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Migrating from Camunda 7 to Camunda 8

A reference guide to upgrading your process automation platform: Unlock Camunda 8's full potential for your business

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Introduction

The transition from Camunda 7 (C7) to Camunda 8 (C8) marks a significant evolution in workflows and decisions automation. This white paper aims to provide high-level guidelines for organizations through their migration process. This white paper provides a high-level migration strategy and the approach to be worked out based on Organization Camunda footprint. This offers guidance on preparing for migration, adjusting BPMN and DMN models, refactoring code, handling workflow engine data and validation of migrated system.

As Business Process Management is becoming critical across industries due to its ability to streamline operations, increase efficiency and improve productivity, there were multiple BPM platforms emerged in the market. Camunda emerged in 2013 as a process orchestration platform to orchestrate, automate and optimize the business processes. This has gained popularity over time due to its lightweight and developer-friendly approach.

Overview of Camunda 7 and Camunda 8

Camunda 7: This open-source BPM platform fostered a strong community of developers and contributors due to its open-source nature. It was adopted by customers across the globe and continuously expanded its features between 2013 to 2020, setting it apart in the BPM market. The key features:

- BPMN and DMN standards compliance
- Developer-friendly environment
- Business-IT collaboration
- Lightweight and scalable
- REST API-based integrations

Camunda 8: Camunda 8 was released in 2022 to handle high-throughput cases with horizontal scalability. It introduced the Zeebe workflow engine and is compatible with cloud-native architecture compatibility for modern clouds deployments. This platform addresses evolving needs such as increased demand for scalability and advancements in technology like AI and cloud-native architecture. In addition, it introduces several distinct advantages, including:

- Unlimited horizontal scalability
- Enhanced real-time collaboration
- Out-of-the-box integration connectors
- Advanced monitoring and troubleshooting

Importance of migration

Both Camunda 7 and Camunda 8 are unique, but upgrading to the latest version of Camunda is beneficial. It helps with strategic alignment and future proofing, as innovations and new features will be developed in Camunda 8. Its cloud-native capabilities, traditional Self-managed options and SaaS offerings provide the flexibility and scalability needed for modern business environments that Organizations take advantage of.

Architectural differences

Core changes

Architectural element(s)	Camunda 7	Camunda 8
Workflow engine	Uses Camunda BPMN engine	Zeebe-cloud-native distributed workflow engine
Architecture	Process engine-centric—typically embedded with Java apps	Cloud-native microservices architecture
Scalability and performance	Vertical scaling—scale up	Horizonal scaling—scale out
Deployment and management	Single monolithic package	Built for modern DevOps environments
Monitoring and troubleshooting	Cockpit—primary tool for monitoring running and completed process instances. No native support for distributed tracing or centralized observability.	Operate—dedicated monitoring tool provides real-time visibility into process instances, incidents and task states. Native support to Prometheus and Grafana.

Impact on existing systems

Migrating to Camunda 8 will have several key impacts on the existing systems and this requires careful consideration on system architecture, data handling, integration and dependencies. The migration team needs to be aware of the key differences through adequate training on the new platform. They should apply the right mechanism towards development, deployment and migration operations to ensure all Camunda 7 artifacts are migrating correctly with the required performance and scalability improvements. While it's expected to be a decrease in operational costs on Camunda 8 over time due to improved scalability and efficiency, it requires an initial investment in terms of time and resources for migration.

Camunda 8: The NextGen Process Orchestration

Camunda 8 platform delivers unparalleled speed, scale and resilience through its cloud native architecture, new features and integrated AI capabilities. This empowers organizations to automate complex end-to-end process across the enterprise, driving digital transformation and enabling rapid adoption to evolving market demands.

