

Network Programmability And Automation Skills For The Next Generation Network Engineer

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Learning Concurrency in Python - Elliot Forbes 2017-08-16

Practically and deeply understand concurrency in Python to write efficient programs About This Book Build highly efficient, robust, and concurrent applications Work through practical examples that will help you address the challenges of writing concurrent code Improve the overall speed of execution in multiprocessor and multicore systems and keep them highly available Who This Book Is For This book is for Python developers who would like to get started with concurrent programming. Readers are expected to have a working knowledge of the Python language, as this book will build on these fundamentals concepts. What You Will Learn Explore the concept of threading and multiprocessing in Python Understand concurrency with threads Manage exceptions in child threads Handle the hardest part in a concurrent system — shared resources Build concurrent systems with Communicating Sequential Processes (CSP) Maintain all concurrent systems and master them Apply reactive programming to build concurrent systems Use GPU to solve specific problems In Detail Python is a very high level, general purpose language that is utilized heavily in fields such as data science and research, as well as being one of the top choices for general purpose programming for programmers around the world. It features a wide number of powerful, high and low-level libraries and frameworks that complement its delightful syntax and enable Python programmers to create. This book introduces some of the most popular libraries and frameworks and goes in-depth into how you can leverage these libraries for your own high-concurrent, highly-performant Python programs. We'll cover the fundamental concepts of concurrency needed to be able to write your own concurrent and parallel software systems in Python. The book will guide you down the path to mastering Python concurrency, giving you all the necessary hardware and theoretical knowledge. We'll cover concepts such as debugging and exception handling as well as some of the most popular libraries and frameworks that allow you to create event-driven and reactive systems. By the end of the book, you'll have learned the techniques to write incredibly efficient concurrent systems that follow best practices. Style and approach This easy-to-follow guide teaches you new practices and techniques to optimize your code, and then moves toward more advanced ways to effectively write efficient Python code. Small and simple practical examples will help you test the concepts yourself, and you will be able to easily adapt them for any application.

C++ Network Programming, Volume I - Douglas Schmidt 2001-12-10

As networks, devices, and systems continue to evolve, software engineers face the unique challenge of creating reliable distributed applications within frequently changing environments. C++ Network Programming, Volume 1, provides practical solutions for developing and optimizing complex distributed systems using the ADAPTIVE Communication Environment (ACE), a revolutionary open-source framework that runs on dozens of hardware platforms and operating systems. This book guides software professionals through the traps and pitfalls of developing efficient, portable, and flexible networked applications. It explores the inherent design complexities of concurrent networked applications and the tradeoffs that must be considered when working to master them. C++ Network Programming begins with an overview of the issues and tools involved in writing distributed concurrent applications. The book then provides the essential design dimensions, patterns, and principles needed to develop flexible and efficient concurrent networked applications. The book's expert author team shows you how to enhance design skills while applying C++ and patterns effectively to develop object-oriented networked applications. Readers will find coverage of: C++ network programming, including an overview and strategies for addressing common development challenges The ACE Toolkit Connection protocols, message exchange, and message-passing versus shared

memory Implementation methods for reusable networked application services Concurrency in object-oriented network programming Design principles and patterns for ACE wrapper facades With this book, C++ developers have at their disposal the most complete toolkit available for developing successful, multiplatform, concurrent networked applications with ease and efficiency.

Learning Python Network Programming - Dr. M. O. Faruque Sarker 2015-06-17

Network programming has always been a demanding task. With full-featured and well documented libraries all the way up the stack, Python makes network programming the enjoyable experience it should be. Starting with a walkthrough of today's major networking protocols, with this book you'll learn how to employ Python for network programming, how to request and retrieve web resources, and how to extract data in major formats over the Web. You'll utilize Python for e-mailing using different protocols and you'll interact with remote systems and IP and DNS networking. As the book progresses, socket programming will be covered, followed by how to design servers and the pros and cons of multithreaded and event-driven architectures. You'll develop practical client-side applications, including web API clients, e-mail clients, SSH, and FTP. These applications will also be implemented through existing web application frameworks.

Practical Network Automation - Abhishek Ratan 2017-11-16

Get More from your Network with Automation tools to increase its effectiveness. About This Book Get started with network automation (and different automation tasks) with relevant use cases Apply software design principles such as Continuous Integration and DevOps to your network toolkit Guides you through some best practices in automation Who This Book Is For If you are a network engineer looking for an extensive guide to help you automate and manage your network efficiently, then this book is for you. What You Will Learn Get the detailed analysis of Network automation Trigger automations through available data factors Improve data center robustness and security through specific access and data digging Get an Access to APIs from Excel for dynamic reporting Set up a communication with SSH-based devices using netmiko Make full use of practical use cases and best practices to get accustomed with the various aspects of network automation In Detail Network automation is the use of IT controls to supervise and carry out every-day network management functions. It plays a key role in network virtualization technologies and network functions. The book starts by providing an introduction to network automation, SDN, and its applications, which include integrating DevOps tools to automate the network efficiently. It then guides you through different network automation tasks and covers various data digging and reporting methodologies such as IPv6 migration, DC relocations, and interface parsing, all the while retaining security and improving data center robustness. The book then moves on to the use of Python and the management of SSH keys for machine-to-machine (M2M) communication, all followed by practical use cases. The book also covers the importance of Ansible for network automation including best practices in automation, ways to test automated networks using different tools, and other important techniques. By the end of the book, you will be well acquainted with the various aspects of network automation. Style and approach A clear, concise, and straightforward book that will enable you to automate networks and improve performance.

VMware NSX Automation Fundamentals - Thiago Koga 2018-04-16

Python Network Programming - Abhishek Ratan 2019-01-31

Power up your network applications with Python programming Key Features Master Python skills to develop powerful network applications Grasp the fundamentals and functionalities of SDN Design

multi-threaded, event-driven architectures for echo and chat servers

Book Description This Learning Path highlights major aspects of Python network programming such as writing simple networking clients, creating and deploying SDN and NFV systems, and extending your network with Mininet. You'll also learn how to automate legacy and the latest network devices. As you progress through the chapters, you'll use Python for DevOps and open source tools to test, secure, and analyze your network. Toward the end, you'll develop client-side applications, such as web API clients, email clients, SSH, and FTP, using socket programming. By the end of this Learning Path, you will have learned how to analyze a network's security vulnerabilities using advanced network packet capture and analysis techniques. This Learning Path includes content from the following Packt products: Practical Network Automation by Abhishek Ratan Mastering Python Networking by Eric Chou Python Network Programming Cookbook, Second Edition by Pradeeban Kathiravelu, Dr. M. O. Faruque Sarker What you will learn Create socket-based networks with asynchronous models Develop client apps for web APIs, including S3 Amazon and Twitter Talk to email and remote network servers with different protocols Integrate Python with Cisco, Juniper, and Arista eAPI for automation Use Telnet and SSH connections for remote system monitoring Interact with websites via XML-RPC, SOAP, and REST APIs Build networks with Ryu, OpenDaylight, Floodlight, ONOS, and POX Configure virtual networks in different deployment environments Who this book is for If you are a Python developer or a system administrator who wants to start network programming, this Learning Path gets you a step closer to your goal. IT professionals and DevOps engineers who are new to managing network devices or those with minimal experience looking to expand their knowledge and skills in Python will also find this Learning Path useful. Although prior knowledge of networking is not required, some experience in Python programming will be helpful for a better understanding of the concepts in the Learning Path.

