CLOUD4C

SAP on Azure

SAP Solution on Azure – Sizing, Estimates & SOW

Microsoft Azure

TABLE OF CONTENTS:

1. Introduction to Cloud4C:

Cloud4C (also referred as C4C) is a Cloud managed services company specializing in hosting and managing mission critical workloads of large enterprises with stringent compliances. Catering to 4000+ customers globally including 60+ Fortune 500 companies. Cloud4C is your cloud evolution partner providing end to end cloud managed services for enterprises; helping you gain total-control of the cloud game now and in the future. With presence in more than 52 locations globally with local Cloud Datacenters, Cloud4C brings in a unique value proposition of meeting your compliance needs of local regulations and data residency with 26+ security tools and 40+ security controls.

Our 2000 technical experts with 750+ Public Cloud Certified experts across industries offer more choices and endless possibilities to you as your trusted Partner, driving your cloud digital transformation across our own private cloud and Hyperscale cloud platforms like AWS, Azure, Google, etc.

Europe
- Netherlands
- Switzerland
- UK
- Portugal
- Turkey

North America
- USA
- Mexico
- Canada

- India
- Sri Lanka

Asia Pacific
- Japan
- Singapore
- Thailand
- Malaysia
- Indonesia
- Philippines
- South Korea
- Vietnam
- Hong Kong

→ 25 Countries - 52 Locations

→ Local In-country services

→ Certified and skilled Global SMEs

South America
- Colombia

ME
- Saudi Arabia
- UAE
- Qatar
- Bahrain

ANZ
- Australia
- New Zealand

We are a Global cloud player with 2,000+ employees with 1,500+ dedicated staff in Service Delivery & customer support. Cloud4C hosts In-house expertise on Network, Storage, OS, DB, Security, etc.

All support services are delivered through Global NOC & SOC with all certified resources available 24x7x365 for customers.

Any Cloud. Any Platform. Total Control

Cost Optimization

Rapid Scaling for Compute

Ease of Application Deployment

Marketplace

Plug and Play as a Service

Platform Services

Global Infrastructure

Massive Data Object Storage

Universal Cloud Portal

Cloud4C Value Addition:

We are a Global cloud provider with 12+ years of experience in Cloud & managed hosting. Our processes are ITIL based & ISO certified. Our solution frameworks are on par with global standards with a holistic approach to Client needs.

We are a Technology neutral & vendor agnostic company with experience & versatility to manage multiple technology platforms.

Team v/s Group

Total Ownership

Full scale automation

Cost Optimization

Tried & Tested SOP

10 ways
In which our Managed services is a truly differentiated experience

Network & Security

CoE's

Underlying Infrastructure

Cloud capabilities

Relevant experience

10 Paradigms that define Cloud4C

- ✓ Cloud4C believes in harnessing the combined knowledge of a team of experienced professionals rather than create silos of expertise with subject matter specialists.
- ✓ Strive to implement full scale automation in all processes.
- ✓ Tried & tested Standard operating Procedures made by a vast pool of experience.
- ✓ Centre of Excellence philosophy to assimilate the combined knowledge of each individual for providing innovative services
- ✓ Creating Industry specific frameworks on Azure platform
- ✓ Experience in servicing Clients across all industry verticals in challenging environments.
- ✓ Services supported by underlying Azure infrastructure, fully managed by Cloud4C
- ✓ Bringing enterprise grade security within the reach of every Client.
- ✓ Focusing on reducing the TCO through Cloud adoption leveraging Azure native services.
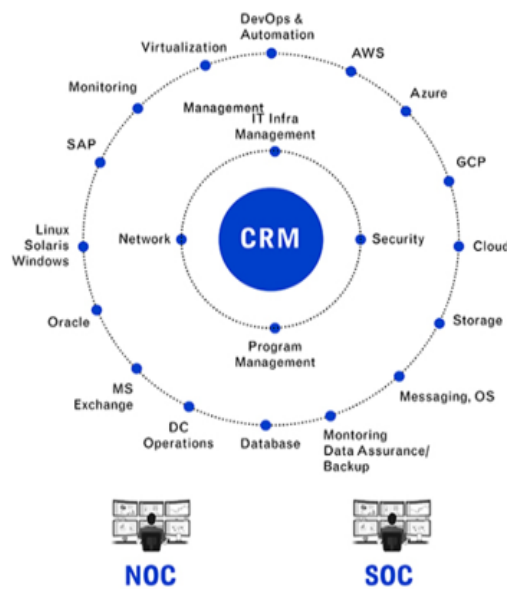- ✓ Total ownership philosophy that ensures Client satisfaction at every stage of the project.

