

Serverless Data Processing with Dataflow

Varighed: 3 Days Kursus Kode: GO9081 Leveringsmetode: Virtuel deltagelse

Beskrivelse:

This training is intended for big data practitioners who want to further their understanding of Dataflow in order to advance their data processing applications.

Beginning with foundations, this training explains how Apache Beam and Dataflow work together to meet your data processing needs without the risk of vendor lock-in. The section on developing pipelines covers how you convert your business logic into data processing applications that can run on Dataflow. This training culminates with a focus on operations, which reviews the most important lessons for operating a data application on Dataflow, including monitoring, troubleshooting, testing, and reliability.

Products:

Dataflow, Cloud Operations

Updated July 2026

Virtuel deltagelse

Et V&C Select kursus indholder nøjagtig det samme som et almindeligt kursus. Før kursusstart modtager man kursusmaterialet. Dernæst logger man på kurset via internettet og ser via sin pc den selvsamme præsentation som de øvrige deltagere, man kommunikerer via chat med underviseren og de øvrige deltagere på kurset. Denne uddannelsesmodel er både tids-og omkostningsbesparende og kan være et oplagt alternativ til almindelig klasseundervisning, hvis man f.eks. har et begrænset rejsebudget.

Målgruppe:

- Data engineer.
- Data analysts and data scientists aspiring to develop data engineering skills

Agenda:

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| ■ After this course participants should be able to: | ■ Implement best practices for a secure data processing environment. |
| ■ Demonstrate how Apache Beam and Dataflow work together to fulfill your organization's data processing needs. | ■ Select and tune the I/O of your choice for your Dataflow pipeline. |
| ■ Summarize the benefits of the Beam Portability Framework and enable it for your Dataflow pipelines. | ■ Use schemas to simplify your Beam code and improve the performance of your pipeline. |
| ■ Enable Shuffle and Streaming Engine, for batch and streaming pipelines respectively, for maximum performance. | ■ Develop a Beam pipeline using SQL and DataFrames. |
| ■ Enable Flexible Resource Scheduling for more cost-efficient performance. | ■ Perform monitoring, troubleshooting, testing and CI/CD on Dataflow pipelines. |
| ■ Select the right combination of IAM permissions for your Dataflow job. | |

Forudsætninger:

To get the most out of this course, participants should have completed the following courses:

- Building Batch Data Pipelines
- Building Resilient Streaming Analytics Systems

Test og certificering

None

Yderligere Kurser:

No recommendation

Indhold:

The course includes presentations, demonstrations, and hands-on labs.

Module 1: Introduction

- Introduce the course objectives.
- Demonstrate how Apache Beam and Dataflow work together to fulfill your organization's data processing needs.

Module 2: Beam Portability

- Summarize the benefits of the Beam Portability Framework.
- Customize the data processing environment of your pipeline using custom containers.
- Review use cases for cross-language transformations.
- Enable the Portability framework for your Dataflow pipelines.

Module 3: Separating Compute and Storage with Dataflow

- Enable Shuffle and Streaming Engine, for batch and streaming pipelines respectively, for maximum performance.
- Enable Flexible Resource Scheduling for more cost-efficient performance.

Module 4: IAM, Quotas, and Permissions

- Select the right combination of IAM permissions for your Dataflow job.
- Determine your capacity needs by inspecting the relevant quotas for your Dataflow jobs.

Module 5: Security

- Select your zonal data processing strategy using Dataflow, depending on your data locality needs.
- Implement best practices for a secure data processing environment.

Module 6: Beam Concepts Review

- Review main Apache Beam concepts (Pipeline, PCollections, PTransforms, Runner, reading/writing, Utility PTransforms, side inputs), bundles and DoFn Lifecycle.

Module 7: Windows, Watermarks, Triggers

- Implement logic to handle your late data.
- Review different types of triggers.
- Review core streaming concepts (unbounded PCollections, windows).

Module 8: Sources and Sinks

- Write the I/O of your choice for your Dataflow pipeline.
- Tune your source/sink transformation for maximum performance.
- Create custom sources and sinks using SDF.

Module 9: Schemas

- Introduce schemas, which give developers a way to express structured data in their Beam pipelines.
- Use schemas to simplify your Beam code and improve the performance of your pipeline.

Module 10: State and Timers

- Identify use cases for state and timer API implementations.
- Select the right type of state and timers for your pipeline.

Module 11: Best Practices

- Implement best practices for Dataflow pipelines.

Module 12: Dataflow SQL and DataFrames

- Develop a Beam pipeline using SQL and DataFrames.

Module 13: Beam Notebooks

- Prototype your pipeline in Python using Beam notebooks.
- Use Beam magics to control the behavior of source recording in your notebook.
- Launch a job to Dataflow from a notebook.

Module 14: Monitoring

- Navigate the Dataflow Job Details UI.
- Interpret Job Metrics charts to diagnose pipeline regressions.
- Set alerts on Dataflow jobs using Cloud Monitoring.

Module 15: Logging and Error Reporting

- Use the Dataflow logs and diagnostics widgets to troubleshoot pipeline issues.

Module 16: Troubleshooting and Debug

- Use a structured approach to debug your Dataflow pipelines.
- Examine common causes for pipeline failures.

Module 17: Performance

- Understand performance considerations for pipelines.
- Consider how the shape of your data can affect pipeline performance.

Module 18: Testing and CI/CD

- Testing approaches for your Dataflow pipeline.
- Review frameworks and features available to streamline your CI/CD workflow for Dataflow pipelines.

Module 19: Reliability

- Implement reliability best practices for your Dataflow pipelines.

Module 20: Flex Templates

- Using flex templates to standardize and reuse Dataflow pipeline code.

Module 21: Summary

- Summary.

Additional Information:

Official course book provided to participants

Flere Informationer:

For yderligere informationer eller booking af kursus, kontakt os på tlf.nr.: 44 88 18 00

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