



2022 Annual Report

Chairman's Letter

Dear members and industry colleagues,

2022 was a remarkable year for the Broadband Forum. Our persistent drive in publishing open standards, driving multi-vendor interoperability and certification programs, and developing open software have helped meet the needs of the global operator, service provider, and vendor community for deployable standards, architectures, and best practices.

We welcomed back the ability to meet in-person at our two final quarterly meetings of the year and along with our successful virtually hosted interim meetings, the high volume and quality of our work continued. This resulted in 39 newly published standards, test plans, marketing reports, and open software releases last year.

I wanted to pick out a few highlights of published and newly initiated work during 2022 and this includes:

- TR-451 and MR-451: vOMCI Interface Specification
- TR-484: Access Network Abstraction
- TR-521 and TR-522: Two new 5G Transport Network standards
- OB-BAA Release 5: Cloud native policy based ONU authentication
- Commencement of work within WT-492 to drive a standards approach to an app-enabled services gateway and service containerization

Impressively, the amount of documents and the velocity of approved new project initiatives across all of our Work Areas continues to grow as our attention shifts to identifying new areas of work and finalizing the next steps for bringing these to fruition.

Our industry never stands still, and this is reflected in the energy of

our re-introduced Town Hall Innovation Series. These open sessions at our quarterly meetings drive discussion on what latest innovations will have a significant impact on the user experience and how broadband services will be delivered.

We are witnessing some truly exciting times with the increasing drive to fiber enabled, faster broadband and new valuable services, as well as experiencing a growing diverse user base. Network agility, intelligence, and a managed connected user experience to meet a rising demand for new differentiated services is a major area of focus beyond simply delivering connectivity.

Increasingly, network performance, Quality of Experience, automation, and application intelligence are becoming as critical as basic Internet connectivity. The broadband ecosystem must evolve to enable interoperable predictability and the agility to meet the new services opportunity of tomorrow, along with the right user experience for an increasingly larger use case and attainable market.

This exciting focus is reflected in a growing number of members and contributors helping to deliver our open standards. We finished 2022 with a strong family of large and small companies that represent innovative vendors, application and content providers, and network and service providers. Once again the Broadband Forum grows from strength-to-strength and ended 2022 with a new ten-year membership high.

Additionally, a key focus of the Broadband Forum is to educate the wider market on the connected user, broadband network architectures, and the provider cloud advancements. The Broadband Accelerations Seminar (BAsE) series has successfully delivered on this with 16 new webinars and six 'in-person' industry

workshops. We celebrate a record year in terms of sponsorship, number of events, total audience attendees and registrants, and amount of content published.

The Forum's important work in delivering open standards and open software is ideally placed to aid the entire broadband ecosystem's transition from a 'connectivity driven' industry to one that will be 'services-led', with the user experience central to this evolution.

I speak on behalf of the Broadband Forum Board and staff when expressing our thanks for all of your incredible support in making our continued progress a reality. It is solely through our members' continuous dedication and energy that we can ensure our open standards and open software will benefit the entire global broadband industry and enable the service delivery of the future.

Yours Sincerely



John Blackford
Chairman of the Board

In the 2022 Annual Report

Chairman's Letter	2
Completed Projects	4
Forum Organization	5
Leadership Groups	6
Open Broadband	7
Open Broadband Labs	8
Certification Program Impact	9
BASe Series	10
Technology Councils	11
Member Recognition	12
Participating & Membership Listings	13
Financial Report	14
BBF Team Links & Contact	16



