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POSITION

Professor, School of Information Science and Technology,
University of Science and Technology of China

RESEARCH INTERESTS

Optical networks, Software-defined networking, Knowledge-defined networking,
Network function virtualization, Datacenter networks.

EDUCATION

University of California, Davis 09/2003–07/2007
Ph.D. in Electrical and Computer Engineering
Advisor: Prof. S. J. Ben Yoo
Dissertation: Highly scalable optical-label switching network systems incorporating label swapping and optical regeneration

University of California, Davis 08/2001–09/2003
M.S. in Electrical and Computer Engineering
Advisor: Prof. S. J. Ben Yoo

University of Science and Technology of China 09/1996–07/2001
B. S. in Electrical Engineering

WORK EXPERIENCE

Professor 06/2014–present
Director of the Intelligent Networking systems & Future InterNet InfrasTructurE (INFINITE) Lab
School of Information Science and Technology
University of Science and Technology of China
Hefei, Anhui, China

Associate Professor 01/2011–06/2014
School of Information Science and Technology
University of Science and Technology of China
Hefei, Anhui, China

Senior Software Engineer 07/2007–01/2011
Cisco Systems
San Jose, California, USA

JOURNAL EDITORS

- Series Editor, Optical Communications Series, IEEE Communications Magazine, 2017–.
- Lead Guest Editor, “Optical Networks in Cloud Computing”, IEEE Network.
- Guest Editor, “Ambient Assisted Living Communications”, IEEE Communications Magazine.
- Editorial Board Member of:
 - IEEE Communications Magazine, 2015–.
 - Optical Switching and Networking (Elsevier), 2010–.
 - IEEE Transactions on Network and Service Management, 2017–.
 - Telecommunication Systems Journal (Springer), 2011–.
 - Photonic Network Communications Journal (Springer), 2015–.
 - European Transactions on Emerging Telecommunications Technologies (Wiley), 2012–.
 - KSII Transactions on Internet and Information Systems, 2015–.

CONFERENCE ACTIVITIES

- Publicity Vice-Chair, IEEE Global Communications Conference (GLOBECOM) 2015.
- Symposium Chair/Co-Chair of:
 - International Conference on Computing, Networking & Communications (ICNC) 2016.
 - ICNC 2015, ICNC 2014, and ICNC 2013.
 - International Conference on Wireless Communications and Signal Processing (WCSP) 2014.
 - International Symposium on Communication Systems, Networks and Digital Signal Processing (CSNDSP) 2012.
- Technical Co-Chair, Workshop on Cloud Computing Systems, Networks and Applications (CCSNA) in GLOBECOM 2015.
- TPC Member of:
 - OSA Signal Processing in Photonic Communications (SPPCom), 2011–2015.
 - IEEE Photonics Conference (IPC), 2013–.
 - INFOCOM, ICC, GLOBECOM, ICNC, and many others.

PROFESSIONAL ACTIVITIES

- Member, Steering Committee of IEEE International Conference on High Performance Switching and Routing (HPSR), 2018–2020.
- Secretary, IEEE Communications Society (ComSoc) Technical Committee on Optical Networking (ONTN), 2017–.
- Member, Best Paper Selection Committee of GLOBECOM 2015.
- Chair, Special Interest Group on Green Multimedia Communications, IEEE ComSoc Technical Committee on Multimedia Communications (MMTC), 2014–.
- Vice-Chair, Special Interest Group on Multimedia Content Distribution: Infrastructure and Algorithms (MCDIA), IEEE ComSoc Technical Committee on Multimedia Communications (MMTC), 2012–2014.

PROFESSIONAL Memberships

- Senior Member of IEEE.
 - Member, IEEE Communication Society.
 - Member, IEEE Photonics Society.
- Senior Member of Optical Society of America (OSA).

HONORS AND AWARDS

- IEEE ComSoc Distinguished Lecturer, 2018–2019.
- Best Paper Awards from
 - IEEE International Conference on Communications (ICC) 2015.
 - ICNC 2014.
 - GLOBECOM 2013.
 - ICC 2013.
- Team Achievement Award for Outstanding Contributions, Cisco Systems, 2008.

PUBLICATIONS

1. Book Chapters

B1. **Zuqing Zhu**, “Energy-Efficient Optical Transport Networks with Mixed Regenerator Placement,” Chapter 6 in *Intelligent Systems for Optical Networks Design: Advancing Techniques*, IGI Global, DOI: 10.4018/978-1-4666-3652-1, 2013.

2. Editorials

E9. Xiang Liu and **Zuqing Zhu**, “Advances in Optical Communications Technologies,” *IEEE Communications Magazine*, vol. 56, no. 2, pp. 176-176, Feb. 2018 (Series Editorial).

E8. Xiang Liu and **Zuqing Zhu**, “Advances in Optical Communications Technologies,” *IEEE Communications Magazine*, vol. 55, no. 8, pp. 155-155, Aug. 2017 (Series Editorial).

E7. Xiang Liu and **Zuqing Zhu**, “Advances in Optical Communications Technologies,” *IEEE Communications Magazine*, vol. 55, no. 2, pp. 142-142, Feb. 2017 (Series Editorial).

E6. Xinlin Huang, Xiaomin Ma, Fei Hu, and **Zuqing Zhu**, “Editorial for Chinacom2015 Special Issue,” *Mobile Networks & Applications*, vol. 21, no. 6, pp. 905-907, Dec. 2016 (Guest Editorial).

