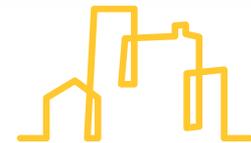# Analysis of LTE Impact on Service API v2

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The Bottom Line

Goals of this presentation is to address concerns:

- **Impact of signaling changes from UMTS core to ePC not considered in the Services API**
- **The API may in fact be incompatible with ePC because of end-to-end encryption of NAS messaging**

What we did

- **Scrubbed Rev. 2 of the Services API Spec**
- **Looked at the following services: General, SMS/MMS, FemtoAwareness, Terminal Location, Location Streaming and Caching**
- **Rest can be addressed if needed**

Summary

- **The need for user ID presents a problem for ALL services we looked at except Caching**
- **All services require "non-cellular" parameters – i.e. information that we should not expect cellular network to provide**
  - These are marked as "N/A" in our analysis

Detailed Analysis: General Service

No	Parameter	Section	Feasible in LTE	Comment
1	FemtoZone ID	3.2.1	N/A	FemtoZone ID is additional signaling being defined by Small Cell Forum
2	Femtocell ID	3.2.2	Yes	Assume to be known to each Small Cell
3	User Address	3.2.3	Not currently	Not available because of encryption of NAS Signaling

Detailed Analysis: FemtoAwareness

No	Parameter	Section	Feasible in LTE	Comment
1	FemtoZone Status	4.3.5	N/A	This can be defined at ParlayX/OneAPI Gateway
1A	Subscription ID	4.3.5	N/A	
2	Prior Femtocell ID	4.3.5	N/A	Prior Femtocell ID would have to be supplied via an implementation within the Small Cell Service
3	Current Femtocell ID	4.3.5	Yes	
4	User Identifier	4.3.5	Not currently	Same User ID from "General" section above can be used.
5	User List	-	Not currently	Same User ID from "General" section above should be used.

Detailed Analysis: Terminal Location

No	Parameter	Section	Feasible in LTE	Comment
1	Target Address Set	4.6.5	Not currently	Same User ID from "General" section above should be used.
2	Terminal Location List	4.6.5	N/A	

* MMS analysis is the same

Detailed Analysis: Location Streaming

No	Parameter	Section	Feasible in LTE	Comment
1	Streaming Location Type	5.4.5	N/A	
2	Notification Period ID	5.4.5	N/A	
3	Desired Accuracy	5.4.5	N/A	
4	Default Retention Period	5.4.5	N/A	This is defined in RFC 4119.
5	Default Retransmission Allowed Policy	5.4.5	N/A	This is defined in RFC 4119.
6	User Identifier	5.4.6	Not currently	Same User ID from "General" section above should be used.
7	Dynamic Data Request	5.4.6	N/A	These are typically available in the mobile devices, but should be accessed as "application" parameters
8	Location Update	5.4.6	Yes	
9	Subscribers	5.4.7	Not currently	Same User ID from "General" section above should be used.
10	User Identity	5.4.8	Not currently	Same User ID from "General" section above should be used.
11	FemtoZoneID	5.4.9	N/A	Same as FemtoZone ID from "General" section above should be used.
12	Subscription Identifier	5.4.9	N/A	The ID that is generated by the application and maintained by the gateway.

Detailed Analysis: Caching

No	Parameter	Section	Feasible in LTE	Comment
1	Client Correlation Number	N/A	N/A	Created by application used by application and gateway so as to match up request/responses.
2	Number of femtozone IDs included	N/A	N/A	The number of femtozone IDs included in the message.
3	Femtozone IDs	N/A	N/A	Same as FemtoZone ID from "General" section above should be used.
4	Locations	N/A	N/A	
5	Storage capacity	N/A	N/A	
6	Size of virtual edge server request	N/A	N/A	
7	Virtual Edge Server ID	N/A	N/A	The ID of the virtual edge server.
8	URI	N/A	N/A	The Uniform Resource Identifier of the virtual edge server.
9	Content	N/A	N/A	
11	Modification Parameters	N/A	N/A	TBD, but, for example, to increase or decrease size of virtual storage.
12	Event	N/A	N/A	Subscribe for failures or performance stats
13	Event Type	N/A	N/A	
14	Event Data	N/A	N/A	

Conclusions / Next Steps

- **Availability of "user ID" type information is a pervasive problem with LTE**
  - Appears in different forms – as need for user ID, IP address, etc.
  - But root cause is the same

- **The Small Cell Services Framework should address this (in rev. 3 of API?)**

- **However – this also seems to be a broader issue beyond Services**
  - **Should be addressed at the architecture level, working with NET?**