PART I   Appendices

1. APPENDIX A – MICROSOFT LYNC 2010/2013 INTEGRATION

The Microsoft Lync Unified Communications solution can be integrated to take advantage of the GRTC infrastructure. Depending on the Lync deployment scenario additional work may need to be tackled at the Enterprise level.

First let's list some of the key Microsoft Lync features and aspects which may highlight the necessity for special treatment:
- Lync does not support the H.323 signalling protocol
- Lync does not support SIP over UDP
- External/public facing services are connected via the Lync Edge Server. This service basically works very well when the other connecting party is either another Lync client (remote access) or another Lync Enterprise (Federation). This connectivity is only achieved over SIPS (SIP over TLS).
- PSTN connectivity is designed to traverse the Lync Mediation server using a SIP trunk. This works very well for audio calls. There is no support for video over the Mediation server since the video attributes within the SIP signalling are stripped as the call traverses the Mediation Server. The mediation server then subsequently connects to another SIP trunk over TCP to a Session Border Controller (SBC), which ultimately connects to the ITSP (Internet Telephony Services provider). PSTN connectivity is out of scope for the GRTC consideration. Therefore is not considered in the accompanying diagram.
- The dominant standards based audio codecs are supported by Lync (G.711, G.722, G.722.1). Lync also supports the proprietary RT audio.
- Lync 2010 provides video support for H.263 baseline and RT video (Microsoft proprietary).
- Lync 2013 dropped video support for H.263 baseline, maintained RTV and added H.264 (SVC UC).

These points create a situation such that some additional steps are needed for open interaction within the GRTC. Your current or planned deployment may already cover these considerations, if you have a requirement to maintain a heterogeneous infrastructure.

Please note that this text does not necessarily represent best practise or the best design for your solution. You must work with your systems integrator to carefully consider your options for connecting to the GRTC. We do however highlight some key components that may enable your Lync solution to have the best chance of connecting external calls with video.

Institutions participating in the GRTC use a wide variety of equipment and solutions. As stated throughout this document the only chance we have of achieving "reliable" interoperability is to conform to a set of International and "open" standards. How vendors choose to manoeuvre within these standards should be completely at their discretion.

Please note that device (b) as illustrated in Fig 8, is not a requirement, but has been included as part of the example, to show that this these considerations could also be part of an existing heterogeneous systems.
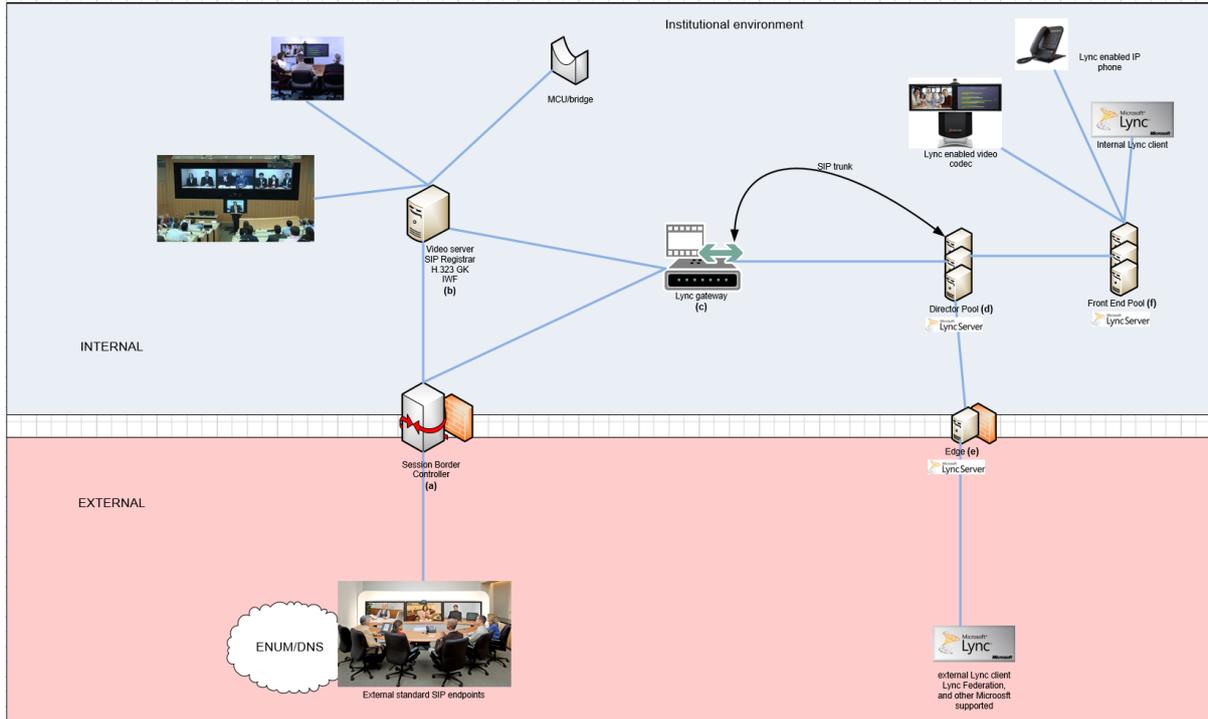
Fig 8. MS Lync integration example.

Given the factors listed above we put forward for consideration, the following additional key points:

1) Lync Gateway
2) Session Border Controller (SBC)

1. Lync Gateway

This is identified as device (c) in Fig 8.

The purpose of the Lync Gateway is to act as a broker between the Lync environment and the rest of the heterogeneous environment. That is, it adds interoperability between a Lync and non-Lync environments, for audio and video calling. A key function being to perform any required video transcoding to smooth/normalise video interoperability issues. A second key function being to translate between the Lync SIP signalling requirements and any other non-Lync SIP signalling systems.

To enable video for external non Lync systems to interoperate, the Lync Gateway needs to be SIP trunked to the Lync Front End (FE) Pool or Lync Director Pool, within the enterprise Lync environment. The Lync FE or Director servers will only accept messages received from systems that are "trusted". Therefore Lync must have the Lync Gateway configured as a trusted device.

For small scale environments, the Lync Gateway (depending of capability) can also perform the functions represented by device (a) and (b) as illustrated in Fig 8. Please work with your respective systems integration partner to discuss in greater detail.

2. Session Border Controller

The purpose of this device as depicted by (a) in Fig 8, is to provide a scalable broker between external calls from heterogeneous callers based on standards based SIP and/or H.323 calls. Therefore, the SBC may also perform the signalling Interworking Functionality.

At this point you may also choose to add support for SIP over UDP and other transports.

The SBC represents the ingress/egress point for non-Lync calls and indeed the GRTC environment.

Note: OutBound Lync Calls

E.164 (telephony number dialing) calls by default egress the Lync Mediation Server. Additional work needs to be done to direct outbound calls via the Lync Gateway. Detailed Lync configuration is out of scope for this document. Call routing (Dial planning) can be a complex part of the overall system design.