Host- and Domainnames in a German AS

Every parent-AS manages ip-address and domain-name-space for all connected sites on its own. This needs a split of the german name-space into 6-7 dns-zonesfiles per parent-AS dependent of the amount of assigned networks. These zones are used in the DNS-system to resolve forward and reverse all of the to a parent-AS assigned networks. The syntax for deploying names within zones is not trivial because of the subsequent transfer into the flat ampr.org domain which has its own amount of policies.

Following example shows a FQDN (Full Qualified Domain Name) for a rf-interlink-device from DB0RES to DB0EEO at the site of DB0RES which is in the autonomous system with AS-number 64627 (KLEVE-627-AS):

```
        trx-eeo.db0res.as64627.de.ampr.org
        |       |       |       |   +-------  DOMAINNAME for international
AMPRNET (44.0.0.0/9 + 44.0.0.0/10)
        |       |       |       +----------  COUNTRY in AMPRNET (possibility
of real Delegation in internet!)
        |       |       +------------------  ZONENAME of an AS
(differentiation of AS-zones)
        |       +------------------------  CALLSIGN of the site within
parent-AS
        +--------------------------------  HOSTNAME of a device, service,
router, IP-powerplug etc.
```

FQDN in German HAMNET

DOMAINNAME

AMPRNET^{tm} is organized in the flat „ampr.org" domain. This domain is hosted in internet. Resolving names of hosts all over the world is possible even when concerning hosts have no routing to each other. The DNS-system is functional for FORWARD and REVERSE resolving. This is a great advantage when doing traceroutes or other stuff for debugging the net. IP-Coordination Germany translates all local FQDN into the flat shortform the „ampr.org"-domain needs. Therefor some requirements have to be taken into consideration. The advantage is that all HAMNET-hosts are resolveable all over the world, even for users who don't have access to the original HAMNET-DNS-servers. Another advantage is the „shortness" of the fqdn within the flat ampr.org domain. Users within the HAMNET can address a host with ist long or its short fqdn. Using reverse resolver in HAMNET (e.g.with traceroute) always delivers the long fqdn of the host. This gives pretty debugging information, e.g. through what AS and sites the signal is proceeding and what AS the host finally belongs to. In case of any issues at any step of the path you could easily address the responsible persons after a short whois-search. Our gateways within AMPRNET^{tm} enable HAMNET to be accessible for all hams around the world participating in the AMPRNet^{tm}.

Take a look at a short traceroute through HAMNET to a specific router:

```
dd9qp@db0res-pc:~$ traceroute router.db0gw.ampr.org
traceroute to router.db0gw.ampr.org (44.149.137.1), 30 hops max, 60 byte
packets
 1  wan-gw.db0res.as64627.de.ampr.org (44.149.30.1)  0.222 ms  0.175 ms
0.151 ms
 2  hamnet-rf-in.db0res.as64627.de.ampr.org (44.148.14.245)  0.297 ms  0.271
ms  0.304 ms
 3  bb-db0res.db0wes.as64627.de.ampr.org (44.148.14.14)  1.568 ms  2.715 ms
2.691 ms
 4  bb-db0wes.db0mo.as64646.de.ampr.org (44.148.52.6)  5.343 ms  5.319 ms
5.295 ms
 5  bb-db0mo.db0hsn.as64646.de.ampr.org (44.148.53.129)  7.199 ms  7.176 ms
7.150 ms
 6  router.db0gw.as64654.de.ampr.org (44.149.137.1)  7.122 ms  5.915 ms
10.127 ms
```

You can see the long fqdns and find out that in this example the signal is passing through three Parent-AS. In case of anny ussue at any step you can directly find out the responsible persons who

eventually can help in resolving any issues 😉

COUNTRY

Country announces the origin of the dns-entry. It mainly is an investment into the future. It enables delegation of the country-zones on special country-dns-masters in internet in the future. This draws an independent administration of dns-entries into the horizont of possibilities. It also allows a more effective usage of special records in the dns-system (MX, CNAME, TXT, Geodata etc) for the national administration.

ZONENAME

Zonename korresponds to the AS-number of the parent-AS the zone-data belongs to. RFC forbids usage of simple digit sequences in dns-subdomains. Therefor the as-number has been completed with the „as".At this point the sub-domain for a HAMNET-Parent-AS has been exactly described. Everything that is added to this entry belongs undoubtedly to this parent-AS.

