Mindtree

Welcome to possible

Discovery, Assessment and Migration

August 2019

Make Digital Real | Execute Smart

A Decade of experience with Cloud Computing

Azure

Gold Certified Partner

Top 5 NSP Consumption (2017)

Azure Innovation Partner (2016)

Emerging Azure Partner (2015)

aws partner network

Advanced Consulting Partner

Data & Analytics Competency

DevOps Competency

Certified the SAP HANA database on GCP.

salesforce platinum cloud alliance partner

4000 + Cloud Projects

2000+ Cloud experts

35 Industry Partnerships

Translating to our Offerings

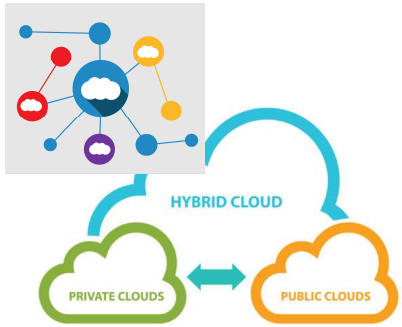
Getting There

Living in the Cloud

Creating New Possibilities

Key Expectations
Efficiency, Agility in Operations with reduced spend
Free up budgets for allocation in digital transformation
Deliver business solutions in a faster, scalable and agile fashion
Build Cloud native strategic platforms for business differentiation and continuous availability

Mindtree cloud migration – Value proposition



Windows, Linux OS, VMware, Hyper-V environments from Data center to Private, public or hybrid Cloud

To minimize or have zero downtime for clients

Automation enables faster migration and reduced cost

Factory Model & streamlined process to migrate workloads seamlessly

Accelerate migrations & ROI realization

20 to 30% reduction in migration cycle

40% reduction in operational costs

Toolset based migration with up to 60% automation

Proven framework and execution approach

Our Relevant Experiences

Migration from AWS to Azure through automation

A leading provider of consumer-driven marketing solutions

Public Cloud to Public Cloud

Migration Initial Challenges

- Strategic decision to standardize on Azure as the cloud platform of choice
- All applications built on AWS to be migrated to Azure
- A central web-based application which allows management of all product lists designed natively on AWS to be migrated to Azure
- Fully automated application through puppet with no manual intervention

Solution Implemented

- Modification of puppet scripts for work with Azure. Technologies included ZooKeeper, Solr etc
- Live data migration of Solr indexes and migration of PostGre database
- Rightsizing of resources for cost-performance on Azure including HA
- New puppet modules written for Azure CLI

Value Addition

- Seamless data and application migration
- Increased confidence on capabilities of Azure platform for open source workloads

Mindtree

Migration of Workloads to Azure in Americas

- *Leading Life and Health Insurance Company*

Classic 2 ARM

Migration Initial Challenges

- Current System is hosted in Azure Service Manager which is not scalable
- Customer wants to Implement Backup and Monitoring on the workloads.
- Customer was looking to templatize the deployment to replicate its multiple Development instances and enable Network Security between 3-tier application sets.

Solution Implemented

- Designed and Implemented the Solution using Azure Resource Manager
- Implemented Network Security Groups to secure the network traffic between workloads
- Implemented Azure Backup for Backups
- Implemented Azure OMS and Application Insights for Infrastructure and Application URL Monitoring

Value Addition

- Easy, Rapid and Tested deployment of Azure Resources
- Consistent Backups
- Stable Monitoring and Alerts Systems
- Configure Infrastructure for future HA and scalability
- Network Security

Mindtree

Decommissioning Data Center

ABG Frankfurt Datacenter Assessment

Leading global provider of mobility solutions, both through its Avis and Budget brands

Migration Initial Challenges

- ABG is looking at evaluating the feasibility of decommissioning their Datacenter (DC) in Frankfurt, Germany.
- The assets in the DC are predominantly non productions environments.
- Currently ABG has NO clarity on what services are running in the Datacenter and service stakeholders.
- Mindtree's responsibility is to assess the DC and come up with the strategy for DC consolidation and evaluate the right 'To-Be' architecture.

Mindtree avis budget group

Solution Implemented

- Mindtree performed detailed Inventory on the datacenter's servers, network devices and storage components.
- Tool based inventory performed using Corent SurPaaS, Spiceworks and Oputils tools.
- Interview with individual server / application owners to understand dependency and scope of the server / application.

Value Addition

- Without any purchase of 3rd party migration tools, using cloud NATIVE Services, Migrated 52 TB Data from Datacenter to Cloud
- Moved from CapEx to OpEx which benefited customer business
- Reduced the Cost by 55% in cloud, for hosting the servers
- Re-usability of On-Prem management servers for Domain Controller / Anti Virus (Less new infra footprint in Cloud)
- Complete Cloud Based Monitoring, logging and auditing services for the first time in ABG
- Moved From ABG's traditional automation tools to Terraform Orchestration

Leading Multinational Consumer Goods Company

Large Scale OnPrem to Cloud

- Migration of 700+ Digital Properties from CTL to Azure
- Cloud Migration of top clusters for all customer facing sites

Issues

Existing DC limitations to scale the business demand

20 Vendors

Mindtree approach

Assessment

- Detailed Assessment of application, Infrastructure and proposed the strategy and sequence of migration

Migration & Transition

- Factory based Migration
- Application Lift & Shift to IaaS
- Migrated Sitecore Master, Core, Web and Pub databases to Azure SQL Server
- Migrated MSSQL & MySQL Databases to Azure SQL Server PaaS & MySQL PaaS
- Seamless cutover to Operations

Automation

- Automated Migration using Mindtree Accelerators
- IaC - used ARM templates for provisioning the Sitecore Content Authoring (CA) and Content Delivery Servers (CD)

No unscheduled downtime during the Migration & impact to Business

First Time Right within P&G on large Cloud Migration

Mindtree

Large Scale Cloud to Cloud

Global Retail Giant Digital Marketing platforms migrated to Azure

Global Retail giant wanted to migrate 600 + digital properties from Rackspace® to Microsoft Azure

Issues

Mitigating migration risk for its top sites that accounted for 90% of traffic volume

Scalability

Mindtree approach

Cloud build

Cloud Infrastructure foundation setup including Network, Firewall, Web Apps & monitoring

Migration factory

Proposed strategy and sequence of migration with a factory based model & use of third-party tools

Seamless Cutover

Uninterrupted Transition to Cloud with no business impact and smooth cutover to operations

600 Sites

Scalable & Better Marketing platforms

Building Azure Stack Hybrid Cloud for multiple customers

Public-Private Cloud

Solution Implemented

- Formed a core team of consultants with Azure Stack experience with additional skills on , Active Directory, PowerShell Automation, Cisco UCO, Nexus Switches
- Working closely with Cisco and Microsoft for latest builds and bugs
- Came up with pre-requisites check-list that will be used for customer discussions
- Automated for faster deployments and configuration

Migration Initial Challenges

- Deploy Azure Stack on Cisco Hyper-Converged Infrastructure
- Responsible for implementations across Europe and APJC
- Responsible for Rack and Stack to bring up the Azure Stack, where customer can login to the admin portal
- Take care of all pre-requisites, like DNS, Network, AAD.
- Resolve any issues during the deployment
- Work with Cisco and Microsoft in case of any bugs / issues

Value Addition

- On-time and On-budget deployments
- BYoIP, providing multi-tenancy & hybrid cloud, enabled by SDN
- Build PaaS, and SaaS Solution that are available through Azure Market Place
- Ability to purchase AzureStack-as-a-Service (Capex vs Opex) with predictable monthly costs based on usage.
- Benefit from the agility of a flexible, speedy and elastic cloud.
- Ability to choose for a dedicated Azure Stack infrastructure, your own secure Azure environment without any other tenants.

Mindtree

Cloud strategy definition and migration roadmap

Large Scale Onprem to Cloud

Need for Operational Expenditure Optimization for Danish bank specializing in online trading and investment across global financial markets

Issues

Current infrastructure was less agile, was not optimally scalable and high on TCO. Need of high compute services to build new end customer interfaces rapidly on

Mindtree approach

Cloud Feasibility

Performed cloud feasibility study for existing applications to get overall business direction with cloud

Business Strategy

Define Business Strategy based on existing IT infrastructure, specific pain areas, investment and process information of the organization.

