JP VASSEUR, CISCO FELLOW (VP), PHD

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TECHNOLOGY PRODUCT DEVELOPMENT LEADER – ANALYTICS, MACHINE LEARNING/AI, NETWORKING, SECURITY

Passionate Innovation Leader delivering breakthrough technologies across a number of networking areas for 2+ decades. Lead world-class teams to create solutions establishing new market paradigms and global product dominance. Establish relationships and collaborate with international and market-dominant Enterprise and Service Providers; work closely with CIOs, CEOs, CTOs, and CxOs.

Visionary Leadership: Champion breakthrough concepts, evangelize new ways of thinking, and deliver next generation products.

Recognized Expertise: IPv4/v6, MPLS (VPN, Traffic Engineering, Fast Reroute), Co-inventor of PCE (Path Computation Element) and SLN (Self Learning Networks) and IoT Architecture & Protocols, Internet of Things (IoT) Technologies (low power RF, routing, QoS, security, constrained environments), Machine Learning algorithms & technologies, Distributed Analytics, core routing, QoS, multicast, Security (NAC, anomaly detection, 0-day attacks, more), Multi-layer Recovery (Optical, SDH, IP, MPLS), NMS.

Facts in Brief: #1 Cisco Inventor | 600 Patents | 35 Standards | Cisco Fellow (2010) | Cisco Pioneer Award | 3 Published Books | Intl. Conference Speaker | Deliver core, MPLS, PCE, Security, Machine Learning

PROFESSIONAL EXPERIENCE

CISCO SYSTEMS | Paris, France – Boston, USA – Anchorage, USA 1998 – Present

CISCO FELLOW (VP), HEAD OF ENGINEERING (CLOUD-BASED MACHINE LEARNING) / AI FOR THE NETWORK (JUL 2016 – PRESENT)

Machine Learning Cloud Solution, Strategic Market Defining Product: Drive Engineering team of high profile engineers (mostly PhD's located at 10 distributed global sites) to build brand new Machine Learning Cloud solution for the Network (Wireless, Wired, IoT, other). This solution supports multiple applications across the network. Work with leading technologists at **Global Fortune 100** customers.

- **Technology "First" Official Launch / Product Impacts:** Early 2018 launch for first AI/ML technology at this scale impacting entire product family: Wireless Access Points, Controllers, Routers, Switches. (*https://www.youtube.com/watch?v=Jb8U1BrJlXo*)

CISCO FELLOW (VP) - HEAD OF ENGINEERING SECURITY ADVANCED THREAT MACHINE LEARNING / AI (NOV 2013 – JUL 2016)

Cisco Stealthwatch: Built 20-member engineering team from ground up and led development of massively Distributed Machine Learning Security solution (detection of 0-day attack) for the Network. Team members included PhD's in Machine Learning, Statistics, Networking, Security, and more. Created highly distributed architecture to detect advanced threats.

- **First Security Machine Learning Solution 0-day attacks Detection, Concept to Launch:** Built product from conception to commercial delivery of first on-premise Security Machine Learning solution embedded on Routers and Switches.
- **Product Launch:** Product released July 2016. (*https://www.youtube.com/watch?v=-KE23Nr4GZE&feature=youtu.be*)

CISCO FELLOW (VP), CHIEF ARCHITECT OF INTERNET OF THINGS (IOT), FOUNDER IOT MACHINE LEARNING TEAM (OCT 2010 – NOV 2013)
HEAD OF STANDARDS TEAM

Cisco Smart Grid Routers (CGR), IPv6 for Smart Meters: Led team to deliver IPv6 architecture for Internet of Things (IoT), including Advanced Machine Learning solutions (routing optimization, Security DDoS). Formed **IPSO Alliance** and new **IETF** Working Group (Routing for IoT).

