Disaggregated BNG
Broadband Forum & the IETF

David Sinicrope, IETF Liaison Manager - Broadband Forum

What has the Broadband Forum done on BNGs?

- TR-025 (1998) Core Network Architecture for Access to Legacy Data Network over ADSL
- TR-058 (2003) Multi-Service Architecture & Framework Requirements
- TR-059 (2003) DSL Evolution - Architecture Requirements for the Support of QoS-Enabled IP Services
- TR-092 (2004) Broadband Remote Access Server (BRAS) Requirements Document
- TR-101 (2006) Migration to Ethernet-Based Broadband Aggregation
- TR-177 (2010) IPv6 in the Context of TR-101, TR-187 (2010) IPv6 for PPP Broadband Access
- TR-101 Issue 2 (2011) Migration to Ethernet-Based Broadband Aggregation
- TR-145 (2012) Multi-Service Broadband Network Functional Modules and Architecture
- TR-203 (2012) Interworking between Next Generation Fixed and 3GPP Wireless Networks
- TR-242 (2012) IPv6 Transition Mechanisms for Broadband Networks

- TR-146 (2013) Subscriber Sessions
- TR-178 (2014) Multi-Service Broadband Network Architecture and Nodal Requirements
- TR-291 (2014) Nodal Requirements for Interworking between Next Generation Fixed and 3GPP Wireless Access
- TR-300 (2014) Policy Convergence for Next Generation Fixed and 3GPP Wireless Networks
- TR-242 Issue 2 (2015) IPv6 Transition Mechanisms for Broadband Networks
- TR-321 (2015) Public Wi-Fi Access in Multi-Service Broadband Networks
- TR-348 (2016) Hybrid Access Broadband Network Architecture
- TR-345 (2016) Broadband Network Gateway and Network Function Virtualization
- TR-384 (2018) Cloud CO Reference Architecture Framework
- TR-378 (2019) Nodal Requirements for Hybrid Access Broadband networks*
- BBF CloudCO-APPN-010-Converged Core as a Service.

20+ years of broadband network architecture, equipment requirements and protocol specification.

List is not exhaustive. See http://www.broadband-forum.org click on Resources. *Publication pending.

What is the Broadband Forum currently doing relative to disaggregated BNG?

From the 7 Mar 2019 BBF liaison to rtgwg:

WT-459 "Disaggregated BNG" - the BBF has started work on control and user plane separation for a disaggregated BNG that may include additional capabilities addressing various deployment scenarios (see the liaison for a list of relevant BBF TRs)
Target completion: 3Q2019

WT-458 "CUPS for 5G FMC functions" One of the 5G convergence models redistributes existing BNG functions across the 5G core network and an Access Gateway Function (AGF). (see the liaison for more detail)
Target completion: 3Q2019

What have the Broadband Forum and IETF communicated to each other to date?

See the following IETF Statements/liaisons: (Note: for full details, please see the liaisons*)

- (15 Mar 2018) BBF-> Rtg ADs and i2rs (#1566) – notes approved TR-384 on Cloud Central Office Reference Architecture Framework. Identifies that a BNG can be disaggregated. Expresses interest in IETF individual drafts.

- (3 Oct 2018) BBF->rtgwg, i2rs, Rtg Area (#1600) – notes that BBF had not selected a protocol for disagg BNG. Also notes CUPS work in BBF related to 5G FMC and its relation to 3GPP and reuse for both cases is a key consideration.

- (3 Dec 2018) rtgwg->BBF (#1615)– notes the two liaisons above and rtgwg evaluation of protocol drafts. Recognizes importance of protocols for BBF's architecture context.

- (2 Jan 2019) BBF->rtgwg, Rtg ADs (#1619) – notes BBF intent to comment on protocol drafts in rtgwg. Notes start of BBF FMC CUPS project to verify use of 3GPP PFCP. Notes TR-384 CUPS deployment option in IETF draft is only one of many. Notes need for BNG to be multi-access e.g., MPLS PW, L2oGRE, L2TPv3. Notes that BBF has not identified the need or requirements for a new protocol. Notes that BBF work related to the TR-384 Converged Core as a Service (with PNF User Plane) context is starting on disagg BNG.

- (7 Mar 2019) BBF->rtgwg, Rtg ADs (#1631) – follow up comments on protocol drafts in rtgwg.   Notes the primary BBF TRs and deployment scenarios considered for disagg BNG. Notes protocol drafts in rtgwg deal with 1 of 2 disagg options. Notes BBF has started document (WT-459) Disaggregated BNG.   Notes start of document (WT-458) on CUPS for 5G FMC functions. Notes that redistribution of BNG functions into an Access Gateway Function (AGF) makes Disaggregated BNG work of interest to FMC. Notes preference to use 3GPP PFCP as preferred direction and verification continues.

*Note: the URL links between liaisons are still being worked out with the IETF Secretariat.

Broadband Forum and IETF - Differences

The Broadband Forum is a company membership organization.

- This means: Contribution and work in progress is normally restricted to members
- Except where: the work in progress is liaised to other organizations

The BBF and IETF, in particular the IETF Rtg and Internet Areas, have a long history of cooperative working via both:

1. Liaisons
   a. BBF making work in progress available to IETF
   b. BBF taking comments and feedback from IETF
   Note: IETF Datatracker and email lists allow BBF access and input to IETF work

2. Mutual participation – participating in both organizations to progress work in both organizations

Broadband Forum & IETF Coordination

What does this mean in practice?

- For work in the IETF – those participating in IETF work are expected to do the work in the IETF according to the IETF process.

- For work in the BBF – those participating
  - who are members are expected to do the work in the BBF according to the BBF process
  - who are not members provide input, comment and feedback on the liaised work in progress via liaison exchange

- Coordination of dates, project scope, dependencies, questions, etc. are typically handled via liaison, IETF email list and mutual participants.

This is largely business as usual.