Source: **Motorola**

Title: 3G Bearer Considerations

Document for: Discussion

Discussion

Motorola recommends that 3GPP LI consider and specify appropriate methods of delivering intercepted 3G PS bearer. Current trends in ETSI suggest that all IP bearer be delivered using one of the following protocols:

1. ROSE

2. FTP

3. TCP

In Motorola's view, these protocols may not be the best selection for the delivery of intercepted real time high data rate streamed bearer that can be generated from 3GPP subscribers. Motorola recommends UDP as a primary protocol for the delivery of all 3G bearer in order to provide real time delivery without a substantial reduction in reliability. The following provides specific points to justify UDP as the primary protocol for 3G bearer. (Note that this discussion does not address the use of GTP* or other data structures. It is assumed that a 3GPP version of GTP* over UDP may be a viable 3GPP solution.)

RELIABILITY:

TCP is often considered more reliable than UDP since TCP allows for connections to be re-established and packets to be re-sent if data at the receiver is detected as corrupted, or if a connection is dropped. UDP is sometimes described as a 'best effort' protocol as acknowledgements from the receiver to the sender are not always required. With UDP, it is possible for a complete packet to be lost during transmission without any attempt to re-transmit by the sender. However, the proper design of the LEA by providing sufficiently large input buffers for the receiving ports of the LEA agent (such that the input buffer sizes are greater than the total number of bits in transfer on the link (Xi interface), the risk of the packet drop will be eliminated completely (or minimized greatly). Addition of the protocols such as GTP to the layer above UDP may also provide flow control.

However the assumption that TCP is more reliable than UDP is not true given the

nature of 3GPP intercepted bearer streams. 3GPP sessions may be long lasting and carry large amounts of data. With greater session lengths and heavy data loads, the likelihood of a connection with TCP being lost becomes as great, if not greater, thanlost packets with UDP. As such, it may become increasing difficult to deliver long sessions of 3GPP bearer reliably with TCP. Interruptions that will terminate a TCP connection and pose the loss of massive amounts of data will not prevent UDP from delivering subsequent of the intercepted packets. Given the nature of 3GPP bearer, UDP can deliver bearer more reliably than TCP.

REAL TIME DELIVERY:

Motorola believes that the ability to deliver intercepted bearer in real time provides value to law agency and network operator. This requires the use of UDP since TCP has been shown to be significantly slower than UDP.

For the agency, they will receive intercepted Voice and Video over IP as it happens, (similar to today's CS intercept) with UDP rather than much delayed with TCP. Network operators can avoid the large amounts of memory needed to provide buffering between data generated with UDP by the subscriber, but delivered with TCP to the agency. The increased performance of UDP benefits all.

CONCLUSION

It should also be noted that high value 3GPP multi-media applications will be designed for streamed data scenarios that exploits UDP as an underlying protocol. 3GPP users will use UDP often in their bearer streams. Furthermore, the GPRS infrastructure depends upon GTP over UDP for routing PS bearer not only within the core network, but also between PLMNs over the Border GW. Why should we not select the technology choice of 3GPP infrastructure designers and 3GPP multi-media application developers as our mechanism to deliver intercepted bearer?

Recommendation:

It is recommended that UDP provides the primary mechanism to deliver 3GPP bearer. The liaison shall be sent accordingly to TC Sec LI, or consideration of 3GPP guidelines for bearer delivery shall take place.

Best regards,

Motorola