E5. Joel J. P. C. Rodrigues, Sudip Misra, Haohong Wang, and **Zuqing Zhu**, “Ambient Assisted Living Communications,” *IEEE Communications Magazine*, vol. 53, no. 1, pp. 24-25, Jan. 2015 (Guest Editorial).

E4. Sana Ullah, Joel J. P. C. Rodrigues, Farrukh Aslam, Christos Verikoukis, and **Zuqing Zhu**, “Protocols and Architectures for Next-Generation Wireless Sensor Networks,” *International Journal of Distributed Sensor Networks*, vol. 2014, pp. 1-3, Dec. 2014 (Guest Editorial).

E3. Piotr Zwierzykowski, Steven Gao, Wai Pang Ng, and **Zuqing Zhu**, “Photonic and RF Communications Systems,” *IET Circuits, Devices & Systems*, vol. 8, no. 5, pp. 331-333, Sept. 2014 (Guest Editorial).

E2. Jason Jue, Vincenzo Eramo, Victor Lopez, and **Zuqing Zhu**, “Software-Defined Elastic Optical Networks,” *Photonic Network Communications*, vol. 28, no. 1, pp. 1-3, Aug. 2014 (Guest Editorial).

E1. **Zuqing Zhu**, S. J. B. Yoo, Zhaohui Li, and Nicolas Fontaine, “Optical Networks in Cloud Computing,” *IEEE Network*, vol. 27, no. 6, pp. 4-5, Nov./Dec. 2013 (Guest Editorial).

3. Referred Journal Papers

J95. Huibai Huang, Bin Niu, Shaofei Tang, Shengru Li, Sicheng Zhao, Kai Han, and **Zuqing Zhu**, “Realizing Highly-Available, Scalable and Protocol-Independent vSDN Slicing with a Distributed Network Hypervisor System,” *IEEE Access*, in Press, 2018 (Corresponding Author).

- J94. Wei Lu, Ping Lu, Quanying Sun, Shui Yu, and **Zuqing Zhu**, “Profit-Aware Distributed Online Scheduling for Data-Oriented Tasks in Cloud Datacenters,” *IEEE Access*, in Press, 2018 (Corresponding Author).
- J93. Wei Lu, Xiaofu Yin, Xiaobao Cheng, and **Zuqing Zhu**, “On Cost-Efficient Integrated Multi-layer Protection Planning in IP-over-EONs,” *IEEE/OSA Journal of Lightwave Technology*, vol. 36, no. 10, pp. 2037-2048, May 2018 (Corresponding Author).
- J92. Xiaokang Xie, Qing Ling, Ping Lu, Wei Xu, and **Zuqing Zhu**, “Evacuate before Too Late: Distributed Backup in Inter-DC Networks with Progressive Disasters,” *IEEE Transactions on Parallel and Distributed Systems*, in Press, 2017 (Corresponding Author).
- J91. Xiaoliang Chen, **Zuqing Zhu**, Jiannan Guo, Sheng Kang, Roberto Proietti, Alberto Castro, and S. J. B. Yoo, “Leveraging Mixed-Strategy Gaming to Realize Incentive-Driven VNF Service Chain Provisioning in Broker-based Elastic Optical Inter-Datacenter Networks,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 10, no. 2, pp. A232-A240, Feb. 2018 (**Invited**).
- J90. **Zuqing Zhu**, Bingxin Kong, Jie Yin, Sicheng Zhao, and Shengru Li, “Build to Tenants’ Requirements: On-Demand Application-Driven vSD-EON Slicing,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 10, no. 2, pp. A206-A215, Feb. 2018 (**Invited**).
- J89. Siqi Liu, Wei Lu, and **Zuqing Zhu**, “On the Cross-Layer Orchestration to Address IP Router Outages with Cost-Efficient Multilayer Restoration in IP-over-EONs,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 10, no. 1, pp. A122-A132, Jan. 2018 (**Invited**) (Corresponding Author).
- J88. Shengru Li, Kai Han, Nirwan Ansari, Qinkun Bao, Daoyun Hu, Junjie Liu, Shui Yu, and **Zuqing Zhu**, “Improving SDN Scalability with Protocol-Oblivious Source Routing: A System-Level Study,” *IEEE Transactions on Network and Service Management*, vol. 15, no. 1, pp. 275-288, Mar. 2018 (Corresponding Author).
- J87. Xiaoliang Chen, Muqing Zhou, Shilin Zhu, Sheng Kang, Lu Sun, and **Zuqing Zhu**, “Optimizing FIPP-p-Cycle Protection Design to Realize Availability-aware Elastic Optical Networks,” *IEEE Communications Letters*, vol. 22, no. 1, pp. 65-68, Jan. 2018 (Corresponding Author).
- J86. Quanying Sun, Yuhan Xue, Shengru Li, and **Zuqing Zhu**, “Design and Demonstration of High-Throughput Protocol Oblivious Packet Forwarding to Support Software-Defined Vehicular Networks,” *IEEE Access*, vol. 5, 24004-24011, 2017 (Corresponding Author).
- J85. Ping Lu and **Zuqing Zhu**, “Data-Oriented Task Scheduling in Fixed- and Flexible-Grid Multilayer Inter-DC Optical Networks: A Comparison Study,” *IEEE/OSA Journal of Lightwave Technology*, vol. 35, no. 24, pp. 5335-5346, Dec. 2017 (Corresponding Author).
- J84. Jing Zhu and **Zuqing Zhu**, “Physical-Layer Security in MCF-based SDM-EONs: Would Crosstalk-Aware Service Provisioning be Good Enough?” *IEEE/OSA Journal of Lightwave Technology*, vol. 35, no. 22, pp. 4826-4837, Nov. 2017 (Corresponding Author).
- J83. Lu Sun, Xiaoliang Chen and **Zuqing Zhu**, “Multi-Broker based Service Provisioning in Multi-Domain SD-EONs: Why and How Should the Brokers Cooperate with Each Other?,” *IEEE/OSA Journal of Lightwave Technology*, vol. 35, no. 17, pp. 3722-3733, Sept. 2017 (Corresponding Author).
- J82. Jie Yin, Jiannan Guo, Bingxin Kong, Heqing Yin, and **Zuqing Zhu**, “Experimental Demonstration of Building and Operating QoS-aware Survivable vSD-EONs with Transparent Resiliency,” *Optics Express*, vol. 25, no. 13, pp. 15468-15480, 2017 (Corresponding Author).
- J81. Junjie Liu, Wei Lu, Fen Zhou, Ping Lu, and **Zuqing Zhu**, “On Dynamic Service Function