New features and core enhancements

Camunda 8—Key features and enhancements

Real-time collaboration

Webmodeller with real-time collaboration and Git integration

Form builder

Tool to create user task forms visually in addition to BPMN and DMN

Out-of-the-box connectors

Connectors framework for low-code and pro-code systems integration

Multi-language support

External task workers with support for multiple languages

Performance monitoring and alerting

Native Prometheus integration with pre-built Grafana dashboards and Prometheus alert manager for real-time alerts

Powerful tools for troubleshooting

Operate UI for real-time incident tracking, retry and filtering. Structured logs via Elasticsearch for centralized, searchable logs

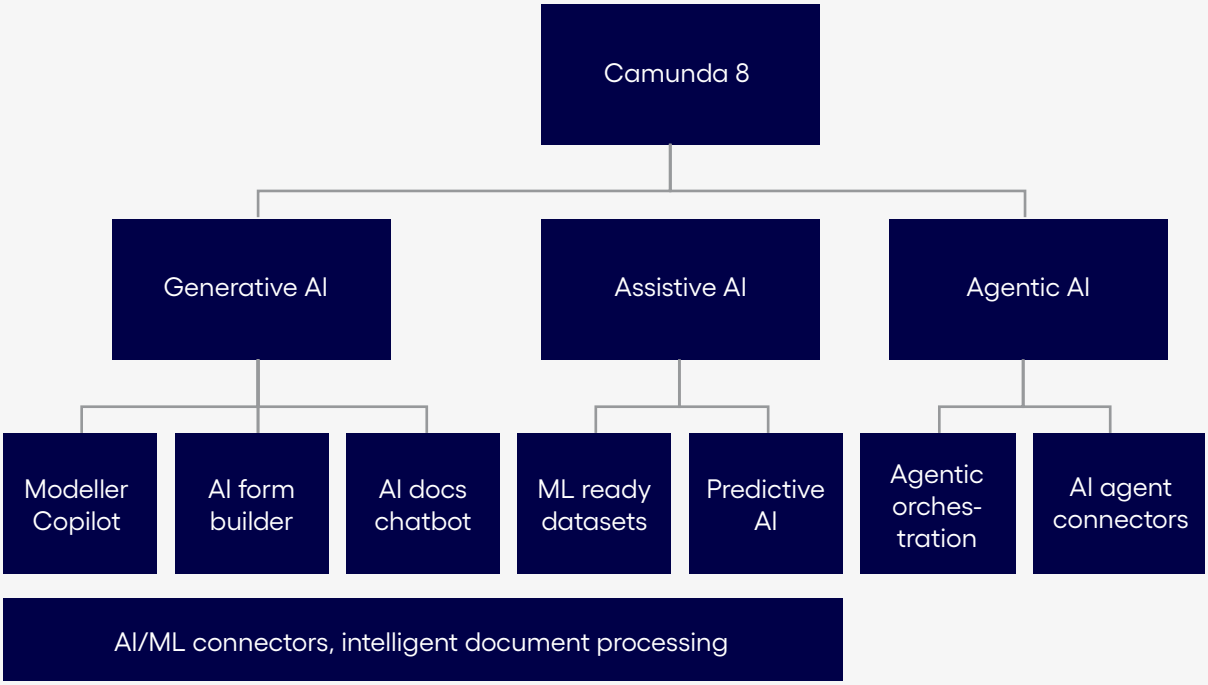
Task list customization

Custom filters, Form Builder integration, theming and API-driven extensions

Improved accessibility

Improved keyboard navigation, screen reader support, responsive design

AI-powered capabilities: Unleashing intelligent automation



Modeler Copilot, AI Form Builder, and AI Docs chatbot support process model design, forms creation, and developer experience. ML-Ready datasets and Predictive AI enable process data export and provide pattern prediction for flow improvement. Agent connectors and agentic orchestration manage agent interaction and coordination. AI/ML connectors integrate AI services, while IDP extracts, validates, and organizes data from documents.

Benefits of migrating to Camunda 8

Migrating to Camunda 8 offers several benefits on the technical and business front.

