

Nicholas Bastin
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Professional Preparation

Bowling Green University, Ohio	Music Performance	Attended	1996
USDA graduate school coursework: Legal Writing, Legal Research I/II, Constitutional Law, Introductory Arabic I/II			2010
Coursera: The Data Scientist's Toolbox, R Programming, Compilers			2014

Professional Appointments

2014 - present	Research Assistant Professor , Computer Engineering Technology, University of Houston
2013 – 2015	System Engineer and Architect , InstaGENI rack OpenFlow stack
2013 – present	Founder and Director , Barnstormer Softworks, Inc.
2012 – 2013	Member Technical Staff , Big Switch Networks, Inc.
2010 - present	Voting Member , Architecture Team, GENI
2010 - 2012	OpenFlow Engineering Manager , NSF Clean Slate Internet Design Program, Stanford University
2000 - 2012	Principal Software Architect , OPNET Inc (now owned by Riverbed)

Software and Publication Products

- 1. Virtual Topology Services (VTS):** SDN offering on GENI that is based on programmable datapath elements and label-isolated circuit services that provides inter-domain connectivity and layer-2 topologies to the experimenters. Created the VTS Aggregate Manager for GENI. Maintains and continues to support for advanced experimentation.
- 2. geni-lib:** Creator and maintainer of the python library for orchestrating, running, and scaling experiments on GENI, CloudLab, and the Chameleon Cloud, utilized by many institutions such as University of Utah, University of Houston, and GENI project office (BBN/Raytheon - NSF's GENI project management contractors)
- 3.** Nicholas Bastin, Andy Bavier, Jessica Blaine, Jim Chen, Narayan Krishnan, Joe Mambretti, Rick Mcgeer, Rob Ricci, and Nicki Watts. 2014. The InstaGENI initiative: An architecture for distributed systems and advanced programmable networks. *Computer Networks, Special Issue on Future Internet Testbeds*, 61 (March 2014), 24-38.
- 4. Python:** Enhanced the available hooks for internal virtual machine instrumentation for debuggers and profilers so that more accurate and diverse profiling of code performance can be realized.
- 5. FOAM:** Creator, developer, and maintainer of the FlowVisor/OpenFlow resource management on the GENI testbed. (FlowVisor: Contributed to and upgraded so there is stability and correctness in the realization of slicing of flow spaces in the network.)
- 6. Floodlight:** Commercial product development and testing during his appointment at Big Switch.
- 7. OpenFlow Products:** Wireshark Dissector; Wrote 1.1 from scratch, maintains 1.0 dissector, serving the community using OpenFlow protocol in their research projects. OFTest; Added tests, improved the performance, and contributed to the tests for conformance - now being used by major test companies, standardization bodies, and testing labs as a basis for OpenFlow protocol conformance testing. OFpy; Collaborative developer for this functionality prototyping platform written as an OpenFlow datapath in python.

8. **AMSoil:** Collaborative developer and contributor to a framework to construct resource managers that is generalized to handle diverse set of resource management in a generic manner with high extensibility
9. **As Director of Model Validation at OPNET (2000 – 2012):** Application Characterization Environment - model/characterize complex multi-tier applications from packet traces; Panorama Transaction Visualizer - model and analyze application behaviour from JVM/CLR/xVM call trace information; Model rules engine - Core engine that drove the NetworkDiff, NetMapper, NetDoctor, Security Analysis. (Fully internationalized to be available in other languages); Trace Transaction Warehouse - Distributed highly available data store and analysis system for packet and application traces from an entire enterprise, scales to over billions of transactions; eXtensible Device Import - broad encompassing framework for building simulation models from configuration files, SNMP information, in-network discovery, polling from other external data sources (asset management products, etc.)

Synergistic Activities

1. Data Plane Acceleration: Traffic Generator implementation on a PC: **550 Gbps** through a commodity PC hardware, demonstrated during Interop 2013 and Super Computing 2013
2. 26th ITC, Workshop on Federated Future Internet and Distributed Cloud Testbeds, TPC member, 2014
3. IEEE ICCCN, Panel member, 2013
4. IEEE ICCCN, SDN track TPC member, 2015
5. **Virtual Topology Services (VTS)**, deployed as an experiment that runs the VTS aggregate manager to enable programmable advanced SDN experiments on GENI.