



full name	Robert John Briscoe
date of birth	5th March 1962
nationality	British
languages	native English, passable French & a little German
health, family	good health, happily married, children all left home
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Professional Reputation

- 3 IETF standardization groups have developed from my research: Low Latency Low Loss Scalable Throughput (L4S; 2016-...), Congestion Exposure (ConEx; 2010-16) & Pre-Congestion Notification (PCN; 2007-12);
- Launched and led (with Greg White) the working group that added Low Latency Support to DOCSIS (Data over Cable System Interface Spec.) based on my research (2017-19)
- Convenor and first Chair of the Security Expert Group of the ETSI Network Functions Virtualisation (NFV) Industry Specification Group (ISG);
- 70 invited talks in international fora over the last 20 years, including 21 keynotes and 6 expert panels.
- Initiated & directed CRN (Comms Research Network) - partnership between Cambridge Uni, MIT & industry;
- Incubated Qariba, a start-up based on my research (2000-3), then absorbed into BT's broadband service;
- Helped initiate various workshop series, e.g. EU FP7 Eiffel Future Internet support action, the ACM ReArch workshops, the ACM Capacity Sharing workshops;
- Reviewer for IEEE/ACM Trans. Networking, Wiley, ACM SIGCOMM Computer Comms Rvw, Royal Soc., etc.

Awards

- Comcast Innovation Award (3 times: 2019, 2021 & 2022)
- Special award for most patents filed (48) in BT's history (2013) (subsequently reached 50);
- Initiated the Trilogy Project (with Philip Eardley), which won the European Future Internet Award for its outstanding contribution to the Internet architecture and protocols (2011);
- BT's Gordon Radley Award for Best Author of Innovation (2007) & (2008)
- BT's Sir Alan Rudge Award for Innovation (Medal winner 2001)

Publications

Selected publications in the fields of Internet architecture, loosely coupled distributed systems, comms performance, virtualisation, traffic control, group security, protocol evolution and the economic structure of communications markets:

- **A Survey of Latency Reducing Techniques and their Merits**, Briscoe, B, Brunstrom, A, Petlund, A, Hayes, D, Ros, D, Tsang, I-J, Gjessing, S, Fairhurst, G, Griwodz, C, Welzl, M, *IEEE Comms Surveys & Tutorials* (2015)
- **Low Latency, Low Loss, Scalable throughput (L4S) Internet Service: Architecture**, Briscoe, B, De Schepper, K, Bagnulo, M, White, G, *Internet Engineering Task Force (IETF) draft (2022) (work in progress)*
- **PI²: A Linearized AQM for both Classic and Scalable TCP**, De Schepper, K, Bondarenko, O, Tsang, I-J, Briscoe, B, In: *Proc. ACM CoNEXT 2016* pp.105-119 (2016)
- **Paced Chirping: Rapid flow start with very low queuing delay**, Joakim Misund and Bob Briscoe, in *Proc. IEEE Global Internet Symposium* (May 2019)
- **Network Functions Virtualisation (NFV) Security Problem Statement**, Briscoe, B (Ed), *ETSI NFV ISG GS NFV-SEC 001 v1.1.1* (Oct 2014)
- **Pre-Congestion Notification - New QoS Support for Differentiated Services IP Networks**, Menth, M, Briscoe, B and Tsou, T, *IEEE Communications Magazine* 50(3):94--103 (Mar 2012)
- **Flow Rate Fairness: Dismantling a Religion**, Briscoe, B, *ACM CCR* 37(2) 63--74 (Apr 2007)
- **Metcalfe's Law is Wrong**, Briscoe, B, Odlyzko, A & Tilly, B, *IEEE Spectrum* Jul 2006, 26-31
- **The Implications of Pervasive Computing on Network Design**, Briscoe, B, Ch. in: *Intelligent Spaces*, Comp. Comms & Netwks Vol.XVIII Springer Verlag (2006)
- **Policing Congestion Response in an Internetwork using Re-feedback** Briscoe, B, Jacquet, A, Di Cairano-Gilfedder, C, Salvatori, A, Soppera, A and Koyabe, M, *Proc. ACM SIGCOMM'05, CCR* 35(4) (2005)
- **TESLA: Multicast Source Authentication Transform Introduction**, Perrig, A, Canetti, R, Song, D, Tygar, D and Briscoe, B, *RFC Editor RFC 4082* (Jun 2005)
- **MARKS: Zero Side-Effect Multicast Key Management using Arbitrarily Revealed Key Sequences**, Briscoe, B, in *Proc 1st Int'l W'kshp on Networked Group Comm'n (NGC'99) LNCS 1736:301--319* (Nov 1999)
- **Nark: Receiver-based Multicast Non-repudiation and Key Management**, Briscoe, B & Fairman, I, in *Proc 1st ACM Conf. on E-Commerce (EC'99)* (Nov 1999)

Career

Aug 2019 - ...
Independent Consultant

Applied Research

Aug'19- : Coordinating ad hoc project team to complete the Low Latency Low Loss Scalable throughput (L4S) architecture, updating TCP and IP (v4 & v6) via the IETF. May 2022: Submitted to steering group (IESG) for publication.