John Blackford
Chairman, Commscope



Mike Talbert
President,
Wistron NeWeb



Aleksandra Kozarev
Vice President,
MaxLinear



Manuel Paul
Vice President,
Deutsche Telekom



Greg Bathrick
Secretary, Calix



Bernd Hesse
CMO, DZS



Frank Van der Putten
Treasurer, Nokia



Dave Sinicrope
Board Member, Ericsson



Mauro Tilocca
Board Member,
Telecom Italia



Francisco de Carvalho
Board Member, Replay



Chen Li
Board Member, AT&T



Lincoln Lavoie
Technical Committee
Chair, UNH-IOL



Ken Ko
Managing Director, BBF

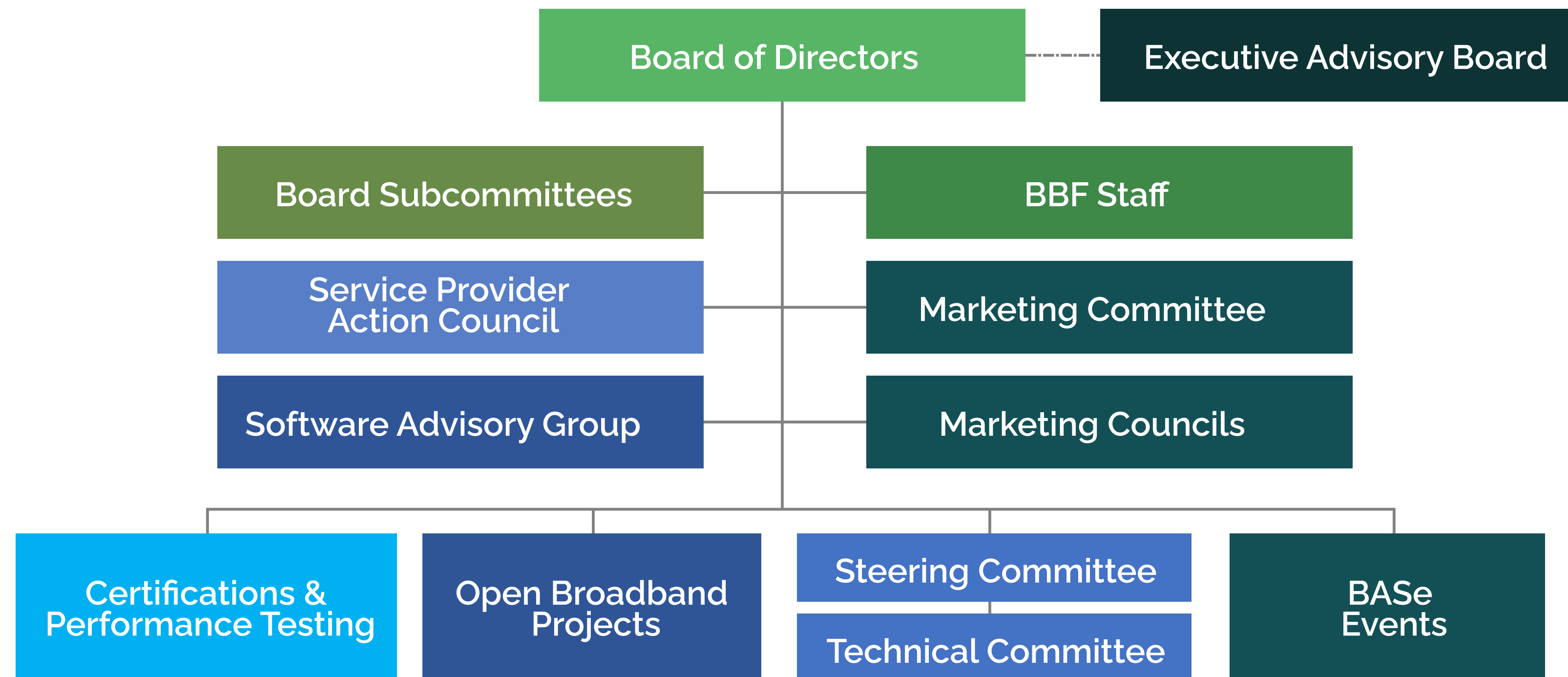


Craig Thomas
VP SM and BD, BBF

2022 Published Work

OD-360	BBF YANG Best Current Practices	TR-355	Amendment 4: YANG Modules for FTTdp Management
OD-469	USP Agent Certification Program Guidelines	MR-522	Mobile-transport network slice instance Management Interfaces (MMI)
TR-280	Issue 2: ITU-T PON in the Context of TR-178	TR-484	Access Network Abstraction
TR-124	Issue 7: Functional Requirements for Broadband Residential Gateway Devices	TP-337	Issue 4 Corrigendum 1: G.fast Certification Test Plan
TR-470	Issue 2: 5G Wireless Wireline Convergence Architecture	TR-124	Issue 8: Functional Requirements for Broadband Residential Gateway Devices
TR-456	Issue 2: AGF Functional Requirements	TR-142	Issue 4: Framework for CWMP and USP enabled PON Devices
TR-383	Amendment 5: Common YANG Modules for Access Networks	TR-471	Issue 3: IP Layer Capacity Metrics and Measurement
DTP-469	Amendment 1: Conformance Test Plan for User Services Platform Agents	TR-338	Issue 3: Reverse Power Feed Testing
TR-369	Amendment 2: User Services Platform	TP-469	Amendment 2: Conformance Test Plan for User Services Platform Agents
TR-181	Issue 2 Amendment 15: Device Data Model	TR-157	Amendment 10 Corrigendum 1: Component Objects for CWMP
DTP-181	Amendment 2: CWMP Interoperability and Functionality Test Plan	TR-452.2	Quality Attenuation Measurements using Active Test Protocols
TR-106	Amendment 11: Data Model Template for CWMP Endpoints and USP Agents	TR-196	Issue 2: Data Model
MR-436	Introduction to Automated Intelligent Management (AIM)	OB-UDPST	Release 7.5.1
TR-522	Mobile-transport network slice instance Management Interfaces (MMI)	OB-BAA	Release: 5.1.0
TR-521	5G Transport Networks	OB-USP-Agent	Release 6.0.0 (Falcon)
TR-419	Issue 2: Fiber access extension over existing copper infrastructure	OB-UDPST	Release 7.5.0
TP-337	Issue 4: G.fast Certification Test Plan	OB-BAA	Release 5.0.0 April 2022
TR-451	vOMCI Interface - YANG Modules	OB-UDPST	Release 7.4.0
TR-451	vOMCI Interface Specification		
MD-451	ONU Management using Virtualized OMCI (vOMCI)		
MD-477	Cloud CO Enhancement - Access Node Hardware Disaggregation		