Learning Python Networking - José Manuel Ortega 2019-03-29

Achieve improved network programmability and automation by leveraging powerful network programming concepts, algorithms, and tools

Key Features Deal with remote network servers using SSH, FTP, SNMP and LDAP protocols. Design multi threaded and event-driven architectures for asynchronous servers programming. Leverage your Python programming skills to build powerful network applications

Book Description Network programming has always been a demanding task. With full-featured and well-documented libraries all the way up the stack, Python makes network programming the enjoyable experience it should be. Starting with a walk through of today's major networking protocols, through this book, you'll learn how to employ Python for network programming, how to request and retrieve web resources, and how to extract data in major formats over the web. You will utilize Python for emailing using different protocols, and you'll interact with remote systems and IP and DNS networking. You will cover the connection of networking devices and configuration using Python 3.7, along with cloud-based network management tasks using Python. As the book progresses, socket programming will be covered, followed by how to design servers, and the pros and cons of multithreaded and event-driven architectures. You'll develop practical clientside applications, including web API clients, email clients, SSH, and FTP. These applications will also be implemented through existing web application frameworks. What you will learn Execute Python modules on networking tools Automate tasks regarding the analysis and extraction of information from a network Get to grips with asynchronous programming modules available in Python Get to grips with IP address manipulation modules using Python programming Understand the main frameworks available in Python that are focused on web application Manipulate IP addresses and perform CIDR calculations Who this book is for If you're a Python developer or a system administrator with Python experience and you're looking to take your first steps in network programming, then this book is for you. If you're a network engineer or a network professional aiming to be more productive and efficient in networking programmability and automation then this book would serve as a useful resource. Basic knowledge of Python is assumed.

Mastering Python Networking - Eric Chou 2020-01-30

New edition of the bestselling guide to mastering Python Networking, updated to Python 3 and including the latest on network data analysis, Cloud Networking, Ansible 2.8, and new libraries

Key Features Explore the power of Python libraries to tackle difficult network problems efficiently and effectively, including pyATS, Nornir, and Ansible 2.8 Use Python and Ansible for DevOps, network device automation, DevOps, and

software-defined networking Become an expert in implementing advanced network-related tasks with Python 3

Book Description Networks in your infrastructure set the foundation for how your application can be deployed, maintained, and serviced. Python is the ideal language for network engineers to explore tools that were previously available to systems engineers and application developers. In Mastering Python Networking, Third edition, you'll embark on a Python-based journey to transition from traditional network engineers to network developers ready for the next-generation of networks. This new edition is completely revised and updated to work with Python 3. In addition to new chapters on network data analysis with ELK stack (Elasticsearch, Logstash, Kibana, and Beats) and Azure Cloud Networking, it includes updates on using newer libraries such as pyATS and Nornir, as well as Ansible 2.8. Each chapter is updated with the latest libraries with working examples to ensure compatibility and understanding of the concepts. Starting with a basic overview of Python, the book teaches you how it can interact with both legacy and API-enabled network devices. You will learn to leverage high-level Python packages and frameworks to perform network automation tasks, monitoring, management, and enhanced network security followed by Azure and AWS Cloud networking. Finally, you will use Jenkins for continuous integration as well as testing tools to verify your network. What you will learn Use Python libraries to interact with your network Integrate Ansible 2.8 using Python to control Cisco, Juniper, and Arista network devices Leverage existing Flask web frameworks to construct high-level APIs Learn how to build virtual networks in the AWS & Azure Cloud Learn how to use Elastic Stack for network data analysis Understand how Jenkins can be used to automatically deploy changes in your network Use PyTest and Unittest for Test-Driven Network Development in networking engineering with Python Who this book is for Mastering Python Networking, Third edition is for network engineers, developers, and SREs who want to use Python for network automation, programmability, and data analysis. Basic familiarity with Python programming and networking-related concepts such as Transmission Control Protocol/Internet Protocol (TCP/IP) will be useful.

Network Programmability and Automation - Jason Edelman 2018-02-02

Like sysadmins before them, network engineers are finding that they cannot do their work manually anymore. As the field faces new protocols, technologies, delivery models, and a pressing need for businesses to be more agile and flexible, network automation is becoming essential. This practical guide shows network engineers how to use a range of technologies and tools—including Linux, Python, JSON, and XML—to automate their systems through code. Network programming and automation will help you simplify tasks involved in configuring, managing, and operating network equipment, topologies, services, and connectivity. Through the course of the book, you'll learn the basic skills and tools you need to make this critical transition. This book covers:

- Python programming basics: data types, conditionals, loops, functions, classes, and modules
- Linux fundamentals to provide the foundation you need on your network automation journey
- Data formats and models: JSON, XML, YAML, and YANG for networking
- Jinja templating and its applicability for creating network device configurations
- The role of application programming interfaces (APIs) in network automation
- Source control with Git to manage code changes during the automation process
- How Ansible, Salt, and StackStorm open source automation tools can be used to automate network devices
- Key tools and technologies required for a Continuous Integration (CI) pipeline in network operations

Network Programmability and Automation - Khaled Abuelenain 2020

Occupational Outlook Handbook - United States. Bureau of Labor Statistics 1976

Flutter Complete Reference - Alberto Miola 2020-09-30

Flutter is Google's UI toolkit for creating beautiful and native applications for mobile, desktop and web from a single Dart codebase. In this book we cover in detail the Dart programming language (version 2.10, with null safety support) and the Flutter framework (version 1.20). While reading the chapters, you'll find a lot of good practices, tips and performance advices to build high quality products. The book is divided in 3 parts. PART 1: It's about the Dart programming language (classes, exceptions, inheritance, null safety, streams, SOLID principles...). PART 2. It's about the Flutter framework (localization, routing, state management with Bloc and Provider, testing, performances with DevTools, animations...). PART 3. It's a long collection of examples (using

Firestore, monetizing apps, using gestures, networking, publishing packages at pub.dev, race recognition with ML kits, playing audio and video...). The official website of the book contains the complete source code of the examples and a "Quiz Game" to test your Dart and Flutter skills!

