

NS-3 Consortium Annual Meeting

NS-3 Annual Meeting June 2019

Agenda

- Consortium overview
 - History, structure, membership
 - Budget status
 - Recognition
 - WNS3 2019 (review) and future plans
- Open source project status and discussion
 - Summary of recent software activity
 - Future directions
- Any other business

Remembrance

- Project co-founder George Riley



Major ns-3 contributions from his prior work on PDNS and GTNetS

- MPI-based distributed simulation
- Initial TCP implementation
- OnOffApplication, BulkSendApplication
- NetAnim
- NixVector routing
- Key network stack elements (Node, Socket, Ipv4 objects)

Supervised or led many early contributors including:

- John Abraham, Raj Bhattacharjea, Jared Ivey, Josh Pelkey, Brian Swenson

Consortium organization

- Original agreement established in 2012 (Inria and UW) to help sustain the open source project
 - Provide an interface for industrial and academic members to contribute and interact with the open source project
 - Organize an annual workshop and meeting
 - Handle funding for the project
 - Handle administrative and logistical issues for the project
- Recently reconstituted as “University of Washington NS-3 Consortium”

More details at <https://www.nsnam.org/consortium/>

Current and recent membership

- Founding Executive Members
 - INRIA, University of Washington
- Additional Executive Members
 - CTTC, Georgia Tech, INESC TEC, NITK Surathkal
- Consortium Members (through 2018)
 - Lawrence Livermore National Laboratory
 - Huazhong University of Science and Technology (HUST)
 - CMMB Vision
 - CableLabs

Classes of Consortium Members

- Class I Consortium Members:
 - For-profit entities with more than 500 employees
 - Annual Dues: \$15,000
- Class II Consortium Members:
 - For-profit entities with 20 or more and less than 500 employees
 - Annual Dues: \$7,500
- Class III Consortium Members:
 - For-profit entities with less than 20 employees
 - Annual Dues: \$1,500
- Class IV Consortium Members:
 - Non-Profit Organizations, governmental organizations, and U.S. Federally Funded Research and Development Centers (FFRDCs)
 - Annual Dues: \$1,500

Current Advisory Board

- Tom Henderson * (University of Washington)
- Sumit Roy ** (University of Washington)
- Walid Dabbous (INRIA)
- Damien Saucez (INRIA)
- Lorenza Giupponi (CTTC)
- Manuel Ricardo (INESC TEC)
- Doug Blough (Georgia Institute of Technology)
- Mohit Tahiliani (NITK Surathkal)

* Director

** Associate Director

Budget status

- Consortium raises small amounts of funding, to pay for annual meeting and low-cost infrastructure/services
- Income sources
 - Google Summer of Code and GCI
 - Consortium membership fees
 - WNS3 registration fees
- Consortium accounts hold roughly \$22,000, prior to WNS3 and web design revenue/expenses

WNS3 past and present

- Thanks to Matt Coudron and Damien Saucez for WNS3 2019
 - Eric Gamess served as Proceedings Chair
 - No significant issues arose during WNS3 review process
- Initiating plans for WNS3 2020 in North America
- Damien has completed a two-year term
 - Eric plans to stay on as Proceedings Chair

Open source recognition

- High levels of activity in the past year (> 25 commits since WNS3 2018)
 - Zoraze Ali
 - Stefano Avallone
 - Sebastien Deronne (107 commits!)
 - Tom Henderson
 - Alexander Krotov
 - Manuel Requena
 - Natale Patriciello
 - Tommaso Pecorella

Open source project highlights

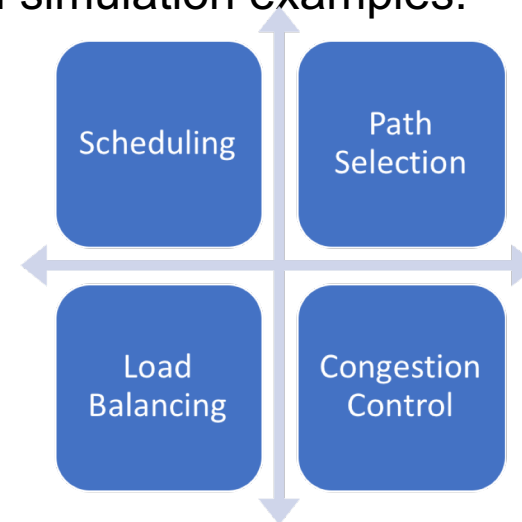
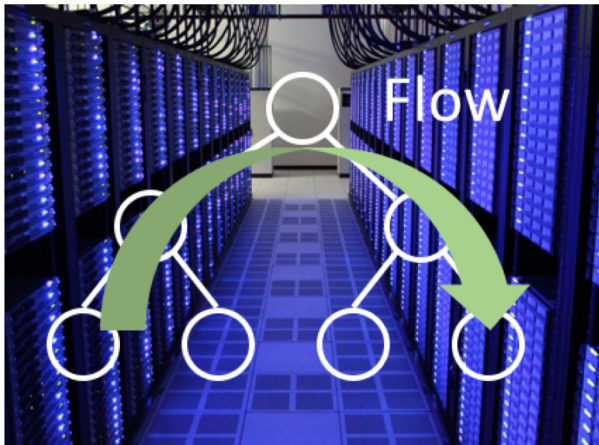
- App store launched in September 2018
- Project repositories moved from Mercurial to Git (GitLab.com) in December 2018
 - Thanks to Natale Patriciello and Zoraze Ali
- New static web site (based on Jekyll framework) installed
 - Documentation licensed to CC BY-SA 4.0
- Google Code-In attracted 46 students who worked on 380 tasks
- Google Summer of Code 2019 awarded us four students