- Chain Deployment and Readjustment,” *IEEE Transactions on Network and Service Management*, vol. 14, no. 3, pp. 543-553, Sept. 2017 (Corresponding Author).
- J80. Lipei Liang, Wei Lu, Massimo Tornatore, and **Zuqing Zhu**, “Game-Assisted Distributed Decision-Making to Build Virtual TDM-PONs in C-RANs Adaptively,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 9, no. 7, pp. 546-554, Jul. 2017 (Corresponding Author).
- J79. Yixiang Wang, Ping Lu, Wei Lu, and **Zuqing Zhu**, “Cost-Efficient Virtual Network Function Graph (vNFG) Provisioning in Multidomain Elastic Optical Networks,” *IEEE/OSA Journal of Lightwave Technology*, vol. 35, no. 13, pp. 2712-2723, Jul. 2017 (Corresponding Author).
- J78. Shengru Li, Kai Han, Huibai Huang, Quanying Sun, Junjie Liu, Sicheng Zhao, and **Zuqing Zhu**, “SR-PVX: A Source Routing based Network Virtualization Hypervisor to Enable POF-FIS Programmability in vSDNs,” *IEEE Access*, vol. 5, pp. 7659-7666, 2017 (Corresponding Author).
- J77. Haitao Wu, Fen Zhou, **Zuqing Zhu**, and Yaojun Chen, “On the Distance Spectrum Assignment in Elastic Optical Networks,” *IEEE/ACM Transactions on Networking*, vol. 25, no. 4, pp. 2391-2404, Aug. 2017.
- J76. Jing Zhu, Bin Zhao, and **Zuqing Zhu**, “Leveraging Game Theory to Achieve Efficient Attack-aware Service Provisioning in EONs,” *IEEE/OSA Journal of Lightwave Technology*, vol. 35, no. 10, pp. 1785-1796, May 2017 (Corresponding Author).
- J75. **Zuqing Zhu**, Xiahe Liu, Yixiang Wang, Wei Lu, Long Gong, Shui Yu, and Nirwan Ansari, “Impairment- and Splitting-Aware Cloud-Ready Multicast Provisioning in Elastic Optical Networks,” *IEEE/ACM Transactions on Networking*, vol. 25, no. 2, pp. 1220-1234, Apr. 2017.
- J74. Shengru Li, Daoyun Hu, Wenjian Fang, Shoujiang Ma, Cen Chen, Huibai Huang, and **Zuqing Zhu**, “Protocol Oblivious Forwarding (POF): Software-Defined Networking with Enhanced Programmability,” *IEEE Network*, vol. 31, no. 2, pp. 58-66, Mar./Apr. 2017 (Corresponding Author).
- J73. Qiang Fan, Hancheng Lu, Peilin Hong, and **Zuqing Zhu**, “Throughput-Power Tradeoff Association for User Equipments in WLAN/Cellular Integrated Networks,” *IEEE Transactions on Vehicular Technology*, vol. 66, no. 4, pp. 3462-3474, Apr. 2017.
- J72. Menglu Zeng, Yan Li, Wenjian Fang, Wei Lu, Xiahe Liu, Hang Yu, and **Zuqing Zhu**, “Control Plane Innovations to Realize Dynamic Formulation of Multicast Sessions in Inter-DC Software-Defined Elastic Optical Networks,” *Optical Switching and Networking*, vol. 23, no. 3, pp. 259-269, Jan. 2017 (Corresponding Author).
- J71. Long Gong, Huihui Jiang, Yixiang Wang, and **Zuqing Zhu**, “Novel Location-Constrained Virtual Network Embedding (LC-VNE) Algorithms Towards Integrated Node and Link Mapping,” *IEEE/ACM Transactions on Networking*, vol. 24, no. 6, pp. 3648-3661, Dec. 2016 (Corresponding Author).
- J70. Alberto Castro, Luis Velasco, Lluís Gifre, Cen Chen, Jie Yin, **Zuqing Zhu**, Roberto Proietti, and S. J. B. Yoo, “Brokered Orchestration for End-to-End Service Provisioning across Heterogeneous Multi-Operator (Multi-AS) Optical Networks,” *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 23, pp. 5391-5400, Dec. 2016.
- J69. Daoyun Hu, Shengru Li, Huibai Huang, Wenjian Fang, and **Zuqing Zhu**, “Flexible Flow Converging: A Systematic Case Study on Forwarding Plane Programmability of Protocol-Oblivious Forwarding (POF),” *IEEE Access*, vol. 4, pp. 4707-4719, 2016 (Corresponding Author).
- J68. Min Ju, Fen Zhou, Shilin Xiao, and **Zuqing Zhu**, “Power-efficient Protection with Directed p-Cycles for Asymmetric Traffic in Elastic Optical Networks,” *IEEE/OSA Journal of Lightwave*

