@nablecomm.com</a></td>
</tr>
<tr>
<td>NewPace</td>
<td>Mike Flynn</td>
<td><a href="mailto:mike.flynn@newpace.com">mike.flynn@newpace.com</a></td>
</tr>
<tr>
<td>WIT Software</td>
<td>Paulo Glórias</td>
<td><a href="mailto:paulo.glorias@wit-software.com">paulo.glorias@wit-software.com</a></td>
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‘IMS in a box’

- IMS box contains P-, I-, and S-CSCF functions
- AS’s separated – may be from other vendors or to offer diversification in service combinations to customers
- P-, I- and S-CSCF tend to be software-based but on common hardware, hence elements can scale independently and be fragmented as customer base grows
- Typical vendors – entry level offering from Tier 1 vendors (Alcatel-Lucent, Ericsson, Huawei, Nokia Siemens Networks…)

Example suppliers of ‘IMS in a box’ solutions

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<tr>
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<td>Xavier Gros</td>
<td><a href="mailto:xavier.gros@alcatel-lucent.com">xavier.gros@alcatel-lucent.com</a></td>
</tr>
<tr>
<td>Mavenir</td>
<td>Amir Mahmood</td>
<td><a href="mailto:amir@mavenir.com">amir@mavenir.com</a></td>
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Edge controlled IMS

- P- and I-CSCF functions reside in SBCs
- SBC might also contain other IMS elements – Policy Control Enforcement, Media Resource Function, Media Gateway.
- SBC vendors would argue they reside there anyway!
- S-CSCF is simply managing authentication credentials and Service brokering.
- Provides a ‘shell’ around any other vendor’s core IMS elements

Example suppliers of Edge controlled IMS solutions

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<td><a href="mailto:kmitchell@acmepacket.com">kmitchell@acmepacket.com</a></td>
</tr>
<tr>
<td>GenBand</td>
<td>Micaela Giuhat</td>
<td><a href="mailto:micaela.giuhat@genband.com">micaela.giuhat@genband.com</a></td>
</tr>
<tr>
<td>Nable Communications</td>
<td>Kang Seong Heon</td>
<td><a href="mailto:sales@nablecomm.com">sales@nablecomm.com</a></td>
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Rapid RCS starter – 3rd party hosted RCS in a box

Physical consolidation options (solution options)

- Requires 3rd Party to host RCS box; operators to acquire ASBCs
- ISBC vendors may be able to implement ‘RCS Box’ function on same hardware as ISBC.
- Guaranteed Interop if this is only option in market as starting point of service.

Example suppliers of 3rd party hosted RCS in a box solutions

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