Sep'19-May'20, Apr'21-Sep'21 & Apr-Sep'22: Funded by no-strings Comcast Innovation awards, enabling hire of developers.

Aug 2020 - ...
Independent Consultant

Sep 2017 - Jul 2019
CableLabs, Colorado, US
Consultant

Jul 2015 - Jul 2017
Simula Research Lab, Norway
Chief Research Scientist

Jul 2009 - May 2015
BT Technology & Svc Ops, UK
Chief Researcher

May 2004 - Jun 2009
BT Group CTO, UK
Chief Researcher

Jan 2003 - Apr 2004
BTextact Technologies, UK
Chief Researcher

Dec 2001 - Dec 2003
BT, UK, Research Lab Mgr
Dec 2000 - Oct 2001
Singleton Tech Grp Leader
Jan 1998 - Nov 2000
Prof'l Tech grade

Dec 1994 - Jan 1998
BT Research, UK
Information Systems,
Senior Professional grade

Apr 1988 - Dec 1994
BT Development, UK
Technical Services,
Senior Professional grade

Jul 1984 - Mar 1988
Professional grade

Further Education

Oct 1998 - Jun 2009
Oct 1981 - Jun 1984
Sep 1980 - Jun 1984

Defence against Patent Litigation

Aug'20- : Undermining patents targeting strategically important tech. (for the client and for the Internet).

Technology Transfer

Sep'17-Jul'19: Formation & leadership of **Low Latency DOCSIS** (Data Over Cable) WG: integration of **L4S**. Ecosystem development, including adoption by Google, Microsoft, etc. IPR mgmt, Standardization in DOCSIS 3.1 and IP (v4 & v6) via **IETF**.

Communications Systems

Dec'15- ...: L4S: collaborating to research, test, standardize and develop **L4S** to become the new default Internet service

Nov'15-Dec'15: Simula Research Strategy

Jul'15-Nov'15: **RITE**. Collaborative project on Reducing Internet Transport Latency.

Networks & Infrastructure Research

Jan'13-May'15: **ETSI Network Functions Virtualisation (NFV)**. Helped create this industry specification group (ISG) and convened and chaired (Jan-Apr'13) the Security Expert Group.

Jan'13-May'15: **Trilogy 2**. Collaborative project on compute resource pooling. Led BT team.

Nov'12-May'15: **RITE**. Collaborative proj. on Reducing Internet Transport Latency. Led BT team.

Jan'12-May'15: IETF coordinator for BT Group.

Apr'11-May'15: **Research on applying data centre tech to wide-area comms**, esp. latency & virtualisation incl. TCO model

Jun'10-Nov'14: **IETF Congestion Exposure (ConEx) w-g**. Built over prior 4yrs.

Apr'08-Sep'09: **Global Information Infrastructure Commission**. Through BT's CTO, Matt Bross, the CxOs of many ICT corporations championed the creation of the IETF ConEx wg aiming to change the Internet Protocol, based on my research.

Jan'08-Dec'10: **Trilogy**. BT (P. Eardley & I) initiated and led consortium. Produced Multipath TCP and Congestion Exposure (ConEx).

Jan'08-Dec'10: MIT Communications Futures Programme Interconnection w-g; Co-chair.

Jun'06-Jul'12: **IETF Pre-Congestion Notification (PCN) w-g**: Initiated and led.

Jun'03-'06: **Comms Research Network (CRN)**: Initiated and led this MIT-Cambridge academia-industry collaboration.

Jan'03-Mar'10: **BT's Future Comms Architecture strategic research programme**: Initiated & led, esp. economics & security.

The Edge Lab

Mar '00 - '03: **Qariba**. Joint venture incubating a start-up for bandwidth mgm't products, which BT used in its broadband service.

Jan '00 - Mar '02: **Technical Director, M3I**. Initiated & led consortium; built & proved "Market Managed Multi-service Internet".

'97-'03: **Internet quality-based charging**. Research and advice both for BT Group Technical Strategy and BTUK Pricing Strategy.

'97-'03: **Internet large-scale multicast applications research**. Group security, incl. IETF's multicast stream authentication protocol and the basis of successful Venation start-up.

Distributed Systems Research

'95-'99 BT's ANSA liaison: Int'l distributed systems research consortium (incl. secondment).

'95-'97: **Web and e-commerce infrastructure research**. Integration of Web & proprietary object models. Advisor to BT Group Technical Strategy. BT's IETF HTTP/1.1 w-g rep.

'95-'97: **Technology and company evaluations co-ordination**. Particularly message-bus & e-commerce back-end platforms.

Technical Services for BT R&D

Apr 1992 - Dec 1994 Deputy Unit Manager (concurrent)

>100 staff offered technical services to BT's R&D.

Technical Computing Support Mgr & Design Office Manager (concurrent)

Apr '88-Dec'94: **CAE system manager**, eventually for whole of BT R&D. Migrated 100s of systems & networks to integrated IP-based multi-vendor system with partitioned security.

Apr '88-Dec'94: Led electronic product design team, then whole design office (dozen staff)

Special Project Design Engineer Mech'l, Electronic & Optical (p-t CAD sysadmin '87-'88)

Referees

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