Centers of Excellence (CoEs)
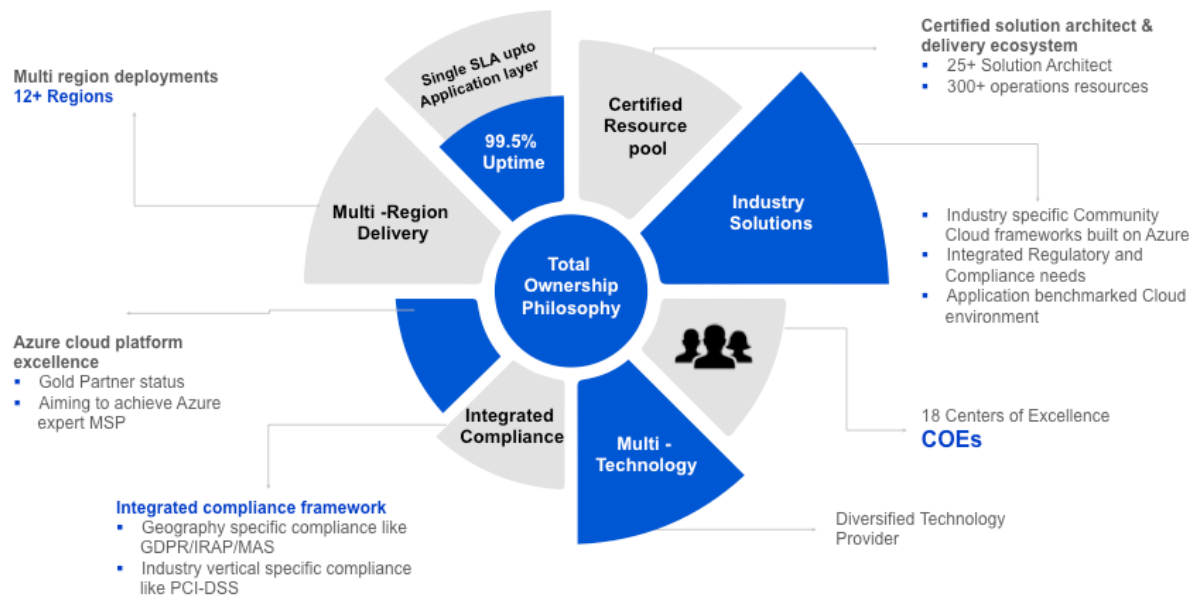
Our current CoEs and capabilities:

Advantages of the Centre of Excellence (COE) Model:

- 24*7 System Monitoring & Management from Central/Local NOC/SOC.
- COE model promotes expertise based on cumulative knowledge pool
- Responsive Support Staff
- Highly Skilled Resources
- Mature IT Service Management
- Single Point of Contact
- SME on demand
- Adherence to Quality and Governance
- Service Level Management

Processes Leveraged to Ensure Quality:

- ISO 20000:1 & 27001 for Security
- ITIL & ISO 9000:1 for Service Management
- Special processed invented on top of ITIL for service improvement
- Lean Six Sigma for Continuous Process Improvement
- ISO 22301 for Business Continuity
- SOC-1 & SOC-2

Cloud4C Value Proposition:

Multi region deployments
12+ Regions

Single SLA upto Application layer

99.5% Uptime

Certified Resource pool

Multi -Region Delivery

Total Ownership Philosophy

Industry Solutions

Certified solution architect & delivery ecosystem
- 25+ Solution Architect
- 300+ operations resources

- Industry specific Community Cloud frameworks built on Azure
- Integrated Regulatory and Compliance needs
- Application benchmarked Cloud environment

Azure cloud platform excellence
- Gold Partner status
- Aiming to achieve Azure expert MSP

Integrated Compliance

Multi - Technology

18 Centers of Excellence
COEs

Integrated compliance framework
- Geography specific compliance like GDPR/IRAP/MAS
- Industry vertical specific compliance like PCI-DSS

Diversified Technology Provider

2. Certifications & Compliances

- **TIA Tier-4** Certification - Industries highest Uptime of **99.995% for Indian DC only**
- **Tier 3 – For Global DC's**
- **ISO 27001** – Information Security Management System
- **ISO 9001**:**2015** – Quality Management System
- **ISO 20000-1** – IT Service Management System
- **ISO 22301** – Business Continuity Management System
- **ISO 27017** – ISMS Cloud Security
- **ISO 27018** – Management System for Protection of PII in Public Cloud
- **PCI DSS** – PCI Certified cloud environments
- **SOC-1, SOC-2** - Organization wide security Audit process
- **SAP Certified for** Cloud Hosting, SAP Premium Partner (SAP HEC), etc.
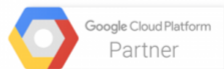- **Global Partner for** Azure, AWS, Google

Global Compliances

Global Certifications

SAP Partner

SAP® Certified in Application Management Services

SAP® Certified in SAP HANA® Operations Services

SAP® Certified in Hosting Services

SAP® Certified in Cloud Services

Gold
Microsoft Partner
▦ Microsoft

Azure Expert MSP

aws partner network
Advanced Consulting Partner

Google Cloud Platform Partner

CERTIFICATIONS

ISO 27001, 27017, 27018
Ensuring data security and safety

ISO 22301
Business Continuity Management System

ISO 20000-1
Efficient and timely service delivery

SOC-1, SOC-2
Organization wide process

PCIDSS V3.2
Payment Card Security

ISO 9001:2015

PEOPLE

1800+ People Strong Group

Certified resources

- **Hyperscaler Platform Certified**
  - **Azure - 750**
  - **AWS - 200**
  - **GCP -100**
- **VM Ware Certified - 300+**
- **ITIL, COBIT, CISA**
- **Six Sigma, PMP**
- **SAP Basis, HANA**

More than 75% of the people resources are dedicated to customer support (Service Delivery) operations

Capabilities to meet any Global standards

3. Azure Platform

Microsoft Azure (formerly Windows Azure is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through Microsoft-managed data centers. It provides software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS) and supports many different programming languages, tools, and frameworks, including both Microsoft-specific and third-party software and systems.

