



Linux and Open Source Databases Migration to Microsoft Azure advanced specialization Program

Final Report

Bosch

Audit Date: 27 October 2021

Gap Review Meeting Date: NA

Audit Process and Criteria: Version 2.0

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Introduction

The audit was conducted to the requirements of the Linux and Open Source Databases Migration to Microsoft Azure advanced specialization Audit Process and Criteria V2.0.

The working language of the audit was: English

The following personnel participated in the audit:

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Audit Objectives and Methodology

The objectives of this audit were:

- to assess the Partner's capabilities in relation to the requirements of the Linux and Open Source Databases Migration to Microsoft Azure advanced specialization program.
- to share and encourage best practices and identify opportunities for Partner improvement.
- to collect and provide Microsoft with information on Partner capabilities, practices, and plans.

The audit assessed the Partner's operational capabilities against program requirements for a Microsoft Azure advanced specialization. This was assessed through discussion with Partner personnel and by reviewing selected processes and procedures, including demonstrations of tools and technologies used by the Partner to meet Azure advanced specialization requirements. Throughout the audit, considerable effort was made to

make the event valuable for the Partner by identifying opportunities for improvement and highlighting partner strengths and best practices.

The audit concluded with a review of the audit findings.

Executive Summary

Bosch is one of the leading system integrators around Migration Services, ISV Solution development across Manufacturing, Automotive IoT Centric Solutions, and OSS DBs. Bosch's strategy - of sensors, software, and services — helps MS build tools, products, and platforms using Bosch's proven expertise to deliver real customer value.

Bosch has developed and implemented solutions in the field of Manufacturing, automobile, supply chain, healthcare, mobility energy and has experience in the usage of multiple technologies and standards across various domains.

Audit Findings -

- 1. Partner has demonstrated a well-structured approach to DB Migration solutions and has been able to meet the requirements of the program.
- 2. Using some customers consistently across sections and some additional customers, the Partner demonstrated their experience for the specialization.
- 3. Across both the audit modules, the Partner demonstrated all evidence and several strength areas adequately.
- 4. There were some areas of improvement identified, and the Partner agreed to work on them.

Conclusion -

Bosch demonstrated the capability to offer Azure DB Migration services to their customers against all the audit criteria. The Partner was adequately prepared to undertake the audit, and there were some areas of improvement identified.

Partner Audit Scorecard

Scoring methodology:

- Partner must meet 100% of each requirement for each section in the checklist.
- Partner results are listed in the 'Met' column.

Module A: Cloud Foundation					
1.0 Str	ategy	Met Y/N			
1.1	Data-Driven Business Strategies	Υ			
2.0 Pla	n				
2.1	Planning and Tracking – Cloud Adoption Projects	Υ			
3.0 En	vironment readiness and Azure landing zone				
3.1	Repeatable deployment	Υ			
4.0 Go	vernance				
4.1	Governance tooling	Υ			
5.0 Ma	inage				
5.1	Operations management tooling	Υ			
Modul	e B: Linux and Open Source Database Migration to Microso	ft Azure workload			
1.0 Thi	rd-party certifications				
1.1	Certification				
2.0 Ass	sess				
2.1	Workload assessment	Υ			
3.0 De	sign				
3.1	Solution design	Υ			
3.2	Well-Architected Review of workloads	Υ			
4.0 Deployment					
4.1	Infrastructure migration	Υ			
4.2	Database migration	Υ			
4.3	Migration tools	Υ			
4.4	Automated deployment and provisioning tools	Υ			

Partner Audit Scorecard

Scoring methodology:

- Partner must meet 100% of each requirement for each section in the checklist.
- Partner results are listed in the 'Met' column.

5.0 Review and Release for Operations

5.1	Service validation and testing	Υ
5.2	Post-deployment Documentation	Y

Strengths

The following organizational strengths were noted during the audit:

1.	A-1.1 Partner has demonstrated a well-defined flow for requirement gathering with in-house tools.
2.	A-2.1 Partner has demonstrated a well-defined flow graph for the project onboarding with the self-service capabilities for Customers.
3.	A-3.1 Partner has demonstrated well-managed Design Documentation with HLD's and LLD's articulations separately.
4.	B-2.1 Partner has demonstrated a well-managed risk register as a risk tracking process.
5	B-4.2 Partner has defined a well demonstrated Data Migration Plan document.

Opportunities for Improvement

The following Opportunities for Improvement were identified during the audit:

1.	A-2.1	Please consider creating standardized templates for Internal and external customers.
2.	A-3.1	Please consider addressing RTO RPO timings and DR Details in the architecture Document.
3.	B-2.1	Please consider that User and DB details need to be captured and defined into requirement gathering Documents.

