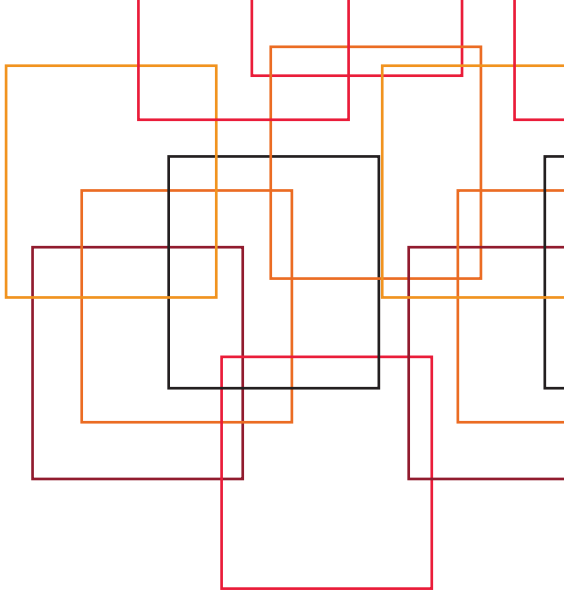
Syllabus



DASA

DEVOPS AGILE
SKILLS ASSOCIATION

DASA DEVOPS FUNDAMENTALS

Syllabus

Version 2.0.0

September 2019

DEVOPS AGILE
SKILLS ASSOCIATION

RELEASE	VERSION	DATE
Previous	1.0.4	January 2019
Current	2.0.0	September 2019
Next	**TBD**	**TBD**

SCOPE AND PURPOSE OF THIS DOCUMENT

The purpose of this document is to inform all parties interested in the DASA DevOps Fundamentals course of the areas covered in the course.

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THE DASA DEVOPS COMPETENCE MODEL

The DevOps Agile Skills Association (DASA) competence framework identifies 8 knowledge areas and 4 skills that are relevant in DevOps, as shown in the following figure.

1. Novice / 2. Competent / 3. Proficient / 4. Expert / 5. Master

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Every individual operating in a DevOps team requires to be competent at all 8 knowledge areas and proficient at the 4 skill levels. In order for DevOps teams to be effective, they require all 12 areas to be at the Expert level. Individual team members can specialize in specific areas, in order for teams to achieve these capabilities.

DASA DEVOPS FUNDAMENTALS

Up to 200 times faster software deployment, 30 times increased deployment frequency, and 60 times higher change success rates, organizations such as Netflix, Spotify, and Facebook are revolutionizing the IT game by successfully implementing DevOps principles. The data does not lie. You do not have to be a hot Web company or a monster enterprise to be a DevOps leader. Companies, large or small, and young or old, have magnificently made the transition and have the proof of success in their pockets.

DevOps training is the starting point for an organization going on the DevOps journey. Improved workflows and faster deployment starts with a core understanding of DevOps fundamental concepts by anyone involved in an Agile and/or DevOps team.

DASA develops and evangelizes a vendor neutral DevOps qualification program for professionals, generates interest and awareness for the need for knowledge and skill development, promotes open source certification for DevOps knowledge and skills, and ensures quality of training for the market through a logical and threshold-driven qualification program.

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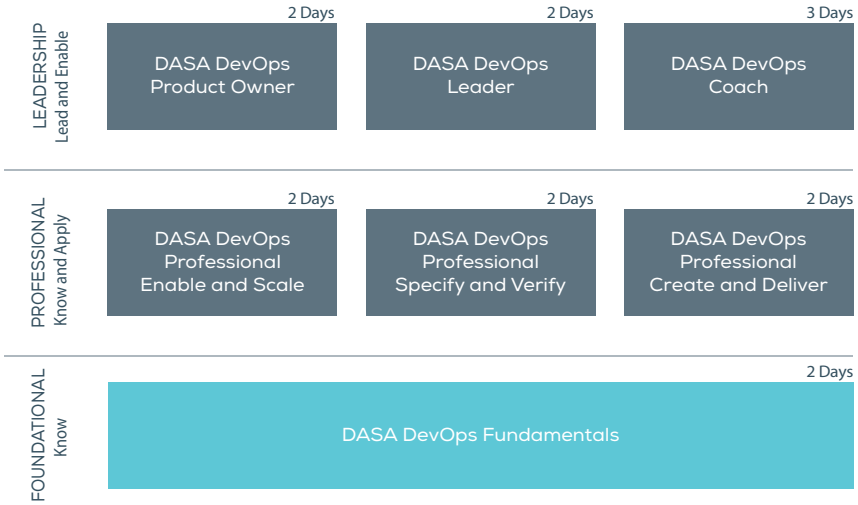
Anyone can participate in defining role-based competencies, learning paths, and qualification schemes. All existing learning content that maps against the DASA knowledge and skill areas has value. DASA will map content and demonstrate relevance and will maintain an open and logical operating model for training delivery, as shown in the following figure.



