

MindSphere Academy Attendance Certificate

Basic Application Development training for MindSphere

**Qendrim
Vllasa**

Date: 27. - 29.11.2018
Place: Karlsruhe, Germany

Description

During this three-day training the participant has received detailed insight into MindSphere architecture and the MindSphere API, has learned about its security concepts, permission model, request routing and the MindSphere RESTful API.

As part of the hands-on practices, the participant has developed and deployed HTML and JavaScript frontend applications to visualize MindSphere data using the dashboard functionality. Moreover, the participant has created own Node.js microservices that communicate with the MindSphere ecosystem.

Objectives discussed

- Use MindSphere APIs to develop HTML/JavaScript frontend applications for MindSphere
- Write microservices used for development of applications while using MindSphere API
- Run MindSphere applications in the cloud

Content

- Cloud Foundry basics
- Web development basics
- MindSphere architecture
- MindSphere API
- MindSphere security concepts
- MindSphere request routing
- Usage of MindSphere Backing Services

Training methods

- Interactive lectures
- Hands-on exercises for application development for MindSphere

The participant has attended the 3-day training.

Steffen Baehr
Training instructor



MindSphere Academy Attendance Certificate

IoT Development training for MindSphere

**Qendrim
Vllasa**

Date: 26. - 28.03.2019
Place: Karlsruhe, Germany

Description

During this three-day training the participant has received detailed insight into MindSphere architecture and the MindSphere API, has learned about its security concepts, permission model, request routing and the MindSphere RESTful API.

As part of the hands-on practices, the participant has developed and deployed HTML and JavaScript frontend applications to visualize MindSphere data using the dashboard functionality. Moreover, the participant has created own Node.js microservices that communicate with the MindSphere ecosystem.

Objectives discussed

- Use MindSphere APIs to develop HTML/JavaScript frontend applications for MindSphere
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Content

- Cloud Foundry basics
- Web development basics
- MindSphere architecture
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- MindSphere security concepts
- MindSphere request routing
- Usage of MindSphere Backing Services

Training methods

- Interactive lectures
- Hands-on exercises for application development for MindSphere

The participant has attended the 3-day training.

Thilo Boehm
Training instructor



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MindConnect API training

**Qendrim
Vllasa**

Date: 10.07.2019
Place: Karlsruhe, Germany

Description

This one-day training provided detailed insights into the MindConnect API, which enables you to build your own custom agent for MindSphere with the RESTful API.

During this training, the participant has learned how to develop a custom agent using preferred programming language, and how to use the MindSphere RESTful API to enable data exchange between custom agent and MindSphere. The MindSphere security concept and the onboarding process of a new agent have been covered in detail. The participant has implemented step-by-step a custom agent that interacts with MindSphere. This training enables to develop the MindConnect custom agent by using different programming languages that will interact with MindSphere to exchange data.

Objectives discussed

- This training enables you to develop your own MindConnect custom agent by using your favorite programming language that will interact with MindSphere to exchange data.

Content

- Agent management application programming interface (API)
- MindConnect API: development of custom agent
- Onboarding and communication
- Data exchange
- MindSphere security concept

Training methods

- Interactive lectures
- Hands-on exercises

**The participant has attended the
1-day training.**

Steffen Baehr
Training instructor



MindSphere Academy Attendance Certificate

MindConnect Device training

**Qendrim
Vllasa**

Date: 21.01.2019
Place: Karlsruhe, Germany

Description

This one-day training provided an overview of the MindSphere connectivity portfolio. During hands-on training, the participant became familiar with MindConnect devices, their settings and areas of application.

While using MindConnect IoT2040 and MindConnect Nano, the MindSphere Asset Manager has been used to configure a data source and its data points, and to collect and send data. Additionally, the participant configured an Open Platform Communications Unified Architecture (OPC UA) server to collect data in MindSphere.