Performance improvements

Camunda 8's Zeebe, a lightweight distributed work engine, eliminates the need for centralized processing by distributing the tasks across multiple nodes, improving throughput and fault tolerance. It's native integration with Kubernetes helps to scale nodes based on demand, ensuring optimal performance during peak time.

Scalability and flexibility

From a business standpoint, it helps in accelerating solution development through low-code approach on OOTB integration connectors, form builders and business-IT collaboration in process modeling.

Enhanced developer and user experience

It also benefits the organization by reducing overall operational costs in the long run through the improved performance and scalability that it offers. All these collectively address the need for Camunda 8 migration through its technological advancements, business improvements and cost savings on top of that.

Migration planning

Assessment of current environment

Though migration from one version to another always gives an advantage, before initiating the same, it's essential to assess the current environment. This includes cataloging all deployed processes, integrations, infrastructure and existing performance benchmarks but not limited to. This helps to understand the existing setup better in terms of architecture and operational aspects to identify better the discrepancies, constraints and future expectations that may impact migration decisions.

Defining migration goals and objectives

Though migration from one version to another always gives an advantage, before initiating the same, it's essential to define the goals and objectives across stakeholders to ensure that everyone is aligned to the common purpose. Questions such as why we need to migrate and what's the qualitative and quantitative benefits associated and what's the cost benefit analysis in the long run and others that need to be raised, clarified and the relevant goals and associated objectives need to be drawn in totality.

Risk assessment and mitigation strategies

Once the goals and objectives are clear towards migration, it's important to assess the risks associated and derive the relevant migration strategies to avoid surprises to the extent possible at the later stage. This is related to technical and operational risks such as compatibility issues, data loss, downtime and so on. Deriving the relevant strategies such as phased rollouts, parallel runs and others can reduce disruptions and ensure business continuity down the line.

Migration approach

Migrating from Camunda 7 to 8 requires shift in the mindset as this is not just a version upgrade rather it's about preparing Camunda 7 artifacts to run in cloud-native and event driven architecture.

Preparation steps

Analyze process inventory: Review all existing BPMN, DMN, and CMMN models to identify any gaps and determine future steps. For example, specific versions of Camunda 7 (7.4 and 7.5) fully support CMMN 1.1, but this support was removed from version 7.21 onwards. Camunda 8 focuses solely on BPMN and DMN. Therefore, migration of CMMN models to event-based, microservice-oriented architecture should be considered, based on the version of Camunda 7 in use. These models may need to be converted to BPMN. Additionally, identify business-critical workflows and their dependencies.

Technical audit: Review all the other components around workflows such as java delegates, external tasks, REST APIs and plugins. Analyze and document the existing infrastructure details – embedded engine, sprint boot apps associated with Camunda 7.

Compatibility assessment: Use Camunda's migration analyzer tool to scan Camunda 7 models and identify the incompatible elements and workout the tailored migration approach for those based on criticality and priority.

Put things into perspective: After all collaterals have been analyzed and gathered, arrive at the holistic migration planning and approach in consensus with all stakeholders and decide on migration strategy, deployment model and define relevant roles, responsibilities and timelines.

Migration tools and resources

Camunda has both in-built tools as part of Camunda 8 Platform and external tools to ease out the whole migration journey. Cognizant also in the process of building relevant best practices, lessons and utilities as a complementary offering on top of these under our migration accelerator framework what we built under Process Orchestration Practice to help customers to migrate their artifacts from Camunda 7 to Camunda 8 platform. This is more of work in motion as the migration tools and resources will keep emerging and evolving in nature.

Below are the set of tools / resources which can be adopted / customized at various stages of migration. These set of tools help to jump start and speed up the migration process and not the product to migrate the entire Camunda 7 artifacts and there is a re-engineering effort associated at each phase.