Action Items

The following Action Items were identified during the audit:

NA

Microsoft Azure Advanced Specialization Audit Checklist

Module A: Cloud Foundation					
1.0 Strategy					
Requirement	Met	Validated		Additional Notes	
1.1 Data-Driven Business Strategies	☑ Yes □ No	☑ Process ☑ Evidence □ Demonstration	Evidence valid Process Customer 1 Routematic Customer 2 InTrack	ated – Both the customer documents follow a standard process to capture the below: 1. CSA and challenges 2. Reasons for migrating to Azure for customers. 3. Business Outcomes were defined 4. Economic Benefits were showcased to the customer 5. Discovery for the services was done through iterative calls and emails. 6. End-User satisfaction matrix created for feedback and service improvements. 1. Technology Strategy and Roadmap presentation dated July 20, 2020 - July 31, 2021 2. The tool used: Azure Migrate. 3. Cost comparison with azure cost calculator. 1. Technology Strategy and Roadmap v2 presentation dated April 1, 2020	
			- IIIII ack	- Dec 14, 2020 2. The tool used: Azure Migrate. 3. Cost comparison with azure cost calculator.	
			Strength –	Partner has demonstrated a well-defined flow for requirement gathering with inhouse tools.	

2.0 Plan			
Requirement	Met	Validated	Additional Notes
2.1			

2.0 Plan				
Requirement	Met	Validated		Additional Notes
Planning and Tracking – Cloud Adoption Projects	☑ Yes □ No	☐ Process ☐ Evidence ☐ Demonstration	Process	Inhouse created Self-Service is used to track cloud adoption and deployment for all customers. 1. The tool used for tracking: Euvantage (In-House Developed) 2. Delivery timeline estimations are well defined in Plan with action trackers. 3. Evidence is kept as Email and Excel Docs for delivering to customers. 4. Track of all the Work Orders according to change in requirements are define clearly
			Customer 1- Routematic	 The project deployment timelines were as per below. Start Date: 20 Jul 2020 End Date: 31 July 2021 Project kick-off, Presales Use case validations post PoC Onboarding flow graph
			Customer 2 – InTrack	 Project Plan from Discovery, Azure Foundation, Deployment. The project deployment timeline: Start Date: 1 Apr 2020 End Date: 14 Dec 2020 Project kick-off, Presales Use case validations post PoC Onboarding flow graph
			Strength	Partner has demonstrated a well-defined flow graph for the project onboarding with the self-service capabilities for Customers.
			OFI	Standardized templates can be created by the partner for Internal and external customers.

3.0 Environment readiness and Azure landing zone				
Requirement	Met	Validated	Additional Notes	
3.1				

3.0 **Environment readiness and Azure landing zone** Requirement Met Validated **Additional Notes** Repeatable Evidence validated -✓ Yes ✓ Process deployment ☐ No ☑ Evidence **Process** 1. User Roles are defined. 2. Tools Used: ARM Template, key ☐ Demonstration vaults, Azure management group 3. Segregation of users with a category. 4. Azure AD Integration for Users onboarding. Customer 1 It follows the "Enterprise Scale" deployment velocity. Routematic Customer 2 It follows the "start small and expand" InTrack deployment velocity. Strength Partner has demonstrated well-managed Design Documentation with HLD's and LLD's articulations separately. OFI RTO RPO timings and DR Details need to be addressed in the architecture Document.

4.0 Governance					
Requirement	Met	Validated	Additional Notes		
4.1	☑ Yes	☑ Process	Evidence validated –		
Governance tooling	□ No	☐ Evidence ☑ Demonstration	Process 1. Single pane of glass for monitoring defined by Grafana 2. Billing Comparison and customer vise consumption summary. 3. Azure Portal is used for configuring the Policies. 4. Azure built-in policies are defined for Azure tags. 5. Azure Auditing is used for compliance management. 6. Segregation of cost with help of tagging. 7. Azure Policy Generator and Built-in-Policies. 8. Auto Policy remediations enabled over azure built-in policies.		

4.0 Governance Requirement Met Validated **Additional Notes** 9. Azure security center and governance policy defined on Firewall Customer 1 Azure Policy deployment for VmSizePolicyDefintion has the Standard VMs as denied, and the rest of VM sizes are Routematic allowed. Customer 2 Region policy definition that is used to limit the region where the VMs can be deployed. - InTrack

5.0 Manage					
Requirement	Met	Validated		Additional Notes	
5.1	☑ Yes	☑ Process	Evidence valid	lated –	
Operations management tooling	□ No	☑ Evidence ☐ Demonstration	Process	 Well-defined documents for training customers. Partner uses Grafana Monitoring to manage the customer environments using Azure APIs. 	
			Customer 1- Routematic	Azure Monitoring demonstration was done as part of Operations Management	

Module B: Linux and Open Source Databases Migration to Microsoft Azure workload

1.0 Third-party certifications

Requirement	Met	Validated		Additional Notes
1.1	☑ Yes	☐ Process	Evidence valida	ated –
Certification	□ No	☑ Evidence ☐ Demonstration	Evidence	Certificate verified for 2 employees with Employment letter and

2.0	A
7.11	Δςςρςς

2.0 Assess				
Requirement	Met	Validated		Additional Notes
Requirement 2.1 Workload assessment	Met ☑ Yes □ No	Validated ☑ Process ☑ Evidence □ Demonstration	Process	
				2. InTrack 3. WCMS
			Strength	Partner has demonstrated a well-managed risk register as a risk tracking process.
			OFI	User and DB details need to be captured and defined into requirement gathering Documents by the partner.