Technology, vol. 34, no. 17, pp. 4053-4065, Sept. 2016.

J67. Xiaoliang Chen, **Zuqing Zhu**, Lu Sun, Jie Yin, Shilin Zhu, Alberto Castro, and S. J. B. Yoo, "Incentive-Driven Bidding Strategy for Brokers to Compete for Service Provisioning Tasks in Multi-Domain SD-EONs," *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 16, pp. 3867-3876, Aug. 2016 (Corresponding Author).

J66. Wenjian Fang, Menglu Zeng, Xiahe Liu, Wei Lu, and **Zuqing Zhu**, "Joint Spectrum and IT Resource Allocation for Efficient vNF Service Chaining in Inter-Datacenter Elastic Optical Networks," *IEEE Communications Letters*, vol. 20, no. 8, pp. 1539-1542, Aug. 2016 (Corresponding Author).

J65. Menglu Zeng, Wenjian Fang, and **Zuqing Zhu**, "Orchestrating Tree-Type VNF Forwarding Graphs in Inter-DC Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 14, pp. 3330-3341, Jul. 2016 (Corresponding Author).

J64. Bin Zhao, Xiaoliang Chen, Jing Zhu, and **Zuqing Zhu**, "Survivable Control Plane Establishment with Live Control Service Backup and Migration in SD-EONs," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 8, no. 6, pp. 371-381, Jun. 2016 (Corresponding Author).

J63. Min Ju, Fen Zhou, **Zuqing Zhu**, and Shilin Xiao, "Distance-adaptive, low CAPEX cost p-cycle design without candidate cycle enumeration in mixed-line-rate optical networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 11, pp. 2663-2676, Jun. 2016.

J62. Ping Lu, Qing Ling, and **Zuqing Zhu**, "Maximizing Utility of Time-Constrained Emergency Backup in Inter-Datacenter Networks," *IEEE Communications Letters*, vol. 20, no. 5, pp. 890-893, May 2016 (Corresponding Author).

J61. Jing Zhu, Bin Zhao, Wei Lu, and **Zuqing Zhu**, "Attack-aware Service Provisioning to Enhance Physical-Layer Security in Multi-Domain EONs," *IEEE/OSA Journal of Lightwave Technology*, vol. 34, no. 11, pp. 2645-2655, Jun. 2016 (Corresponding Author).

J60. Kaiyue Wu, Ping Lu, and **Zuqing Zhu**, "Distributed Online Scheduling and Routing of Multicast-Oriented Tasks for Profit-Driven Cloud Computing," *IEEE Communications Letters*, vol. 20, no. 4, pp. 684-687, Apr. 2016 (Corresponding Author).

J59. Mingyang Zhang, Changsheng You, and **Zuqing Zhu**, "On the Parallelization of Spectrum Defragmentation Reconfigurations in Elastic Optical Networks," *IEEE/ACM Transactions on Networking*, vol. 24, no. 5, pp. 2819-2833, Oct. 2016 (Corresponding Author).

J58. Xiaoliang Chen, Fan Ji, Shilin Zhu, Qinkun Bao, and **Zuqing Zhu**, "Availability-Aware Service Provisioning in SD-EON based Inter-Datacenter Networks," *Photonic Network Communications*, vol. 31, no. 3, pp. 543-549, Jun. 2016 (Corresponding Author).

J57. Wei Lu, **Zuqing Zhu**, and Biswanath Mukherjee, "Optimizing Deadline-Driven Bulk-Data Transfer to Revitalize Spectrum Fragments in EONs," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 7, no. 12, pp. B173-B183, Dec. 2015 (**Invited**) (Corresponding Author).

J56. Huihui Jiang, Yixiang Wang, Long Gong, and **Zuqing Zhu**, "Availability-Aware Survivable Virtual Network Embedding (A-SVNE) in Optical Datacenter Networks," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 7, no. 12, pp. 1160-1171, Dec. 2015 (Corresponding Author).

J55. Shengru Li, Wei Lu, Xiahe Liu, and **Zuqing Zhu**, "Fragmentation-aware service provisioning for advance reservation multicast in SD-EONs," *Optics Express*, vol. 23, no. 20, pp. 25804-25813, Oct. 2015 (Corresponding Author).