Forum Organization



Leadership Groups

Broadband Innovation Group

The Broadband Innovation Group was formed as the incubator for new projects such as the developments in 5G. As envisaged in the Broadband 20/20 vision document, the Innovation Track began work on Broadband Assured IP Services. The Forum has long recognized the need for performance-assured services that are secure, standardized, on-demand and user-initiated and is leveraging several new technologies over the previous 12 months (25G and 50G PON, QED, App aware Containerized Service Gateway, Network virtualization and disaggregation, network slicing, Automated Intelligent Management and Wireline/Wireless Convergence). Its IP expertise and experience with more than 1 billion installations and the future of the user experience across all connected devices with USP. The Broadband Innovation Group also works with various member groups to host “Birds of a Feather” events held at most quarterly meetings.

Christele Bouchat, Nokia and Mauro Tilocca, Telecom Italia — Co-Chairs

Executive Advisory Board

Introduced in 2017, the Executive Advisory Board was established to provide an executive C-level and forward-thinking lens through which the Forum can keep an insight on industry trends to shape our future. The genesis of the Board is the profound changes in the industry - a paradigm shift both in terms of technology and methodology. The questions regarding the impact on business value and what sort of deliverables are required is the main conversation of the BBF's Executive Advisory Board.

Craig Thomas, BBF — Chair, Bernd Hesse, BBF CMO — Co-Chair

Service Provider Action Council

The SPAC (Service Provider Action Council) is a key influential standing committee keeping the Forum connected to user requirements - the key financial realities of the market. Open exclusively to the service provider membership, it offers continuous direction on requirements to ensure that strategic work has the service provider engagement needed to achieve timely standards development.

Mauro Tilocca, Telecom Italia — Chair, Weiqiang Cheng, ChinaMobile, Chen Li, AT&T

Software Advisory Group

The SAG (Software Advisory Group) comprises contributing Forum member companies and provides a center of software expertise acting as a “think tank” within the Forum. It advises on engagement with external SDOs and open source organizations on the processes and modeling tools needed to enable the Forum to work as an agile software-focused organization, the challenges of IPR, and balancing the Forum's role on the definition of requirements and service attributes with the implementation of code and prototyping.

William Lupton, BBF — Chair

Steering Committee

The Steering Committee's primary goal is to execute the Forum's strategy via the Work Areas of the Technical Committee. It is the main conduit for the leadership to monitor work in progress across the Forum. The Steering Committee influences the technical work and acts as a clearinghouse for new projects. It also oversees the formation of project streams (groups of related projects) and the appointment of Work Area Directors. Implementation of procedures and use of tools and the technical content of Broadband Forum meetings also fall to the Steering Committee, as well as coordination of the important items in the Forum's Liaison Program with almost every industry standards body and open source organization.

Lincoln Lavoie, UNH-IOL — Technical Committee and Steering Committee Chair

Open Broadband - Multi Access Point

Broadband Forum's Open Broadband initiative brings open source and open standards together, paving the way to dramatically change our industry and bring the full promise of broadband to fruition.

The future of broadband will be the result of the marriage between the flexibility, innovation, and speed of "open software" and with the discipline, efficiencies, and global scale made possible by "open standards".

Delivering excellent point solutions will always be critical. However, in a broadband ecosystem undergoing radical change of technology and approaches, focusing on individual elements alone is likely to be a limiting strategy. This is why the Forum is taking an approach to the drivers and technologies that feed broadband transformation to serve the industry and our members. By bringing the best ideas of open source together with the interoperability and standards required for mass market solutions, the Forum is bringing true innovation and scale to the industry.