CALLSIGN

A parent-AS normally consists of several interconnected sites containing digis, d-star-repeaters, atv-repeaters, echolink systems, clubstations etc. Nearly all of the sites have a special callsign for automatic stations which was assigned by the Bundesnetzagentur (BNetzA), our German Licence Authority. So the site-callsign is the next unit to be added in the dns-name. If only one device would be present at the site, this callsign would be the hostname in the fqdn. But it isn't, normaly there are a lot of different ip-devices present at one single site. Something more has to be added...

HOSTNAME

Hostname is the identifier for a specific device located at a site in the parent-AS. Hostnames can identify services the device provides (e.g. WWW), or identify the special function the device has (e.g. router) or identify other devices (e.g Camera, PC ...). So the device-identifier has to be added in front of the callsign, separated by a dot.

Net-44 Interface

IP-Coordination DL maintains a special **Net-44 Interface**. This is the link between the flat ampr.org domain and the subdomain-based zone-concept in the German HAMNET. FQDN-hostnames from the German HAMNET have to be transformed into the flat ampr.org namens. Entries corresponding to the policies of the flat ampr.org structure are loaded into the worldwide dns-system. Invalid entries are blocked and returned to the as-maintainers in order to correct them.

Valid Examples for FQDN in German HAMNET

A www- or news-server at DB0RES may have following fqdn:

```
www.db0res.as64627.de.ampr.org  -- transforms to -> www.db0res.ampr.org
news.db0res.as64627.de.ampr.org -- tramsforms to -> news.db0res.ampr.org
```

Some more examples:

```
db0shg-router1.as64636.de.ampr.org -- transforms to -> db0shg-
router1.ampr.org
webcam-db0sha.as64636.de.ampr.org  -- transforms to -> webcam-
db0sha.ampr.org
db0res-svr.as64627.de.ampr.org     -- transforms to -> db0res-svr.ampr.org
```

⚠️ **POLICY: A FQDN-name in German HAMNET has to be chosen in a way that the licenced callsign still is remaining in the fqdn after the transformation into the flat ampr.org has been finished.**

Invalid Examples for FQDN in German HAMNET

The automatic transformation of all DNS-entries into the flat „ampr.org"-Domain comprises some restrictions in choosing the name-identifiers. Name-identifiers that do not contain any callsign after transformation into flat ampr.org cannot be exactly identified in other parts of the ampr.org-world. There is the danger that existing entries in the ampr.org-zone could be overwritten or some fakes/doubles could be created. Entries of that kind will not be transformed automagically. See some **forbidden examples**:

```
router.as12345.de.ampr.org  <- would be transformed to -> router.ampr.org
(FORBIDDEN! MAY BE EXISTING!)
im4ham.as12345.de.ampr.org  <- would be transformed to -> im4ham.ampr.org
(FORBIDDEN! MAY BE EXISTING!)
www.as12345.de.ampr.org     <- would be transformed to -> www.ampr.org
(FORBIDDEN!/ALREADY EXISTS!)
www.54321.de.ampr.org       <- would be transformed to -> www.ampr.org
(FORBIDDEN!/ALREADY EXISTS!)
hamgate.as12345.de.ampr.org <- would be transformed to -> hamgate.ampr.org
(FORBIDDEN! AMBIGUOUS!)
```

⚠ **POLICY: All entries must be unambiguous and not creating fakes or doublettes after they are transformed into flat ampr.org. This can be guaranteed by using the exclusively existing callsigns in fqdn.**

Registering personal Callsigns in German HAMNET-DNS

In Germany personal callsigns must be handled in a special manner because of existing laws for data integrity and transfering data into Non-EU-Countries (DSGVO). This is the case when dns-data is transfered to the US- or GB-master-dns and spread throughout the worlds most common dns-servers, e.g. Google and others. That is why in Germany transfering personal callsigns is not starting automagically at the Net-44-interface. Callsign-owner has to opt-in at the IP-Coordination Germany before the transformation process can be started. Another reason is that in most cases personal callsigns are not necessary anymore for using HAMNET ressources. There are some essential informations about opting-in for german users only:

- **Datenschutzerklärung zum Eintrag persönlicher Rufzeichen in das DNS-System** (sorry, german only)

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