Automate Your Network: Introducing the Modern Approach to Enterprise Network Management - John W. Capobianco 2019-03-09

Network automation is one of the hottest topics in Information Technology today. This revolutionary book aims to illustrate the transformative journey towards full enterprise network automation. This book outlines the tools, technologies and processes required to fully automate an enterprise network. Automated network configuration management is more than converting your network configurations to code. The benefits of source control, version control, automated builds, automated testing and automated releases are realized in the world of networking using well established software development practices. The next-generation network administrative toolkit is introduced including Microsoft Team Foundation Server, Microsoft Visual Studio Code, Git, Linux, and the Ansible framework. Not only will these new technologies be covered at length, a new and continuously integrated / continuously delivered pipeline is also introduced. Starting with safe, simple, non-intrusive, non-disruptive information gathering organizations can ease into network automation while building a dynamic library of documentation and on-demand utilities for network operations. Once comfortable with the new ecosystem, administrators can begin making fully automated, orchestrated, and tactical changes to the network. The next evolutionary leap occurs when fully automated network configuration management is implemented. Important information from the network running-configurations is abstracted into data models in a human readable format. Device configurations are dynamically templated creating a scalable, intent-based, source of truth. Much like in the world of software development, full automation of the network using a CI/CD pipeline can be realized. Automated builds, automated testing and automated scheduled releases are orchestrated and executed when changes are approved and checked into the central repository. This book is unlike any on the market today as it includes multiple Ansible playbooks, sample YAML data models and Jinja2 templates for network devices, and a whole new methodology and approach to enterprise network administration and management. The CLI no longer cuts it. Readers should take away from this book a new approach to enterprise network management and administration as well as the full knowledge and understanding of how to use TFS, VS Code, Git, and Ansible to create an automation ecosystem. Readers should have some basic understanding of modern network design, operation, and configuration. No prior programming or software development experience is required. John Capobianco has over 20 years of IT experience and is currently a Technical Advisor for the Canadian House of Commons. A graduate of St. Lawrence College's Computer Programmer Analyst program, John is also a former Professor at St. Lawrence College in the Computer Networking and Technical Support (CNTS) program. John has achieved CCNP, CCDP, CCNA: Data Center, MCITP: EA/SA, CompTIA A+ / Network+, and ITIL Foundation certifications. Having discovered a new way to interface with the network John felt compelled to share this new methodology in hopes of revolutionizing the industry and bringing network automation to the world.

Introduction to Python Network Automation - Brendan Choi 2021-05-23

Learn and implement network automation within the Enterprise network using Python 3. This introductory book will be your guide to building an integrated virtual networking lab to begin your Network Automation journey and master the basics of Python Network Automation. The book features a review of the practical Python network automation scripting skills and tips learned from the production network, so you can safely test and practice in a lab environment first, various Python modules such as paramiko and netmiko, pandas, re, and much more. You'll also develop essential skills such as Python scripting, regular expressions, Linux and Windows administration, VMware virtualization, and Cisco networking from the comfort of your laptop/PC with no actual networking hardware. Finally, you will learn to write a fully automated and working Cisco IOS XE upgrade application using Python. Introduction to Python Network Automation uses a canonical order, where you begin at the bottom and by the time you have completed this book, you will at least reach the intermediate level of Python coding for enterprise networking automation using native Python tools. What You'll Learn Build a proper GNS3-based networking lab for Python network automation needs. Write

the basics of Python codes in both the Windows and Linux environments. Control network devices using telnet, SSH, and SNMP protocols using Python codes. Understand virtualization and how to use VMware workstation Examine virtualization and how to use VMware Workstation Pro Develop a working Cisco IOS upgrade application Who This Book Is For IT Engineers and developers, network managers and students, who would like to learn network automation using Python.

Hands-On Enterprise Automation with Python - Bassem Aly 2018-06-28 Invent your own Python scripts to automate your infrastructure Key Features Make the most of Python libraries and modules to automate your infrastructure Leverage Python programming to automate server configurations and administration tasks Efficiently develop your Python skill set Book Description Hands-On Enterprise Automation with Python starts by covering the set up of a Python environment to perform automation tasks, as well as the modules, libraries, and tools you will be using. We'll explore examples of network automation tasks using simple Python programs and Ansible. Next, we will walk you through automating administration tasks with Python Fabric, where you will learn to perform server configuration and administration, along with system administration tasks such as user management, database management, and process management. As you progress through this book, you'll automate several testing services with Python scripts and perform automation tasks on virtual machines and cloud infrastructure with Python. In the concluding chapters, you will cover Python-based offensive security tools and learn how to automate your security tasks. By the end of this book, you will have mastered the skills of automating several system administration tasks with Python. What you will learn Understand common automation modules used in Python Develop Python scripts to manage network devices Automate common Linux administration tasks with Ansible and Fabric Managing Linux processes Administrate VMware, OpenStack, and AWS instances with Python Security automation and sharing code on GitHub Who this book is for Hands-On Enterprise Automation with Python is for system administrators and DevOps engineers who are looking for an alternative to major automation frameworks such as Puppet and Chef. Basic programming knowledge with Python and Linux shell scripting is necessary.

Network Automation Cookbook - Karim Okasha 2020-04-17

Take your network automation skills to the next level with practical recipes on managing network devices from a variety of vendors like Cisco, Juniper, and Arista Key Features Use Ansible to automate network infrastructure with the help of step-by-step instructions Implement network automation best practices to save cost, avoid critical errors, and reduce downtime Deliver a robust automation framework by integrating Ansible with NAPALM, NetBox, and Batfish Book Description Network Automation Cookbook is designed to help system administrators, network engineers, and infrastructure automation engineers to centrally manage switches, routers, and other devices in their organization's network. This book will help you gain hands-on experience in automating enterprise networks and take you through core network automation techniques using the latest version of Ansible and Python. With the help of practical recipes, you'll learn how to build a network infrastructure that can be easily managed and updated as it scales through a large number of devices. You'll also cover topics related to security automation and get to grips with essential techniques to maintain network robustness. As you make progress, the book will show you how to automate networks on public cloud providers such as AWS, Google Cloud Platform, and Azure. Finally, you will get up and running with Ansible 2.9 and discover troubleshooting techniques and network automation best practices. By the end of this book, you'll be able to use Ansible to automate modern network devices and integrate third-party tools such as NAPALM, NetBox, and Batfish easily to build robust network automation solutions. What you will learn Understand the various components of Ansible Automate network resources in AWS, GCP, and Azure cloud solutions Use IaC concepts to design and build network solutions Automate network devices such as Cisco, Juniper, Arista, and F5 Use NetBox to build network inventory and integrate it with Ansible Validate networks using Ansible and Batfish Who this book is for This Ansible network automation book is for network and DevOps engineers interested in automating complex network tasks. Prior understanding of networking and basic Linux knowledge is required.