Datacenters and regions

Azure is a global cloud platform that is generally available in many regions around the world. When you Provision a service, application, or VM in Azure, you are asked to select a region. The selected region represents a specific datacenter where your application runs. For more information, see Azure regions. One of the benefits of using Azure is that you can deploy your applications into a variety of datacenters around the globe. The region you choose can affect the performance of your application. It's optimal to choose a region that is closer to most your customers, to reduce latency in network requests. You might also select a region to meet the legal requirements for distributing your app in certain countries.

Regions

A region is a set of datacentres deployed within a latency-defined perimeter and connected through a dedicated regional low-latency network.
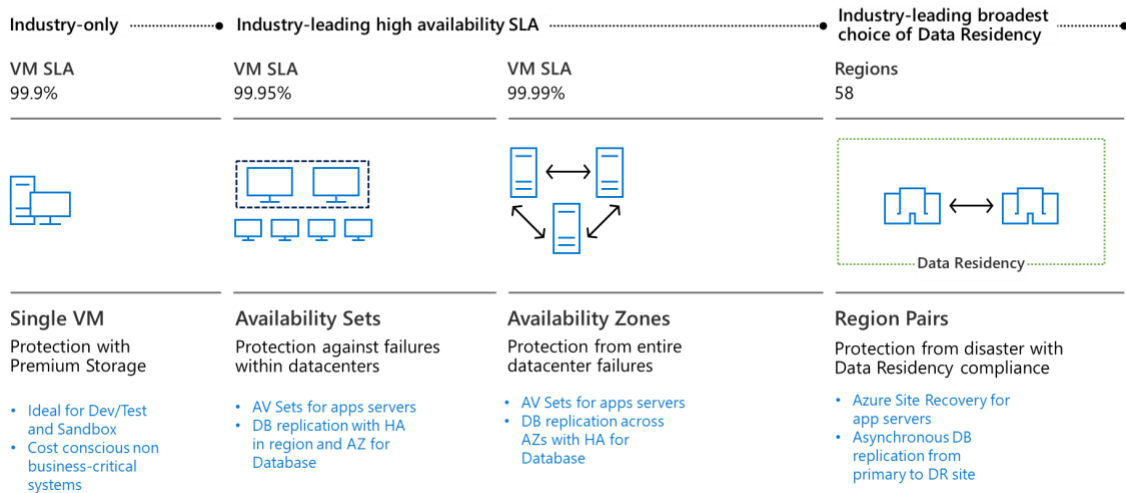
Geographies

A geography is a discrete market, typically containing two or more regions, that preserves data residency and compliance boundaries.

Availability Zones

Availability Zones are physically separate locations within an Azure region. Each Availability Zone is made up of one or more datacenters equipped with independent power, cooling and networking.

Azure VM | Availability and recoverability
Industry-leading high availability SLA

Industry-only	Industry-leading high availability SLA		Industry-leading broadest choice of Data Residency
VM SLA 99.9%	VM SLA 99.95%	VM SLA 99.99%	Regions 58
Single VM Protection with Premium Storage	**Availability Sets** Protection against failures within datacenters	**Availability Zones** Protection from entire datacenter failures	**Region Pairs** Protection from disaster with Data Residency compliance
• Ideal for Dev/Test and Sandbox • Cost conscious non business-critical systems	• AV Sets for apps servers • DB replication with HA in region and AZ for Database	• AV Sets for apps servers • DB replication across AZs with HA for Database	• Azure Site Recovery for app servers • Asynchronous DB replication from primary to DR site

Azure services

Azure offers many services in its cloud computing platform. Some of the common services are
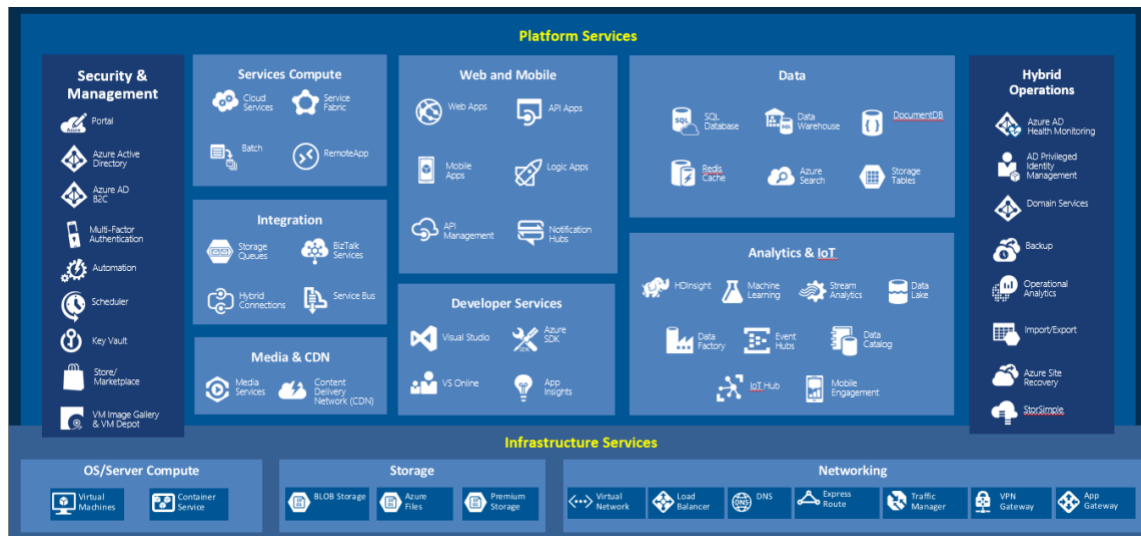
Compute services