Open source project status

- ns-3.29 (September 2018)
 - TCP PRR and ECN
 - Wi-Fi PCF
 - PRIO queue disc
 - 3GPP HTTP traffic model
- ns-3.30 (shortly)
 - LTE Radio Link Failure (RLF)
 - Enhanced EPC and backhaul
 - Wi-Fi preamble detection model and PHY upgrades
 - Cobalt queue disc
 - Full Python 3 support
- Apps
 - QUIC, sem, NDN, OpenAI Gym, mmWave, LTE PS

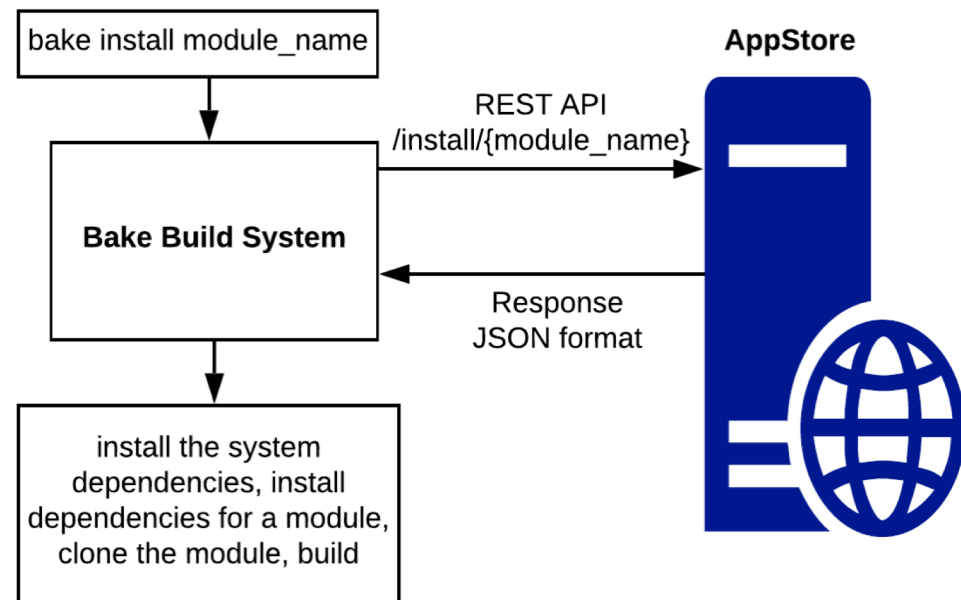
GSOC: NS-3 Data Center Networking (DCN)

- **Student:** Liangcheng Yu, University of Pennsylvania, USA.
- **Mentor:** Dizhi Zhou, Mohit P. Tahlilani
- **Project goal:** Enhance NS-3 for DCN, specifically flow-based performance optimization
- **Benefit to ns-3:** Support NS-3 further for DCN research.
- **Main Milestones:**
 - **Phase 1:** Implementation and testing of DCN scheduling (MLFQ).
 - **Phase 2:** Implementation and testing of DCN environment (spine-leaf).
 - **Phase 3:** Documentation and DCN simulation examples.



GSOC: Improving the ns-3 App Store and Linking with Bake

- **Student:** Mishal Shah, National Institute of Technology Karnataka, India.
- **Mentors:** Abhijith Anilkumar, Ankit Deepak
- **Project goal:** The project aims to link the Bake build system with the ns-3 AppStore and add features to the ns-3 AppStore.
- **Benefit to ns-3:** Ease the process of installing new modules to have a smaller ns-3 core.
- **Milestones:**
 - **Phase 1:** Port ns-3 AppStore to python3, build REST APIs for install, search options.
 - **Phase 2:** Bake integration for install, update, search command.
 - **Phase 3:** Download stats, multi thread comments on AppStore.