Tool/resource	Purpose
Migration analyzer	Analyzes Camunda 7 BPMN / DMN / CMMN models for Camunda 8 compatibility.
Diagram converter	Converts BPMN 2.0 models from Camunda 7- to 8-compatible format
Camunda Modeler	Design and validate BPMN/DMN models
Zeebe client libraries	SDKs for implementing job workers (Java, Node.js, etc.)
Camunda operate and optimize	Monitoring and analytics for Camunda 8.
Migration guides	Best practice, lessons and utilities.
Code converter	Detect and refactor Camunda 7 API usage in code
Cawemo to Web Modeler migration	Script to migrate Cawemo projects to Camunda 8 Web Modeler

AI-driven acceleration towards migration

Although migrating from Camunda 7 to 8 is a substantial project, leveraging migration tools for Camunda 7 artifacts along with the integration of Camunda AI features can facilitate a more seamless and efficient transition.

The below specific AI capabilities of Camunda 8 enhance and accelerate the migration process.

Accelerated development and modeling—Modeler Copilot within Web Modeler helps to fine tune the BPMN Models generated by the relevant migration tool from Camunda 7, guide the users towards best practices and efficient designs. AI-assisted form builder helps to simplify UI migration and reduces the chances of errors during form adoption in the Camunda 8 environment.

Simplified integration and connectivity—Out-of-the-box AI/ML connectors for AI services simplify integrating advanced AI capabilities into the process. For migration, this means C8 is inherently ready to connect to modern AI tools, allowing organizations to enhance processes with AI without extensive custom development. Agentic orchestration capability of C8 enabled by AI Agentic Connector allows the modeling and orchestration of AI agents. While this is not directly related to migration, this allows migrated processes to leverage advance automations and streamline complex tasks in C8 that were cumbersome and manual in C7.

Intelligent execution and optimization—ML ready datasets in C8 facilitates data analysis and insights into migrated processes towards further optimization. While migration approach / tool takes care data transition, ML datasets help to make sense out of that towards continuous improvement. Predictive AI option allows proactive identification of issues in the migrated processes and helps to improve efficiency.

Beyond migration, C8 cloud native architecture and its integrated AI features provide a foundation for scalable, resilient, AI enabled processes that C7 cannot fully deliver.

Step-by-step migration guide

Phase 1: Strategic planning and foundation

This phase leverages the outputs of migration planning, preparation steps of migration approach and planning to define the architectural roadmap and prepares the target environment.

Finalize migration strategy and scope

- Revisit the outcome of migration planning, migration approach preparation steps and migration goals
- Confirm the migration approach
- Define initial set of processes for migration based on business value and risk proposition
- Confirm on target C8 architecture

Risk assessment and mitigation refinement

- Review the identified risks and refine mitigation strategies
- Work out a rollback strategy in the case of migration challenges

Set up Camunda 8 infrastructure

- Camunda 8 environment provision
- Core Camunda 8 components deployment—Zeebe, Operate, Tasklist and Optimize
- Execute the PoT/PoC as necessary to ensure all the components are working seamlessly

Phase 2: Artifact migration and code adoption

This phase focuses on migrating Camunda 7 artifacts to Camunda 8 ecosystem.

Convert BPMN and DMN models

- Utilize migration analyzer and diagram converter tools to identify model changes and convert those
- Leverage Modeler Copilot to refine converted BPMN models to adhere to C8 best practices
- Rebuild CMMN models as BPMN and as external workflows
- Refactor any unsupported C7 elements in C8
- Convert JUEL expressions into FEEL
- Validate all these artifacts in C8 environment

Phase 3: Data migration and integration

This phase addresses the crucial phase of moving process data and connecting to external systems.

Data model refinement

- Ensure process variables are compatible and refactor unsupported data types
- Ensure minimal data is stored within Camunda

Process instance and history data migration

- Execute the agreed-upon data migration strategy
- Transfer historical data to C8 Elasticsearch based history system in SaaS setup whereas with version 8.9, Camunda now supports storing audit data in a relational database (RDBMS), offering an alternative to Elasticsearch for self-managed deployments. This enhancement further simplifies migration from Camunda 7 and aligns with enterprise data governance strategies.