Open Broadband projects within the forum continue to thrive since their inception in 2017. The following are currently active Open Broadband projects:

Open Broadband—Broadband Access Abstraction (OB-BAA)

Enabling standardized, automated and accelerated deployment of new cloud-based access infrastructure and services. Link [here](#) for more information.

Open Broadband Multi Access Point (OB-MAP)

Ensuring that the software of open-source innovators like [prpl Foundation](#), and their mesh software projects will be scalable to large service providers deployments via carrier grade manageability. Link [here](#) for more information.

Open Broadband—UDP Speed Test (OB-UDPST)

Enabling an open source implementation tool to perform IP Layer Capacity metrics and measurement for gigabit broadband connectivity. Link [here](#) for more information

Open Broadband—User Services Platform Agent (OB-USP-Agent)

Creating a reference implementation of the User Services Platform (USP) specification from an "agent" perspective. Link [here](#) for more information.

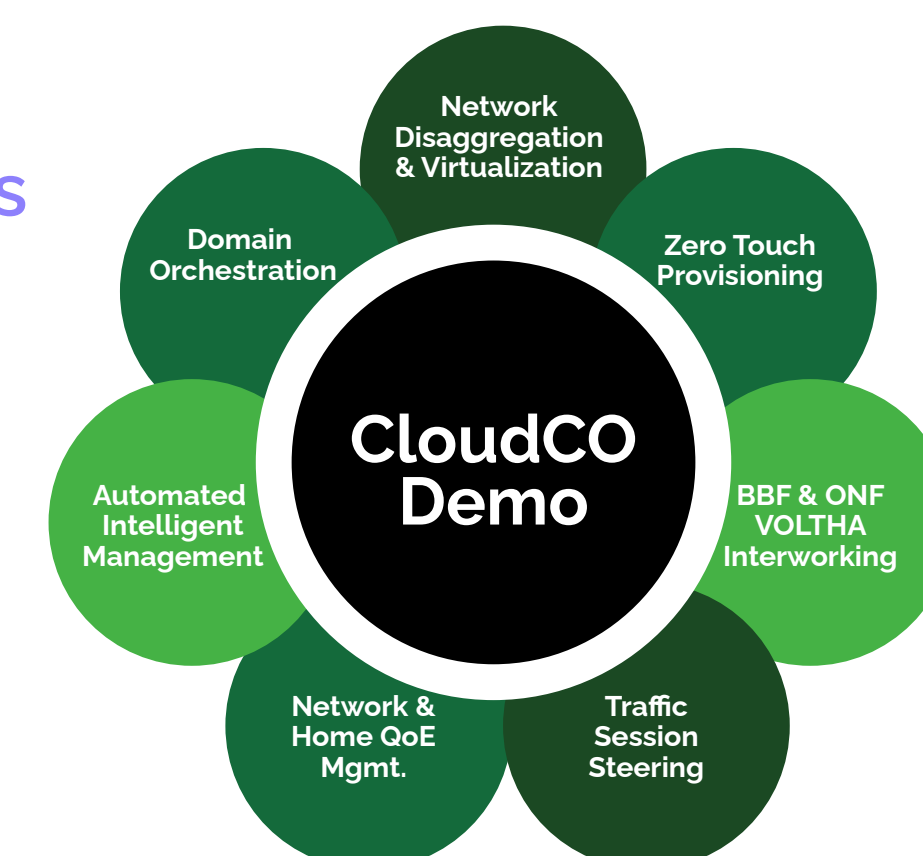
Open Broadband – WWC Reference Implementation for 5G-RG (OB-5WWC)

An open source project creating a Wireless-Wireline Convergence reference implementation for 5G-capable Residential Gateways (5G-RG). Deliverable to develop a production-grade 5G-Residential Gateway solution stack for integration into OpenWRT/RDK-B RG platforms.

OB-BAA and CloudCO | Live Demonstration 2022



CloudCO Demo Participating Companies



Interop and Certification

Since its inception the Forum has had an objective to establish interoperability in the broadband marketplace. Today, the Broadband Forum Interoperability and Certification program encompasses end- to-end broadband testing requirements including fiber, DSL, MPLS and home networking related interoperability and conformance testing.

