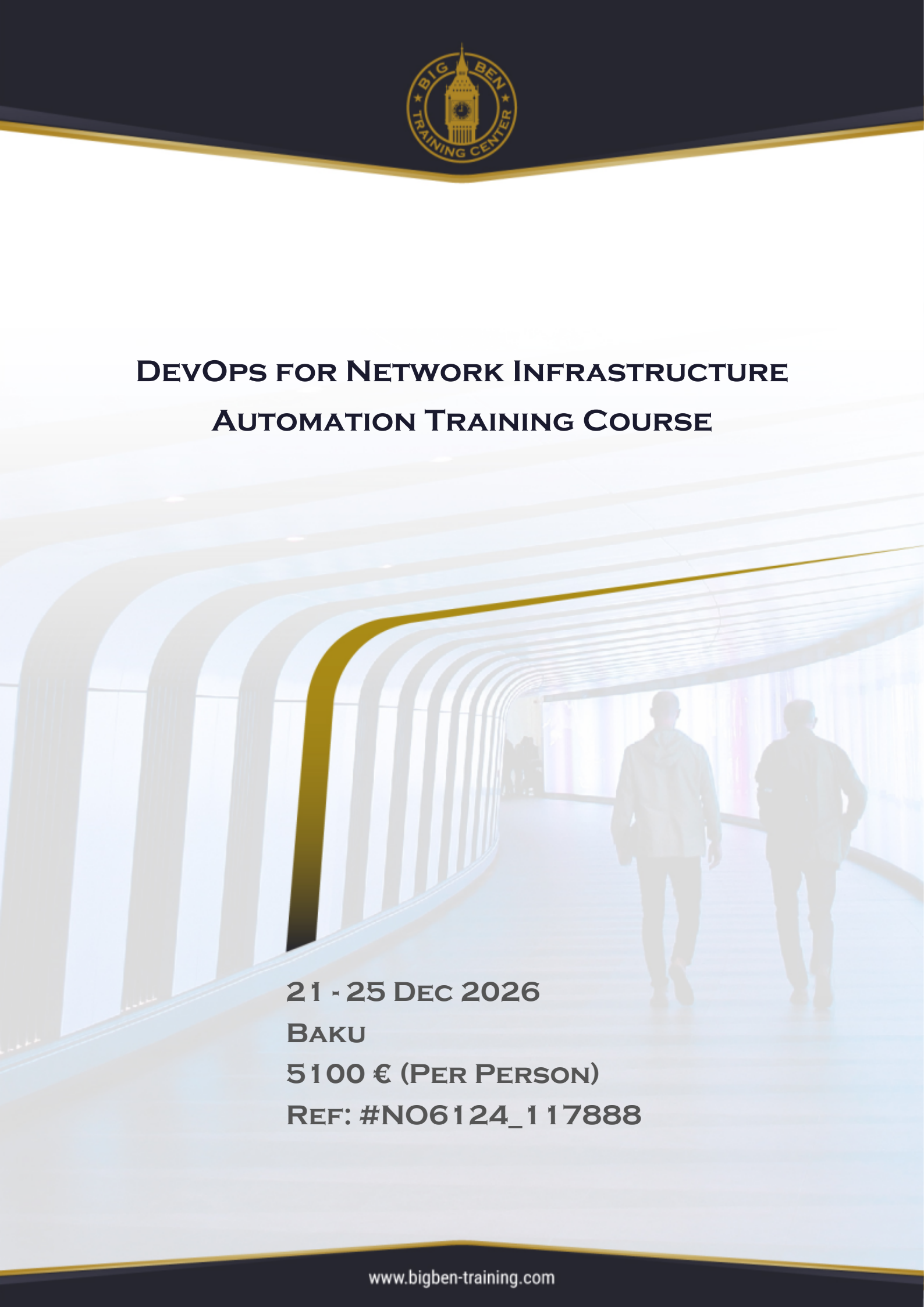
DevOps for Network Infrastructure Automation Training Course



21 - 25 Dec 2026

Baku

5100 € (Per Person)

Ref: #NO6124_117888

Course Introduction / Overview:

This course provides a comprehensive exploration of the principles and practices required to transform traditional network operations into a modern, automated, and agile framework. In an era where network infrastructure must evolve at the speed of software development, the integration of DevOps methodologies, known as NetDevOps, is no longer a luxury but a necessity. This program is meticulously designed to bridge the gap between network engineering and software development, empowering participants to manage network infrastructure as code. Drawing upon concepts discussed by thought leaders like Jason Edelman in his book "Network Programmability and Automation", the curriculum delves into version control, continuous integration, automated testing, and continuous deployment (CI/CD) specifically tailored for network environments. Participants will learn to leverage powerful automation tools and scripting languages to build resilient, scalable, and secure networks. BIG BEN Training Center has structured this course to move beyond theoretical knowledge, focusing on hands-on application and real-world problem-solving, ensuring that attendees can immediately apply these advanced strategies to drive efficiency and innovation within their organizations. This journey will equip network professionals with the future-proof skills needed to excel in the dynamic landscape of modern IT infrastructure.

Target Audience / This training course is suitable for:

- Network Engineers and Administrators.
- Network Architects and Designers.
- DevOps Engineers with a focus on infrastructure.
- Systems Engineers and Administrators.
- Cloud Infrastructure Engineers.
- IT Managers and Team Leaders overseeing network operations.
- Solutions Architects.
- Technical Project Managers.