DASA DevOps Fundamentals provides an extensive introduction to the core Agile DevOps principles covering the essential knowledge and skill competences that have been defined by DASA.

The DevOps Fundamentals qualification is designed to provide the core education necessary to build your DevOps vocabulary and to understand its principles and practices. With the help of key DevOps concepts and terminology, real-life case studies, examples and interactive group discussions and extensive exercises in each module you will acquire a fundamental understanding of DevOps.

DEVOPS AGILE
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QUALIFICATION OBJECTIVES

When you have acquired the required knowledge from this course, you will be able to:

- Explain the drivers responsible for the emergence of DevOps.
- Define and discuss the key concepts and principles of DevOps.
- List and explain the business benefits of DevOps and continuous delivery.
- Know how teams can translate DevOps principles into tangible practices.
- Learn about modern operations in a DevOps context.
- Explain the concepts of test automation, infrastructure automation, and build and deployment automation.
- Describe how DevOps relates to Lean and Agile methodologies.
- Get insight into the various organizational DevOps models
- Identify how Cloud and Delivery pipeline automation optimize and accelerate the ways of working.
- Discuss the critical success factors for DevOps transformation.

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HOW DOES DEVOPS FUNDAMENTALS FIT INTO THE DASA COMPETENCE FRAMEWORK?

After completing this course, you will cover the area marked as DevOps Fundamentals in the following figure of the DASA qualification scheme. As a result, you will reach the "Competent" level of the scheme.

1. Novice / 2. Competent / 3. Proficient / 4. Expert / 5. Master

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DEVOPS AGILE
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TARGET AUDIENCE

The DevOps Fundamentals qualification is primarily aimed at:

- Individuals involved in IT development, IT operations, or IT service management
- Individuals whose role are touched by DevOps and continuous delivery, such as the following IT roles:
  - ◊ DevOps engineers
  - ◊ Product owners
  - ◊ Integration specialists
  - ◊ Operations managers
  - ◊ Incident and change managers
  - ◊ System administrators
  - ◊ Network administrators
  - ◊ Business managers
  - ◊ Automation architects
  - ◊ Enterprise architects

COURSE REQUIREMENTS

Basic familiarity with Agile, Scrum, Lean, and ITSM principles is beneficial.

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DASA DEVOPS AGILE SKILLS ASSOCIATION

CERTIFICATION REQUIREMENTS

You will receive the required certification from DASA on successful completion of the DASA DevOps Fundamentals exam.

EXAM DETAILS

The characteristics of the DASA DevOps Fundamentals exam are:

Exam Format:

- Closed-book format
- Web-Based
- Participants may bring scratch paper

Questions:

- 40 multiple choice questions

Passing Score:

- 65%

Exam Duration:

- 60 minutes
- 15 minutes extra time for non-native English speakers.

DASA DEVOPS AGILE SKILLS ASSOCIATION

Exam Specifications:

Module Name	Topics	# Questions	Bloom Level 1	Bloom Level 2
DevOps - The Context	DevOps Evolution	2	2	
	Business Benefits of DevOps	1		1
	DASA DevOps Principles	4	2	2
	Goals and Measurement	2	1	1
DevOps for Individuals	From Roles to T-shape DevOps Profiles	1		1
DevOps for Teams and rganizations	Culture and Behavior	6	4	2
	Organizational Models	2	1	1
	Team Autonomy	2	1	1
	DevOps at Scale	1	1	
DevOps Practices	ITSM	3	2	1
	Lean	3	2	1
	Agile	3	2	1
	Architecture	3	2	1
	Continuous Delivery and Automation	3	2	1
	Modern Infrastructure and Cloud	2	2	
	Operations	1	1	
The Next Steps	Analyze the Current Situation	1	1	
	Improve Incrementally			
Total # of Questions		**40**	**26**	**14**

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LEARNING OUTCOMES

A classification widely used when designing assessments for certification and education is Bloom's Taxonomy of Educational Objectives. This classifies learning objectives into six ascending learning levels, each defining a higher degree of competencies and skills. (Bloom et al, 1956, Taxonomy of Educational Objectives).

