René Hirsch

Full Stack Java Developer
Keycloak Developer

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I am an experienced Full Stack Java Developer with a specialization in Keycloak and Identity and Access Management (IAM).

With two decades of experience in Java, I am proficient in backend development with Java and Spring Boot as well as frontend development with TypeScript/JavaScript and frameworks such as Next.js, Lit and Qooxdoo.

I have extensive experience in integrating single sign-on solutions and migrating systems to modern microservice architectures and cloud platforms, especially with AWS and Kubernetes.

Over the last five years, I have gained in-depth knowledge of Kubernetes, where I have successfully implemented container applications using CI/CD practices.

Top Skills

Java:	20 years
Kubernetes:	5 years
Keycloak:	4 years

Skills

Backend:	Java, J2EE, Spring Boot, Springboot, Quarkus, REST, Java API For Restful Web Services, Apache ActiveMQ, RabbitMQ, Apache Kafka, Maven, Gradle, Eclipse, Microsoft Visual Studio, Linux, Windows
Frontend:	TypeScript, JavaScript, HTML5, CSS3, Next.js, Lit, Web Components, qooxdoo, Playwright, Cypress, Selenium, jQuery, Swing, JavaFX
Kubernetes:	Rancher, RKE, AWS, EKS, Docker, Istio, Microservices
CI/CD:	Git, GitLab, GitHub, Maven, Gradle, Jenkins, Argo CD, Helm, JUnit, SonarQube, ClearCase, Continuous Integration, Continuous Delivery, Continuous Deployment, Terraform
Databases:	RDBMS, SQL, JDBC, JPA, Java Persistence API, Hibernate, PostgreSQL, MS SQL Server, Oracle, PostGIS
IAM:	OAuth, OAuth2, OAuth 2.0, OIDC, Openid Connect, SAML, JWT, JSON Web Token, Keycloak, Single Sign-On, LDAP, ADFS, Active Directory Federation Services, IDP
Standards:	HTTP, TCP/IP, JSON, XML, REST, SOAP, WebSockets, XML Schema
Methods/Tools:	Scrum, Scaled Agile Framework, Confluence, JIRA
Certification	Oracle Cert Professional, Java SE 17 Developer

Experience

05/2024 - heute   Single sign-on using Keycloak for SAP and online shop

Firma: Zedach eG, Rolle: Entwickler (freiberuflich)

Integration of a single sign-on solution using Keycloak supporting SAP and online shop

- Setup Keycloak server in the development, quality assurance and production environments with PostgreSQL and Caddy on on-prem Docker
- Connection of SAP systems via SAML
- Connection of the online shop using reverse proxy and OIDC
- Automatic Keycloak configuration via REST and keycloak-config-cli
- Implementation of a backup, monitoring and logging concept
- Customization of Keycloak websites (theme)

Used technologies:
Docker, GitHub, Keycloak, Single Sign-on, PostgreSQL, OAuth 2.0, OIDC, SAML

12/2022 - 12/2023 Keycloak customization and integration

Company: HUK-COBURG Autoservice GmbH, Role: developer (freelance)

Keycloak customization and integration into microservice architecture and Next.js frontend

- Building a GitHub repo with CI/CD pipeline to create a custom Keycloak Docker image with customized theme and various Keycloak extensions (SPI).
- Integration into microservice architecture and deployment into multiple AWS EKS environments
- Creating a customized Keycloak theme in corporate design (websites and email templates)
- Creating custom authorization flows for First Broker Login, Local Registration, Password Reset and Password Update
- Integration of the external identity provider of the parent company. Adaptation of Keycloak to proprietary processes (e.g. backchannel logout)
- Creating automated integration tests based on Playwright and test containers
- Automated Keycloak configuration of development, staging and production systems using keycloak-config-cli
- Migrating the Keycloak WildFly distribution to the Quarkus distribution
- Integration of the Keycloak login into the Next.js frontend using NextAuth.js; Support local login/logout/password update and reset; Support IDP login/logout/registration; Creating automated Cypress end-to-end tests

Used technologies:
Kubernetes, Cloud-native, Next.js, AWS, GitHub, CI/CD, Scrum, Java, Eclipse, IntelliJ IDEA, TypeScript, Quarkus, Helm, Terraform, NextAuth.js, Keycloak, Single Sign-on, PostgreSQL, OAuth 2.0, OIDC, SAML, Maven, Gradle