pytest Quick Start Guide - Bruno Oliveira 2018-08-29

Learn the pytest way to write simple tests which can also be used to write complex tests Key Features Become proficient with pytest from day one by solving real-world testing problems Use pytest to write tests more

efficiently Scale from simple to complex and functional testing Book Description Python's standard unittest module is based on the xUnit family of frameworks, which has its origins in Smalltalk and Java, and tends to be verbose to use and not easily extensible. The pytest framework on the other hand is very simple to get started, but powerful enough to cover complex testing integration scenarios, being considered by many the true Pythonic approach to testing in Python. In this book, you will learn how to get started right away and get the most out of pytest in your daily workflow, exploring powerful mechanisms and plugins to facilitate many common testing tasks. You will also see how to use pytest in existing unittest-based test suites and will learn some tricks to make the jump to a pytest-style test suite quickly and easily. What you will learn Write and run simple and complex tests Organize tests in files and directories Find out how to be more productive on the command line Markers and how to skip, xfail and parametrize tests Explore fixtures and techniques to use them effectively, such as tmpdir, pytestconfig, and monkeypatch Convert unittest suites to pytest using little-known techniques Use third-party plugins Who this book is for This book is for Python programmers that want to learn more about testing. This book is also for QA testers, and those who already benefit from programming with tests daily but want to improve their existing testing tools.

Complete Guide to Test Automation - Arnon Axelrod 2018-09-22

Rely on this robust and thorough guide to build and maintain successful test automation. As the software industry shifts from traditional waterfall paradigms into more agile ones, test automation becomes a highly important tool that allows your development teams to deliver software at an ever-increasing pace without compromising quality. Even though it may seem trivial to automate the repetitive tester's work, using test automation efficiently and properly is not trivial. Many test automation endeavors end up in the "graveyard" of software projects. There are many things that affect the value of test automation, and also its costs. This book aims to cover all of these aspects in great detail so you can make decisions to create the best test automation solution that will not only help your test automation project to succeed, but also allow the entire software project to thrive. One of the most important details that affects the success of the test automation is how easy it is to maintain the automated tests. *Complete Guide to Test Automation* provides a detailed hands-on guide for writing highly maintainable test code. What You'll Learn Know the real value to be expected from test automation Discover the key traits that will make your test automation project succeed Be aware of the different considerations to take into account when planning automated tests vs. manual tests Determine who should implement the tests and the implications of this decision Architect the test project and fit it to the architecture of the tested application Design and implement highly reliable automated tests Begin gaining value from test automation earlier Integrate test automation into the business processes of the development team Leverage test automation to improve your organization's performance and quality, even without formal authority Understand how different types of automated tests will fit into your testing strategy, including unit testing, load and performance testing, visual testing, and more Who This Book Is For Those involved with software development such as test automation leads, QA managers, test automation developers, and development managers. Some parts of the book assume hands-on experience in writing code in an object-oriented language (mainly C# or Java), although most of the content is also relevant for nonprogrammers.

Network Warrior - Gary A. Donahue 2011-05-13

Pick up where certification exams leave off. With this practical, in-depth guide to the entire network infrastructure, you'll learn how to deal with real Cisco networks, rather than the hypothetical situations presented on exams like the CCNA. *Network Warrior* takes you step by step through the world of routers, switches, firewalls, and other technologies based on the author's extensive field experience. You'll find new content for MPLS, IPv6, VoIP, and wireless in this completely revised second edition, along with examples of Cisco Nexus 5000 and 7000 switches throughout. Topics include: An in-depth view of routers and routing Switching, using Cisco Catalyst and Nexus switches as examples SOHO VoIP and SOHO wireless access point design and configuration Introduction to IPv6 with configuration examples Telecom technologies in the data-networking world, including T1, DS3, frame relay, and MPLS Security, firewall theory, and configuration, as well as ACL and authentication Quality of Service (QoS), with an emphasis on low-latency queuing (LLQ) IP address allocation, Network Time Protocol (NTP), and device failures

Mastering Python Networking - Eric Chou 2017-06-28

Become an expert in implementing advanced, network-related tasks with

Python. About This Book Build the skills to perform all networking tasks using Python with ease Use Python for network device automation, DevOps, and software-defined networking Get practical guidance to networking with Python Who This Book Is For If you are a network engineer or a programmer who wants to use Python for networking, then this book is for you. A basic familiarity with networking-related concepts such as TCP/IP and a familiarity with Python programming will be useful. What You Will Learn Review all the fundamentals of Python and the TCP/IP suite Use Python to execute commands when the device does not support the API or programmatic interaction with the device Implement automation techniques by integrating Python with Cisco, Juniper, and Arista eAPI Integrate Ansible using Python to control Cisco, Juniper, and Arista networks Achieve network security with Python Build Flask-based web-service APIs with Python Construct a Python-based migration plan from a legacy to scalable SDN-based network. In Detail This book begins with a review of the TCP/IP protocol suite and a refresher of the core elements of the Python language. Next, you will start using Python and supported libraries to automate network tasks from the current major network vendors. We will look at automating traditional network devices based on the command-line interface, as well as newer devices with API support, with hands-on labs. We will then learn the concepts and practical use cases of the Ansible framework in order to achieve your network goals. We will then move on to using Python for DevOps, starting with using open source tools to test, secure, and analyze your network. Then, we will focus on network monitoring and visualization. We will learn how to retrieve network information using a polling mechanism, flow-based monitoring, and visualizing the data programmatically. Next, we will learn how to use the Python framework to build your own customized network web services. In the last module, you will use Python for SDN, where you will use a Python-based controller with OpenFlow in a hands-on lab to learn its concepts and applications. We will compare and contrast OpenFlow, OpenStack, OpenDaylight, and NFV. Finally, you will use everything you've learned in the book to construct a migration plan to go from a legacy to a scalable SDN-based network. Style and approach An easy-to-follow guide packed with hands-on examples of using Python for network device automation, DevOps, and SDN.