Services for hosting and running application workload:

- Azure Virtual Machines—both Linux and Windows
- App Services (Web Apps, Mobile Apps, Logic Apps, API Apps, and Function Apps)
- Azure Batch (for large-scale parallel and batch compute jobs)
- Azure RemoteApp
- Azure Service Fabric
- Azure Container Service

Data services

Services for storing and managing data:

- Azure Storage (comprises the Azure Blob, Queue, Table, and File services)
- Azure SQL Database
- Azure DocumentDB
- Microsoft Azure StorSimple
- Azure Redis Cache

Application services

Services for building and operating applications:

- Azure Active Directory (Azure AD)
- Azure Service Bus for connecting distributed systems
- Azure HDInsight for processing big data
- Azure Scheduler
- Azure Media Services

Network services

Services for networking both within Azure and between Azure and on-premises datacenters:

- Azure Virtual Network
- Azure ExpressRoute
- Azure-provided DNS
- Azure Traffic Manager
- Azure Content Delivery Network

Azure Global Security Compliance:

Take advantage of more than 90 compliance certifications, including over 50 specific to global regions and countries, such as the US, the European Union, Germany, Japan, the United Kingdom, India and China. And, get more than 35 compliance offerings specific to the needs of key industries, including health, government, finance, education, manufacturing and media. Your emerging compliance needs are covered, too: Microsoft engages globally with governments, regulators, standards bodies and non-governmental organizations.

4. Cloud4C Azure Capabilities

Cloud4C is a Microsoft Azure Global Gold Partner & Expert MSP. Azure Expert MSPs must pass a time and cost-intensive auditing process & Cloud4C has successfully completed a rigorous pre-audit assessment and on-site audit.

We are also a CSP (Cloud Service Provider) for Azure globally. Below are our Azure capabilities.

Next-Gen Cloud MSP for Azure
Cloud Evolution Partner

550+
Certified Azure Experts

1000+ VMs
(Series D,M,F) across regions on Azure

20+
SAP HLI (HANA Large Instances) across regions

30+
Tasks Automated (VM Deployment, Load Balancer, Application Gateway etc.)

430+
Security and Compliance Controls on Azure

- Deployment - Infrastructure as a Code (Arm Template, Terraform, Ansible, JIRA, Powershell etc.)
- Containerization with AKS
- Security compliance with CIS standard of Azure
- Deployment of Transit Networks and NVA
- IRAP implementation through Azure
- Leveraging Azure Advisor and Cost Management Tools
- Additional Services (Service End Points, Network Tags, UDR, write accelerator etc.)
- Managing 3rd Party applications outside Azure portfolio (Commvault, QRadar, Alien Vault etc.)
- 40,000+VMs Migrated and Managed across various Cloud Platforms

Product offerings on Azure:

Business Applications
- SAP, Oracle, Microsoft, Open Source & Home grown apps
- Migration & Managed Services with SLA at application Login

Datacenter Modernization
- Workload Design consultation & Best Practice
- Workload Migration Services
- Workload Transformation Services (AI, ML, Cognitive, IoT)
- Workload Transformation to Microservices (Containers)
- Workload Transform to Intel Platform from Non Intel
- Workload Monitoring and Automation

Managed services
- OS – Windows, Linux,
- DB – Sybase, Oracle, MSFT, HANA, MySql,
- Mango DB, Postgress, Maria DB, OSS
- Big Data platform,
- CMP
- Backup and Replication

Industry Cloud Framework
- Bank in Box
- Insurance in Box
- Healthcare in Box
- Government Cloud

Automation
- IaaS as Code
- DevOps
- DevSec Ops

Workspace Modernization
- Virtual Desktops (CitriX and Microsoft)

Compliance Driven Security and Governance Solutions
- Azure native security tools
- SIEM, APT, PIM, DAM etc
- 40+ 3rd party security tools
- Compliances : PCIDSS, ISO 27001:2013, HIPPA, GXP, GDPR, IRAP, CSA , NESA

Microservice Architecture
- Containers & Kubernetes
- Cloud Apps and API

Business Continuity
- Smart Solutions on Disaster Recovery
- Data availability

Cloud4C Capabilities on Azure:

5. SAP Services Portfolio

Cloud4C has been delivering SAP environments to its customers since 2009 and has been continuously expanding the service portfolio to provide the latest technology advancements & its benefits to all Organizations. Cloud4C has also been working with SAP as one of their global premium supplier to provide their PaaS offering SAP HEC "SAP HANA Enterprise Cloud" to their clients. We are one of the Top 3 Premium suppliers, delivering SAP HEC with the most expanded service portfolio comprising of multiple 3rd party products.