The BBF Testing and Certification programs include:

1. Developing common test requirements
2. Establishing a test suite which normally includes functional and performance tests
3. Hosting test events also known as plugfests, which can include private members only multivendor plugfests, conformance testing, public interoperability demonstrations and/or certification

Certification Program Impact

- Creates confidence and minimizes risks
- Establishes a trusted industry standard for implementation and high customer satisfaction
- Leverages vast experience and expertise
- Avoids extensive provider testing before purchase
- Significantly reduces costs and accelerates time to revenue for all stakeholders
- Provides a starting point for service provider integration and fosters a diverse marketplace across silicon and products



welcome to:
Broadband
Acceleration
Seminars



BASe Series

Broadband Forum is the industry's most respected organization for accelerating broadband innovation and deployment, and its fast-growing Broadband Acceleration Seminar (BASe) series provides key insights into the state of broadband innovation, technology, standards, and ecosystems.

Held in conjunction with major industry conferences, each BASe event draws hundreds of key influencers from global broadband service providers, suppliers, analysts, and government officials who appreciate our uncompromising educational focus and our member's leading-edge perspectives.

BASe series is driven around 3 major tracks; The Connected User, Fiber and Copper Access Technologies and Network and Service Delivery. It includes areas of focus of the Forum – 5G, Connected Home, Cloud, and Access | Next – and provides sponsors with unparalleled access to broadband industry innovators and leaders. BASe events are renowned throughout

the industry as truly unique thought leadership events created by tech innovators for tech leaders.

2022 was a record year for The Broadband Forum both in the number of sponsors and also total number of events. With the return of Face-to-Face conferences in 2022 BASe was active with often multiple workshops in 6 separate conferences including our very own "UFBB" technical summit.

In addition through vBASE we also held 16 Webinars or virtual events sessions throughout the year. In total we had 145 thought leaders speak across our calendar of virtual events creating over 30 hours of video content.

In total 22 companies took advantage of sponsorship.

Platinum



Gold

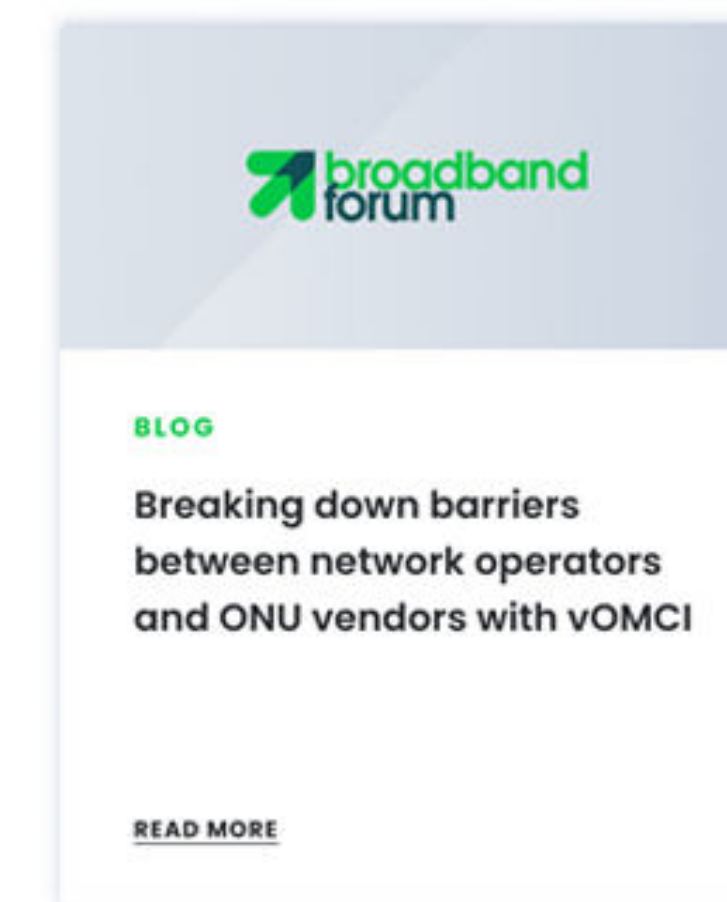
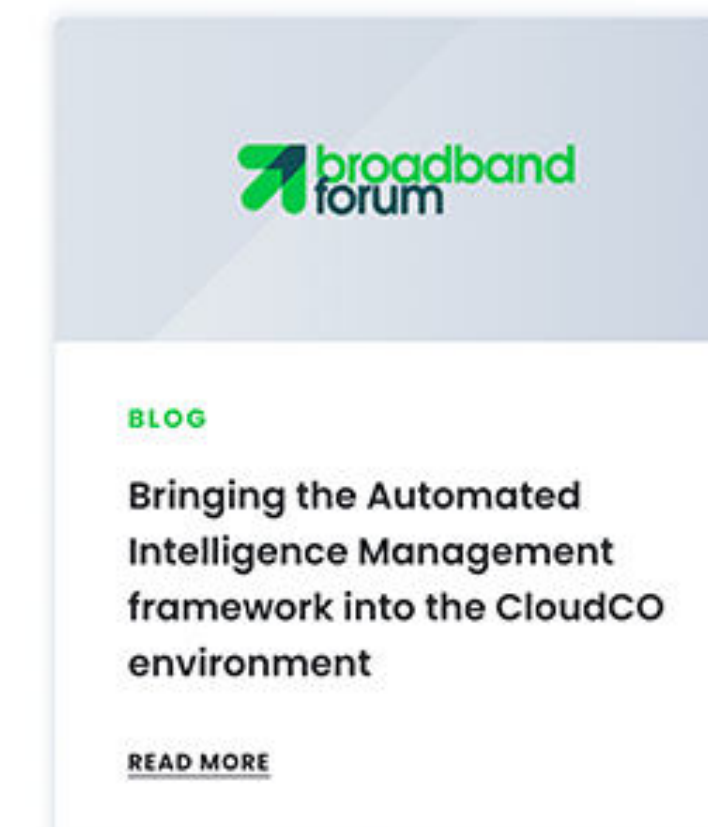
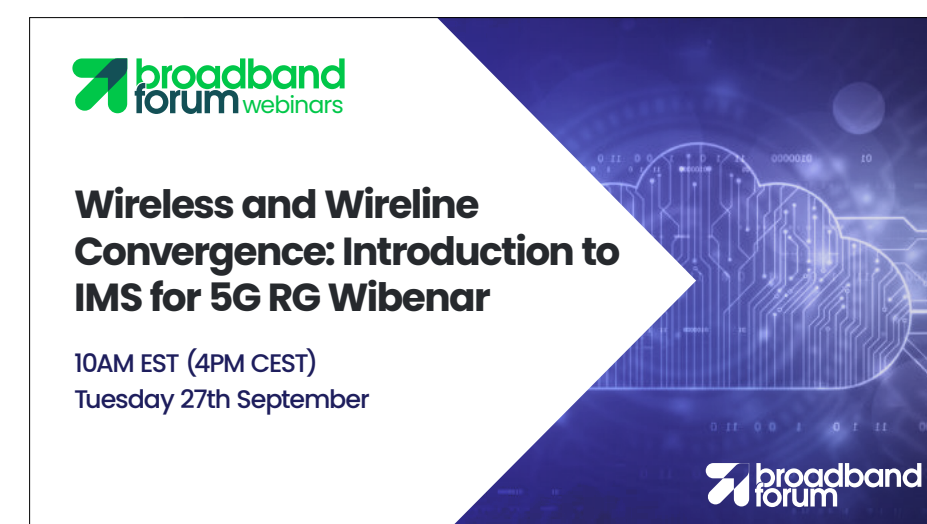