Network Programming with Go - Jan Newmarch 2017-05-15

Dive into key topics in network architecture and Go, such as data serialization, application level protocols, character sets and encodings. This book covers network architecture and gives an overview of the Go language as a primer, covering the latest Go release. Beyond the fundamentals, *Network Programming with Go* covers key networking and security issues such as HTTP and HTTPS, templates, remote procedure call (RPC), web sockets including HTML5 web sockets, and more. Additionally, author Jan Newmarch guides you in building and connecting to a complete web server based on Go. This book can serve as both as an essential learning guide and reference on Go networking. What You Will Learn Master network programming with Go Carry out data serialization Use application-level protocols Manage character sets and encodings Deal with HTTP(S) Build a complete Go-based web server Work with RPC, web sockets, and more Who This Book Is For Experienced Go programmers and other programmers with some experience with the Go language.

Data Analytics for IT Networks - John Garrett 2018-10-24

Use data analytics to drive innovation and value throughout your network infrastructure Network and IT professionals capture immense amounts of data from their networks. Buried in this data are multiple opportunities to solve and avoid problems, strengthen security, and improve network performance. To achieve these goals, IT networking experts need a solid understanding of data science, and data scientists need a firm grasp of modern networking concepts. *Data Analytics for IT Networks* fills these knowledge gaps, allowing both groups to drive unprecedented value from telemetry, event analytics, network infrastructure metadata, and other network data sources. Drawing on his pioneering experience applying data science to large-scale Cisco networks, John Garrett introduces the specific data science methodologies and algorithms network and IT professionals need, and helps data scientists understand contemporary network technologies, applications, and data sources. After establishing this shared understanding, Garrett shows how to uncover innovative use cases that integrate data science algorithms with network data. He concludes with several hands-on, Python-based case studies reflecting Cisco Customer Experience (CX) engineers' supporting its largest customers. These are designed to serve as templates for developing custom solutions ranging

from advanced troubleshooting to service assurance. Understand the data analytics landscape and its opportunities in Networking See how elements of an analytics solution come together in the practical use cases Explore and access network data sources, and choose the right data for your problem Innovate more successfully by understanding mental models and cognitive biases Walk through common analytics use cases from many industries, and adapt them to your environment Uncover new data science use cases for optimizing large networks Master proven algorithms, models, and methodologies for solving network problems Adapt use cases built with traditional statistical methods Use data science to improve network infrastructure analysis Analyze control and data planes with greater sophistication Fully leverage your existing Cisco tools to collect, analyze, and visualize data

Network Programmability with YANG - Benoit Claise 2019-05-10

Today, networks must evolve and scale faster than ever. You can't manage everything by hand anymore: You need to automate relentlessly. YANG, along with the NETCONF, RESTCONF, or gRPC/gNMI protocols, is the most practical solution, but most implementers have had to learn by trial and error. Now, Network Programmability with YANG gives you complete and reliable guidance for unlocking the full power of network automation using model-driven APIs and protocols. Authored by three YANG pioneers, this plain-spoken book guides you through successfully applying software practices based on YANG data models. The authors focus on the network operations layer, emphasizing model-driven APIs, and underlying transports. Whether you're a network operator, DevOps engineer, software developer, orchestration engineer, NMS/OSS architect, service engineer, or manager, this guide can help you dramatically improve value, agility, and manageability throughout your network. Discover the value of implementing YANG and Data Model-Driven Management in your network Explore the layers and components of a complete working solution Build a business case where value increases as your solution grows Drill down into transport protocols: NETCONF, RESTCONF, and gNMI/gRPC See how telemetry can establish a valuable automated feedback loop Find data models you can build on, and evaluate models with similar functionality Understand models, metadata, and tools from several viewpoints: architect, operator, module author, and application developer Walk through a complete automation journey: business case, service model, service implementation, device integration, and operation Leverage the authors' experience to design successful YANG models and avoid pitfalls

Automate the Boring Stuff with Python, 2nd Edition - Al Sweigart 2019-11-12

The second edition of this best-selling Python book (over 500,000 copies sold!) uses Python 3 to teach even the technically uninclined how to write programs that do in minutes what would take hours to do by hand. There is no prior programming experience required and the book is loved by liberal arts majors and geeks alike. If you've ever spent hours renaming files or updating hundreds of spreadsheet cells, you know how tedious tasks like these can be. But what if you could have your computer do them for you? In this fully revised second edition of the best-selling classic Automate the Boring Stuff with Python, you'll learn how to use Python to write programs that do in minutes what would take you hours to do by hand--no prior programming experience required. You'll learn the basics of Python and explore Python's rich library of modules for performing specific tasks, like scraping data off websites, reading PDF and Word documents, and automating clicking and typing tasks. The second edition of this international fan favorite includes a brand-new chapter on input validation, as well as tutorials on automating Gmail and Google Sheets, plus tips on automatically updating CSV files. You'll learn how to create programs that effortlessly perform useful feats of automation to:

- Search for text in a file or across multiple files
- Create, update, move, and rename files and folders
- Search the Web and download online content
- Update and format data in Excel spreadsheets of any size
- Split, merge, watermark, and encrypt PDFs
- Send email responses and text notifications
- Fill out online forms

Step-by-step instructions walk you through each program, and updated practice projects at the end of each chapter challenge you to improve those programs and use your newfound skills to automate similar tasks. Don't spend your time doing work a well-trained monkey could do. Even if you've never written a line of code, you can make your computer do the grunt work. Learn how in Automate the Boring Stuff with Python, 2nd Edition.

Python for DevOps - Noah Gift 2019-12-12

Much has changed in technology over the past decade. Data is hot, the cloud is ubiquitous, and many organizations need some form of

automation. Throughout these transformations, Python has become one of the most popular languages in the world. This practical resource shows you how to use Python for everyday Linux systems administration tasks with today's most useful DevOps tools, including Docker, Kubernetes, and Terraform. Learning how to interact and automate with Linux is essential for millions of professionals. Python makes it much easier. With this book, you'll learn how to develop software and solve problems using containers, as well as how to monitor, instrument, load-test, and operationalize your software. Looking for effective ways to "get stuff done" in Python? This is your guide. Python foundations, including a brief introduction to the language How to automate text, write command-line tools, and automate the filesystem Linux utilities, package management, build systems, monitoring and instrumentation, and automated testing Cloud computing, infrastructure as code, Kubernetes, and serverless Machine learning operations and data engineering from a DevOps perspective Building, deploying, and operationalizing a machine learning project