Cloud4C has been successfully delivering SAP workloads on cloud (SAP community cloud), a framework which includes certified system types to run SAP HANA workloads, adequate cloud security, required backup and resiliency with SLA driven service framework. This framework can be designed to deliver higher SLA for mission critical enterprise applications to enterprises. Processes & certifications are the first step in validating our efforts on SAP delivery, where Cloud4C possesses SAP certifications in Cloud services, Hosting services, HANA operations & SAP Application Management.

Today, Cloud4C is serving 3,500 customers across the globe spanning all industry verticals. World's best companies have trusted and accredited Cloud4C for the value delivered to their esteemed organizations.

Cloud4C follows the concepts of vendor agnostic & no technology lock-in, by allowing customers to leverage newer technology platforms freely. Existing SAP cloud framework can be delivered on not only Cloud4C PODs, but also on any of the Hyperscale platforms.

Other than SAP certifications, process certifications include ISO 27001, ISO 27017, ISO 27108, ISO 22301, ISO 9001, and SOC-1 & SOC-2.

End-End | SAP Management Services Portfolio
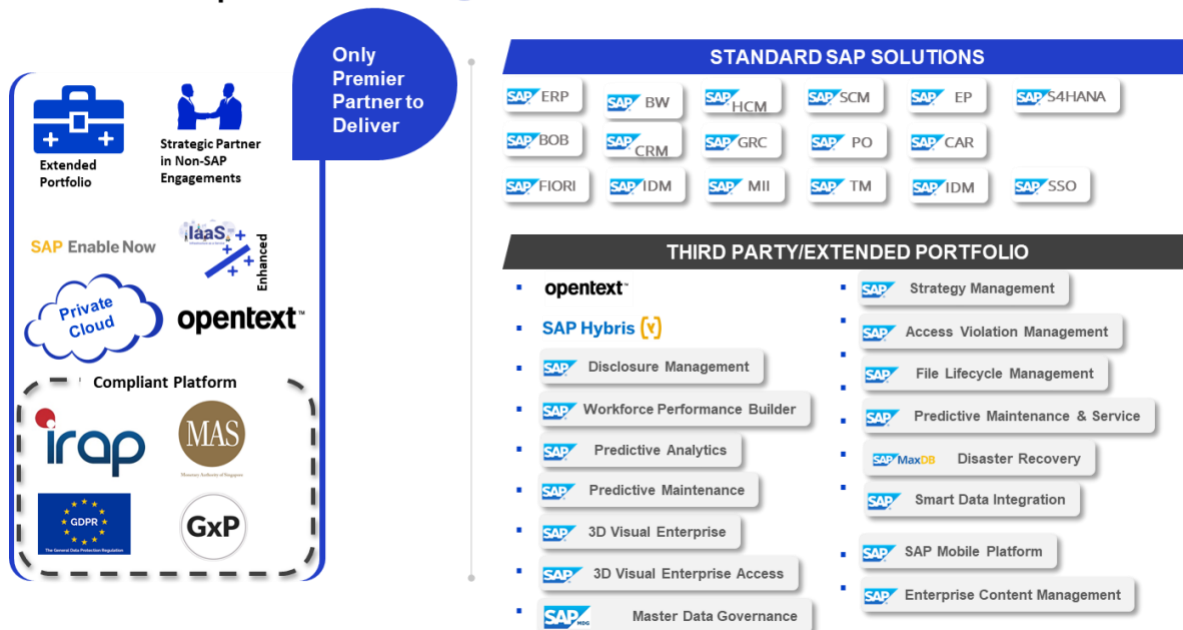
SAP on Azure

Bring unparalleled performance to your entire SAP estate with Azure. Reliably run and deploy popular SAP products and solutions within minutes—on a secure, scalable, and enterprise-proven cloud platform.

Trust a partnership built on decades of experience

In 2017, Microsoft and SAP expanded an alliance lasting more than two decades by enabling Microsoft to use SAP S4/HANA to enhance financial analysis and SAP to migrate critical SAP S/4HANA systems to Azure. The result is a joint ecosystem that brings unique insights and rich product integration to help make the most of running SAP solutions and applications in the cloud—accelerating your performance, productivity, and innovation with seamless enterprise-class support.

Increase your scale and performance with SAP-certified infrastructure

Get high-performance SAP-certified infrastructure for SAP HANA applications such as SAP S/4HANA and SAP NetWeaver-based applications such as SAP Business Suite or ECC on AnyDB. Run your SAP applications with your choice of database, including SAP HANA, SQL Server, Oracle Database, IBM Db2, and SAP ASE, on your choice of operating system, including Windows, SUSE Linux, Red Hat Enterprise Linux, and Oracle Linux.

When it comes to running SAP HANA for mission critical SAP deployment, Azure offers the most scalable platform of any cloud provider. Azure is the only cloud provider that offers single node scale up configurations up to 24 TB while also offering a cost effective and high performance VM infrastructure that's certified for SAP HANA.

