

Vendor Neutral Interface for Network Device Configuration

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Declaration

I declare that this thesis is my own work and this does not incorporate without acknowledgement any material previously published submitted for a Degree or Diploma in any other university or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Abstract

Efficient network configuration of heterogeneous network devices from different vendors is a great challenge. Networking personnel have to adopt to different vendor specific CLIs when necessary, where they have to go through a learning curve to get adapted to a new product. Having to go through a learning process makes such personnel think twice before recommending a product of a different vendor, even though it offers more value for money. Even if they recommend a different vendor based product with hesitation, the implementation and troubleshooting of a networking solution with a new vendor based product increases the duration and cost of the project due to addition of training time and cost.

This research aims to introduce a simple vendor-neutral interface and command converter interface as a simple and efficient approach to overcome issues faced by networking personnel when managing heterogeneous network devices by different vendors. It also aims to make networking infrastructures vendor neutral in all aspects by contributing specially to network configuration management area.

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List of Abbreviations

API – Application Programming Interface

CLI – Command Line Interface

CNRI – Corporation for National Research Initiatives

IANA – Internet Assigned Number Authority

IETF – Internet Engineering Task Force

NETCONF – Network Configuration Protocol

NETMOD – Network Modelling

YANG – Data Modelling Language for the Network Configuration Protocol

POSIX – Portable Operating System Interface

IEEE – Institute of Electronic and Electrical Engineers

SNMP – Simple Network Management Protocol

ISO – International Standard Organization

OSI – Open System Interconnection

LAN – Local Area Network

WLAN – Wireless Local Area Network

SSH – Secure Shell

LLDP – Link Layer Discovery Protocol

LACP – Link Aggregation Control Protocol

MSTP – Multiple Spanning Tree Protocol

VLAN – Virtual LAN

ACL – Access Control List

POC – Proof of Concept