- **Technologies & Products:** Designed/developed IoT technologies (IEEE 802.15.4 layers, RPL - co-inventor, 6LowPAN), and IoT Products, such as Connected Grid Router, Lightweight IPv6 stack, and more. (*https://www.youtube.com/watch?v=co2MLqkJVXs*)
- **IoT Evangelist / Partner Engagement:** Evangelized IoT concepts and gained support of partners and customers in Smart Grids, Lighting, Connected Buildings, Industrial Automation, Smart cities, Physical Security, Water Management, and much more.
- **IPv6 Dominance from Proprietary Protocols / IPv6 Evangelist:** Overcame technical challenges to support world's largest IPv6 IoT network, evangelized IPv6 for the IoT, and drove cross-industry architecture move from proprietary Protocols to IPv6 Protocols.

CISCO DISTINGUISHED ENGINEER / TECHNICAL LEADER, IP/MPLS CORE TECHNOLOGIES – SERVICE PROVIDERS (APR 2002 - OCT 2010)

- **Co-inventor / Path Computation Element Architecture:** Lead Architect/co-inventor of PCE architecture - core component of SDN.
- **Co-inventor / MPLS FRR, TE, PCE, Signaling Protocols:** Lead Designer/co-inventor of many Internet technologies, including MPLS FRR, TE, PCE, various signaling protocols (e.g. PCEP), Routing, QoS, Optical Networks, GMPLS, and more.
- **Innovation Award:** Winner, "*Cisco Pioneer Award*" for MPLS Traffic Engineering - highest ranked internal prize for innovation.

PRIOR POSITIONS: NETWORKING EXPERT – CISCO (EMEA); CEGETEL; ATOS; CABLE & WIRELESS AUG 1992 - APR 2002

EDUCATION

PhD, Telecom Paris, Paris, France

MS, Computer Science, Stevens Institute of Technology, USA and **MS, Networking,** EPITA, Paris, France

JP VASSEUR, CISCO FELLOW, PHD

ADDENDUM: BOOKS, PATENTS, STANDARDS, PUBLICATIONS, ASSOCIATIONS AND CONFERENCES AND

BOOKS

"Network Recovery: Protection and Restoration of Optical, SONET-SDH, IP, and MPLS (The Morgan Kaufmann Series in Networking)" - Jean-Philippe Vasseur, Mario Pickavet, and Piet Demeester - Morgan Kaufmann - July 2004, 544 pages.

"Definitive MPLS Network Designs" - Jean-Philippe Vasseur, Jim Guichard et Francois Le Faucheur - Cisco Press - March 2005, 552 Pages.

"Interconnecting Smart Objects with IP: The next Internet" - Jean-Philippe Vasseur, Adam Dunkers - Morgan Kaufman - May 2010, 400 pages.

PATENTS (CO-INVENTOR)

(co) Inventor of 450 patents on various networking technologies (architecture, protocols and algorithms): Internet Architecture including "The Internet of Things", Security, IPv6, Routing, Quality of Service and Call Admission Control, Low power PHY/MAC technologies (PLC and LP Wireless), MPLS, Traffic Engineering, Virtual Private Networks, Multicast, Network Management, Machine Learning.

STANDARDS (CO-AUTHOR)

RFC 6554 An IPv6 Routing Header for Source Routes with the Routing Protocol for Low-Power and Lossy Networks (RPL) J. Hui, JP. Vasseur, D. Culler, V. Manral, March 2012.

RFC 6553 The Routing Protocol for Low-Power and Lossy Networks (RPL) Option for Carrying RPL Information in Data-Plane Datagrams J. Hui, JP. Vasseur, March 2012

RFC 6551: Routing Metrics used for Path Calculation in Low Power and Lossy Networks, JP. Vasseur, M. Kim, K. Pister, N. Dejean, D. Barthel, March 2012

RFC 6650: RPL: IPv6 Routing Protocol for Low power and Lossy Networks, T. Winter, P. Thubert, A. Brandt, J. Hui, R. Kelsey, P. Levis, K. Pister, R. Struik, JP. Vasseur, R. Alexander, March 2012

RFC 5886: A Set of Monitoring Tools for Path Computation Element (PCE)-Based Architecture JP. Vasseur, JL. Le Roux, Y. Ikejiri, June 2010