SAP® Certified
in Application Management Services

SAP® Certified
in SAP HANA® Operations Services

SAP® Certified
in Hosting Services

SAP® Certified
in Cloud Services

- Certified by SAP for **HANA Operations Services**
- Certified by SAP for **Cloud Services** (Cloud)
- Certified by SAP for **Hosting** Services (HS)
- Certified by SAP for **Application Management Services** (AMS)
- Follow **SAP Governance Structure** for Services
- Cloud4C has SAP Human Resources **(People) certified by SAP**

Scale up HANA nodes
Upto 20 TB

Scale Out HANA Nodes
Upto 64 TB

SAP HEC Global Premium Supplier
With 150+ HEC Customers in 25 Countries

500+ SAP Customers

Spanning across USA, Middle East , India ,South East Asia, Europe, Japan, Australia & New Zealand

High Customer Satisfaction
4.5 out of 5

Comprehensive SAP Services Portfolio
- HANA Database Management
- ASE & MAX DB Management
- SAP Basis Support
- SAP AS Support

Our SAP | Value Proposition

End to End Services
IaaS to AMS/SAP Basis Support, Testing

SAP HANA hosting
Cloud4C offers SAP HANA hosting in India's only Tier-4 Platform

SAP Experts
Skilled and Experienced SAP Experts with 20 Yrs of Experience

24X7X365 SAP Support
Round the clock 24X7X365 SAP Support - Dedicated Customer Success Manager

Managing 500+ SAP Customers

Industry's highest SLA
Cloud4C offers Industry's highest SLA of 99.995% for Infrastructure

Cloud4C offers Industry best SLA of 99.9% for Application(s)

SAP Center of Excellence
Dedicated SAP Center of Excellence (CoE)

Private Cloud Framework
Private Cloud Framework ensuring flexibility & Scalability
Intel, RISC . Power VM for IBM. AIX, HP IVM for HP-UX & Oracle VM for Solaris.

SAP HANA Customers
Cloud4C can support SAP HANA Customers across -India, SEA/APAC, Middle East, NALA, Japan, ANZ, etc

Cloud4C | SAP Expertise

SAP HANA COMPETENCY OVERVIEW

- **Size & Scale :** Rich pool of Certified HANA technical consultants on global delivery model with implementation, upgrade, production support and maintenance project experience across various SAP Products and systems.

- **Readiness :** Robust templates for Estimation, implementation, upgrade, Migration & support Accelerators around SAP System Deployments and Migrations

- **Verticals :** Manufacturing, Retail, Financial Services, Hi-Tech, Life Sciences, Energy & Utilities, Consumer Products, Industry Solutions

- **LOB :** ERP, SCM, SRM, MDG, CRM, Finance, EWM, HCM, BI/BO etc.,

- **OS/DB Platform :** Unix flavors, windows family, **SAP HANA,** Oracle, MS SQL, Sybase, MaxDB & DB2

- **SAP Platform:** Components based on SAP HANA Technology , SAP NetWeaver Technology, Business suite, Frontend Technologies including Persona, Fiori & UI5, Solution Manager

Leveraging Experience, Expertise Leaders in SAP HANA Cloud Deployments

EXPERT HOSTING CAPABILITIES

1200+ HANA Systems
550+ Success Stories
26+ HANA PODS

SAP Application Mgmt. | Disaster Recovery Services | Implementation Services | O/S, D/B Mgmt | 24x7 infra Monitoring & Management | Conversion Mgmt.

SERVICES

- HANA Private Cloud
- Full Cycle Implementation
- Release Upgrades for SAP Products
- OS/DB/Datacenter migrations
- Solution Manager As A Service

- S4HANA Conversions
- DR as a service (DraaS)
- Infrastructure As Service (IaaS)
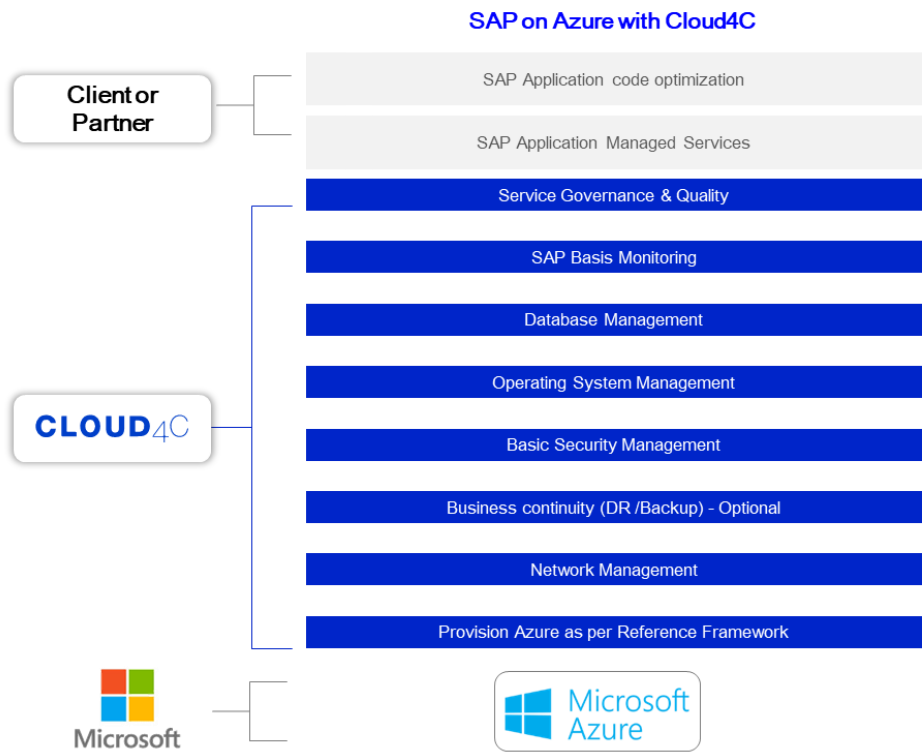- Assessments and Advisory
- Application Managed Services

Enterprises looking to adopt SAP HANA workloads can definitely look forward to Cloud4C who will provide SAP on Cloud framework on platform of their choice, with assured performance using certified & purpose built systems, service assurance by delivering SLA upto application layer & most importantly, optimized cost propositions.