- J54. Wei Lu, **Zuqing Zhu**, and Biswanath Mukherjee, "On Hybrid IR and AR Service Provisioning in Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 22, pp. 4659-4669, Nov. 2015 (Corresponding Author).
- J53. Lulu Yang, Long Gong, Fen Zhou, Bernard Cousin, Miklos Molnar, and **Zuqing Zhu**, "Leveraging Light-Forest with Rateless Network Coding to Design Efficient All-Optical Multicast Schemes for Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 18, pp. 3945-3955, Sept. 2015 (Corresponding Author).
- J52. Xiaoliang Chen, Massimo Tornatore, Fan Ji, Wenshuang Zhou, Cen Chen, Daoyun Hu, Shilin Zhu, Liu Jiang, and **Zuqing Zhu**, "Flexible Availability-Aware Differentiated Protection in Software-Defined Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 18, pp. 3872-3882, Sept. 2015 (Corresponding Author).
- J51. Xiaoliang Chen, Shilin Zhu, Liu Jiang, and **Zuqing Zhu**, "On Spectrum Efficient Failure-Independent Path Protection p-Cycle Design in Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 17, pp. 3719-3729, Sept. 2015 (Corresponding Author).
- J50. Nana Xue, Xiaoliang Chen, Suoheng Li, Long Gong, Daoyun Hu, and **Zuqing Zhu**, "Demonstration of OpenFlow-Controlled Network Orchestration for Adaptive SVC Video Multicast," *IEEE Transactions on Multimedia*, vol. 17, no. 9, pp. 1617-1629, Sept. 2015 (Corresponding Author).
- J49. Ping Lu, Liang Zhang, Xiahe Liu, Jingjing Yao, and **Zuqing Zhu**, "Highly-Efficient Data Migration and Backup for Big Data Applications in Elastic Optical Inter-Data-center Networks," *IEEE Network*, vol. 29, no. 5, pp. 36-42, Sept./Oct. 2015 (Corresponding Author).
- J48. Ping Lu, Quanying Sun, Kaiyue Wu, and **Zuqing Zhu**, "Distributed Online Hybrid Cloud Management for Profit-Driven Multimedia Cloud Computing," *IEEE Transactions on Multimedia*, vol. 17, no. 8, pp. 1297-1308, Aug. 2015 (Corresponding Author).
- J47. Jingjing Yao, Ping Lu, Long Gong, and **Zuqing Zhu**, "On Fast and Coordinated Data Backup in Geo-Distributed Optical Inter-Datacenter Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 14, pp. 3005-3015, Jul. 2015 (Corresponding Author).
- J46. Wei Lu and **Zuqing Zhu**, "Malleable Reservation based Bulk-Data Transfer to Recycle Spectrum Fragments in Elastic Optical Networks," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 10, pp. 2078-2086, May 2015 (Corresponding Author).
- J45. Wenjian Fang, Minhua Lu, Xiahe Liu, Long Gong, and **Zuqing Zhu**, "Joint Defragmentation of Optical Spectrum and IT Resources in Elastic Optical Datacenter Interconnections," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 7, no. 4, pp. 314-324, Mar. 2015 (Corresponding Author).
- J44. **Zuqing Zhu**, Cen Chen, Shoujiang Ma, Lei Liu, Xiaotao Feng, and S. J. B. Yoo, "Demonstration of Cooperative Resource Allocation in an OpenFlow-Controlled Multidomain and Multinational SD-EON Testbed," *IEEE/OSA Journal of Lightwave Technology*, vol. 33, no. 8, pp. 1508-1514, Apr. 2015 (Invited).
- J43. Xiaoliang Chen, Bin Zhao, Shoujiang Ma, Cen Chen, Daoyun Hu, Wenshuang Zhou, and **Zuqing Zhu**, "Leveraging Master-Slave OpenFlow Controller Arrangement to Improve Control Plane Resiliency in SD-EONs," *Optics Express*, vol. 23, no. 6, pp. 7550-7558, Mar. 2015 (Corresponding Author).
- J42. **Zuqing Zhu**, Xiaoliang Chen, Cen Chen, Shoujiang Ma, Mingyang Zhang, Lei Liu, and S. J. B. Yoo, "OpenFlow-Assisted Online Defragmentation in Single-/Multi-Domain Software-Defined Elastic Optical Networks," *IEEE/OSA Journal of Optical Communications and Networking*, vol. 7, no. 1, pp. A7-A15, Jan. 2015 (Invited).