Migration Roadmap

Define Migration Roadmap performing cloud fitment based on technology components, architecture, design, integration, storage, security and compliance

2000+ VMs

Data center with 2000+ VMs, 600+ application servers

Mindtree

Large Airline embarks on Cloud Strategy Roadmap

Large Scale Cloud to Cloud

Airline wanted to revolutionize customer experience with cloud as a critical component. Mindtree advised and developed standards for how to go and whom to go with for Cloud

Issue

Independent decision making of cloud adoption across eight business units

Mindtree approach

CSP evaluation

Selected private and public cloud providers and cloud management platform

Cloud blueprint

Created the decision criteria, use cases, evaluation scorecard and security set-up

Anchor partner

Drove consensus amongst business groups to create a unified reference architecture for cloud adoption

2020

Accelerated digital vision with a cloud-first approach

Advisory for Multinational Consumer Goods Company

Large Scale Cloud to Cloud

Leverage cloud for improved cost savings for a unified web content management platform

Issue

Limitations on agility and operational efficiency with Virtual Private Data Center

Mindtree approach

6 Weeks Assessment

Detailed assessment, help in creating a business case and propose a PoC

Approach

Recommended approach is taken for larger rollout and continuous improvement model

Architecture

Provided the architecture for WebApp PaaS, Web/Worker Role PaaS and IaaS hosting options

6

Weeks exercise for detailed assessment and recommended approach

Mindtree

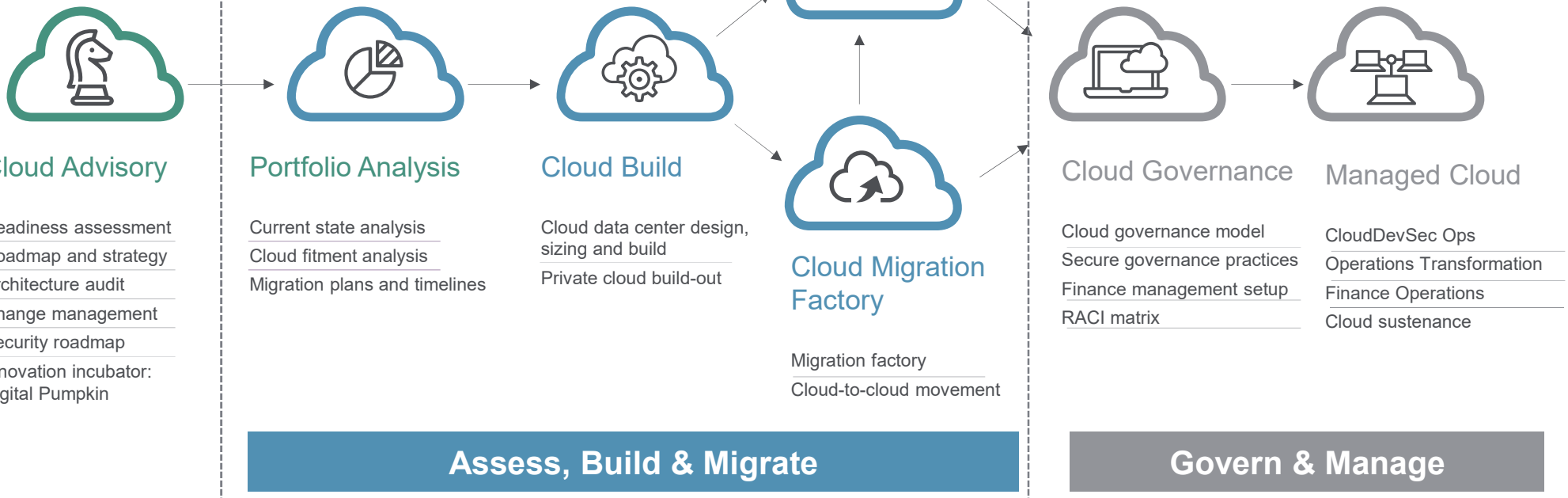
POV on DC Migration in China

Background

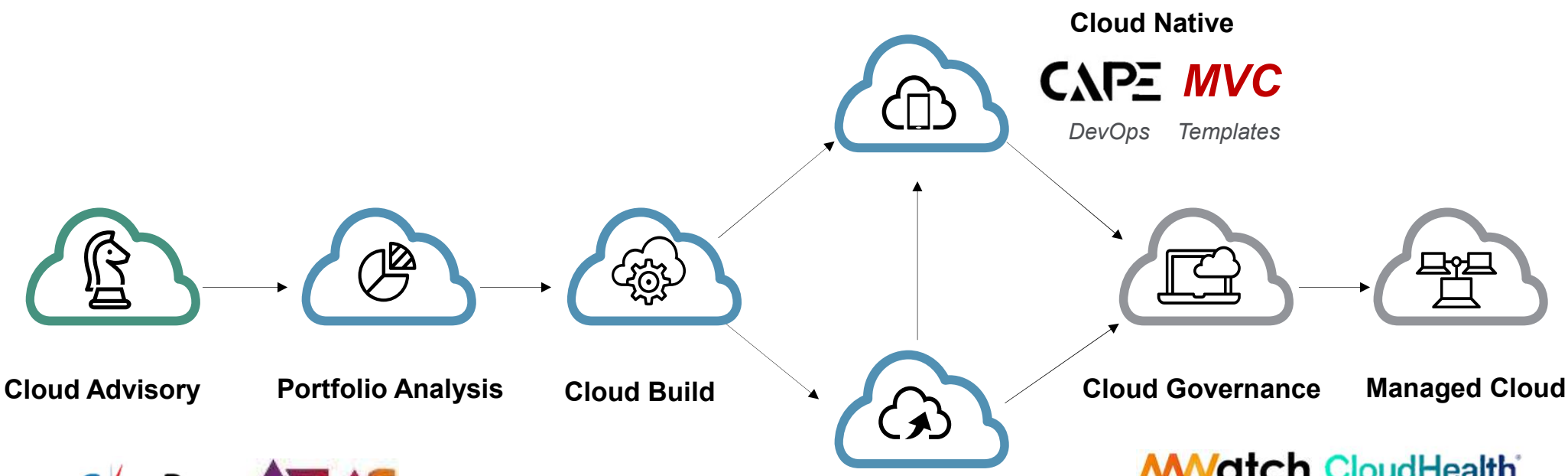
- MS Plans to migrate its China customers from existing Azure Data Centre to its upcoming new Data Centre within the same Country.
- These customers have various Azure resources created that are both IaaS and PaaS
- Business expects to migrate application running on Existing Azure Data Centre seamlessly to Upcoming Azure Data Centre with zero or minimum downtime.
- The resources migrated should have the same deployment topology as original

Mindtree's end-to-end Services for Cloud Transformation

A holistic approach from Advisory to Operations to transform Customer business and drive innovation and efficiency



Platforms and Tools powering Migration



Mindtree

Migration Journey

1 **Planning & Prep**

- Objectives
- Success Criteria
- Approach
- Governance

Culture

Tools

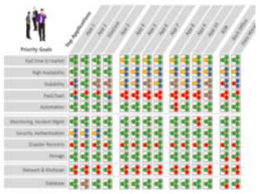
Change

Assessment & Execution

2 **Discovery & Assessment**

Inventory of apps, infra, databases

Cloud fitment



Move Groups

5 **Migration**

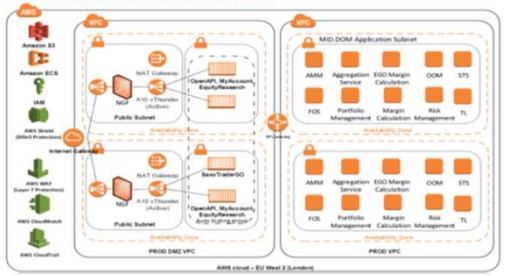
Migration Batches

Migration Factory

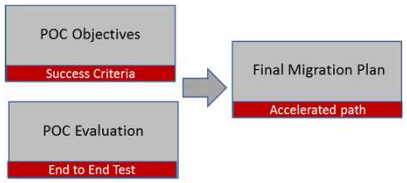
Program Management

3 **Design & Build**

Target Environment Architecture Build



4 **Pilot**



Successful POC

Migration Schedule

Mindtree

Approach for Azure to Azure Migration

Portfolio Analysis

Current state discovery
Architecture audit
Security roadmap
Change management
Roadmap and strategy
Migration plans and timelines

Cloud Build

Establish Foundational Layers
Establish Security Model

Cloud Migration Factory

Migration factory/Patterns
Cloud-to-cloud movement

Cloud Governance

Standardization
Secure governance
Finance management

Managed Cloud

Cloud sustenance
CloudOps and DevOps

ComPass ATLAS

Discovery, Automated app. analysis and cloud assessment

MVC

Templatized Foundation Setup

ComPass MVC

Migration Factory and Templates

Assess & Plan | **Build & Migrate** | **Govern & Manage**

Mindtree

Core Tenets Migration

Factory Migration

- High Velocity Migration powered by factory-based approach
  - Leverage Mindtree's migration factory approach to migrate applications to cloud
  - Migration Factory driven by Automation, Adaptive Learning and Analytics
- Optimize the licensing costs in Cloud by smart assessments