SAP on Azure landscape

SAP on Azure with Cloud4C

Client or Partner

SAP Application code optimization

SAP Application Managed Services

CLOUD4C

Service Governance & Quality

SAP Basis Monitoring

Database Management

Operating System Management

Basic Security Management

Business continuity (DR /Backup) - Optional

Network Management

Provision Azure as per Reference Framework

Microsoft

Microsoft Azure

SAP Certified Instances on Azure:

SAP HANA Applications on Azure

Both Azure and SAP have worked together to certify the Azure platform for the following SAP Business Solutions.

- SAP Business Suite including ERP, CRM, HCM, SRM, PLM, and SCM.
- SAP Net weaver ABAP and JAVA Technology Stacks
- SAP Hybris
- SAP Business Warehouse and BPC on HANA
- SAP Business Objects
- SAP BW/4 HANA
- SAP Business One

SAP Application Mapping with Azure (SAP Notes: 1928533)

The prerequisites mentioned by SAP in SAP Notes 1928533 has been used to ensure full supportability and optimal performance of SAP systems on Azure

SAP Notes 1928533:

Azure offers Infrastructure services that can be utilized for deployment of the SAP Products. Cloud4C has shortlisted the following instances which are certified by SAP for running the HANA Production Environments.

The mapped Azure instance types (server sizes) are supported in 2-tier or 3 –tier configurations and can be used as application server(s) as well as a pure database server.

The following instances have been mapped to provide SAP Instances to the Azure Certified Instance:

SAP on Azure – Certified VM's

Certified HANA VM's				
VM Series	VM Type	vCPU	vRAM	2 Tier SAPS
Esv3 Series	Standard_E2s_v3	2	16	2,178
	Standard_E4s_v3	4	32	4,355
	Standard_E8s_v3	8	64	8,710
	Standard_E16s_v3	16	128	17,420
	Standard_E32s_v3	32	256	34,840
	Standard_E64s_v3	64	432	70,050
M- Series	Standard_M8ms	8	219	8,686
	Standard_M16ms	16	438	17,232
	Standard_M32ts	32	192	33,670
	Standard_M32ls	32	256	33,670
	Standard_M32ms	32	875	34,465
	Standard_M64ls	64	512	66,600
	Standard_M64s	64	1024	67,315
	Standard_M64ms	64	1792	68,930
	Standard_M128s	128	2048	1,34,630
	Standard_M128m	128	3892	1,34,630

Certified App VM's				
VM Series	VM Type	vCPU	vRAM	2 Tier SAPS
Dsv3 Series	Standard_D2s_v3	2	8	2,178
	Standard_D4s_v3	4	16	4,355
	Standard_D8s_v3	8	32	8,710
	Standard_D16s_v3	16	64	17,420
	Standard_D32s_v3	32	128	34,840
	Standard_D64s_v3	64	256	69,680

SAP Note: 1928533 - SAP Applications on Azure: Supported Products and Azure VM types

6. Azure Platform Management

Our CoE for Azure Managed Services at Cloud4C manages the tasks and processes required to support M business applications hosted on Azure and the resources that support them. We enable and customize many Azure services and tools that work together to provide complete management for Customer.