- J41. Cen Chen, Xiaoliang Chen, Mingyang Zhang, Shoujiang Ma, Yan Shao, Suoheng Li, Munir Said Suleiman, and **Zuqing Zhu**, “Demonstrations of Efficient Online Spectrum Defragmentation in Software-Defined Elastic Optical Networks,” *IEEE/OSA Journal of Lightwave Technology*, vol. 32, no. 24, pp. 4701-4711, Dec. 2014 (Corresponding Author).
- J40. Xiaoliang Chen, Fan Ji, and **Zuqing Zhu**, “Service Availability Oriented p-Cycle Protection Design in Elastic Optical Networks,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 6, no. 10, pp. 901-910, Oct. 2014 (Corresponding Author).
- J39. Wei Lu, Shoujiang Ma, Cen Chen, Xiaoliang Chen, and **Zuqing Zhu**, “Implementation and Demonstration of Revenue-Driven Provisioning for Advance Reservation Requests in OpenFlow-Controlled SD-EONs,” *IEEE Communications Letters*, vol. 18, no. 10, pp. 1727-1730, Oct. 2014 (Corresponding Author).
- J38. Suoheng Li, Yan Shao, Shoujiang Ma, Nana Xue, Shengru Li, Daoyun Hu, and **Zuqing Zhu**, “Flexible Traffic Engineering (F-TE): When OpenFlow Meets Multi-Protocol IP-Forwarding,” *IEEE Communications Letters*, vol. 18, no. 10, pp. 1699-1702, Oct. 2014 (Corresponding Author).
- J37. Liang Zhang and **Zuqing Zhu**, “Spectrum-Efficient Anycast in Elastic Optical Inter-Datacenter Networks,” *Optical Switching and Networking*, vol. 14, no. 3, pp. 250-259, Aug. 2014 (Corresponding Author).
- J36. Fan Ji, Xiaoliang Chen, Wei Lu, Joel. J. P. C. Rodrigues, and **Zuqing Zhu**, “Dynamic p-Cycle Protection in Spectrum-Sliced Elastic Optical Networks,” *IEEE/OSA Journal of Lightwave Technology*, vol. 32, no. 6, pp. 1190-1199, Mar. 2014 (Corresponding Author).
- J35. Mingyang Zhang, Changsheng You, Huihui Jiang, and **Zuqing Zhu**, “Dynamic and Adaptive Bandwidth Defragmentation in Spectrum-Sliced Elastic Optical Networks with Time-Varying Traffic,” *IEEE/OSA Journal of Lightwave Technology*, vol. 32, no. 5, pp. 1014-1023, Mar. 2014 (Corresponding Author).
- J34. Long Gong and **Zuqing Zhu**, “Virtual Optical Network Embedding (VONE) over Elastic Optical Networks,” *IEEE/OSA Journal of Lightwave Technology*, vol. 32, no. 3, pp. 450-460, Feb. 2014 (Corresponding Author).
- J33. Yawei Yin, Huan Zhang, Mingyang Zhang, Ming Xia, **Zuqing Zhu**, Stefan Dahfort, and S. J. B. Yoo, “Spectral and Spatial 2D Fragmentation-Aware Routing and Spectrum Assignment Algorithms in Elastic Optical Networks,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 5, no. 10, pp. A100-A106, Oct. 2013 (**Invited**).
- J32. Xiahe Liu, Long Gong, and **Zuqing Zhu**, “On the Spectrum-Efficient Overlay Multicast in Elastic Optical Networks Built with Multicast-Incapable Switches,” *IEEE Communications Letters*, vol. 17, no. 9, pp. 1860-1863, Sept. 2013 (Corresponding Author).
- J31. Long Gong, Xiang Zhou, Xiahe Liu, Wenwen Zhao, Wei Lu, and **Zuqing Zhu**, “Efficient Resource Allocation for All-Optical Multicasting over Spectrum-Sliced Elastic Optical Networks,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 5, no. 8, pp. 836-847, Aug. 2013 (Corresponding Author).
- J30. Yichao Jin, Yonggang Wen, Qinghua Chen, and **Zuqing Zhu**, “An Empirical Investigation of the Impact of Server Virtualization on Energy Efficiency for Green Data Center,” *The Computer Journal*, vol. 56, no. 8, pp. 977-990, Aug. 2013.
- J29. Xiaoliang Chen, Fan Ji, Yanan Wu, and **Zuqing Zhu**, “Energy-Efficient Resilience in Translucent Optical Networks with Mixed Regenerator Placement,” *IEEE/OSA Journal of Optical Communications and Networking*, vol. 5, no. 7, pp. 741-750, Jul. 2013 (Corresponding Author).

- J28. Weiran Shi, **Zuqing Zhu**, Mingyang Zhang, and Nirwan Ansari, "On the Effect of Bandwidth Fragmentation on Blocking Probability in Elastic Optical Networks," *IEEE Transactions on Communications*, vol. 61, no. 7, pp. 2970-2978, Jul. 2013 (Corresponding Author).
- J27. **Zuqing Zhu**, Ping Lu, Joel J. P. C. Rodrigues, and Yonggang Wen, "Energy-Efficient Wideband Cable Access Networks in Future Smart Cities," *IEEE Communications Magazine*, vol. 51, no. 6, pp. 94-100, Jun. 2013.
- J26. **Zuqing Zhu**, Suoheng Li, and Xiaoliang Chen, "Design QoS-Aware Multi-Path Provisioning Strategies for Efficient Cloud-Assisted SVC Video Streaming to Heterogeneous Clients," *IEEE Transactions on Multimedia*, vol. 15, no. 4, pp. 758-768, Jun. 2013.
- J25. Ping Lu, Yabo Yuan, Zhongzhen Yang, and **Zuqing Zhu**, "On the Performance Analysis of Energy-Efficient Upstream Scheduling for Hybrid Fiber-Coaxial Networks with Channel Bonding," *IEEE Communications Letters*, vol. 17, no. 5, pp. 1020-1023, May 2013 (Corresponding Author).
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4. Invited Conference Talks

IC16. **Zuqing Zhu**, Siqi Liu, Baojia Li, and Wei Lu, “AI-Assisted Knowledge-Defined Multilayer Optical Networks,” accepted for presenting in IEEE Summer Topicals Meeting Series (SUM), pp. 1-2, Jul. 2018 (**Invited**).