Same Target State

- Target State to be same as Current State
- Hybrid Connectivity to remain as it is
- Governance Model including tools and process to be identical as current
- Databases and persistent store should be identical with latest data
- Extend current security model

Cloud First Platform driven approach

Adopt Cloud First Platform driven approach for the new product

- Automation enabled DevSecOps pipeline
- Cloud Native adoption

Assessment and Plan

Friction Free Discovery

Cloud Advisory

Portfolio Analysis

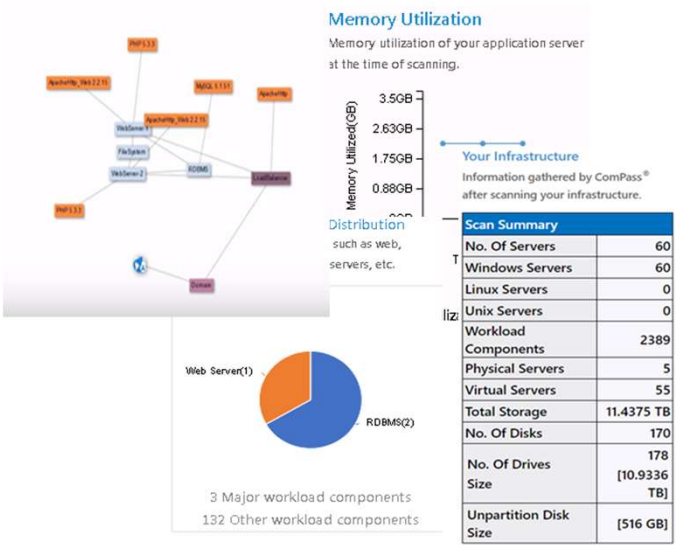
Realized through Platforms

ComPass ATLAS

Discovery, Automated app. analysis and cloud assessment

Custom Powershell Scripts

Backed by Experience and Expertise



Scan Summary	
No. Of Servers	60
Windows Servers	60
Linux Servers	0
Unix Servers	0
Workload Components	2389
Physical Servers	5
Virtual Servers	55
Total Storage	11.4375 TB
No. Of Disks	170
No. Of Drives Size	178 [10.9336 TB]
Unpartition Disk Size	[516 GB]

Scaled through the cloud migration factory

Assessment and Design

- Detailed analysis and Move groups identification
- Migration approach and sequencing finalization

Planning Desk

- Identify migration batches
- Maintain migration calendar
- Communication management

Migration Desk (x4)

- Technology aligned migration batches
- Migration tools / scripts updates
- Migration to target platform, verification
- Governance & reporting

Testing Desk

- Validation
- Smoke testing

Handover Desk

- Handover to Ops
- Support documentation

Reviews, Approvals, Project & Change Management Desk (Through ServiceNow)

- Responsible for reviews and approvals on the deliverables from each desk
- Course correction, overall plan and strategy updates
- Change & risk management

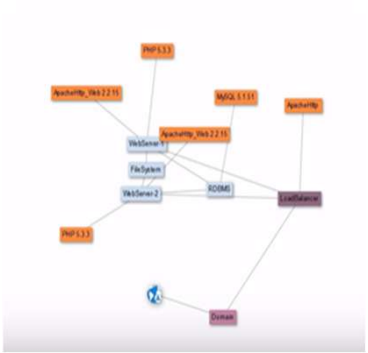
Learning & Knowledge Management

Reporting and Analytics

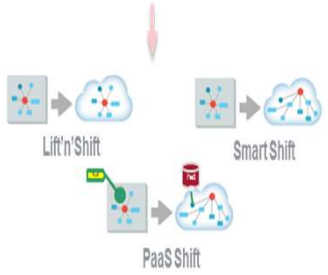
ComPass Platform enabling our Cloud migration factory

ComPass

Assessment and Analysis → Migration → Testing and Validation → Real-time Reporting



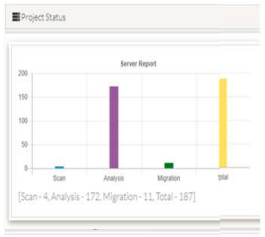
Dependence Mapping
Migration Batches



Automated Migration

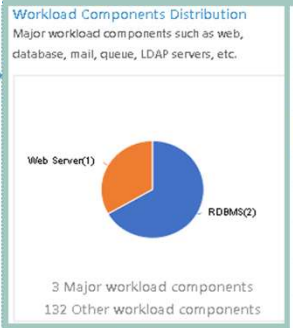
BOTS

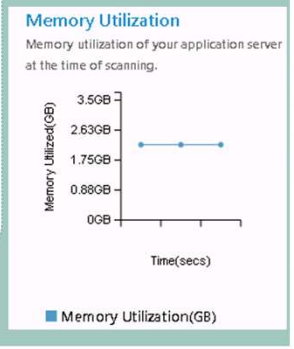
Automated Testing & Validation



Dashboards

Assessment sample snapshots

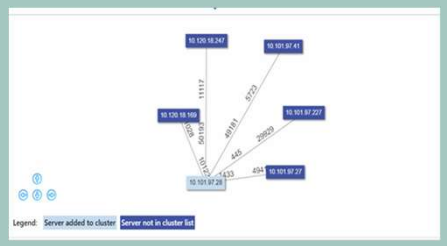


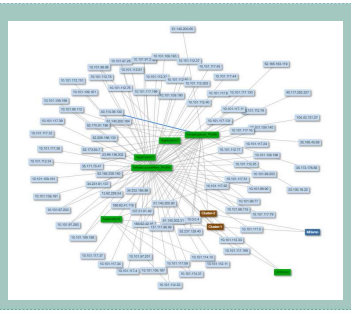


Your Infrastructure

Information gathered by ComPass® after scanning your infrastructure.

Scan Summary	
No. Of Servers	60
Windows Servers	60
Linux Servers	0
Unix Servers	0
Workload Components	2389
Physical Servers	5
Virtual Servers	55
Total Storage	11.4375 TB
No. Of Disks	170
No. Of Drives Size	178 [10.9336 TB]
Unpartition Disk Size	[516 GB]





PaaS TCO Match Over 3 Years

Cloud Name	Total Recurring /Month	Total Cost Over 3 Years
Microsoft Azure	$691	$24876
AWS	$388	$13968

Discovery & Assessment Approach

Planning → Discover → Analyze → Recommend

01 Planning & Readiness

Preparedness to start the assessment & pre-requisties setup for scan and disvoery

02 Discovery

Discovery of DC Infrastucture using Mindtree tools & accelerators

03 Analysis

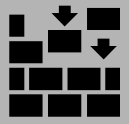
Study the Inventory and understading of Current environment and architecture, Analyze the Cloud fitment and target architecture reqirements

04 Recommend

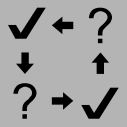
After a thorough analysis to provide a clear reporting of Cloud fitment and Migration approach

Discovery

- Tool Setup and Scan for Landscape
- ‘As Is’ Discovery
- Data collection from SMEs



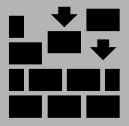
- Application Owners
- Infrastructure Owners
- DC and Process Owners
- Key IT Stakeholders Mapping

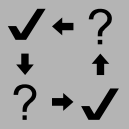


- Understanding existing Infrastructure landscape
- Understanding of applications, infrastructure, tools & other integrations
- Understand current security and regulatory requirements
- Interviews with SMEs & Owners to validate
- Gather existing policies, architecture diagrams, artifacts and runbooks

Analysis

- Functional and technical understanding
- Inferences from Discovery phase





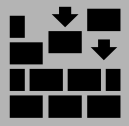
- Process Owners
- Application Solution Architects
- Infrastructure & Cloud Consultants & Architects
- Database Architects
- Business Analysts

- Analysis of the Infrastructure & Applications based on the As – Is study, Tools report and Interview
- Analysis of business flow, application dependencies and mapping
- Understanding and analysis of network, storage, DR , back up and current ways of working
- Operations & process analysis
- Policies, procedures, standards, support analysis
- Analysis of performance and critical issues