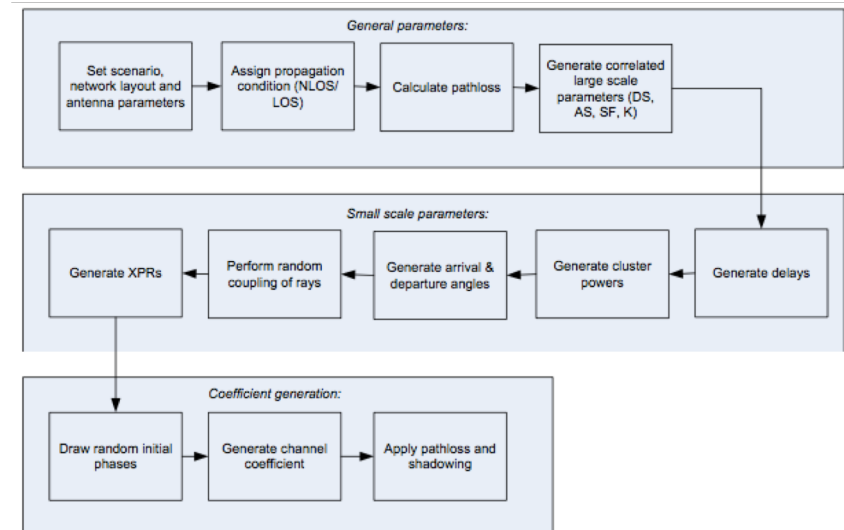


GSOC: TCP Testing and Alignment

- **Student:** Apoorva Bhargava
- **Mentors:** Tom Henderson, Vivek Jain, Mohit Tahiliani
- **Project Goal:** Alignment and Testing of ns-3 TCP with Linux TCP using ns-3 Direct Code Execution (DCE) framework
- **Benefit to ns-3:**
 - Provides users a more realistic implementation of TCP
 - Documentation of the differences between ns-3 TCP and Linux TCP
- **Milestones:**
 - **Phase 1:** Align ns-3 implementation of PRR, ECN and DCTCP with Linux and test it.
 - **Phase 2:** Align ns-3 implementation of SACK and DSACK with Linux and test it.
 - **Phase 3:** Align ns-3 implementation of RACK and Paced Chirping with Linux and test it.

GSOC: Integration of the 3GPP TR 38.901 channel model

- **Student:** Tommaso Zugno, University of Padova
- **Mentor:** Natale Patriciello, CTTC
- **Project goal:** to integrate the channel modelling framework described by 3GPP TR 38.901
- **Benefit to ns-3:** inclusion of a new channel model supporting the modelling of wireless channels between 0.5 and 100 GHz in different propagation environments
- **Milestones:**
 - **Phase 1:** channel condition model
 - **Phase 2:** pathloss and shadowing models
 - **Phase 3:** fading model



Software Freedom Conservancy

- Considering applying to the SFC



The screenshot shows the homepage of the Software Freedom Conservancy. At the top is a navigation bar with links: "Become a Supporter!", "Donate", "News", "Blog", "Projects", "Copyleft Compliance", "NPOAcct", "Sponsors", and "About". Below the navigation bar is a large heading "Software Freedom Conservancy" followed by a paragraph describing the organization's mission: "Software Freedom Conservancy is a not-for-profit charity that helps promote, improve, develop, and defend Free, Libre, and Open Source Software (FLOSS) projects. Conservancy provides a non-profit home and infrastructure for FLOSS projects. This allows FLOSS developers to focus on what they do best — writing and improving FLOSS for the general public — while Conservancy takes care of the projects' needs that do not relate directly to software development and documentation." Below this, there are two columns. The left column is titled "Recent News" and features a headline "VMware Suit Concludes in Germany" with a sub-headline "VMware Announces Plans to Remove Non-complying Code, Hellwig Decides Not to Appeal" and a date "April 2, 2019". The right column is titled "Conservancy Blog" and features a headline "Conservancy News Round-up" with a sub-headline "by Deb Nicholson on May 28, 2019". Both columns have a "Read More..." link at the bottom.

Software Freedom Conservancy

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Software Freedom Conservancy

Software Freedom Conservancy is a not-for-profit charity that helps promote, improve, develop, and defend Free, Libre, and Open Source Software (FLOSS) projects. Conservancy provides a non-profit home and infrastructure for FLOSS projects. This allows FLOSS developers to focus on what they do best — writing and improving FLOSS for the general public — while Conservancy takes care of the projects' needs that do not relate directly to software development and documentation.

Recent News

VMware Suit Concludes in Germany

VMware Announces Plans to Remove Non-complying Code, Hellwig Decides Not to Appeal

April 2, 2019

Today, Christoph Hellwig **announced** the conclusion of his case against VMware in Germany. The Hamburg Higher

Conservancy Blog

Conservancy News Round-up

by Deb Nicholson on May 28, 2019

May is for code releases! Check out these videos, blog posts from member projects, code releases and upcoming events.

[Read More...](#)

Project priorities

- GUI and ease-of-use
 - animators not maintained
- DCE sorely in need of update
 - stuck on kernel 4.4 (Jan. 2016) and Ubuntu 16
- More code into the app store
- Documentation updating
- Missing models (Switched Ethernet, modern HTTP, Linux default TCP, ...)
 - Also ‘simple’ models (see ease-of-use above)
- Onboarding projects and educational scripts
- Others?

“A goal without a plan is just a wish.” Antoine St. Exupery