Objectives discussed

- Select the most suitable MindConnect option for your business use case
- Experience using an existing agent
- Configure MindConnect devices to collect data and send it to MindSphere
- Configure data points using S7 and OPC UA protocols as well as configure an OPC UA server

Content

- MindConnect portfolio overview and its settings
- MindSphere Asset Manager
- Collection and upload of data to MindSphere with MindConnect Nano or MindConnect IoT2040
- OPC UA server configuration and data transfer

Training methods

- Interactive lectures
- Hands-on exercises for connecting to MindSphere

The participant has attended the 1-day training.

Martin Jurecko
Training instructor



MindSphere Academy Attendance Certificate

MindConnect Integration training

**Qendrim
Vllasa**

Date: 25.01.2019
Place: Karlsruhe, Germany

Description

MindConnect Integration is the integration platform as a service (iPaaS) offering for MindSphere. The solution enables you to integrate your cloud-based software as a service (SaaS) applications with other cloud-based and on-premise applications.

This one-day training provided detailed insights into MindConnect Integration and how to easily develop and configure cloud-to-cloud integration. The participant has been also introduced to connecting cloud-based SaaS applications and on-premise enterprise service bus (ESB) implementations. With this hybrid integration solution it is possible to connect anything with everything, including mainframe applications.

Objectives discussed

- Select the most suitable MindConnect Integration solution for your business case to enable data exchange across cloud and enterprise information technology (IT) systems
- Develop and deploy your own MindConnect Integration solution that interacts with MindSphere to exchange data

Content

- Cloud-based SaaS application configurations
- MindSphere security concept
- MindConnect Integration: development of integrations
- Data exchange with MindSphere
- On-premise integration server and hybrid integration solution overview

Training methods

- Interactive lectures
- Hands-on exercises

The participant has attended the 1-day training.

Martin Jurecko
Training instructor



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MindConnect IoT Extension training

**Qendrim
Vllasa**

Date: 11.07.2019
Place: Karlsruhe, Germany

Description

This one-day training provided insights into the possibilities of MindConnect IoT Extension, which is a connectivity layer that uses predefined agents to expand the number of protocols that can communicate with MindSphere.

In this training the participant has learned how to use MindConnect IoT Extension to connect assets to MindSphere, acquired a better understanding of compatible elements and supported protocols, and got detailed instruction on the MindSphere security concept. The participant has also learned the onboarding process for a new agent, and put that knowledge into practice in a step-by-step process by connecting the predefined agent to MindSphere.

Objectives discussed

- Get familiar with MindConnect IoT Extension, its device management and administration
- Connect assets to MindSphere via various protocols with MindConnect IoT Extension

Content

- Device management
- MindSphere security concept
- MindConnect IoT Extension: onboarding and connect assets
- Data transfer to MindSphere
- RESTful API

Training methods

- Interactive lectures
- Hands-on exercises for connecting to MindSphere

The participant has attended the 1-day training.

Steffen Baehr
Training instructor



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MindConnect LIB training

**Qendrim
Vllasa**

Date: 23.01.2019
Place: Karlsruhe, Germany

Description

This one-day training provided detailed insights into MindConnect LIB, which enables you to build your own custom agent for the MindSphere ecosystem using ANSI C.

During the training the participant has learned how to compile MindConnect LIB on a specific operating system and how to use the library to exchange data with MindSphere. The MindSphere security concept and the onboarding process of a new agent have been covered in detail. In hands-on trainings, the participant implemented step-by-step own custom agent that interacts with MindSphere.

Objectives discussed

- Develop your own MindConnect custom agent which interacts with MindSphere to exchange data.

Content

- MindConnect LIB
- Development of agents for the MindSphere ecosystem
- CMake and libraries
- Onboarding and communication
- Data exchange
- MindSphere security concept

Training methods

- Interactive lectures
- Hands-on for connecting to MindSphere

The participant has attended the 1-day training.

Martin Jurecko
Training instructor