IC15. Xiaoliang Chen, **Zuqing Zhu**, Alberto Castro, Roberto Proietti, and S. J. B. Yoo, “Multi-Broker based Software-Defined Optical Networks,” in Proceedings of IEEE Photonics Conference (IPC), pp. 1-2, Oct. 2017 (**Invited**).

IC14. Siqi Liu, Wei Lu, and **Zuqing Zhu**, “Multi-Layer Restoration to Address IP Router Outages in IP-over-EONs,” in Proceedings of Asia Communications and Photonics Conference (ACP), pp. 1-3, Nov. 2017 (**Invited**)(Corresponding Author).

IC13. Wei Lu, Lipei Liang, and **Zuqing Zhu**, “On vNF-SC Deployment and Task Scheduling for Bulk-Data Transfers in Inter-DC EONs,” in Proceedings of the IEEE/CIC International Conference on Communications in China (ICCC), pp. 1-4, Oct. 2017 (**Invited**)(Corresponding Author).

IC12. Wei Lu, Xin Jin, and **Zuqing Zhu**, “Game Theoretical Flexible Service Provisioning in IP over Elastic Optical Networks,” in Proceedings of the 16th IEEE International Conference on Optical Communications and Networks (ICOON), pp. 1-3, Aug. 2017 (**Invited**)(Corresponding Author).

IC11. Wei Lu, Menglu Zeng, Wenjian Fang, and **Zuqing Zhu**, “Network Function Virtualization in Optical Inter-Datacenter Elastic Optical Networks,” in Proceedings of Opto-Electronics and Communications Conference (OECC), pp. 1-2, Jul./Aug. 2017 (**Invited**)(Corresponding Author).

IC10. Wei Lu and **Zuqing Zhu**, “IR/AR/MR Service Provisioning in Elastic Optical Networks,” in Proceedings of 15th International Conference on Optical Communications and Networks (ICOON), pp. 1-3, Sept. 2016 (**Invited**)(Corresponding Author).

IC9. Cen Chen, Xiaoliang Chen, Bin Zhao, and **Zuqing Zhu**, “Service Provisioning in Multi-Domain SD-EONs,” in Proceedings of 14th International Conference on Optical Communications and Networks (ICOON), pp. 1-3, Jul. 2015 (**Invited**)(Corresponding Author).

IC8. Cen Chen, Xiaoliang Chen, Shoujiang Ma, and **Zuqing Zhu**, “OpenFlow-Controlled Online Spectrum Defragmentation in Software-Defined Elastic Optical Networks,” in Proceedings of 13th International Conference on Optical Communications and Networks (ICOON), pp. 1-4, Dec. 2014 (**Invited**)(Corresponding Author).

IC7. **Zuqing Zhu**, Wei Lu, and Liang Zhang, “Strategies for Improving the Throughput of Dynamic Service Provisioning in Elastic Optical Networks,” in Proceedings of Asia Communications and Photonics Conference (ACP), paper AS4D.1, Nov. 2012 (**Invited**).

IC6. Suoheng Li, **Zuqing Zhu**, Houqiang Li, and Weiping Li, “Efficient and Scalable Cloud-Assisted SVC Video Streaming Through Mesh Networks,” in Proceedings of International Conference on Computing, Networking and Communications (ICNC), pp. 944-948, Jan. 2012 (**Invited**)(Corresponding Author).

IC5. **Zuqing Zhu**, “Mixed Regenerator Placement and Routing and Wavelength Assignment for Energy-Efficient Optical Transport Networks,” in Proceedings of International Conference on Optical Communications and Networks (ICOON), pp. 1-2, Dec. 2011 (**Invited**).

IC4. **Zuqing Zhu**, Weida Zhong, and Chuanqi Wan, “Joint Optimization of Mixed Regenerator Placement and Wavelength Assignment for Green Translucent Optical Networks,” in Proceedings of SPIE, IEEE/OSA Asia Communications and Photonics Conference (ACP), vol. 8310, 83100G,

Nov. 2011 (**Invited**).

IC3. **Zuqing Zhu**, Wenbo Ma, and Qiao Liang, “Improve Energy-Efficiency of Hybrid Fiber-Coaxial Networks with Traffic-Aware Design,” in Proceedings of SPIE, IEEE/OSA Asia Communications and Photonics Conference (ACP), vol. 8310, 83100W, Nov. 2011 (**Invited**).

IC2. **Zuqing Zhu**, “Optical Regenerator Placement Strategy to Achieve Green Design of Translucent Optical Networks,” in Proceedings of IEEE Wireless and Optical Communications Conference (WOCC), paper O4-1, Apr. 2011 (**Invited**).

IC1. S. J. Ben Yoo, Zhong Pan, Haijun Yang, and **Zuqing Zhu**, “All-Optical Signal Processing in Photonic Label Switching Routers,” in Proceedings of OSA Information Optical Amplifiers and their Applications Conference, Symposium on All-Optical Signal Processing, Aug. 2005 (**Invited**).

5. Referred Conference Papers

C107. Wei Lu, Hongqiang Fang, and **Zuqing Zhu**, “AI-Assisted Resource Advertising and Pricing to Realize Distributed Tenant-Driven Virtual Network Slicing in Inter-DC Optical Networks,” accepted for presenting in International Conference on Optical Network Design and Modeling (ONDM), pp. 1-6, May 2018 (Corresponding Author).

