

5G mobile networks & naming

A perspective

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Disclaimer

- This is a **discussion** about the role that domain names may/would/will have to play in 5G mobile networks
 - In *networks* (not the OTT, “mobile application” part)
 - A number of questions remain open – and implementation dependent
- Overview
 - What 5G is in broad terms
 - Where “5G comes from”
 - What that might entails regarding the use of domain names/DNS
- Intended to generate discussions
 - “views expressed here are only my own etc...”
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Changes for 5G mobile networks (3GPP “release 15/16/...”)

- **Radio access network:** major changes - mostly agnostic to domain names
- **Core network level:**
 - Slicing , **Virtualised Network Functions**
 - Service based architecture – restful architecture (inspired by the IT) – both internally and to the outside world.
 - Transport protocols http2 tcp/tls + quick based / API become predominant
 - Exposition of the north bound interfaces / API –
- Service level: **IoT/Machine Type Communications**, V2X (Vehicle-to-“everything” communications)...
- *Today’s so called “**5G deployments**” are mostly/only about access*

The inheritance of 5G

- In the mobile industry's world, in general **5 = 4 +1(!)**...
 - A number of 5G networks will be building up on 4G (including Operations/Business Support System) – aka **non standalone 5G** where
 - use of **DNS/domain names** in these mobile core networks is **marginal**
 - Exception for “VoLTE” where ever that applies
 - use of DNS/domain names for interdomain is limited (IPX/GRX...) – and mostly derived from **legacy IDs**
 - use of DNS/domain names for mobile Internet access is (mostly) non specific
 - Browsers/suffix lists may vary / cache servers may be specific
 - Others wont (“standalone 5G” networks) but will have to operate...
- ...SO
 - Need to consider **legacy schemes** in terms of user identification / network identification - “Legacy” means adherence/inertia to some extent

Where we start from: 2/3/4G mobile networks

- Mobile network “Ids” are **only (marginally) based on domain names**
 - **Subscriber IDs** (aka IMSIs) or integrated circuit card (aka IINs) including eSIM are NOT based on domain names (or only anecdotally)
 - **Network identification** aka Public Land Mobile Network / Mobile Network Code / Home Network Identifier are NOT based on domain names
 - Some use of DNS where DN are mostly used as containers (DNs are embedded in Domain names)
- Possible exception: OTT user ids at application level where some would use “email-like identifiers” (others would use the MSISDN, the “phone number”)

What 5G may change in terms of domain names

- The core network is now intended to be “**IP native**”
 - **Virtualised hardware-independent environments** become the norm
 - And it’s hard to operate/manage networks solely w/ IP(v6) addresses...
- **Inter-domain** will also be “IP native”...
 - including Voice interconnect should gradually move to IP
 - **Inter-domain Virtualised Network Function** is largely uncharted territory for mobile networks
- User identification + network identification
 - 5G is probably **not a game changer** because of legacy/backward compatibility
 - But 5G may see the emergence of new business models where legacy schemes may not be prevalent (and use “External Identifier”)
- **IoT from OTT/connectivity to the core network** eg Vehicle2Everything...

- 6 – New drivers for the use of domain names?

Generally lack of understanding/knowledge within the "IoT device

How would that use of domain name materialise?

- Essentially **transparent for users**
 - Core network/interconnect/IoT: mostly for technical purposes
- Largely **implementation specific**
 - Not a source of Second Level Domain name registration
 - But explicit/implicit use of domain names is prevalent in 3GPP 23.5** specs – **not all of which will be resolved on DNS**
- Probably a mixture of extranet / Internet
 - Need to apply **common sense good naming Common Practices**
 - Use duly registered domain names and not “fictitious top level domains” etc
 - Disseminate such “BCPs”
 - Likely to lead to common naming schemes between 5G operators
 - Associated risks: **collisions** ...

Discussion

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