10/2021 - 10/2022 Migration of a legacy application server

Company: Yunex Gmbh, Role: developer (freelance)

Migration of a legacy application server to Kubernetes and microservices architecture

- Split monolith into several microservices based on Spring Boot
- Windows to Linux Migration, Dockerization and migration from JDK 8 to JDK 11
- Switching the build from Jenkins/Apache Ant to Maven/GitLab
- Migrating multiple PostgreSQL databases to sidecars and longhorn volumes
- Distributing data to new microservices using RabbitMQ and Apache Kafka
- Integration of several micro frontends into one application framework (shell)

- Deployment via CI/CD on development, staging and production systems on the cloud (AWS/EKS) and on premises (Rancher/RKE)
- Creation of Helm charts for deployment via GitLab and Argo CD
- Created automated tests using Selenium/Python and Puppeteer/TypeScript
- Creation of JUnit tests and monitoring of code quality using SonarQube
- Fixing vulnerabilities found through pentests
- Integration of OWASP Dependency Check, OSSReview Toolkit, Dependency Track and DefectDojo for continuous Vulnerability analysis and remediation of the vulnerabilities found

Used technologies:

Kubernetes, Cloud-native, Istio, Spring Boot, Springboot, PostgreSQL, Apache Kafka, RabbitMQ, Apache ActiveMQ, AWS, RKE, Linux, GitLab, CI/CD, Scrum, Scaled Agile Framework, Java, Argo CD, Helm, J2EE, JAXB, SMTP, JAX-RS, REST, Servlet, JAX-WS, JIRA, Confluence, Maven, Gradle

5/2021 - 9/2021   IoT Gateway

Company: EnOcean GmbH, Role: developer (freelance)

Development of a secure IoT gateway to connect EnOcean devices with an IoT connector over the Internet and exchange ESP3 telegrams

- The gateway is implemented in Golang and runs as Docker Container on a WLAN router and on a Raspberry Pi
- Devices are connected via a USB gateway
- Communication with the IoT Connector takes place via Secure WebSockets and token-based authentication
- Creation of unit tests and monitoring of code quality using SonarQube
- Design, build and installation documentation using Markdown

Used technologies:

Golang, Docker, Linux, Git, WebSocket, WebSockets, IoT, Internet Of Things, GitLab, Bitbucket, SonarQube, Markdown

5/2020 - 4/2021   IAM and SSO for microservices based on Keycloak and Kubernetes

Company: Siemens Mobility GmbH, Role: developer (freelance)

IAM and SSO for microservice architecture based on Keycloak and Kubernetes

- Deployment of Keycloak via CI/CD on development, staging and production systems on the cloud (AWS/EKS) and on premises (Rancher/RKE)
- Creation of Helm charts for deployment via GitLab and Argo CD
- Implementation of a configuration service based on Spring Boot in Kotlin for Keycloak as a sidecar, which creates users, user groups, roles and OIDC clients via the Keycloak REST API and supports their updating
- Implementation of a single sign-on (SSO) for multiple frontend services using an OIDC Authentication Proxy (oauth2-proxy) as a sidecar
- Integration of Active Directory and Keycloak using external IDP (ADFS) and alternatively by using user federation via LDAP
- Support for Keycloak migrations in versions 10-19

Used technologies:

OIDC, OAuth 2.0, Kubernetes, Cloud-native, Keycloak, Single Sign-on, Java, Spring Boot, Springboot, PostgreSQL, Kotlin, oauth2-proxy, ADFS, Active Directory Federation Services, LDAP, Istio, AWS, RKE, Linux, GitLab, CI/CD, Scrum, JIRA, Confluence

6/2019 - 4/2020   HTML5 framework application for micro frontends

Company: Siemens Mobility GmbH, Role: developer (freelance)

Implementation of an HTML5 framework application (shell) which integrates several micro frontends. The micro frontends use different UI frameworks such as Angular or React and are integrated using HTML iframes.