Technology Councils

The charter of each technology council is to foster the global market development of its representative technology through educational and awareness initiatives.

Each council, was formed to disseminate the expertise and experience of each respective market in order to facilitate the rapid deployment of respective technology. Each council meets regularly, and develops a roadmap for educating the market on their respective technology and providing deployment updates. Typical vehicles are formal published Market Updates, White Papers, webinars, industry blogs and surveys. In addition, the technology councils are very active as engines in developing content for BAsE Knowledge events and moderating BAsE panels. Lastly, as the technology councils are monitoring market trends and conducting surveys, they provide use case ideas back into the working areas and interoperability/certification programs to stimulate market expansion and ecosystem development.

Examples of Market Updates created by technology councils include:



Recognizing Member Contributions

The BBF recognizes the outstanding contributions of those who have shaped the growth of Broadband, worldwide.

Distinguished Fellow Award

The Distinguished Fellow title is bestowed by the Broadband Forum to exceptional individuals who have over time provided a major influence on the direction and success of broadband development

2022 Recipients:

- Joey Boyd, Adtran
- William Lupton, Honu Ltd

Leadership Awards

The Leadership award is given to outgoing, commendable working group chairs or Board members. These individuals, who have dedicated their time and leadership ability to establishing our success, have gone above and beyond the call of duty within The Broadband Forum and we thank them for their service.

2022 Recipients:

- Samuel Chen, Broadcom

Circle of Excellence

The Broadband Forum recognizes the exceptional contributions of its members through the "Circle of Excellence" award, which is awarded at our annual meetings.