- Process Owners
- Architects
- Director & CIO

- Assessment Summary & Detailed Report
- Inventory Report

Recommend

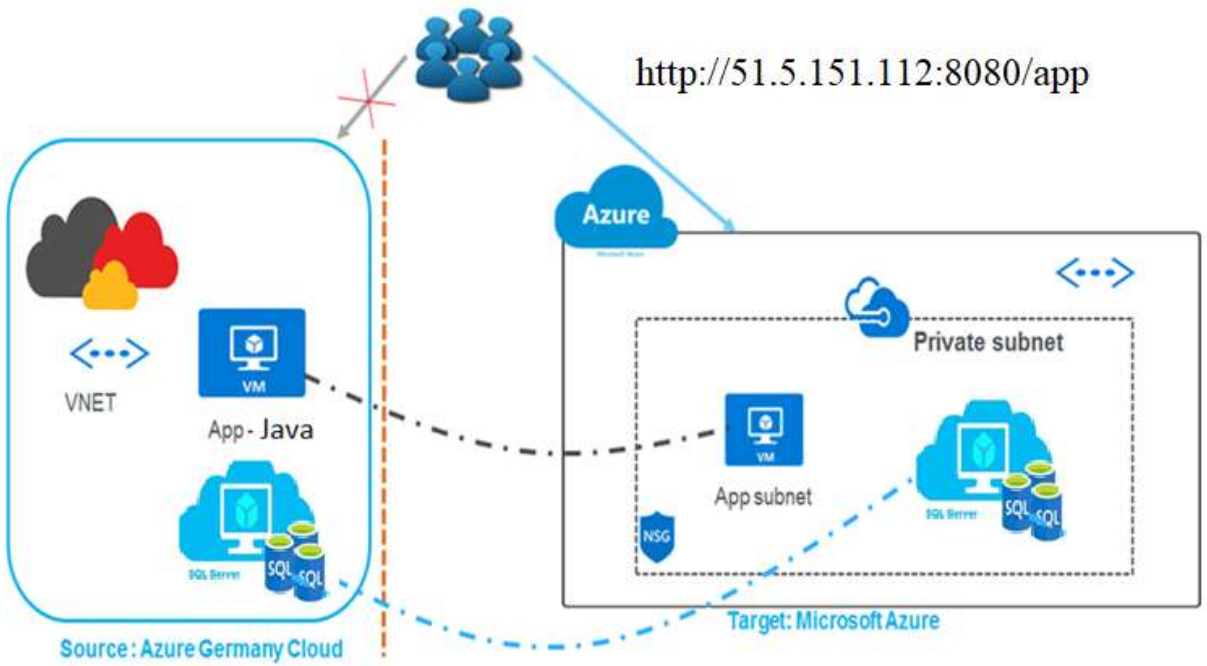


- Prepare the summary and detailed report
- Validate the analysis and reporting data with Architects
- Present the final report on assessment and key attributes
- Planning of next phase, migration and approach
- Submit the report and sign off current phase

How we did it ?

Demo1 : Migrate Iaas and Paas Resources

Migrating Web Application deployed on Highly Available VM's



High level Migration steps:

- ASR shall be used for the VM migration (lift and shift)
- Bacpac and Azure Data sync shall be used for the DB migration and continuous replication
- Ensure the data is sync to latest at target location and application is working offline connecting to the target DB.
- Point DNS to the target location where user can access application.

Approach

Step	Approach
1	Used Custom PowerShell Scripts to gather inventory details
2	Further assessment and inventory analysis performed manually
3	Created Migration Sequence
4	Re-Deployed App on Azure App Service
5	Migrate resources (Scripts, Tools)
6	Validate , Test & Cut Over (Manual)

Samples

Discovery Scripts

azure-ps.txt

reportps.txt

coverstorageaccount

Inventory Output

azure-report-german_cloud.zip

IaaS-VMlevel
etails _ Discovery outp

Storage Report

Resource Graph

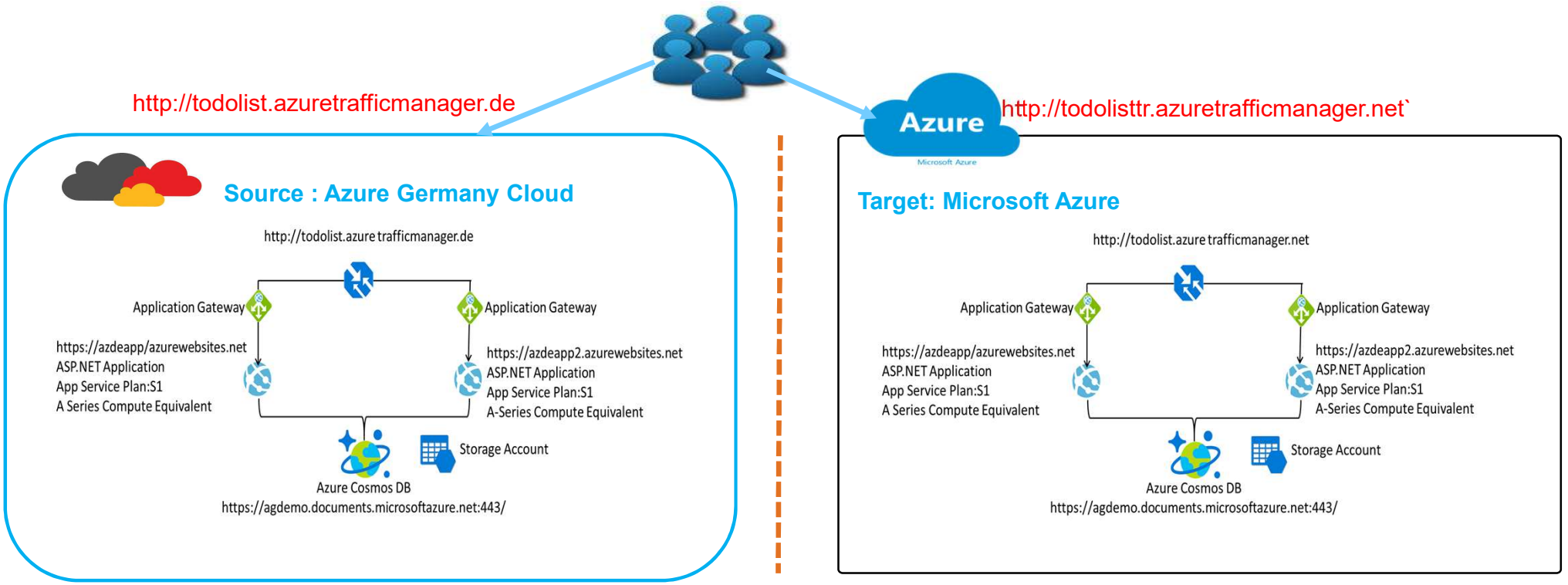
Report_AppServices

DB_Report

How we did it ?

Demo2 : Migrate Azure Paas Resources

Use case 1: PaaS services Migration (two tier Application architecture(App services + Azure CosmosDB)