C106. Jing Zhu, Carlos Natalino, Marija Furdek, and **Zuqing Zhu**, “Control Plane Robustness in Software-Defined Optical Networks under Targeted Fiber Cuts,” accepted for presenting in International Conference on Optical Network Design and Modeling (ONDM), pp. 1-6, May 2018 (Corresponding Author).

C105. Gengchen Liu, Kaiqi Zhang, Xiaoliang Chen, Hongbo Lu, Jiannan Guo, Jie Yin, Roberto Proietti, **Zuqing Zhu**, S. J. B. Yoo, “The First Testbed Demonstration of Cognitive End-to-End Optical Service Provisioning with Hierarchical Learning across Multiple Autonomous Systems,” in Proceedings of IEEE/OSA Optical Fiber Communication Conference (OFC), **post-deadline paper** Th4D.7, Mar. 2018.

C104. Sicheng Zhao, Yao Jin, Kai Han, Jie Yin, and **Zuqing Zhu**, “Make Big Data Applications More Reliable: Hitless vSDN Migration to Avoid TCAM Depletion,” accepted for presenting in IEEE International Conference on Communications (ICC), pp. 1-6, May 2018 (Corresponding Author).

C103. Wei Lu, Lipei Liang, Bingxin Kong, Baojia Li, and **Zuqing Zhu**, “Leveraging Predictive Analytics to Achieve Knowledge-Defined Orchestration in a Hybrid Optical/Electrical DC Network: Collaborative Forecasting and Decision Making,” in Proceedings of IEEE/OSA Optical Fiber Communication Conference (OFC), paper Th3F.2, Mar. 2018 (Corresponding Author).

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C101. Xin Jin, Wei Lu, Siqi Liu, and **Zuqing Zhu**, “On Multi-Layer Restoration in Optical Networks with Encryption Solution Deployment,” in Proceedings of IEEE/OSA Optical Fiber Communication Conference (OFC), paper Th2A.39, Mar. 2018 (Corresponding Author).

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IEEE/OSA Optical Fiber Communication Conference (OFC), paper W4F.7, Mar. 2018.

C98. Shengru Li, Kai Han, Huibai Huang, and **Zuqing Zhu**, “PVFlow: Flow-Table Virtualization in POF-based vSDN Hypervisor (PVX),” in Proceedings of IEEE International Conference on Computing, Networking and Communications (ICNC), pp. 1-5, Mar. 2018 (Corresponding Author).

C97. Kai Han, Shengru Li, Junjie Liu, Shaofei Tang, Huibai Huang, Sicheng Zhao, and **Zuqing Zhu**, “Leveraging Protocol-Oblivious Forwarding (POF) to Realize NFV-Assisted Mobility Management,” in Proceedings of IEEE Global Communications Conference (GLOBECOM), pp. 1-6, Dec. 2017 (Corresponding Author).

C96. Xiaoliang Chen, Jiannan Guo, **Zuqing Zhu**, Alberto Castro, Roberto Proietti, Hongbo Lu, Mohammadsadegh Shamsabardeh, S. J. B. Yoo, “Leveraging Deep Learning to Achieve Knowledge-based Autonomous Service Provisioning in Broker-based Multi-Domain SD-EONs with Proactive and Intelligent Predictions of Multi-Domain Traffic,” in Proceedings of IEEE/OSA European Conference and Exhibition on Optical Communication (ECOC), paper W.3.A.3, Sept. 2017.

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C92. Jie Yin, Jiannan Guo, Bingxin Kong, and **Zuqing Zhu**, “Demonstration of Survivable vSD-EON Slicing with Automatic Data Plane Restoration to Support Reliable Video Streaming,” in Proceedings of IEEE/OSA Optical Fiber Communication Conference (OFC), paper Tu3E.4, Mar. 2017 (Corresponding Author).

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- C78. Lulu Yang, Long Gong, and **Zuqing Zhu**, “Incorporating Network Coding to Formulate Multicast Sessions in Elastic Optical Networks,” in Proceedings of IEEE International Conference on Computing, Networking and Communications (ICNC), pp. 1-5, Feb. 2016 (Corresponding Author).
- C77. Xiaoliang Chen, Cen Chen, Daoyun Hu, Shoujiang Ma, and **Zuqing Zhu**, “Multi-Domain Fragmentation-Aware RSA Operations through Cooperative Hierarchical Controllers in SD-EONs,” in Proceedings of IEEE/OSA Asia Communications and Photonics Conference (ACP), paper AM2E.3, Nov. 2015 (Corresponding Author).
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- C74. Xiaoliang Chen, Jie Yin, Cen Chen, **Zuqing Zhu**, Alberto Casales, and S. J. B. Yoo, “Multi-Broker based Market-Driven Service Provisioning in Multi-Domain SD-EONs in Noncooperative Game Scenarios,” in Proceedings of IEEE/OSA European Conference and Exhibition on Optical

Communication (ECOC), paper #756, Sept. 2015 (Corresponding Author).

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C70. Shoujiang Ma, Daoyun Hu, Shengru Li, Nana Xue, Suoheng Li, Yan Shao, and **Zuqing Zhu**, "QoS-Aware Flexible Traffic Engineering with OpenFlow-Assisted Agile IP-Forwarding Interchanging," in Proceedings of IEEE International Conference on Communications (ICC), pp. 8490-8495, Jun. 2015 (**Best Paper Award**)(Corresponding Author).

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