Programming and Automating Cisco Networks - Ryan Tischer 2016-09-09

Improve operations and agility in any data center, campus, LAN, or WAN Today, the best way to stay in control of your network is to address devices programmatically and automate network interactions. In this book, Cisco experts Ryan Tischer and Jason Gooley show you how to do just that. You'll learn how to use programmability and automation to solve business problems, reduce costs, promote agility and innovation, handle accelerating complexity, and add value in any data center, campus, LAN, or WAN. The authors show you how to create production solutions that run on or interact with Nexus NX-OS-based switches, Cisco ACI, Campus, and WAN technologies. You'll learn how to use advanced Cisco tools together with industry-standard languages and platforms, including Python, JSON, and Linux. The authors demonstrate how to support dynamic application environments, tighten links between apps and infrastructure, and make DevOps work better. This book will be an indispensable resource for network and cloud designers, architects, DevOps engineers, security specialists, and every professional who wants to build or operate high-efficiency networks. Drive more value through programmability and automation, freeing resources for high-value innovation Move beyond error-prone, box-by-box network management Bridge management gaps arising from current operational models Write NX-OS software to run on, access, or extend your Nexus switch Master Cisco's powerful on-box automation and operation tools Manage complex WANs with NetConf/Yang, ConfD, and Cisco SDN Controller Interact with and enhance Cisco Application Centric Infrastructure (ACI) Build self-service catalogs to accelerate application delivery Find resources for deepening your expertise in network automation

DevNet Associate DEVASC 200-901 Official Certification Guide - Chris Jackson 2020-05-25

DevNet Associate DEVASC 200-901 Official Certification Guide is Cisco's official, comprehensive self-study resource for Cisco's DEVASC 200-901 exam: your pathway to the DevNet Associate Certification demonstrating your knowledge of application development and automation on Cisco platforms. Written by Cisco experts based on Cisco's own internal training, it clearly explains the value of each technique, presents realistic use cases, introduces solution components, illuminates their inner workings, and shows how to execute on what you've learned in practice. Designed for all Cisco DevNet Associate candidates, it covers every DEVASC 200-901 objective concisely and logically, with extensive teaching features designed to promote retention and understanding. You'll find: Pre-chapter quizzes to assess knowledge upfront and focus your study more efficiently Foundation topics sections that explain concepts and configurations, and link theory to practice Key topics sections calling attention to every figure, table, and list you must know Exam Preparation sections with additional chapter review features Final preparation chapter providing tools and a complete final study plan A customizable practice test library This guide offers comprehensive, up-to-date coverage of all DEVASC 200-901 topics related to: Software development and design Understanding and using APIs Cisco platforms and development Application deployment and security Infrastructure and automation Network fundamentals

Foundations of Python Network Programming - John Goerzen 2011-02-24

This second edition of Foundations of Python Network Programming targets Python 2.5 through Python 2.7, the most popular production versions of the language. Python has made great strides since Apress released the first edition of this book back in the days of Python 2.3. The advances required new chapters to be written from the ground up, and

others to be extensively revised. You will learn fundamentals like IP, TCP, DNS and SSL by using working Python programs; you will also be able to familiarize yourself with infrastructure components like memcached and message queues. You can also delve into network server designs, and compare threaded approaches with asynchronous event-based solutions. But the biggest change is this edition's expanded treatment of the web. The HTTP protocol is covered in extensive detail, with each feature accompanied by sample Python code. You can use your HTTP protocol expertise by studying an entire chapter on screen scraping and you can then test lxml and BeautifulSoup against a real-world web site. The chapter on web application programming now covers both the WSGI standard for component interoperability, as well as modern web frameworks like Django. Finally, all of the old favorites from the first edition are back: E-mail protocols like SMTP, POP, and IMAP get full treatment, as does XML-RPC. You can still learn how to code Python network programs using the Telnet and FTP protocols, but you are likely to appreciate the power of more modern alternatives like the paramiko SSH2 library. If you are a Python programmer who needs to learn the network, this is the book that you want by your side.

Hands-On Network Programming with C# and .NET Core - Sean Burns 2019-03-29

A comprehensive guide to understanding network architecture, communication protocols, and network analysis to build secure applications compatible with the latest versions of C# 8 and .NET Core 3.0 Key Features Explore various network architectures that make distributed programming possible Learn how to make reliable software by writing secure interactions between clients and servers Use .NET Core for network device automation, DevOps, and software-defined networking Book Description The C# language and the .NET Core application framework provide the tools and patterns required to make the discipline of network programming as intuitive and enjoyable as any other aspect of C# programming. With the help of this book, you will discover how the C# language and the .NET Core framework make this possible. The book begins by introducing the core concepts of network programming, and what distinguishes this field of programming from other disciplines. After this, you will gain insights into concepts such as transport protocols, sockets and ports, and remote data streams, which will provide you with a holistic understanding of how network software fits into larger distributed systems. The book will also explore the intricacies of how network software is implemented in a more explicit context, by covering sockets, connection strategies such as Transmission Control Protocol (TCP) and User Datagram Protocol (UDP), asynchronous processing, and threads. You will then be able to work through code examples for TCP servers, web APIs served over HTTP, and a Secure Shell (SSH) client. By the end of this book, you will have a good understanding of the Open Systems Interconnection (OSI) network stack, the various communication protocols for that stack, and the skills that are essential to implement those protocols using the C# programming language and the .NET Core framework. What you will learn Understand the breadth of C#'s network programming utility classes Utilize network-layer architecture and organizational strategies Implement various communication and transport protocols within C# Discover hands-on examples of distributed application development Gain hands-on experience with asynchronous socket programming and streams Learn how C# and the .NET Core runtime interact with a hosting network Understand a full suite of network programming tools and features Who this book is for If you're a .NET developer or a system administrator with .NET experience and are looking to get started with network programming, then this book is for you. Basic knowledge of C# and .NET is assumed, in addition to a basic understanding of common web protocols and some high-level distributed system designs.

Learning Scrapy - Dimitrios Kouzis-Loukas 2016-01-30

Learn the art of efficient web scraping and crawling with Python About This Book Extract data from any source to perform real time analytics. Full of techniques and examples to help you crawl websites and extract data within hours. A hands-on guide to web scraping and crawling with real-life problems and solutions Who This Book Is For If you are a software developer, data scientist, NLP or machine-learning enthusiast or just need to migrate your company's wiki from a legacy platform, then this book is for you. It is perfect for someone , who needs instant access to large amounts of semi-structured data effortlessly. What You Will Learn Understand HTML pages and write XPath to extract the data you need Write Scrapy spiders with simple Python and do web crawls Push your data into any database, search engine or analytics system Configure your spider to download files, images and use proxies Create efficient

pipelines that shape data in precisely the form you want Use Twisted Asynchronous API to process hundreds of items concurrently Make your crawler super-fast by learning how to tune Scrapy's performance Perform large scale distributed crawls with scrapyd and scrapinghub In Detail This book covers the long awaited Scrapy v 1.0 that empowers you to extract useful data from virtually any source with very little effort. It starts off by explaining the fundamentals of Scrapy framework, followed by a thorough description of how to extract data from any source, clean it up, shape it as per your requirement using Python and 3rd party APIs. Next you will be familiarised with the process of storing the scrapped data in databases as well as search engines and performing real time analytics on them with Spark Streaming. By the end of this book, you will perfect the art of scarping data for your applications with ease Style and approach It is a hands on guide, with first few chapters written as a tutorial, aiming to motivate you and get you started quickly. As the book progresses, more advanced features are explained with real world examples that can be referred while developing your own web applications.