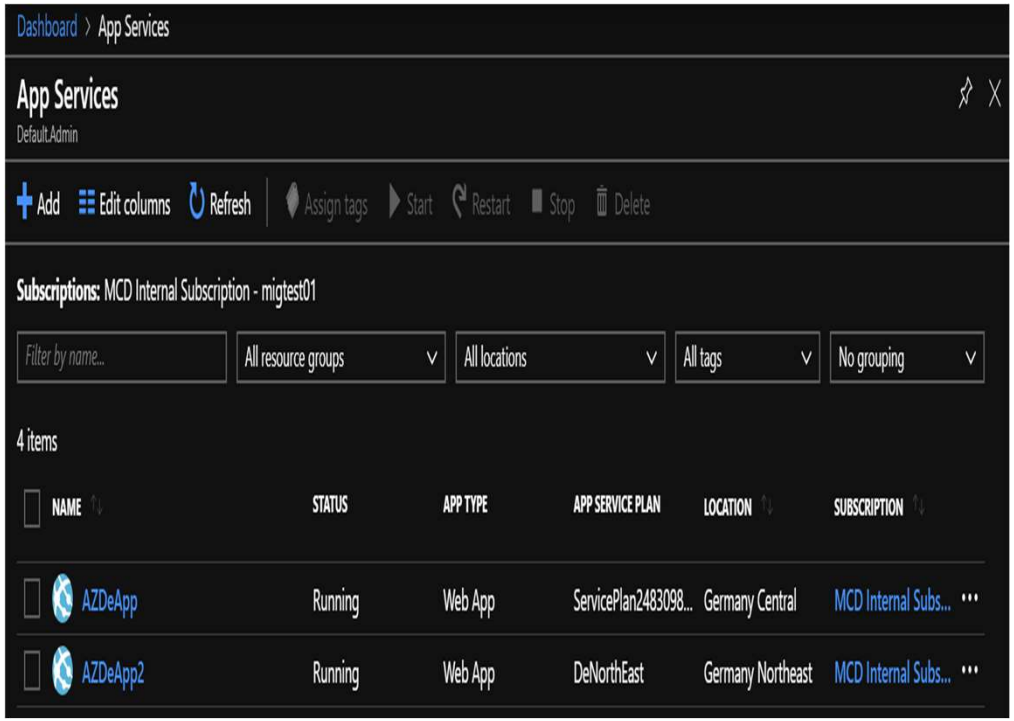
Mindtree

Approach

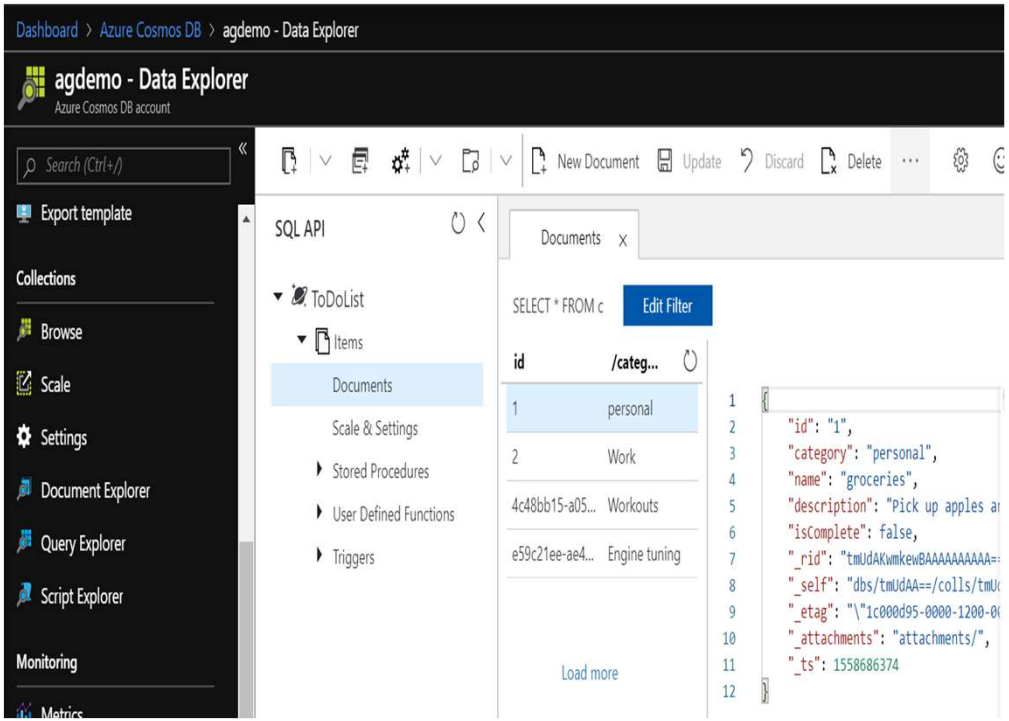
Step	Approach
1	Used Custom PowerShell Scripts to gather inventory details
2	Further assessment and inventory analysis performed manually
3	Created Migration Sequence
4	Create and configured the App service
5	Re-Deployed application
6	Used AZ-Copy to migrate Storage Accounts
7	Document DB Data Migration Tool used for Cosmos DB Migration
8	Ensured that data is in sync, Application is able to access resources, Performed Security Testing
9	DNS Switch to do a cut over

App Services on Azure Germany

ASP.NET Application deployed



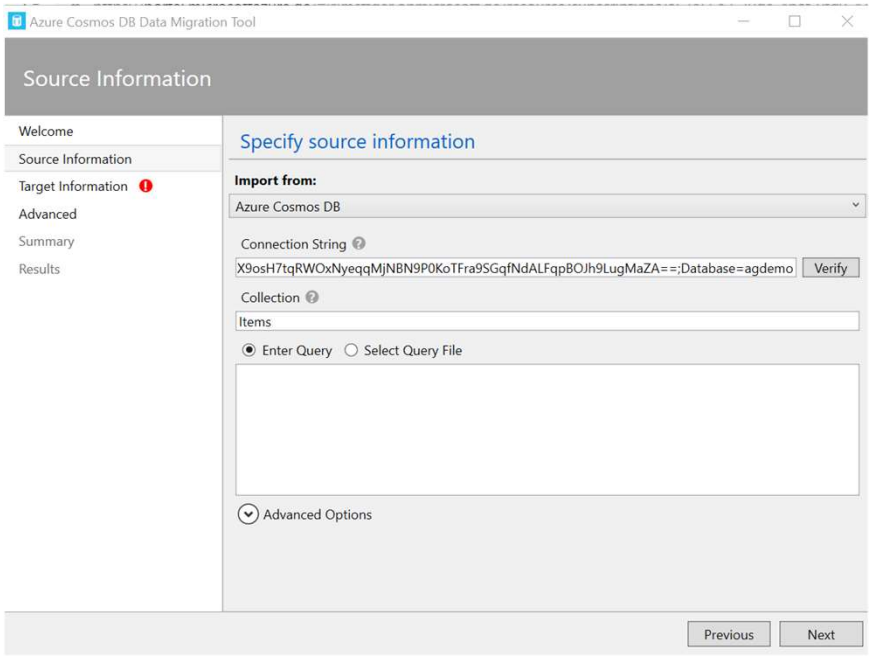
Source Account Cosmos DB Collection



Mindtree

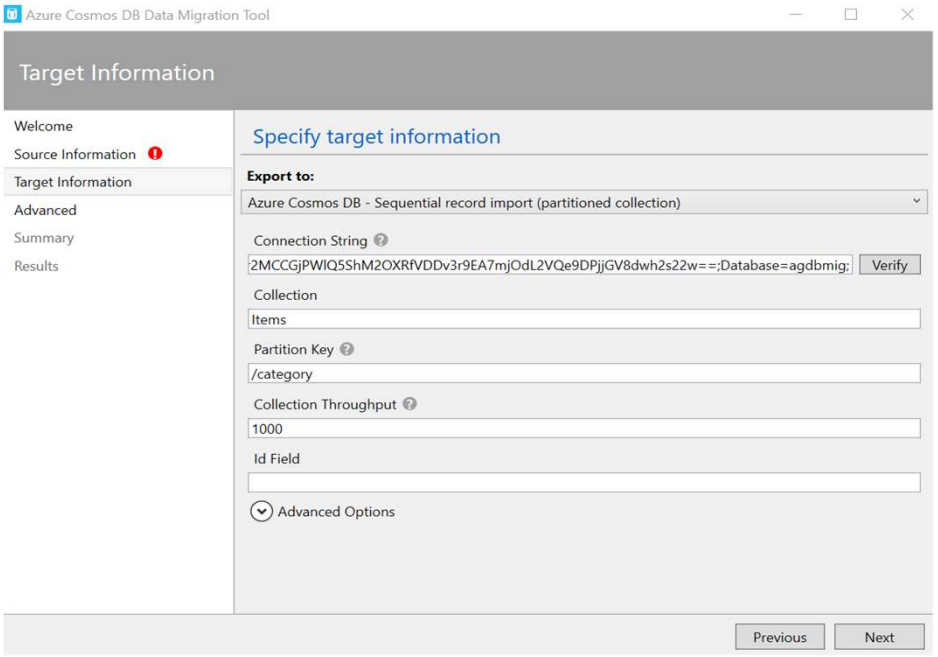
DB Migration using tool

Source – Cosmos DB



AccountEndpoint=<CosmosDB Endpoint>;AccountKey=<CosmosDB Key>;Database=<CosmosDB Database>;