RFC 5817: Graceful Shutdown in MPLS and Generalized MPLS Traffic Engineering Networks Z. Ali, JP. Vasseur, A. Zamfir, J. Newton, April 2010

RFC 5712: MPLS Traffic Engineering Soft Preemption M. Meyer, JP. Vasseur, January 2010

RFC 5711: Node behavior upon originating and receiving Resource ReserVation Protocol (RSVP) Path Error message JP. Vasseur, Ed., G. Swallow, I. Minei, January 2010

RFC 5710: PathErr Message Triggered MPLS and GMPLS LSP Reroute, L. Berger, D. Papadimitriou, JP. Vasseur, January 2010

RFC 5553: Resource Reservation Protocol (RSVP) Extensions for Path Key Support, A. Farrel, R. Bradford, JP. Vasseur, May 2009

RFC 5541: Encoding of Objective Functions in the Path Computation Element Communication Protocol (PCEP) JP. Vasseur, R. Zhang, N. Bitar, JL. Le Roux, April 2009

RFC 5520: Preserving Topology Confidentiality in Inter-Domain Path Computation Using a Path-Key-Based Mechanism R. Bradford, JP. Vasseur, A. Farrel, April 2009

RFC 5468: Performance Analysis of Inter-Domain Path Computation Methodologies, S. Dasgupta, J. de Oliveira, JP. Vasseur, April 2009

RFC 5441: A Backward-Recursive PCE-Based Computation (BRPC) Procedure to Compute Shortest Constrained Inter-Domain Traffic Engineering Label Switched Paths, JP. Vasseur, R. Zhang, N. Bitar, JL. Le Roux, April 2009

RFC 5440: Path Computation Element (PCE) Communication Protocol (PCEP), JP. Vasseur, JL. Le Roux, March 2009
RFC 5330: A Link-Type sub-TLV to Convey the Number of Traffic Engineering Label Switched Paths Signaled with Zero Reserved Bandwidth across a Link JP. Vasseur, M. Meyer, K. Kumaki, A. Bonda, October 2008

RFC 5298: Analysis of Inter-Domain Label Switched Path (LSP) Recovery T. Takeda, A. Farrel, Y. Ikejiri, JP. Vasseur, August 2008

RFC 5152: A Per-Domain Path Computation Method for Establishing Inter-Domain Traffic Engineering (TE) Label Switched Paths (LSPs) JP. Vasseur, A. Ayyangar, R. Zhang, February 2008

RFC 5151: Inter-Domain MPLS and GMPLS Traffic Engineering -- Resource Reservation Protocol-Traffic Engineering (RSVP-TE) Extensions A. Farrel, A. Ayyangar, JP. Vasseur, February 2008

RFC 5150: Label Switched Path Stitching with Generalized Multiprotocol Label Switching Traffic Engineering (GMPLS TE) A. Ayyangar, K. Kompella, JP. Vasseur, A. Farrel, February 2008

RFC 5089: IS-IS Protocol Extensions for Path Computation Element (PCE) Discovery JL. Le Roux, JP. Vasseur, Y. Ikejiri, R. Zhang, January 2008

RFC 5088: OSPF Protocol Extensions for Path Computation Element (PCE) Discovery JL. Le Roux, JP. Vasseur, Y. Ikejiri, R. Zhang, January 2008

RFC 5073: IGP Routing Protocol Extensions for Discovery of Traffic Engineering Node Capabilities J.P. Vasseur, J.L. Le Roux, December 2007

RFC 5029: Definition of an IS-IS Link Attribute Sub-TLV JP. Vasseur, S. Previdi, September 2007

RFC 4972: Routing Extensions for Discovery of Multiprotocol (MPLS) Label Switch Router (LSR) Traffic Engineering (TE) Mesh Membership JP. Vasseur, JL. Leroux, S. Yasukawa, S. Previdi, P. Psenak, P. Mabbey, July 2007

RFC 4971: Intermediate System to Intermediate System (IS-IS) Extensions for Advertising Router Information JP. Vasseur, N. Shen, R. Aggarwal, July 2007