Python Scripting for Network Engineers - Wajid Hassan 2019-05-24

Today Network Automation can be used for provisioning, configurations, identifying rogue devices, mitigating security attacks, compliance, audits, capacity planning and scores of other network deployment activities. It has helped in enhancing network visibility and has empowered the network engineers to make faster, smarter network decisions, optimize uptime and performance, enhance security, and enable innovation instead of spending endless cycles in managing the network. This book has been written for Network Engineers and Network Managers who are starting to explore network automation. This book is a good starting point for Network Engineers who learnt Programming in their earlier academic or work career and haven't used it in a long time or those Network Engineers who are learning Programming and Automation for the first time. The book has example Python Scripts which readers can practice and improve their job potential and make the networks more resilient and scalable.

Mastering Python Networking - Eric Chou 2018-08-29

Master the art of using Python for a diverse range of network engineering tasks Key Features Explore the power of Python libraries to tackle difficult network problems efficiently and effectively Use Python for network device automation, DevOps, and software-defined networking Become an expert in implementing advanced network-related tasks with Python Book Description Networks in your infrastructure set the foundation for how your application can be deployed, maintained, and serviced. Python is the ideal language for network engineers to explore tools that were previously available to systems engineers and application developers. In this second edition of Mastering Python Networking, you'll embark on a Python-based journey to transition from traditional network engineers to network developers ready for the next-generation of networks. This book begins by reviewing the basics of Python and teaches you how Python can interact with both legacy and API-enabled network devices. As you make your way through the chapters, you will then learn to leverage high-level Python packages and frameworks to perform network engineering tasks for automation, monitoring, management, and enhanced security. In the concluding chapters, you will use Jenkins for continuous network integration as well as testing tools to verify your network. By the end of this book, you will be able to perform all networking tasks with ease using Python. What you will learn Use Python libraries to interact with your network Integrate Ansible 2.5 using Python to control Cisco, Juniper, and Arista eAPI network devices Leverage existing frameworks to construct high-level APIs Learn how to build virtual networks in the AWS Cloud Understand how Jenkins can be used to automatically deploy changes in your network Use PyTest and Unittest for Test-Driven Network Development Who this book is for Mastering Python Networking is for network engineers and programmers who want to use Python for networking. Basic familiarity with Python programming and networking-related concepts such as Transmission Control Protocol/Internet Protocol (TCP/IP) will be useful.

Automating Junos Administration - Jonathan Looney 2016-04-27

How can you grow and maintain a reliable, flexible, and cost-efficient network in the face of ever-increasing demands? With this practical guide, network engineers will learn how to program Juniper network devices to perform day-to-day tasks, using the automation features of the Junos OS. Junos supports several automation tools that provide powerful solutions to common network automation tasks. Authors Jonathan Looney and Stacy Smith, senior testing engineers at Juniper, will help you

determine which tools work best for your particular network requirements. If you have experience with Junos, this book will show you how automation can make a big difference in the operation of your existing network. Manage Junos software with remote procedure calls and a RESTful API Represent devices as Python objects and manage them with Python's PyEZ package Customize Junos software to detect and block commits that violate your network standards Develop custom CLI commands to present information the way you want Program Junos software to automatically respond to network events Rapidly deploy new Junos devices into your network with ZTP and Netconify tools Learn how to use Ansible or Puppet to manage Junos software

Foundations of Python Network Programming - John Goerzen

2004-08-16

* Covers low-level networking in Python —essential for writing a new networked application protocol. * Many working examples demonstrate concepts in action -- and can be used as starting points for new projects. * Networked application security is demystified. * Exhibits and explains multitasking network servers using several models, including forking, threading, and non-blocking sockets. * Features extensive coverage of Web and E-mail. Describes Python's database APIs.

Crafting Rails 4 Applications - Jose Valim 2013-11-14

Get ready to see Rails as you've never seen it before. Learn how to extend the framework, change its behavior, and replace whole components to bend it to your will. Eight different test-driven tutorials will help you understand Rails' inner workings and prepare you to tackle complicated projects with solutions that are well-tested, modular, and easy to maintain. This second edition of the bestselling *Crafting Rails Applications* has been updated to Rails 4 and discusses new topics such as streaming, mountable engines, and thread safety. Rails is one of the most extensible frameworks out there. This pioneering book deep-dives into the Rails plugin APIs and shows you, the intermediate Rails developer, how to use them to write better web applications and make your day-to-day work with Rails more productive. Rails Core developer Jose Valim guides you through eight different tutorials, each using test-driven development to build a new Rails plugin or application that solves common problems with these APIs. You'll learn how the Rails rendering stack works and customize it to read templates from the database while you discover how to mimic Active Record behavior, such as validations, in any other object. You'll find out how Rails integrates with Rack, the different ways to stream data from your web application, and how to mix Rails engines and Sinatra applications into your Rails apps, so you can choose the most appropriate tool for the job. In addition, you'll improve your productivity by customizing generators and responders. This book will help you understand Rails' inner workings, including generators, template handlers, internationalization, routing, and responders. With the knowledge you'll gain, you'll create well-tested, modular, and robust solutions for your next project.

Enterprise Networking, Security, and Automation Companion Guide (Ccnv7) - Cisco Networking Academy 2020-06-12

Enterprise Networking, Security, and Automation (CCNA v7) Companion Guide is designed as a portable desk reference to use anytime, anywhere to reinforce the material from the Enterprise Networking, Security, and Automation course and organize your time. The book's features help you focus on important concepts to succeed in this course: Chapter Objectives - Review core concepts by answering the focus questions listed at the beginning of each chapter. Key Terms - Refer to the lists of networking vocabulary introduced and highlighted in context in each chapter. Glossary - Consult the comprehensive Glossary with more than 250 terms. Summary of Activities and Labs - Maximize your study time with this complete list of all associated practice exercises at the end of each chapter. Check Your Understanding - Evaluate your readiness with the end-of-chapter questions that match the style of questions you see in the online course quizzes. The answer key explains each answer. How To - Look for this icon to study the steps you need to learn to perform certain tasks. Interactive Activities - Reinforce your understanding of topics with dozens of exercises from the online course identified throughout the book with this icon. Packet Tracer Activities - Explore and visualize networking concepts using Packet Tracer exercises interspersed throughout the chapters and provided in the accompanying Labs & Study Guide book. Videos - Watch the videos embedded within the online course. Hands-on Labs - Work through all the course labs and additional Class Activities that are included in the course and published in the separate Labs & Study Guide. Part of the Cisco Networking Academy Series from Cisco Press, books in this series support and complement the Cisco Networking Academy curriculum.