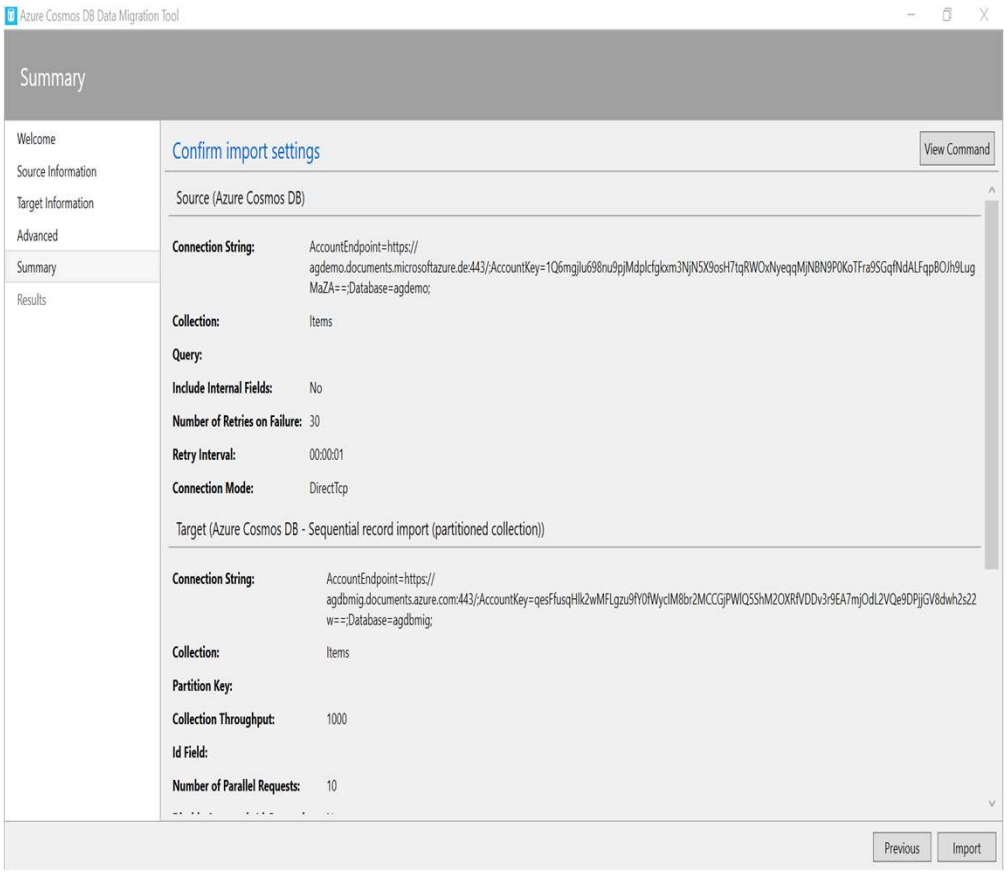
Target - Cosmos DB



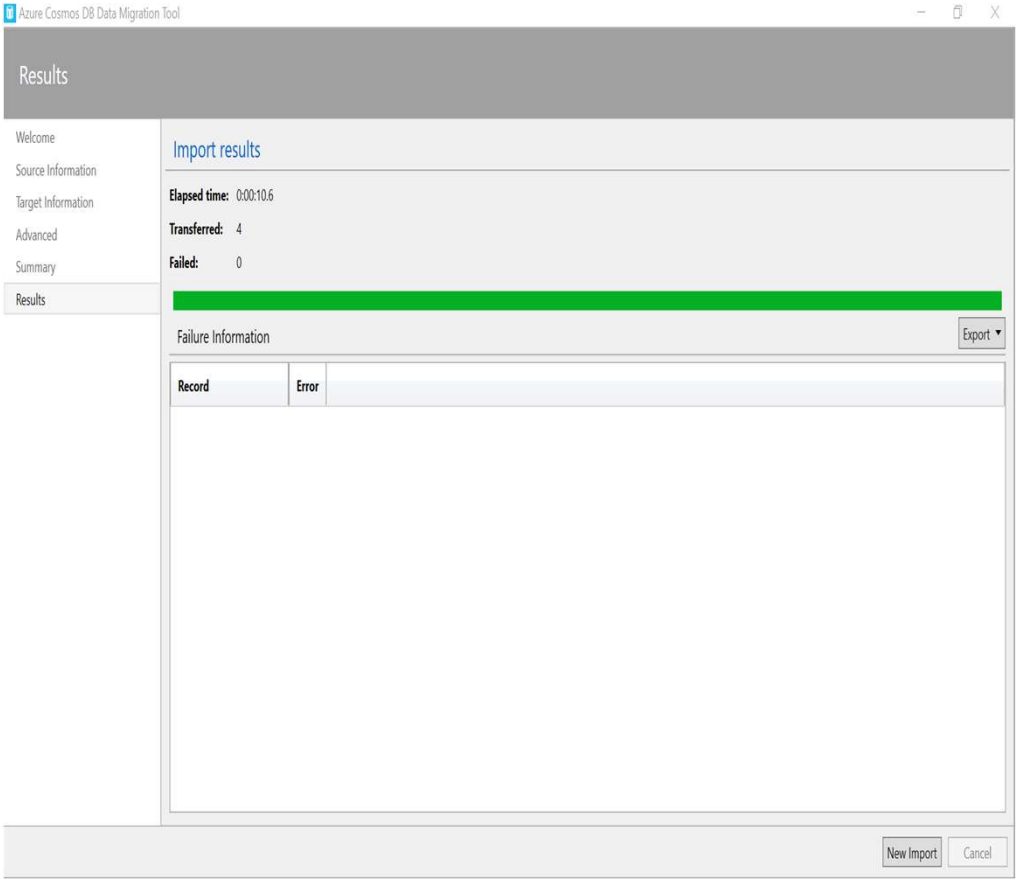
Mindtree

DB Migration

Summary

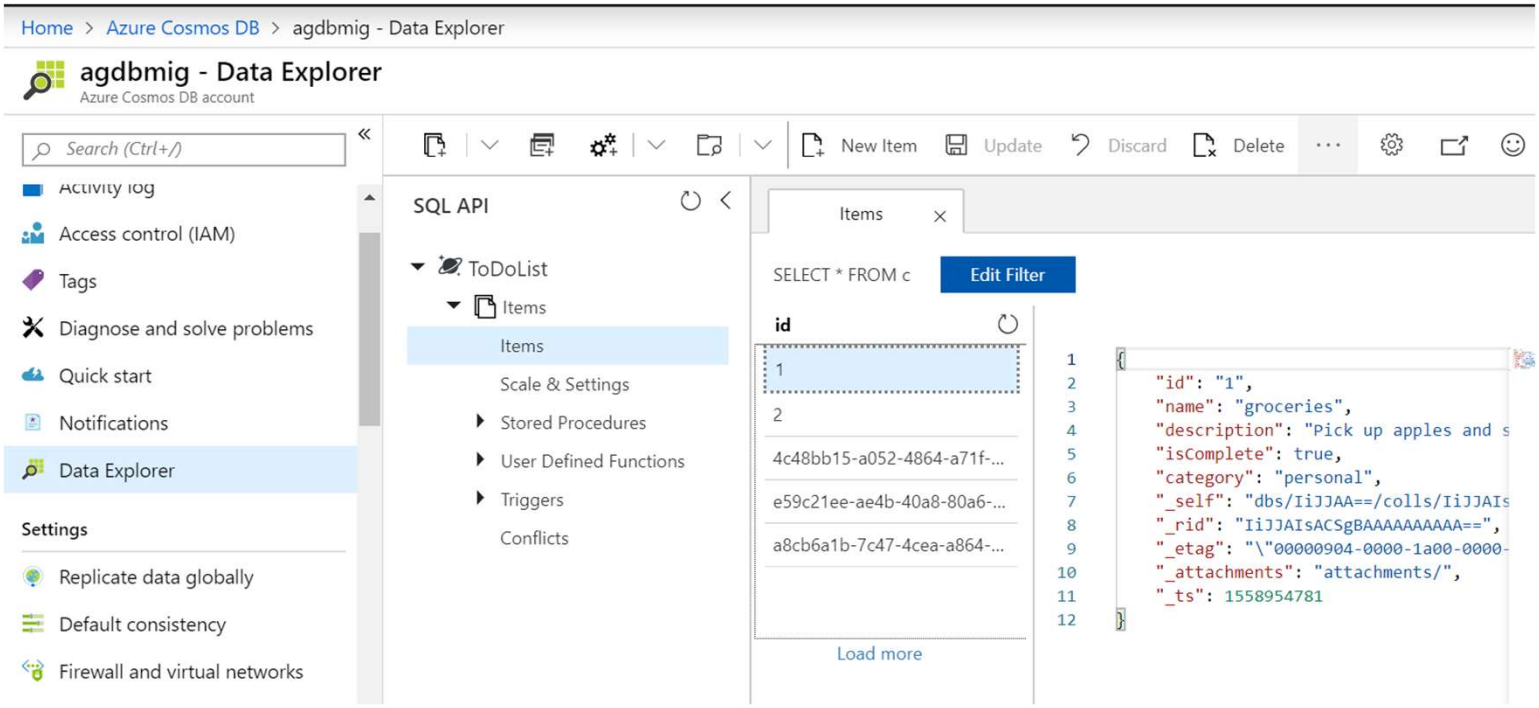


Results



Destination DB with collections

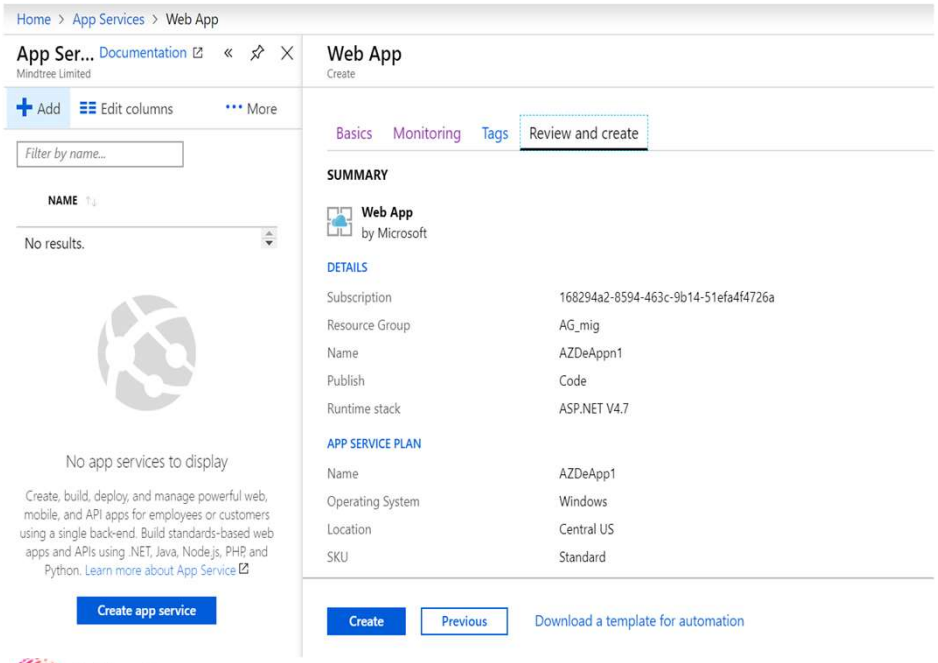
- Collections migrated from source DB in Azure cloud Germany



