2017 IEEE Conference on Network Softwarization (NetSoft 2017)

Bologna, Italy 3-7 July 2017



IEEE Catalog Number: CISBN: 9

CFP17A76-POD 978-1-5090-6009-2

Copyright © 2017 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP17A76-POD

 ISBN (Print-On-Demand):
 978-1-5090-6009-2

 ISBN (Online):
 978-1-5090-6008-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



2017 IEEE Conference on Network Softwarization



Table of Contents

Full Papers

- Catena: A Distributed Architecture for Robust Service Function Chain Instantiation with Guarantees 1
- CCVP: Cost-efficient Centrality-based VNF Placement and Chaining Algorithm for Network Service Provisioning 10
- Optimal Traffic Engineering and Placement of Virtual Machines in SDNs with Service Chaining 19
- Smashing SDN built-in actions: programmable data plane packet manipulation in hardware
- Partial Offloading of OpenFlow Rules on a Traditional Hardware Switch ASIC 37
- TableVisor 2.0: Towards full-featured, scalable and hardware-independent Multi Table Processing 46
- Intent-based Management and Orchestration of Heterogeneous OpenFlow/IoT SDN Domains 54
- Optimal Superfluid Management of 5G Networks 63
- Genome Centric Networking: a network function virtualization solution for genomic applications 72
- CoGS: Enabling Distributed Network Functions with Global States 81
- StateSec: Stateful Monitoring for DDoS Protection in Software Defined Networks 90
- A Novel SDN based Stealthy TCP Connection Handover Mechanism for Hybrid Honeypot Systems 99
- Automated Verification of Security Chains in Software-Defined Networks with Synaptic 108
- Erlang-k-based packet latency prediction model for optimal configuration of software routers 117
- A Comprehensive Resource Management and Placement for Network Function Virtualization 126
- Learning End-to-end Application QoS from OpenFlow Switch Statistics 135

Short Papers

- Layered Vehicle Control System Coordinated between Multiple Edge Servers 144
- Dynamic Failover for SDN-based Virtual Networks 149
- An In-Network Packet Processing Architecture for Distributed Data Storage 154
- Towards Softwarization in the IoT: Integration and Evaluation of T-Res in the oneM2M Architecture
- SDNS: Exploiting SDN and the DNS to Exchange Traffic in a Federated Network 164
- Anomaly Detection Framework for SFC Integrity in NFV Environments 169
- Towards Policy Unification for Enterprise Network Security 174
- Towards an Accountable Software-Defined Networking Architecture 179
- Orchestrating Scalable Service Function Chains in a NFV Environment 184
- Implementation of Virtual Network Function Chaining through Segment Routing in a Linux-based NFV
 Infrastructure 189
- Minimizing Downtimes: Using Dynamic Reconfiguration and State Management in SDN 194
- Network service description model for VNF orchestration leveraging Intent-based SDN Interfaces
 199
- A new model for DPDK-based virtual switches 204
- Network Orchestrator for QoS-enabled Service Function Chaining in reliable NFV/SDN infrastructure 209
- Transparent Transmission Segmentation in Software-Defined Networks 214
- Performance Evaluation of Cache Allocation Technology for NFV Noisy Neighbor Mitigation 219
- Virtualising and Orchestrating a 5G Evolved Packet Core Network 224
- A Unifying Operating Platform for 5G End-to-End and Multi-Layer Orchestration 229
- An Abstraction Framework for FLOW Mobility in Multi-Technology 5G environments using Virtualization and SDN 234
- Gap Analysis for Adapting the Distributed Mobility Management Model in 4G/5G Mobile Networks 239
- Software Defined Networking (SDN) for reliable user connectivity in 5G Networks 244
- Automated Monitoring and Detection of Resource-limited NFV-based Services 249
- Multi-VNF Performance Characterization for Virtualized Network Functions 254
- NetAware: Network Architecture-Aware Reliability Management Schemes for Softwareized Network Systems 259
- X-MANO: Cross-domain Management and Orchestration of Network Services 264
- A Marketplace as a Scalable Solution to the Orchestration Problem in SDN/NFV Networks 269

Workshop Papers

- On offloading programmable SDN controller tasks to the embedded microcontroller of stateful SDN dataplanes 274
- A Pipeline Functional Language for Stateful Packet Processing 278
- Towards traffic classification offloading to stateful SDN data plane 282
- SHIELD: A Novel NFV-based Cybersecurity Framework 286
- Detecting and Mitigating Denial of Service Attacks against the Data Plane in Software Defined Networks 292
- A Model for the Analysis of Security Policies in Service Function Chains 298
- Measuring the effectiveness of SDN mitigations against cyber attacks 304
- SDNetkit: A Testbed for Experimenting SDN in Multi-Domain Networks 310
- Sharing of Crosshaul Networks via a Multi-Domain Exchange Environment for 5G Services 316
- End-to-End Service Orchestration across SDN and Cloud Computing Domains 322
- Automated Cloud Migration based on Network Traffic Dependencies 328
- X-MANO: An Open-Source Platform for Cross-domain Management and Orchestration 332
- Prototyping NFV-based Multi-access Edge Computing in 5G ready Networks with Open Baton 338
- Load balancing on distributed datastore in OpenDaylight SDN controller cluster 342
- An Open-Source Virtual Set-Top-Box for Softwarized Networks 345
- Per-User NFV Services with Mobility Support 351
- Overload and Failure Management in Service Function Chaining 355
- SmartX MultiView Visibility Framework Leveraging Open-Source Software for SDN-Cloud Playground 360
- Energy Efficient Dynamic Flow-based Management For Relay-assisted Heterogeneous Networks N/A
- A Scalable SDN Slicing Scheme for Multi-domain Fog/Cloud Services 364
- On Experimenting 5G: Testbed Set-up for SDN Orchestration across Network Cloud and IoT domains 370
- An NFV Approach to Share Home Multimedia Devices 376
- EdgeNetworkCloudSim: Placement of Service Chains in Edge Clouds Using NetworkCloudSim 382
- Understanding Disruptive Monitoring Capabilities of Programmable Networks 388
- A framework to correlate power consumption and resource usage in cloud infrastructures 394

Demo Papers

- A Flexible Multi-PoP Infrastructure Emulator for Carrier-grade MANO Systems 399
- An Interactive Intent-based Negotiation Scheme for Application-Centric Networks 402
- End-to-End Management of IoT Applications 404
- Mimicking a Compute Domain Orchestrator with the ONOS SDN Controller 407
- RAN slicing for multi-tenancy support in a WLAN scenario 410
- Telecom Microservices Orchestration 412
- Traffic Monitoring and DDoS Detection using Stateful SDN 414
- Wi-Balance: SDN-based load-balancing in Enterprise WLANs 416
- DevOps based service orchestration in 5G virtualised Networks 418
- Multi-domain Service Orchestration with X-MANO 421