3.0 Design			
Requirement	Met	Validated	Additional Notes
3.1 Solution design	☑ Yes □ No	☑ Process □ Evidence □ Demonstration	Evidence 1. Migration of Linux-based applications to Azure: Routemetic 2. Migration of MySQL, PostgreSQL, MongoDB: InTrack 3. Rehost Customer: InTrack 4. Replatform Customer: WCMS 5. Refactor Customer: Routemetic 6. Azure Landing zone with following components validated for: IAM, RBAC, NSG, Firewall, data backup, and Recovery. 7. Model Type: hub and Spoke 8. Monitoring: Prometheus + Grafana with single pane of glass List of customers presented for this control: 1. Routematic 2. InTrack 3. WCMS
3.2 Well- Architected Review of workloads	☑ Yes □ No	□ Process☑ Evidence□ Demonstration	Evidence validated — Process Defined milestones: 1. Azure well-architected review questionnaire exported as CSV. List of customers presented for this control: 1. Routematic
			2. InTrack 3. WCMS

4.0 Deployment				
Requirement	Met	Validated		Additional Notes
4.1 Infrastructure migration	☑ Yes □ No	☑ Process ☑ Evidence □ Demonstration	Process	Defined documents as part of Infrastructure Migration checklist 1. SOW 2. Design Document 3. Project Plan

4.0 Deployment **Validated** Requirement Met Additional Notes 4. HLD 5. LLD 6. As build doc List of customers presented for this control: 1. Routematic 2. InTrack 3. WCMS Strength Partner has demonstrated well-managed Design Documentation with HLD's and LLD's articulations separately. 4.2 ✓ Yes Evidence validated -☐ Process □ No ☐ Evidence Database **Process** Defined documents as part of Database migration ☐ Demonstration Migration checklist 1. Architecture Diagram 2. SOW 3. Design Document 4. Project Plan 5. HLD 6. LLD 7. As build doc List of customers presented for this control: 4. Routematic 5. InTrack 6. WCMS Strength Partner has defined a well demonstrated Data Migration Plan document. 4.3 ✓ Yes Evidence validated -☐ Process □ No ☑ Evidence Migration tools Process Azure migration tools Demo: ☐ Demonstration 1. Azure Database Migration Service 2. Storage Migration Service List of customers presented for this control: 1. Routematic 2. InTrack 3. WCMS

4.0 Deployment				
Requirement	Met	Validated	Additional Notes	
4.4 Automated	☑ Yes	☐ Process ☐ Evidence	Evidence valid	ated –
deployment and provisioning tools		☐ Demonstration	Process	Automated Deployment demo: 1. Azure DevOps Pipeline 2. Terraform Code Repo
				List of customers presented for this control: 1. Routematic 2. InTrack 3. WCMS

5.0 Review and Release for Operations				
Requirement	Met	Validated	Additional Notes	
5.1 Service validation and testing	☑ Yes □ No	☑ Process ☑ Evidence □ Demonstration	Evidence validated — Customer 1 - Routematc 2. Patching snapshot for the image Current +2 older versions 3. Cutover closure case includes the customer email for confirmation closure. 4. Project Plan with the functional and UAT tests conducted 5. QA tests for server checklist with the mitigation plan. Customer 2 - InTrack 1. Well managed service delivery a feedback system defined for customers 2. Patching snapshot for the image Current +2 older versions 3. Cutover closure case includes the customer email for confirmation closure. 4. Project Plan with the functional and UAT tests conducted 5. QA tests for server checklist with the mitigation plan. Customer 2 - InTrack 1. DB testing document with the SSMS, AD, and Windows Server	es: ne n of ity h
			cases. 2. Email to the customer with the Project closure meeting report a customer signoff.	and
5.2				

5.0 **Review and Release for Operations** Requirement Met Validated **Additional Notes** Post-Evidence validated -✓ Yes ☑ Process deployment □ No ☑ Evidence Documentation Customer 1 1. KT sessions are kept as part of ☐ Demonstration - HGS teams recordings. 2. SharePoint repository for all Canada customer documentation, policies & procedures, and KBs. 3. Azure environment diagram. 4. Live training sessions 5. Troubleshooting Runbooks 6. Monitoring dashboards for Observability