APP Service

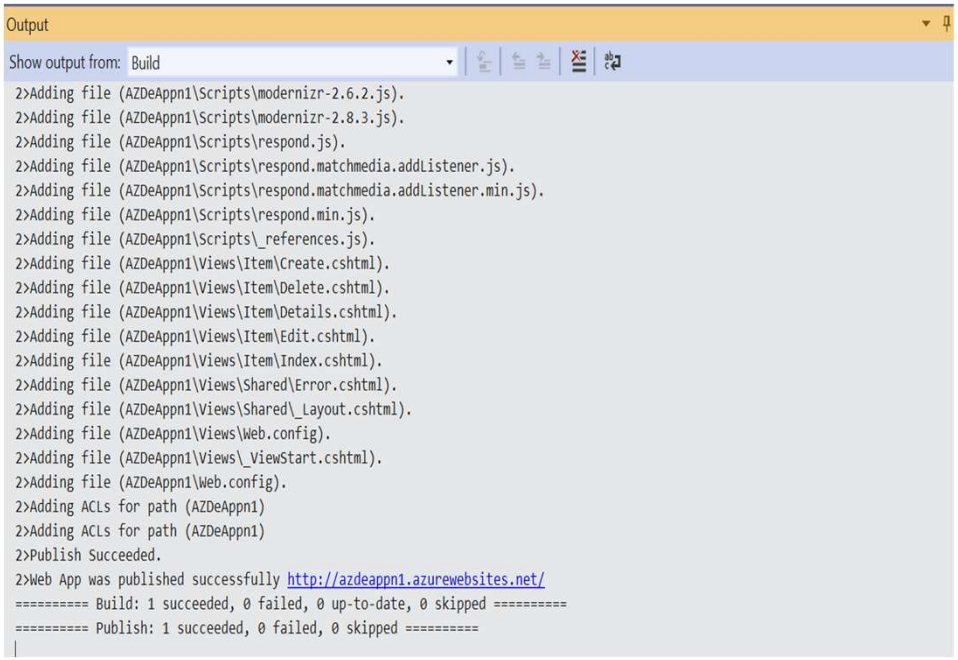
Creation in destination account

- As there is no supported tool to migrate APP Services, it has to be created manually or through ARM templates and redeploy the Application.
- Created and configured the App service as per the application requirements.

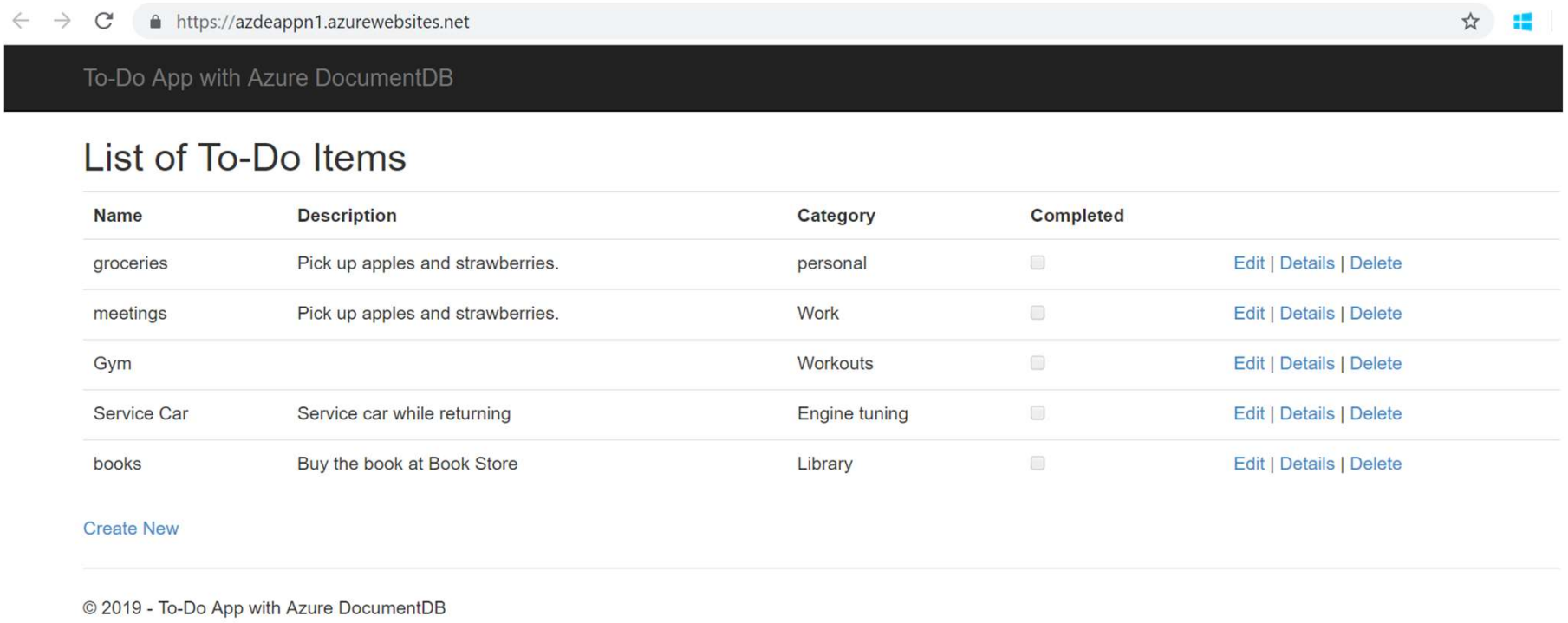


Visual Studio 2019

- Published sample .NET Application to the target App Services in destination Account
- Database connection string is embedded in Web.config which points to the newly created cosmos DB with data migrated.



TODOLIST Application Page – Destination App service



Why Mindtree

Expertise in Migration

Mindtree is engaged with Microsoft for years in migration space and have experience in building China Sovereign Cloud

Experience with Scale

Proven framework and execution approach

Availability of Skills

Ready availability of Certified engineers to take up highly confidential and secure workload

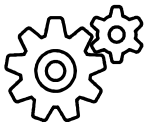
Ready to start

Knowledge of existing migration model, Mindtree is delivery ready and can start the project faster than any other partner.