RFC 4970: Extensions to OSPF for Advertising Optional Router Capabilities A. Lindem, N. Shen, JP. Vasseur, R. Aggarwal, S. Shaffer, July 2007

RFC 4829: Label Switched Path (LSP) Preemption Policies for MPLS Traffic Engineering J. de Oliveira, JP. Vasseur, L. Chen, C. Scoglio, Avril 2007

RFC 4736: Reoptimization of Multiprotocol Label Switching (MPLS) Traffic Engineering (TE) Loosely Routed Label Switched Path (LSP) JP. Vasseur, Y. Ikejiri, R. Zhang, November 2006

RFC 4726: A Framework for Inter-Domain Multiprotocol Label Switching Traffic Engineering A. Farrel, J.-P. Vasseur, A. Ayyangar, November 2006

RFC 4655: A Path Computation Element (PCE)-Based Architecture A. Farrel, J.-P. Vasseur, J. Ash, August 2006

RFC 4561: Definition of a Record Route Object (RRO) Node-Id Sub-Object J.-P. Vasseur, Ed., Z. Ali, S. Sivabalan, June 2006

RFC 4420: Encoding of Attributes for Multiprotocol Label Switching (MPLS) Label Switched Path (LSP) Establishment Using Resource ReserVation Protocol-Traffic Engineering (RSVP-TE) A. Farrel, D. Papadimitriou, J.-P. Vasseur, A. Ayyangar, February 2006

RFC 4216: MPLS Inter-Autonomous System (AS) Traffic Engineering (TE) Requirements R. Zhang, J.-P. Vasseur, November 2005

RFC 4105: Requirements for Inter-Area MPLS Traffic Engineering J.-L. Le Roux, J.-P. Vasseur, J. Boyle, June 2005

PUBLICATIONS, CONFERENCES

"Local recovery solutions from multi-link failures in MPLS-TE networks with probable failure patterns", Marco Tacca, Kai Wu, Andrea Fumagalli, Jean-Philippe Vasseur Globecom 2004, Dallas, TX, Dec 2004.

"A New Distributed Dynamic Bandwidth Reservation Mechanism to Improve Resource Utilization: Simulation and Analysis on Real Network and Traffic Scenarios", S. Dasgupta, J. C. de Oliveira, and J.-P. Vasseur in the Proceedings of IEEE INFOCOM 2006, Barcelona, Spain, April 23-29, 2006.

Local Detection and Recovery from Multi-Failure Patterns in MPLS-TE Networks", Marco Tacca, Kai Wu, Andrea Fumagalli, Jean-Philippe Vasseur, ICC 2006, Istanbul, Turkey, June 2006.

"A Performance Study of IP and MPLS Traffic Engineering Techniques under Traffic Variations", S. Dasgupta, J. C. de Oliveira, and J.-P. Vasseur, Proceedings of the IEEE Globecom 2007, Washington, DC, November 26-30, 2007.

"Trend Based Bandwidth Provisioning: An Online Approach for Traffic Engineered Tunnels", Proceedings of the Next Generation Internet Networks (Euro-NGI 2008), S. Dasgupta, J. C. de Oliveira, and J.-P. Vasseur, Krakow, Poland, April 28-30, 2008.

A Queueing Model Framework of PCE-based Inter-Area Path Computation, Infocom 2009, Juanjuan Yu1, Yue He1, Kai Wu1, Marco Tacca1, Andrea Fumagalli1, and Jean-Phillippe Vasseur, Apr 2009.

A performance evaluation study of RPL: Routing protocol for low power and lossy networks" – Joydeep, J. C. de Oliveira, and J.-P. Vasseur, 44th Annual Conference on Information Sciences and Systems, CISS 2010; Princeton, NJ; 17 March 2010 through 19 March 2010.