2022 Recipients:

- Elia Battiston, Radisys
- David Cluytens, Orange
- Al Morton, AT&T
- Mauro Tilocca, TIM
- Nagaraj Turaiyur, Juniper Networks

Outstanding Contributors

Once a year, at the annual meeting, the Outstanding Contributor awards are given to individuals who, during the previous year, went above and beyond the call of duty within the Forum work areas.

2022 Recipients:

- Sam Chen, Broadcom
- Killian De Smedt, Nokia
- Chris Gray, Orange
- Ben Greear, Candela
- Jeff Hartley CommScope
- Bjørn Ivar Teigen, Damos
- Hugues Le Bras, Orange
- Mengmeng Li, China Mobile
- Antonio Marsico, Reply
- Roland Schott, Deutsche Telekom AG

Visit broadband-forum.org/contributors for information on BBF member recognition

Participating Organizations

2022 recognized yet another increase in membership and participation. Below is a list of member companies by membership level. Please note that Open Broadband initiative projects include a wide variety of non-member industry organizations not listed.

PRINCIPAL LEVEL:

A1 Telekom Austria AG
Adtran
Advanced Digital Broadcast S.A.
AEPONYX
Airoha Technology (Suzhou) Limited (formally ECONET)
Airties
Alethea Communications Technologies Pvt Ltd
Allion Labs
Altice Labs, S.A.
Aprecomm Private Limited
ASSIA, Inc.
AT&T
AVM Audiovisuelles Marketing und Computersysteme GmbH
AVSystem
Axiros
Axon Networks
Beegol Corporation
Bell Canada
Benu Networks (merged under Ciena)
Bharti Airtel Ltd.
BiFrost Communications
BISDN GmbH
Broadcom Corporation
BT
CableLabs
Calix Networks
Cambridge Industries Group Limited (CIG)
Candela Technologies

Capgemini Engineering (formerly Altran)
Casa Systems
Charter Communications
China Mobile Research Institute
China Telecommunications Corporation
China Unicom
Chunghwa Telecom Labs
Ciena Corporation
Cisco Systems
CityFibre
cnlab
CommScope
Consult Red
Cyta
Deutsche Telekom AG
D-Link
Domos AS
DZS
EANTC
Ericsson
Excentis
Friendly Technologies (FTL) Ltd.
F-Secure
Futurewei Technologies Inc.
Genesis Technical Systems
Genew Technologies Co. Ltd.
Go Foton
Google Fiber
H3C
Heights Telecom Ltd.
Hewlett Packard Enterprise
Honu Ltd (William Lupton)

Huawei Technologies Co., Ltd.
Hybrid Access Technologies
InCoax Networks AB
Incognito Software Systems Inc.
Intel
Inteno Group AB (Genexis BV)
IO Intelligence
ISPApp
Juniper Networks
Kaloom
KAONMEDIA Co., Ltd.
KPN
Lambda Networks AS
LAN
Liberty Global
Lumen (formerly CenturyLink)
Maxlinear
Merocom Solutions
Microsoft (formerly Metaswitch)
MT2 SAS
National Broadband Network
National Information Solutions Cooperative (NISC)
NEC
NetCologne GmbH
netplus.ch S.A.
Netsia
Nokia
NTT Corporation
OpenVault
Orange
OutSys

Pantacor Ltd
PIC Advanced SA
Plume
POST Luxembourg
Predictable Network Solutions Ltd
Proximus
PVentures Group, Inc.
QA Cafe
Qualcomm Incorporated
RAD Data Communications
Radisys Corporation
Reply AG
RTBrick Inc.
Sagemcom Broadband
SaskTel
Snom Technology GmbH
Sparnex Instruments
Spirent Communications GmbH
Stechs
Sterlite Access Solutions BU
Suzhou Centec Communications Co., Ltd.
Technetix, Inc.
Technicolor
Tejas Networks
Telecom Argentina
Telecom Italia S.p.A
Telefonica S.A.
Telenet NV
Telstra Corporation Ltd
TELUS Communications, Inc.
Tibit Communications (acquired by Ciena)
Traveling GmbH

Ubilinx Technology, Inc.
Ufi Space Co. Ltd
UNH InterOperability Lab
United Cloud d.o.o. Beograd
Vecima Networks Inc.
Verizon
Viavi Solutions
Vodafone Group Services
Wistron NeWeb Corp.
ZTE Corporation

AUDITING LEVEL:

Actiontec Electronics (merged under CIG)
Arcadyan Technology Corp.
Askey Computer Corp.
Compal Broadband Networks, Inc.
Comtrend Corporation
CyberTAN Technology, Inc.
Dish Network
Fiberhome Telecommunications Technologies CO., LTD.
Furukawa Latam
Gemtek Technology Co.
General Mobile (TELPA TEKNOLOJI HIZ. A.S.)
Harmonic Inc.
Hitron Technologies Inc.
Humax Networks, Inc.
Icotera Sp. z o.o.
MitraStar Technology Corp.
Sercomm
Shenzhen C-Data Technology Co., Ltd
Shenzhen Skyworth Digital Technology