- The framework itself is based on Lit (Web Components) and implemented in TypeScript.
- Implemented a unified navigation to navigate between frontends and also call subfunctions
- Implementation of client-side communication between the front ends using postMessage
- Creation of Helm charts and deployment via CI/CD on cloud (AWS/EKS) and on premises (Rancher/RKE) Kubernetes clusters
- Created automated tests using Selenium/Python and Puppeteer/TypeScript

Used technologies:

CI/CD, Istio, Kubernetes, AWS, RKE, Linux, TypeScript, Lit, Web Components, Microservices, GitLab, Scrum, JIRA, Confluence, Selenium, Puppeteer, Java

8/2018 - 5/2019   Token authentication and authorization and REST API for user management

Company: Siemens Mobility GmbH, Role: developer (freelance)

Implementation of token based (JSON Web Token) authentication and authorization

- Extension of the login to include the issuance of signed access and refresh tokens (JWT)
- Integration of the token into the existing UI protocol and checking the token with every HTTP request
- Providing a library to integrate token verification into various backend services
- Implementation of a REST API for existing user management
- The REST API is based on Spring Boot and runs as a standalone Docker container on a Rancher installation.
- Communication with user management takes place via Jakarta Messaging/Apache ActiveMQ.
- Migrate user management persistence to JPA, Hibernate, and PostgreSQL.

Used technologies:

JSON Web Token, Java, JavaScript, REST, Jakarta Messaging, Apache ActiveMQ, Docker, Spring Boot, Springboot, JPA, Hibernate, PostgreSQL, Scrum, JAX-RS, JIRA, Confluence, Jenkins

7/2017 - 7/2018   Implementation UX style for HTML5 UI framework

Company: Siemens AG, Mobility, Role: developer (freelance)

Implementation of the company-wide UX style guide for a proprietary HTML5 UI framework based on Qooxdoo, JavaScript, CSS3.

- CSS styles, colors, fonts, vector icons, pixel-precise sizes and defined behavior of all UI components such as list boxes, tables, combo boxes, date/time pickers, etc.

Used technologies:

HTML5, CSS3, JavaScript, Java, Ajax, jQuery, Qooxdoo, REST, Jetty, NetBeans, ClearCase, Perforce, Scrum, Docker, Jenkins

3/2015 - 6/2017   Implementation of an HTML5 UI framework

Company: Siemens AG, Infrastructure, Role: developer (freelance)

Implementation of an HTML5 UI framework based on Qooxdoo, jQuery, JavaScript, CSS3

- Implementation of the frontend based on Jetty and Java backend executable in Rancher/Docker
- Client/Server XML protocol using AJAX
- XML based backend communication via message broker Apache ActiveMQ
- Support for printing, PDF/XML/CSV export, online help and internationalization
- WYSIWYG editor for dialog editing based on Swing/JavaFX

Used technologies:

HTML5, CSS3, JavaScript, Ajax, jQuery, OpenLayers, Qooxdoo, Java, REST, Jetty, Apache ActiveMQ, Eclipse, NetBeans, ClearCase, Perforce, Scrum, Docker, Jenkins, Gradle, Selenium, Puppeteer

12/2012 - 2/2015   HTML5 GIS frontend

Company: Siemens AG, Infrastructure, Role: developer (freelance)

Implementation of an HTML5 GIS component in JavaScript based on OpenLayers and Qooxdoo

- Display a background map with support for OpenStreetMap, Google Maps, Bing Maps, WMS/WMTS
- Display of dynamic objects such as traffic lights, vehicles, cameras and visualization of status values in real time
- Support for street search using PostGIS and OSM vector data
- Implementation of the backend REST service in Java based on JBoss, JAX-RS and Jersey

Used technologies:

HTML5, CSS3, JavaScript, Ajax, jQuery, OpenLayers, Qooxdoo, Java, REST, SQL, JDBC, Java Database Connectivity, Jetty, PostGIS, PostgreSQL, Eclipse, ClearCase, Perforce, Scrum, JBoss, Servlet, JAX-RS, JAX-WS, Jenkins

7/2011 - 11/2012   Client framework program with window management

Company: Siemens AG, Intelligent Traffic Systems, Role: developer (freelance)

Developing a user-friendly component-based client framework

- Integration of any UI components
- Navigation and window management
- Support communication between UI components

Used technologies:

Java, Swing, JavaFX, Eclipse, ClearCase, Scrum, Jenkins

4/2009 - 6/2011   Maintenance notification with fax, SMS, SNMP and email support

Company: Siemens AG, Intelligent Traffic Systems, Role: developer (freelance)

Implemented the user interface for managing orders, trigger sources and recipients

- Sender of notifications via fax, SMS, SNMP and email

Used technologies:

Java, SMTP, SNMP, JUnit, Apache Ant, Eclipse, ClearCase, JAXB, Jenkins

6/2007 - 3/2009   GIS component based on JLoox/Mapinfo

Company: Siemens AG, Intelligent Traffic Systems, Role: developer (freelance)

Implementation of a GIS component in Java/Swing based on JLoox/Mapinfo

- Display a background map available in Mapinfo format
- Display of dynamic objects such as traffic lights, vehicles, cameras and visualization of status values in real time
- Implementation of the backend RMI service in Java

Used technologies:

Java, Swing, Jloox, MapInfo, GIS, JUnit, Apache Ant, Eclipse, ClearCase

5/2004 - 4/2007   UI Framework based on Java/Swing

Company: Siemens AG, Intelligent Traffic Systems, Role: developer (freelance)

Developed a comprehensive GUI framework in Java based on the Swing class library

- Client/Server support
- Protocol based on XML, SOAP and RMI

- Support for printing, PDF/XML/CSV export, online help and internationalization
- WYSIWYG editor for dialog editing

Used technologies:

XML, Extensible Stylesheet Language (XSL), XML Schema, SOAP, JBoss, Eclipse, ClearCase

4/2000 - 4/2004   UI components for traffic management system

Company: Siemens AG, Intelligent Traffic Systems, Role: developer (freelance)

Developed several components for a traffic management system in the C++ programming language and using the MFC class library.

- Message Manager
- Media management with email/fax and Word support
- Graphical process display
- Event and time control

Used technologies:

C++, Microsoft Visual Studio, ClearCase

9/1986 - 3/2000   Projects before 2000

Company: Siemens AG, Public Switching, Role: developer (employed)

Implementation of an alarm monitoring application in C++ on Windows platform

- Alarm monitoring application for a TMN system
- API for TCP/IP stack
- Loading and distribution function for RDBMS
- Assembler modules for real-time systems

Used technologies:

C++, Assembler, Microsoft Visual Studio, Oracle Database, ClearCase

References

" After discussing the requirements with me, the consultant planned and implemented this project completely independently and professionally, sought and found solutions to the problems and advised and trained the necessary people. He was part of the development team from the start and was able to score points with his colleagues with his experience and expertise. Overall, the project is a complete success. Our customers really enjoy using the feature, and it makes an essential contribution to our success. Overall, I am very satisfied with the consultant's work and can absolutely recommend him. (translated from German) "

— HUK-COBURG Autoservice GmbH, Projekt Keycloak, 12/22 - 12/23 —

" The consultant was conscientious, solution-oriented, reliable and has a wide range of business expertise. He completed the project with great commitment, independently, on time and in top quality. We would like to thank him for his excellent work and will be happy to use him again for new projects at any time. We hereby express our highly recommendation. (translated from German) "

— Ingenieurbüro Armin Pelka, Projekt IoT Gateway, 05/21 - 09/21 —

" The Consultant is a senior developer who has in-depth technological knowledge, is communicative and works very well with his team and also with colleagues in the wider organization. Thanks to his technical skills and willingness to go the extra mile, we were able to deliver the project within the given time and with high quality. He also has high security awareness and enough technical skills to deal with such complex issues. (translated from German) "

— Yunex GmbH, Projekt IAM solution, 05/20 - 04/21 —

Education

6/1985	Matura/Diplom Höhere Technische Lehranstalt für elektrische Nachrichtentechnik und Elektronik, Innsbruck
3/2000	Genehmigung zur Führung des Berufsbezeichnung Ingenieur gemäß Art. 2 Ingenieurgesetz durch Regierung von Oberbayern
11/1999	Verleihung der Standesbezeichnung "Ingenieur" durch Österreich. Bundesministerium für wirtschaftliche Angelegenheiten

Languages

German:	Native
English:	business fluent

Interests

Books, Movies, Mountain Biking, Electronics