"Beyond Interoperability: Pushing the Performance of Sensornet IP Stacks." JeongGil Ko, Joakim Eriksson, Nicolas Tsiftes, Stephen Dawson-Haggerty, Mathilde Durvy, JP Vasseur, Andreas Terzis, Adam Dunkels, and David Culler. In Proceedings of the ACM Conference on Networked Embedded Sensor Systems, ACM SenSys 2011, Seattle, WA, USA, November 2011.

PUBLICATIONS, JOURNALS

"The IP/MPLS over ASON/GMPLS test bed of the IST project LION", C. Cavazzoni, V. Barosco, A. D'Allessandro, A. Manzalini, S. Milani, G. Ricucci, R. Morro, R. Geerdsen, U. Hartmer, G. Lehr, U. Pauluhn, S. Wevering, D. Pendarakis, N. Wauters, R. Gigantino, JP Vasseur, K. Shimano, G. Monari, A. Salvioni, IEEE/OSA Journal of Lightwave Technology, November 2003.

"Benefits of GMPLS for multilayer recovery" IEEE GMPLS Special Edition, B. Puype, Jean-Philippe Vasseur, Adelbert Groebbens, Sophie De Maesschalck, Didier Colle, Ilse Lievens, Mario Pickavet, and Piet Demeester, IEEE Communications Magazine, Vol. 43, No. 7, pp. 51-59, July 2005, July 2005.

Path-Computation-Element- Based Architecture for Interdomain MPLS/GMPLS Traffic Engineering: Overview and Performance", S. Dasgupta, J. C. de Oliveira, and J.-P. Vasseur, in IEEE Network, Special Issue on Network Systems Architecture, vol. 21(4), pp. 38-45, July/August 2007.

"Dynamic Traffic Engineering for Mixed Traffic on International Networks", S. Dasgupta, J. C. de Oliveira, and J.-P. Vasseur, in Computer Networks (Elsevier), vol. 52(11), pp. 2237-2258, August 2008.

"A Comprehensive Evaluation of RPL under Mobility". Kevin Lee, Raghuram Sudhaakar, Jianxia Ning, Lillian Dai, Sateesh Addepalli, JP Vasseur, and M. Gerla – To be published in International Journal of Vehicular Technology.

PUBLICATIONS, OTHER PAPERS

"IP for Smart Objects," J-P Vasseur, Adam Dunkels, IPSO White Paper, March 2008.

"RPL: The IP Routing protocol designed for low power and lossy networks," J.-P. Vasseur et al, IPSO White paper, April 2011.

"IP in commercial buildings," J.-P. Vasseur, IPSO White paper

"Recommendation for an end-to-end IP architecture for Smart Grid Networks", J.-P. Vasseur et al, Smart Grid: White paper, July 2009.

"IP smart object networks", J.-P. Vasseur, Expresso (Italy)

"IP for Smart Objects", J.-P. Vasseur, Hidden Wires Magazine, August 2010

ASSOCIATIONS

Internet Engineering Task Force (IETF), Co-chair of the IETF ROLL Working Group

Internet Engineering Task Force (IETF),Co-chair of the IETF PCE Working Group

Institute of Electrical and Electronics Engineers (IEEE), Chair of the IP group of IEEE P1901.2

IP for Smart Object Alliance (IPSO), Co-founder and Chair of the Technology Advisory Board, 2008 to 2011

CONFERENCES

Key Note Speaker, SENSORCOM 2010, "The Internet of Things"

Co-chair of the Networking Track, IEEE Smart Grid Washington 2010

Technical Program Committee: Wiman (Workshop on Wireless Mesh and Ad Hoc Networks)

- IP+Optical Networks, Wiman (Workshop on Wireless Mesh and Ad Hoc Networks), 2008, 2009, 2010
- DRCN: Designing Reliable Communication Networks, Wiman (Workshop on Wireless Mesh and Ad Hoc Networks), multiple years

Co-editor, Journal of Communications and Networks (JCN), various articles

General Chair, SENSORCOM 2008

Technical program member of several Sensor related conferences

IARIA Fellow, International Academy, Research, and Industry Association (IARIA), 2010

Attendee, MPLS World Congress, multiple years

Attendee, MPLS Washington, multiple years