Integration migration

- Migrate existing integrations, replace custom integrations with C8 integration connectors wherever possible
- Use AI/ML connectors to simplify integration with AI services
- Validate end-to-end connectivity with all integrated systems

Phase 4: Testing and validation

The objective of this phase is to ensure that the migrated solution is robust, performs as expected and meets the business requirements.

Comprehensive test execution

- Unit, integration, performance and system testing—as per the established test strategy
- Leverage Zeebe process test for automated testing of C8 processes
- Use C8 Operate to monitor and validate process instance execution and ensure error handling and retry mechanisms
- Security testing to meet compliance standards

User acceptance testing

Phase 5: Deployment and go-live

The objective of this phase is to ensure that the migrated solution is robust, performs as expected and meets the business requirements.

Deployment Planning

- Plan a phased roll-out strategy to minimize the risk.
- Define rollback procedures.

Go live

- Execute the deployment to production and ensure a smooth transition.

Post Deployment Monitoring

- Continuously monitor process execution using Operate, its performance and expected outcomes.
- Be prepared for rapid issue resolution and adaptation and execute rollback procedures in unexpected scenarios.

Phase 6: Optimization and continuous improvement

The objective of this phase is to maximize the value of C8 platform post-migration.

Performance tuning

- Use C8 Optimize to identify the areas for tuning
- Leverage predictive AI within Optimize for proactive optimization

Operational excellence

- Refine operational procedures for C8 environment
- Provide ongoing support and training for support team

Future AI integration and innovation

- Use C8 AI features to further enhance the migrated processes
- Leverage AI agents for autonomous tasks and gen AI services via connectors

Post-migration activities

Monitoring and optimization

Once the UAT is approved and before artifacts are deployed into production, ensure that you have Camunda Operate already in place to monitor process instances, incidents and job worker health and configure alerts and dashboards using tools like Prometheus and Grafana or the equivalent. Also configure Camunda Optimize to analyze the bottlenecks, cycle times and task durations on the processes that are deployed and do the course correction on a continuous basis. Most importantly compare the pre and post migration performance benchmarks and work on continuous improvement.

Ongoing support and maintenance

As more processes are getting migrated into the production environment, establish the support model and define L1/L2/L3 support tiers with relevant roles and responsibilities. Train support teams on Camunda 8 troubleshooting and encourage them to build knowledge base and runbooks. This will ensure operational continuity, user satisfaction and technical resilience.

Future upgrades and enhancements

Post migration is also an opportunity to evolve on the platform and explore new capabilities. To capitalize Camunda 8 to its fullest potential, leverage its native features like connectors, event-based micro services-based orchestrations and SaaS capabilities. When more processes are migrated, work towards the modernization aspects by integrating AI/ML related features. Also accommodate different end points to utilize its advantages across process orchestrations. Continuously monitor and scale the Zeebe clusters based on usage growth and adopt relevant scalability aspects such as multi-region / hybrid cloud strategies apart from process optimizations.

Conclusion

This white paper outlines strategic considerations, architectural differences, and planning steps without prescribing a one-size-fits-all approach. Camunda 8 offers significant enhancements that aligned with modern cloud-native paradigms. Successful migration requires thorough assessment, stakeholder alignment, and readiness to re-engineer existing assets and this document serves as a starting point for informed decision-making and deriving structured approach.

Appendices

Glossary of terms

BPMN/DMN/CMMN	Business Process Model and Notation/Decision Model and Notation/Case Management Model and Notation
PoC/PoT	Proof of concept / Proof of technology
API	Application programming interface
gRPC/REST	Google Remote Procedure Call/Representational state transfer

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Resources and references

https://docs.camunda.io/docs/guides/migrating-from-camunda-7

https://github.com/camunda-community-hub/camunda-7-to-8-migration

https://academy.camunda.com/c8-migration-overview

https://forum.camunda.io

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