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TOPIC:

Introduction to DevOps

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GROUP:

10B

SUBJECT:

Software Develoment Process Manager

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DevOps: Characteristics, Standards, and Applicable Norms

Definition

DevOps is a methodology that combines software development (Dev) and IT operations (Ops) to improve collaboration, automate processes, and deliver high-quality software efficiently. It emphasizes cultural change, continuous integration and delivery (CI/CD), and infrastructure automation.

Characteristics of DevOps

1. **Collaboration-Centric**: Promotes seamless communication and cooperation between development and operations teams.
2. **Automation-Driven**: Automates repetitive processes like testing, integration, and deployment.
3. **Continuous Processes**: Focuses on **Continuous Integration (CI)**, **Continuous Delivery (CD)**, and **Continuous Monitoring** for iterative improvement.
4. **Infrastructure as Code (IaC)**: Treats infrastructure configuration as software, ensuring consistency and scalability.
5. **Resiliency and Reliability**: Enhances system reliability by integrating feedback loops and monitoring mechanisms.
6. **Scalability**: Enables dynamic scaling of resources to meet the needs of applications or workloads.
7. **Rapid Deployment**: Facilitates faster deployment cycles while minimizing risks.
8. **Customer-Centric Development**: Prioritizes end-user needs by incorporating their feedback into the development process.

Applicable Standards

DevOps is influenced by several established standards and best practices from software development, IT operations, and quality management:

1. **ISO/IEC 27001**: Standards for information security management systems, ensuring secure DevOps practices.
2. **ISO/IEC 20000**: IT service management standards that guide operational processes.
3. **ISO/IEC 29110**: Standards for software engineering tailored to small and medium enterprises.
4. **ISO/IEC 25010**: Software quality standards defining attributes such as reliability, maintainability, and security.
5. **ITIL (Information Technology Infrastructure Library)**: Framework for IT service management that aligns with DevOps operations.
6. **CMMI (Capability Maturity Model Integration)**: Provides guidelines for process improvement in software development and operations.

Applicable Norms

1. **Agile Manifesto**: A foundational influence on DevOps, emphasizing iterative development and flexibility.
2. **IEEE 730**: Software Quality Assurance Plans, providing guidance on maintaining quality in development.
3. **SAFe (Scaled Agile Framework)**: Framework for applying Agile at enterprise levels, complementing DevOps.
4. **NIST SP 800-190**: Application container security guidelines to ensure safe DevOps practices in containerized environments.

Importance of Standards and Norms in DevOps

- **Consistency**: Ensures uniform practices across development and operations.
- **Security**: Establishes secure processes for managing software and infrastructure.
- **Quality Assurance**: Promotes high-quality deliverables through standardized procedures.
- **Compliance**: Helps meet legal and industry-specific regulations.

DevOps thrives on integrating these standards and norms into its workflow to maintain high-quality, secure, and efficient software delivery.