Quality of Delivery

High Performing – Won Month on Month Incentives even with higher volume compared to others

Factory Model



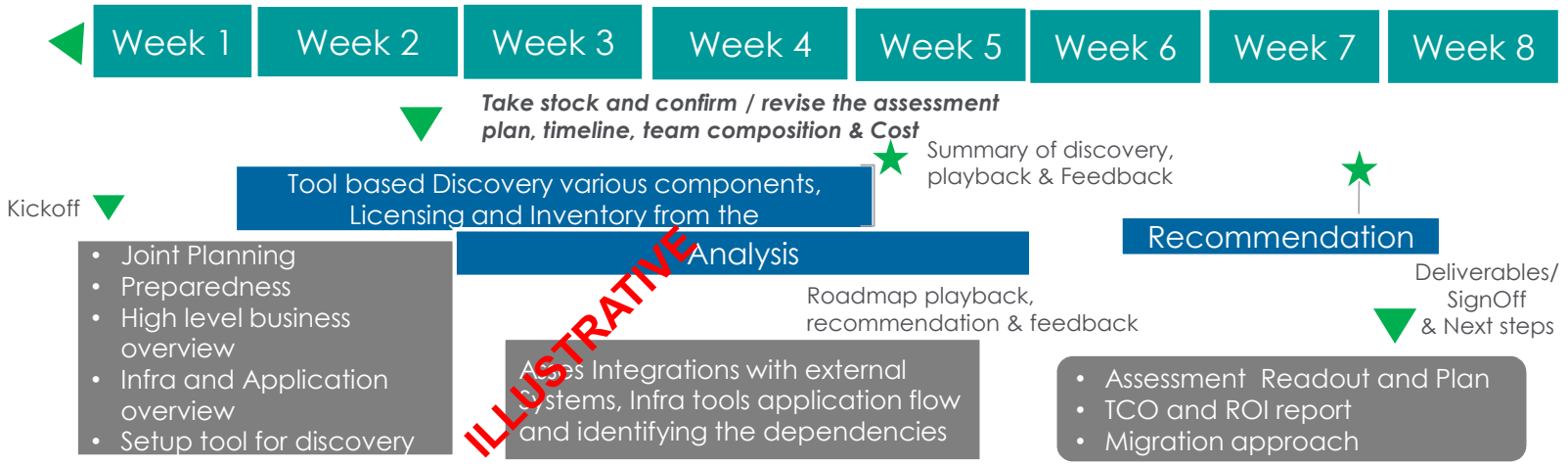
Factory Model & streamlined process to migrate workloads seamlessly

Thank You

Annexure

Assessment Engagement Plan (Tool based) - Sample

** Its important that Customer IT meets the Discovery prerequisite before week -1 starts .Prerequisite shall be shared in advance.*



- The assessment will be conducted for 8 weeks (Sample plan is depicted above)
- We have factored efforts based on the tool approach for Discovery & Assessment, if it is manual then the effort will change
- The landscape/Datacenter covers of 50 different application and 500 Servers
- Onsite - Two Mindtree Minds – 1 Sn Infrastructure Architect and 1 Application Architect will be based out of Customer place, for 8 weeks
- Offshore – Above Architects will be supported by multiple SME's from offshore – Cloud expert, Databases expert, Application and Infra Architects, Network and Migration Engineers (6)
- Dedicated Project Manager will be allocated for the assessment

Mindtree

Tool - **Comparison** Report

	Corent	RISC Networks	Device42
General Features			
On Premise Hosting	Yes	Yes	Yes
Cloud Hosting	Yes	Yes	Yes

Corent :
- Complete Cloud migration tool with Discovery, Assessment and Migration capabilities

Device42 :
- Can be used for Discovery phase and Infra/Application mapping for Assessment

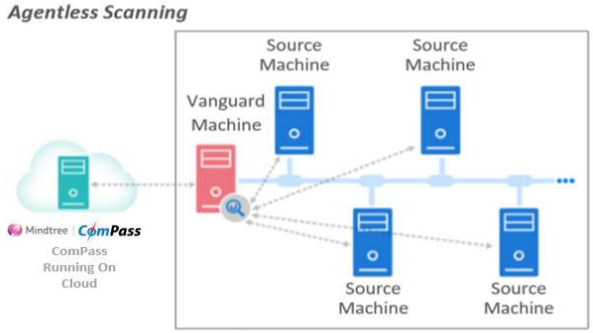
RISC Networks :
- Can be used as Discovery and Assessment tool
- Provides complete Agentless discovery
- Provides cost modelling for Microsoft Azure

Microsoft Excel Worksheet

Corent- Infra/Application Discovery Tool

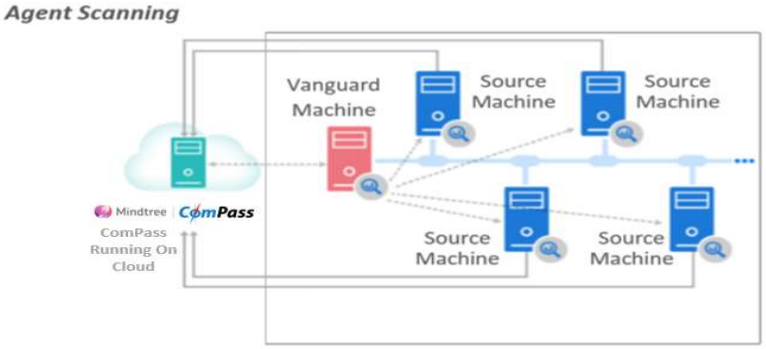
Agentless Scanning:

Scanning the source machines by installing the agent in a vanguard machine in the network, which will have access to all the source machines



Agent Scanning:

Scanning the source machines by installing the agent in all the source machines through Vanguard



ILLUSTRATIVE

Cloud Strategy Analysis:

Cloud Ready:

- Number of servers which can be migrated with no charges
- Cloud Ready with additional service efforts: Number of servers which can be migrated with additional service efforts such as changing OS/Version/Architecture/RAM in servers

Migration Strategy:

- **Life & Shift Migration:** Number of servers which can be migrated as-is using Life & Shift mode
- Life & Shift Migration with additional service efforts: Number of servers which can be migrated as-is using Life & Shift mode by additional migration tools available within ComPass
- **Possible only with Smart Shift:** Number of servers which can be migrated as-is only using Smart Shift method using Agent scanning method, your infrastructure needs to be scanned for gathering more details about workload components to perform Smart Shift migration

PaaS Strategy:

- **PaaS Shift Migration:** Number of servers which can be migrated to Cloud as PaaS service by provisioning and migrating your workload components in Cloud with the help of ComPaaS

- **PaaS Shift Migration with additional service efforts:** Number of Servers which can be migrated to cloud as a PaaS service using ComPaaS by following the approaches/recommendations provided by the Cloud providers with minimal manual efforts

Infrastructure Summary Report

Corent Analysis reports

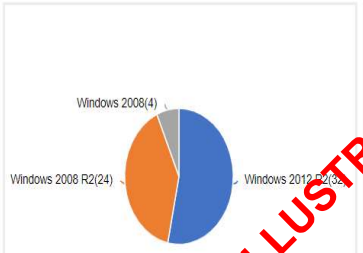
Your Infrastructure

Information gathered by **Corent** after scanning your infrastructure.

Scan Summary	
No. Of Servers	60
Windows Servers	60
Linux Servers	0
Unix Servers	0
Workload Components	2389
Physical Servers	5
Virtual Servers	55
Total Storage	11.4375 TB
No. Of Disks	170
No. Of Drives Size	178 [10.9336 TB]
Unpartition Disk Size	[516 GB]

OS Distribution

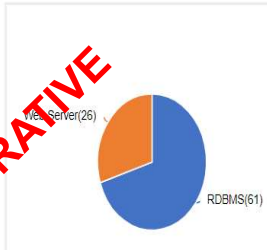
Classification of servers based on OS.



3 Operating Systems

Workload Components Distribution

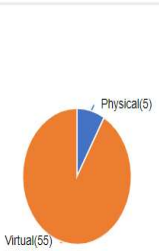
Major workload components such as web, database, mail, queue, LDAP servers, etc.



87 Major workload components
2302 Other workload components

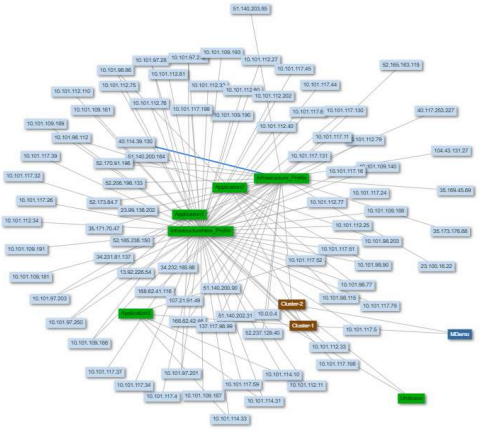
Server Type

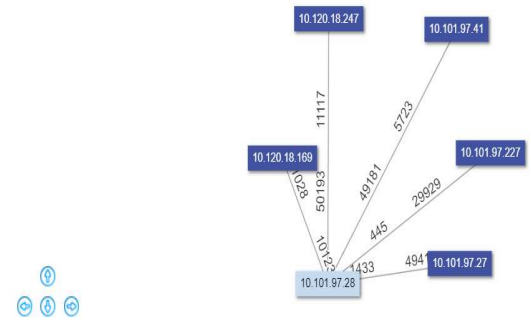
Distribution of servers based on hypervisor.



Physical Servers: 8%

ILLUSTRATIVE





Your Preferred Clouds	Cloudability Status
Azure	Cloudable

Background & purpose

- Deploy the application and discover using the scripts
- Demo the output against a test environment
- Two tier architecture consists of ASP.NET and Cosmos DB.
- Demo the work involved in planning for the migration based on the script output
- Business expects to migrate application running on German Cloud seamlessly to Global Azure with zero downtime or minimum downtime.