Co.,Ltd.
Sumitomo Electric Industries
TDC A/S
Telekom Slovenije, d.d.
Telenor Norge As (SY)
Telkom SA Ltd
Triductor Technology
WISI Communications GmbH & Co KG
Zyxxel Communications Corporation

ASSOCIATE & OBSERVER LEVEL:

China Academy of Information and Communications Technology (CAICT)
Continental Automated Buildings Association (CABA)
ETRI
Informa T & M (Broadband World Forum)
Layer123
Mocalliance (MoCA)
National Exchange Carrier Association
National Media and Infocommunications Authority
Ofcom
Open Networking Foundation (ONF)
Point Topic
RDK
TNO
University of New South Wales
Elisa Corporation
SK Broadband
Swisscom (Schweiz) AG

Financial Report

John Waddell & Co, Certified Public Accountants, conducted the audit of the 2022 Broadband Forum financial statements. The following tables provide an overview of the financial position and key financial metrics of the organization at the close of 2022.

Statement of Financial Position
December 31, 2022
(With Comparative Totals for December 31, 2021)

	2022	2021
Cash and cash equivalents	\$ 1,786,418	\$ 1,400,980
Investments	1,593,257	1,921,041
Accounts receivable	9,625	8,000
Prepaid expenses and deposits	19,131	85,933
Website, net of accumulated amortization of \$18,233 and \$15,453, respectively	1,512	4,292
	\$ 3,409,943	\$ 3,420,246
LIABILITIES AND NET ASSETS		
Liabilities		
Accounts payable	\$ 182,949	\$ 40,586
Accrued liabilities	\$ 147,379	\$ 127,056
Deferred membership dues	692,900	821,168
Total Liabilities	1,023,228	988,810
Net Assets		
With donor restrictions	-	16,083
Without donor restrictions		
Designated for reserves	1,000,000	1,000,000
Undesignated	1,386,715	1,415,353
Total Net Assets	2,386,715	2,431,436
	\$ 3,409,943	\$ 3,420,246

Statement of Activities
For the Year Ended December 31, 2022
(With Comparative Totals for December 31, 2021)

	Without Donor Restrictions	With Donor Restrictions	2022 Total	2021 Total
Revenue				
Membership dues	\$ 1,582,919	\$ -	\$ 1,582,919	\$ 1,537,700
Meeting fees	105,750	-	105,750	-
BASe event fees	20,895	-	20,895	-
Sponsorship fees	388,250	-	388,250	225,250
Interest and investment income	(327,616)	-	(327,616)	172,608
Net assets released from restriction	16,083	(16,083)	-	-
Total Revenue	1,786,281	(16,083)	1,770,198	1,935,558
Expenses				
Program services:				
Meetings	426,452	-	426,452	135,089
Member services, tools, and other	210,118	-	210,118	208,261
Trade shows, marketing and PR	584,305	-	584,305	486,443
Total program services	1,220,875	-	1,220,875	829,793
General and administrative	594,044	-	594,044	547,062
Total Expenses	1,814,919	-	1,814,919	1,376,855
Change in Net Assets	(28,638)	(16,083)	(44,721)	558,703
Net Assets				
Beginning of Year	2,415,353	16,083	2,431,436	1,872,733
End of Year	\$ 2,386,715	\$ -	\$ 2,386,715	\$ 2,431,436

BBF Team

Managing Director | Ken Ko | kko@broadband-forum.org
VP SM & BD | Craig Thomas | cthomas@broadband-forum.org
Membership Development | Rhonda Heier | rheier@broadband-forum.org
Member Support | April Nowicki | anowicki@broadband-forum.org
Secretariat | Gabby Bond | gbond@broadband-forum.org
Software Architect | William Lupton | wlupton@broadband-forum.org
Marketing Coordinator | Tiffany Groves | tgroves@broadband-forum.org
Media & Public Relations | Josh Wright | josh.wright@proactive-pr.com
2Fast 4Wireless | Adolfo Albarracin | Adolfo@2fast4wireless.com

Links and Contacts

Enquiries | info@broadband-forum.org
Support | tools@broadband-forum.org
Member Sites and Sign-up | wiki.broadband-forum.org
Public Site | broadband-forum.org
Download this report | broadband-forum.org/about-bbf/annual-report