This structured approach helps to ensure:

- A clear delineation in learning level content between different qualification levels
- Learning outcomes are documented consistently across different areas of the guidance
- Exam questions and papers are consistent and are created to a similar level of difficulty.

DASA DEVOPS AGILE SKILLS ASSOCIATION

The Fundamentals qualification examines learning outcomes at levels 1 (knowledge) and 2 (comprehension).

DASA DEVOPS FUNDAMENTALS LEARNING OUTCOMES				
	1. Knowledge	2. Comprehension	3. Application	4. Analysis
Generic Definition from Learning Outcomes	Know key facts, terms and concepts from the manual/ guidance	Understand key concepts from the manual/guidance	Be able to apply key concepts relating to the syllabus area for a given scenario	Be able to analyze and distinguish between appropriate and inappropriate use of the method/ guidance for a given scenario situation
Qualification Learning Outcomes	Know facts, including terms, concepts, principles, tools and techniques from the DevOps Fundamentals curriculum	Understand the concepts, principles, and dimensions of DevOps and can explain how these are applied.		

SYLLABUS AREAS

The following syllabus areas are identified.

SYLLABUS AREA CODE	SYLLABUS AREA TITLE
DC	DevOps - The Context
DI	DevOps for Individuals
DT	DevOps for Teams and Organizations
DP	DevOps Practices
NS	The Next Steps

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DASA DEVOPS AGILE SKILLS ASSOCIATION

SYLLABUS

In the following tables, the key aspects of the DASA DevOps Fundamentals Syllabus are described.

DEVOPS - THE CONTEXT

Syllabus Area Code: DC Syllabus Area Title: DevOps - The Context	
Topic	**Objectives**
DevOps Evolution	• Explain the Wall of Confusion between Dev and Ops? • List and discuss the various problems that IT organizations face due to Wall of Confusion. • Discuss the brief history of DevOps movement since its germination • Explain how DevOps helps foster a culture of high-performance IT.
Business Benefits of DevOps	• Why companies need to radically rethink their IT strategy considering the digital world? • List and discuss the various reasons of adopting DevOps. • List the example statistics to better understand how DevOps practices impact IT and organizational performance. • Discuss the role of Antifragility in the DevOps world.
DASA DevOps Principles	• Explain briefly the six DASA DevOps principles. • List and discuss the various characteristics of each DASA principle.

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Syllabus Area Code: DC Syllabus Area Title: DevOps - The Context	
Topic	**Objectives**
Goals and Measurement	• Discuss the role of values, goals, metrics, and compliance for an effective governance. • What is the importance of setting clear goals basis the vision in the successful adoption of DevOps? • How to create a vision based on DASA principles and set clear goals? • What is Survivorship Bias? • Explain the need of taking required actions based on measurements to improve? • What are Performance Metrics and Performance Predictors? How these differ from one another? • List the top practices correlated to Performance Metrics to make improvements.

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DEVOPS FOR INDIVIDUALS

Syllabus Area Code: DI Syllabus Area Title: DevOps for Individuals	
Topic	**Subtopics/Objectives**
From Roles to T-shape DevOps Profiles	• Explain the meaning of "No Role Silo in a DevOps Team." • What is T-shape?
DASA DevOps Competence Model	• What is DASA DevOps Competence Model? • Discuss the DASA DevOps Skill Areas. • Discuss the DASA DevOps Knowledge Areas. • Explain the importance of DASA DevOps Competence Quickscan™. • Introduce the various DASA DevOps certifications.

DASA DEVOPS AGILE SKILLS ASSOCIATION

DEVOPS FOR TEAMS AND ORGANIZATIONS

Syllabus Area Code: DT Syllabus Area Title: DevOps for Teams and Organizations	
Topic	**Objectives**
Culture and Behavior	• What is culture? • Explain DevOps Culture. • List and discuss the typical cultural aspects of a DevOps team. • How to grow a culture? • What context to provide to facilitate growth areas for teams? • Discuss "Ron Westrum: The Three Typologies of Organizational Culture." • What is behavior? • List the various elements of a DevOps culture. • Explain team building and collaboration • What is a team? • What is Visual Management. • Explain the role of collaboration as a success factor of a team. • List the various example team activities for effective collaboration. • Explain continuous improvement and problem-solving. • What is Kaizen? • Explain structured problem-solving. • Explain courage and experimentation. • Discuss the role of "Courage to Act" as a key behavior of a DevOps team.