Target Sectors and Industries:

- Telecommunications and Internet Service Providers.
- Financial Services and Banking.
- Cloud and Hosting Service Providers.
- Technology and Software Development companies.
- E-commerce and Retail.
- Healthcare and Pharmaceutical.
- Governmental agencies and public sector organizations.
- Energy and Utilities.

Target Organizations Departments:

- Network Operations Center (NOC).
- IT Infrastructure and Operations.
- Cloud Engineering and Architecture.
- Cybersecurity and Information Security.
- Research and Development (R&D).
- Enterprise Architecture.
- Software Development and Engineering.
- Quality Assurance and Testing.

Course Offerings:

By the end of this course, the participants will have able to:

- Implement Infrastructure as Code (IaC) principles to manage network device configurations.
- Develop robust automation scripts using Python and popular libraries like Netmiko and NAPALM.
- Utilize Ansible for configuration management and orchestration of complex network tasks.
- Master version control for network configurations using Git and collaborative workflows.
- Design and build CI/CD pipelines for automated network testing and deployment.
- Leverage network programmability through REST APIs, NETCONF, and YANG models.
- Integrate automated security checks and compliance into the network lifecycle (DevSecOps).
- Establish a single source of truth for network data and configurations.
- Implement network observability and telemetry for proactive monitoring and troubleshooting.
- Apply DevOps cultural principles to improve collaboration between network and development teams.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, immersive, and practical, ensuring participants gain tangible skills. This course moves beyond traditional lecture-based learning by integrating a significant hands-on component. Each theoretical concept is immediately followed by practical lab exercises that allow participants to apply their knowledge in a simulated, real-world network environment. We emphasize a collaborative learning atmosphere, encouraging teamwork through group projects and peer-to-peer problem-solving sessions. Case studies derived from actual industry challenges will be analyzed to provide context and demonstrate the impact of NetDevOps strategies in practice. The instructor will facilitate interactive discussions, Q&A sessions, and provide continuous, personalized feedback to guide each participant's learning journey. Our approach focuses on building a deep conceptual understanding of not just the "how" but also the "why" behind network automation and DevOps, empowering attendees to think critically and develop innovative solutions for their own unique operational challenges. This blend of expert instruction, practical application, and collaborative engagement ensures a comprehensive and lasting learning experience.

Course Agenda (Course Units):

Unit One Foundations of NetDevOps and Network Automation

- Introduction to DevOps principles and the CALMS framework.
- The cultural shift from traditional network operations to NetDevOps.
- Fundamentals of Linux command-line for network engineers.
- Introduction to Python scripting for network automation.
- Setting up a development environment with VS Code and virtual environments.
- Version control fundamentals with Git for network configuration management.
- Understanding data serialization formats (YAML, JSON, XML).

Unit Two Core Network Automation Tools and Techniques

- Deep dive into Ansible for network configuration management.
- Writing Ansible playbooks for device configuration and data gathering.
- Using Python libraries like Netmiko and NAPALM for device interaction.
- Building dynamic inventories and managing device credentials securely.
- Creating reusable automation code with roles and templates.
- Introduction to network programmability with REST APIs.
- Parsing structured and unstructured data from network devices.

Unit Three Infrastructure as Code (IaC) for Networks

- Core principles of managing network infrastructure as code.
- Establishing a Source of Truth (SoT) for network data.
- Using Jinja2 for dynamic configuration templating.
- Developing a Git-based workflow for network configuration changes.
- Implementing peer review and approval processes for network changes.
- Strategies for migrating from legacy configurations to an IaC model.
- Managing configuration drift and ensuring consistency across the network.

Unit Four Building CI/CD Pipelines for Network Changes

- Introduction to Continuous Integration and Continuous Deployment (CI/CD).
- Components of a CI/CD pipeline for network automation.
- Using Jenkins or GitLab CI to orchestrate network workflows.
- Automated pre-change validation and linting of configurations.
- Developing automated network tests using frameworks like Pytest.
- Implementing automated post-change verification and rollback strategies.
- Integrating CI/CD pipelines with chat and notification systems (ChatOps).

Unit Five Advanced NetDevOps and Future-Ready Skills

- Introduction to containerization with Docker for networking tools.
- Understanding container networking concepts with Kubernetes.
- Network observability, monitoring, and telemetry strategies.
- Integrating security into the DevOps lifecycle (DevSecOps for networks).
- Introduction to Software-Defined Networking (SDN) and its role in automation.
- Exploring network data modeling with NETCONF and YANG.
- Future trends in network automation and the role of AIOps.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As network infrastructure becomes increasingly defined and managed by software, how does the role of the network engineer evolve from a device operator to a systems developer, and what new ethical responsibilities does this shift entail?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by providing a holistic and strategic perspective on NetDevOps, moving beyond a narrow focus on specific tools. While many programs teach the syntax of Ansible or Python, this curriculum is architected to instill the fundamental mindset shift required to successfully implement a DevOps culture within a network engineering context. We emphasize the integration of people, processes, and technology, focusing on building robust, end-to-end automated workflows rather than isolated scripts. The content is uniquely tailored to address the specific challenges network professionals face, such as managing brownfield environments, ensuring compliance, and maintaining high availability during automated changes. By integrating concepts like Infrastructure as Code (IaC), CI/CD pipelines, and DevSecOps from the ground up, the course provides a complete lifecycle view of network management. Participants will not just learn to automate tasks; they will learn to architect and operate a programmable, resilient, and agile network infrastructure. The emphasis on real-world case studies and strategic thinking equips attendees with the critical problem-solving skills needed to drive genuine transformation within their organizations, making it an investment in long-term capability, not just short-term tool proficiency.