Hands-On Network Programming with C - Lewis Van Winkle

2019-05-13

A comprehensive guide to programming with network sockets, implementing Internet protocols, designing IoT devices, and much more with C Key FeaturesLeverage your C or C++ programming skills to build powerful network applicationsGet to grips with a variety of network protocols that allow you to load web pages, send emails, and do much moreWrite portable network code for operating systems such as Windows, Linux, and macOSBook Description Network programming, a challenging topic in C, is made easy to understand with a careful exposition of socket programming APIs. This book gets you started with modern network programming in C and the right use of relevant operating system APIs. This book covers core concepts, such as hostname resolution with DNS, that are crucial to the functioning of the modern web. You'll delve into the fundamental network protocols, TCP and UDP. Essential techniques for networking paradigms such as client-server and peer-to-peer models are explained with the help of practical examples. You'll also study HTTP and HTTPS (the protocols responsible for web pages) from both the client and server perspective. To keep up with current trends, you'll apply the concepts covered in this book to gain insights into web programming for IoT. You'll even get to grips with network monitoring and implementing security best practices. By the end of this book, you'll have experience of working with client-server applications, and be able to implement new network programs in C. The code in this book is compatible with the older C99 version as well as the latest C18 and C++17 standards. Special consideration is given to writing robust, reliable, and secure code that is portable across operating systems, including Winsock sockets for Windows and POSIX sockets for Linux and macOS. What you will learnUncover cross-platform socket programming APIsImplement techniques for supporting IPv4 and IPv6Understand how TCP and UDP connections work over IPDiscover how hostname resolution and DNS workInterface with web APIs using HTTP and HTTPSAcquire hands-on experience with Simple Mail Transfer Protocol (SMTP)Apply network programming to the Internet of Things (IoT)Who this book is for If you're a developer or a system administrator who wants to enter the world of network programming, this book is for you. Basic knowledge of C programming is assumed.

Cisco Networks - Chris Carthern 2015-11-27

This book is a concise one-stop desk reference and synopsis of basic knowledge and skills for Cisco certification prep. For beginning and experienced network engineers tasked with building LAN, WAN, and data center connections, this book lays out clear directions for installing, configuring, and troubleshooting networks with Cisco devices. The full range of certification topics is covered, including all aspects of IOS, NX-OS, and ASA software. The emphasis throughout is on solving the real-world challenges engineers face in configuring network devices, rather than on exhaustive descriptions of hardware features. This practical desk companion doubles as a comprehensive overview of the basic knowledge and skills needed by CCENT, CCNA, and CCNP exam takers. It distills a comprehensive library of cheat sheets, lab configurations, and advanced commands that the authors assembled as senior network engineers for the benefit of junior engineers they train, mentor on the job, and prepare for Cisco certification exams. Prior familiarity with Cisco routing and switching is desirable but not necessary, as Chris Carthern, Dr. Will Wilson, Noel Rivera, and Richard Bedwell start their book with a review of the basics of configuring routers and switches. All the more advanced chapters have labs and exercises to reinforce the concepts learned. This book differentiates itself from other Cisco books on the market by approaching network security from a hacker's perspective. Not only does it provide network security recommendations but it teaches you how to use black-hat tools such as oclHashcat, Loki, Burp Suite, Scapy, Metasploit, and Kali to actually test the security concepts learned. Readers of *Cisco Networks* will learn How to configure Cisco switches, routers, and data center devices in typical corporate network architectures The skills and knowledge needed to pass Cisco CCENT, CCNA, and CCNP certification exams How to set up and configure at-home labs using virtual machines and lab exercises in the book to practice advanced Cisco commands How to implement networks of Cisco devices supporting WAN, LAN, and data center configurations How to implement secure network configurations and configure the Cisco ASA firewall How to use black-hat tools and network penetration techniques to test the security of your network

Network Programmability and Automation, Volume 1 - Khaled

Abuelenain 2020-09

Network Programmability and Automation, Volume 1, covers designing,

implementing, monitoring and operating networks using programmable interfaces on network devices versus the legacy (and soon-to-be obsolete) methods and protocols such as the Command Line Interface (CLI) and Simple Network Management Protocol (SNMP). It discusses the protocols, tools, techniques and technologies upon which Network Programmability is based. Covering the fundamentals that a network engineer needs to transition to the software and programmability domains, the book opens with an introduction that lays the foundation by discussing the market trends and emerging technologies such as SDN, NFV and Cloud, and how network programmability skills are paramount for aligning oneself with these technologies. It provides network engineers with a solid foundation in Python programming and Linux in the context of network programmability and automation.

Python Network Programming Techniques - Marcel Neidinger
2021-10-08

Become well-versed with network programmability by solving the most commonly encountered problems using Python 3 and open-source packages
Key Features
Explore different Python packages to automate your infrastructure
Leverage AWS APIs and the Python library Boto3 to administer your public cloud network efficiently
Get started with infrastructure automation by enhancing your network programming knowledge
Book Description
Network automation offers a powerful new way of changing your infrastructure network. Gone are the days of manually logging on to different devices to type the same configuration

commands over and over again. With this book, you'll find out how you can automate your network infrastructure using Python. You'll get started on your network automation journey with a hands-on introduction to the network programming basics to complement your infrastructure knowledge. You'll learn how to tackle different aspects of network automation using Python programming and a variety of open source libraries. In the book, you'll learn everything from templating, testing, and deploying your configuration on a device-by-device basis to using high-level REST APIs to manage your cloud-based infrastructure. Finally, you'll see how to automate network security with Cisco's Firepower APIs. By the end of this Python network programming book, you'll have not only gained a holistic overview of the different methods to automate the configuration and maintenance of network devices, but also learned how to automate simple to complex networking tasks and overcome common network programming challenges. What you will learn
Programmatically connect to network devices using SSH (secure shell) to execute commands
Create complex configuration templates using Python
Manage multi-vendor or multi-device environments using network controller APIs or unified interfaces
Use model-driven programmability to retrieve and change device configurations
Discover how to automate post modification network infrastructure tests
Automate your network security using Python and Firepower APIs
Who this book is for
This book is for network engineers who want to make the most of Python to automate their infrastructure. A basic understanding of Python programming and common networking principles is necessary.