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DASA DEVOPS AGILE SKILLS ASSOCIATION

Syllabus Area Code: DT Syllabus Area Title: DevOps for Teams and Organizations	
Topic	**Objectives**
Culture and Behavior (contd.)	• Explain courage and experimentation. • Why courageous behavior requires safety? • Explain the role of experimentation meetups as key tool of courage. • Explain leadership and feedback. • Discuss leadership in a DevOps Environment. • Explain the differences between Mission Command and Central Command of leadership. • What are the various barriers of effective collaboration • Explain the style leadership requires. • How to build a DevOps culture?
Organizational Models	• Why change the organization? • Explain the need to move from Project to Product. • Why taking DevOps "Literally" is not at all a solution? • Explain the practical approach to the organizational model. • Discuss the differences between DevOps Business System and Platform Teams.
Team Autonomy	• What is autonomy of teams? • List and discuss the various criteria for autonomous teams. • Discuss Daniel's Pink aspects of motivation.
DevOps at Scale	• Why is scaling inevitable? • How to mitigate scale? • List the various scaling models/frameworks.

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DEVOPS PRACTICES

Syllabus Area Code: DP Syllabus Area Title: DevOps Practices	
Topic	**Subtopics/Objectives**
ITSM	• What is the difference between products and services? • List and discuss the various types of work. • Discuss ITIL4. • How DevOps relates to ITSM processes?
Lean	• Explain Lean. • Discuss Lean principles. • List and discuss the various types of waste? (TIMWOODS) • Discuss different facts about waste. • What is Value Stream Mapping (VSM)? • How to improve the flow of work? • Explain Lean Startup. • What is a Minimal Viable Product (MVP)? • Explain the role of including the MVP in an Agile process.
Agile	• How are traditional organizations different from Agile organizations? • What is Agile? • Explain the Agile focus on satisfying the customers' needs. • Discuss Agile Manifesto. • How is Agile an umbrella for several methods and frameworks? • What is Scrum and Scrum Framework? • List and discuss some advantages of working Agile.

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Syllabus Area Code: DP Syllabus Area Title: DevOps Practices	
Topic	**Subtopics/Objectives**
Architecture	• What is the ultimate aim of IT architecture? • Explain the importance of building qualities. • Relate Complexity and Quality. • Discuss Conway's Law and Organizations' Architecture. • What are Smaller Services? • Exapin Microservices Architecture (MSA). • Why is MSA a faster, cheaper, better approach to software development? • List and discuss the common characteristics of MSA. • What is the need to move from legacy to smaller services?
Continuous Delivery and Automation	• Define Continuous Delivery. • How is Continuous Delivery different from Continuous Integration and Continuous Deployment? • Discuss the various benefits of automating Continuous Delivery. • Explain "Cycle Time Reduction" as the primary goal of Continuous Delivery. • List and discuss the various Continuous Delivery base principles and focus topics. • Discuss "Continuous Delivery Implies: Software has to Flow." • Explain automated build, automated test, automated deployment, and automated provisioning. • Discuss the importance of having everything as code.

DASA DEVOPS AGILE SKILLS ASSOCIATION

Syllabus Area Code: DP Syllabus Area Title: DevOps Practices	
Topic	**Subtopics/Objectives**
Continuous Delivery and Automation (contd.)	• How automation changes the focus towards engineering tasks? • Explain the role of Continuous Delivery in enabling DevOps team performance. • Explain the different types of feedback. • Explain the importance of failing fast in a smart way. • Summarize the automation approach to Continuous Delivery.
Modern Infrastructure and Cloud	• Discuss the emergence of Cloud Computing. • List and discuss the National Institute of Standardization (NIST) Cloud Principles. • Explain the different types of Cloud services. • What are the services DevOps Business System teams require? • What is Continuous Delivery for Platform Products and Teams? • Why do DevOps organizations adopt Cloud principles? • Discuss DevOps Platform teams as a "Cloud" service provider. • What are the different types of Clouds to operate? • Explain the concept of pets and cattle in the context of software development. • What is Desired State Configuration to automate environments? • Explain automated provisioning with mutable and immutable infrastructure.

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DASA DEVOPS AGILE SKILLS ASSOCIATION

Syllabus Area Code: DP Syllabus Area Title: DevOps Practices	
Topic	**Subtopics/Objectives**
Operations	• Discuss the modern ways of doing Operations. • Discuss monitoring at multiple levels. • How to optimize monitoring for DevOps? • Explain logging with stakeholders and usage examples.

THE NEXT STEPS

Syllabus Area Code: NS Syllabus Area Title: The Next Steps	
Topic	**Subtopics/Objectives**
Where to start?	• Map the context. • Assemble the team. • Train the team. • Do the DASA Competence Scan. • Focus on the cultural elements. • Improve the flow of work.

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www.devopsagileskills.org