Wenbo Hu

Curriculum Vitae

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Cover Letter

Over the years, thanks to my thirst for knowledge, I have gained extensive experience in computer science ranging from operating systems to programming languages and platforms upon which the latter are based. Along this path I have continued to improve my approach to problems always trying to design and implement optimal, generalized and reusable solutions (OOP, Design Patterns, SOA).
For 6 years of undergraduate and master school life in Software Engineering, I have a strong knowledge background of it, including software development methodology, software testing, software lifecycle management. Having another 5 years of the Ph.D. life of doing research on Software Defined Networking, I have a strong knowledge background of it and related fields.
In some academic work opportunities I've been able to demonstrate excellent teamwork skills and capability to collaborate with external groups. Another virtue I possess is the ability to solve almost any computer problem thanks to the excellent information gathering skills and the many years of experience in the computer science field.

Education

2013-Now **Doctor Degree in Information and Communication Engineering**, *Future Network Laboratory*, Beijing University of Posts and Telecommunications, China.
Research on Software Defined Networking.

2011-2013 **Master Degree in Computer Science**, *Key Laboratory of Trustworthy Distributed Computing and Service*, Beijing University of Posts and Telecommunications, China.
Research on Software Testing, Software Architecture, Cloud Computing.

2007-2011 **Bachelor Degree in Software Engineering**, *OurEDA Laboratory*, Dalian University of Technology, China.
Research on Wireless Sensor Networks, Embedded System.

Technical Skills

Languages	Proficient with **Java/Python** (SDN Controller, Mininet & Crawler Development) Familiar with **C/C++** (Embedded System, Linux & Microkernel Development) Know .Net with development experience Capable of many other programming languages
Operating System	Debian-based Linux Distributions Development & Operation (Debian/Ubuntu) OpenWrt Building & Configuration Basic UNIX Operation (IBM Certified Specialist - AIX Basic Operations V5) Microkernel Embedded System (VxWorks/μC/OS)
Software Engineering	Proficient with Object-Oriented Design & Programming Familiar with Developing & Testing Procedure Experienced in Software Architecture Design, Software Develop Model & Lifecycle Management
Other Tools	VI, *NIX shell, Chef, AWS, MySQL, Selenium, Visual Studio, Eclipse, IntelliJ IDEA, Git, Matlab, Microsoft Office Suite

Experience

Project

Feb.-May.2017 **Optus WAN Bandwidth Ordering System**, Optus.

Using OpenDaylight as a centralized controller and Netconf as the southbound protocol to make an automation system for Wide Area Network operators to create bandwidth reservation from end to end and also provides user-friendly front-end for customer to create end-to-end VPN.

- OpenDaylight Development
  - ODL Restconf-based Application
  - OpenDaylight Application Module Development
  - ElasticSearch Integration
- JunOS Custom YANG Model Development
- Open Source Community Feedback

Feb.-April.2017 **Atlas - Large scale network element monitoring system**, Optus.

Network device status monitoring and alarm system used inside Optus. The system generates config files based on the model and vendor of the network device. It uses Cricket to poll status via SNMP periodically.

- Reconstruct Development/Production Environment
- Add SNMPv3 support
- Create templates for new models

Feb.-May.2016 **Carrier-Grade Networking Orchestration System**.

Mapping different traffic into SR/RSVP tunnels and using Cisco WAE system to predict and manage traffic/bandwidth calendar.

- Cisco WAE integration
- Monitoring Utility Development
- Automation Integration and Testing Script

Jan.2016 **Shenzhen OpenDaylight Bootcamp**, *TA*, Cisco.

Oct.2015-Feb.2016 **Distributed Syslog Message Subscription System for OpenDaylight Project**, Cisco.

The collect system collects network information from networking elements in a distributed manner, provides service level APIs for other applications to subscribe specific syslog messages across sites, and also stores and analyses data by integrating with OpenDaylight existing data-storage services. The code has been merged into open-source OpenDaylight TSDR project.

May.-Nov.2014 **SDN-based Multimedia Traffic Optimization on Campus-level Network**.

OpenFlow-based multimedia traffic optimization solution.

- Real time multimedia traffic: Using multicast to reduce duplicated traffic; Adjust multicast path based on the business requirements and network load.
- Non-real time multimedia traffic: Customizable Service Quality by creating rules for different types of multimedia resource caches.

This project won the first place of the 1st National University Student Competition of SDN Application Innovation and Development.

Nov.2013-Mar.2014 **QoS Management in Cloud Environment Based-on Software Defined Network**.

Using a custom network controller and OpenFlow to manage QoS in Cloud Environment. This project is a cooperation project with Unicom (China United Network Communications Group Co.,Ltd) which is running on WoCloud.

May.2013-Sept.2015 **Campus-level SDN Test-bed Building & Operation**, *test-bed builder & major operator, CNVP conceptual designer,*.

This test-bed is a prototype of CENI (China Environment for Network Innovations). In the first year, we deployed multiple nodes across the campus with in-band mode due to limited physical connections. In order to improve the scalability and manageability, we introduced ESXi as the hypervisor of each switch node and out-of-band mode by optical fiber expansion. We also developed CNVP as a virtual network embedding system which is similar with FlowVisor. It checks every flowmods to prevent overwriting flowmods by other tenants, which FlowVisor doesn't. This test-bed has been connected to other CENI nodes and can be managed via a universal web interface.

2014 **Software-Defined Network Core Principles and Application Practice**, *Author*.

May.-Aug. 2013 **Live Video Steaming System Based-on Software Defined Network**.

Using OpenFlow Protocol to enhance network management capability and reduce redundant traffic. This project is a demo application running on SDN test bed.

Jul.2012-Jan.2013 **Automated Testing Framework of PaaS**, *leader, architecture designer, programmer*.

Designs an automated testing framework based-on Selenium and CloudFoundry Service Framework which complies with Service-oriented architecture (SOA). This project belongs to Trusty Software Service which is the National natural Science Foundation of China (NSFC) project.

Academic

2018 **A Completion Time-based Flow Scheduling for Inter-Data Center Traffic Optimization**.
Propose a Completion Time-based Model, which takes multiple deadlines and their impacts into consideration to profile more accurate characteristics of data transfers, and propose a novel mechanism to achieve the goals of both maximum utility and fairness. Furthermore, we develop an Inter-DC WAN emulation tool which enables a single commodity server to emulate arbitrary topology and dynamically configuration on the WAN links.

2015 **Towards Consistency of Virtual Machine Migration in Software-Defined Network**.
Propose a novel proactive mechanism to reduce the duration from the time of migration initiation to the time of reconstructing forwarding rules for migration in Software-Defined Network (SDN).

2013 **An Improved Cache Replacement Algorithm Based on Prediction of Re-reference Distance**.
Propose an improved algorithm based on Prediction of Re-reference Distance. By setting up a victim table to monitor the replaced data-block to reduce cache miss rate.

2012 **An Elastic Billing Model for IaaS Cloud Computing Platform**.
Propose an elastic billing model based on leasing instance model and event-trigged mechanism for IaaS cloud computing platform, which makes billing for cloud computing more flexible.

Other

Sept. 2014 **Winning the 1st prize of National University Student Competition of SDN Application Innovation and Development**, Guangzhou, China.

Languages

Mandarin: native

English: fluent

		Listening	Reading	Writing	Speaking	CEFR
IELTS	6.5	*7.0*	*7.5*	*5.5*	*6.0*	*B2*