Azure Platform Management Practice at Cloud4C
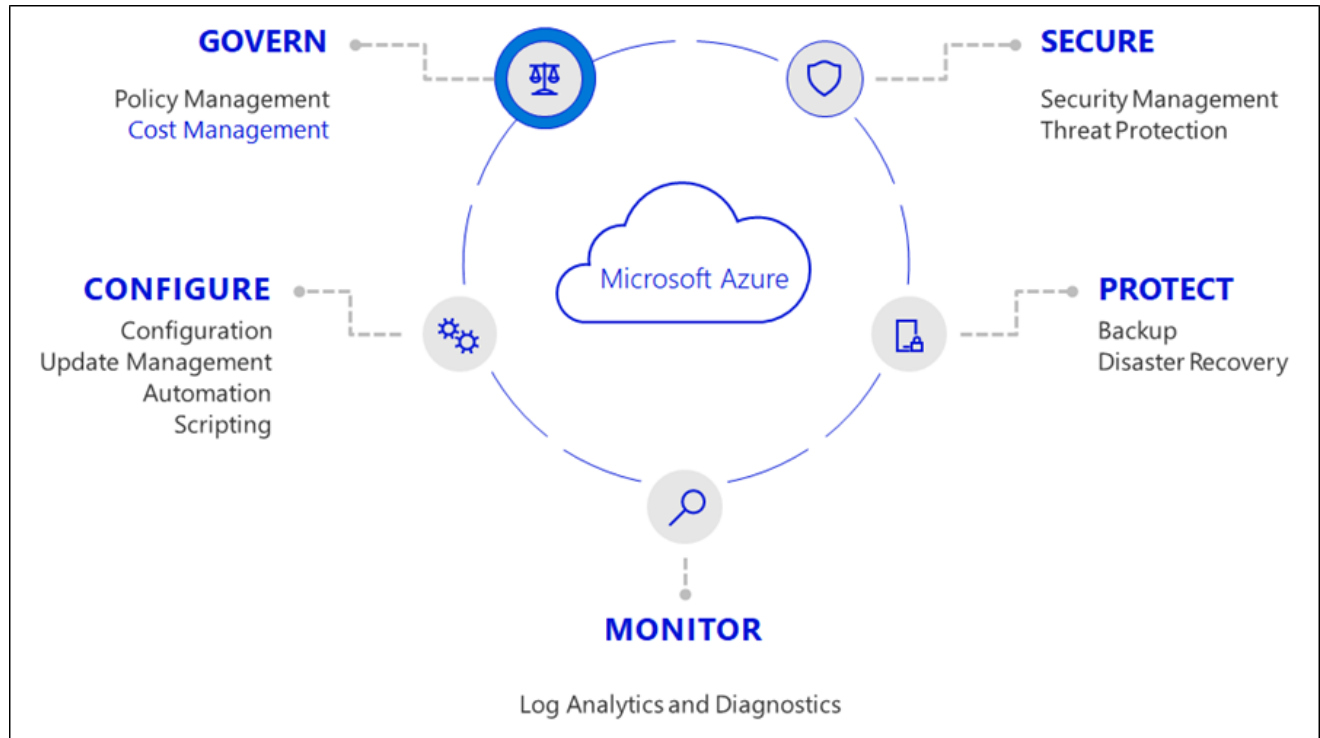
Cloud4C, an Azure Expert MSP, can help Customer to identify the right Azure services to use and the right process for transitioning to more optimal services. For instance, we can help you to weigh the costs of transitioning to an Azure native database service against the ease of lifting and shifting to an Azure VM. This helps Customer to identify parts of the application that are worth tweaking in order to take advantage of the auto scaling capabilities of Azure. Based on our extensive experience on other Azure migration projects, we can help you avoiding the common mistakes.

Customer does not need to completely re-architect applications to get the full value out of Azure. Cloud4C can identify high-impact areas to focus on so that Customer can migrate quickly and with the greatest benefit.

Infrastructure as a Code

Infrastructure-as-code is what enables Customer to launch new Azure resources in minutes, deploy Test/DEV/Prod environments with ease, automatically scale up production resources, and maintain

consistent configuration standards across resources. Cloud4C can help Customer to go from manually building resources in the console or CLI to a fully operational infrastructure-as-code system.

Cloud4C will help Customer in guiding through the basic building blocks of Infrastructure as Code: Templates (Terraform, ARM), configuration management (PowerShell, Ansible for Azure), and catalogs (Azure Managed Applications). Each of these tools work together to allow Customer to architect, launch, and configure Azure resources programmatically. At Cloud4C, we write custom templates and scripts for each client. We also have a library of templates and configuration management scripts that support almost all scenarios.

Azure Compliance Expertise

Maintaining compliance on Azure requires a new set of tools and processes. For risk-averse companies in highly-regulated industries, this often means months of work to conduct a risk assessment, understand the required tools, configure & document them, and prepare for audits.

Cloud4C, being an Azure Expert MSP with compliance expertise, can ensure that Customer Azure architecture meets your specific standard. We do so using low cost Azure-native tools rather than retrofitting your existing tools to Azure.

On an ongoing basis, Cloud4C can also help Customer SS team to prepare for audits by preparing necessary documentation and ensuring that your infrastructure meets required standards. Cloud4C has dedicated security and Governance teams working 24x7 to make customer environments secure round the clock through real-time threat intelligence.

24×7 Access to Azure Managed Services

Maintaining an in-house support overnight can be both expensive and challenging to manage. But, if you're running mission-critical applications on Azure, you need that level of support. 24×7 quality support is the foundation of any good MSP. Cloud4C offers the following unique and salient features.

- On-shore support at Customer

- 500+ Azure Certified Professionals

- Microsoft Gold Certified and Azure Expert MSP

- Good NPS Technical score on tickets (from existing customers)

- Escalation path to network, automation, or DBA specialists

- Access to a Service Delivery Manager or Product Manager to coordinate efforts and make sure tickets are resolved

- Subscription to 24×7 support makes your internal teams more productive, so that they can focus & serve business critical areas. This also mitigates the risk of staffing resources.

- Cloud4C will function like an extension of your in-house team, supplement what you need, and give your internal team flexible control of what it wants to manage.

Patching and Backup Management

Many clients assume that when you migrate to Azure, Microsoft takes care of OS patching, backups, and upgrades for you.

In reality, more than 80% of technologists believe that IT leadership underestimates the cost and effort of maintaining the cloud. Just as when you operate on-premises, you are responsible for regular patching, taking snapshots, and of course fixing the unexpected. Some services can be configured to perform backups and patching automatically, but for the most part the responsibility lies with Customer.

By outsourcing to Cloud4C, an Azure Expert MSP, you're offloading time-consuming, often labor-intensive maintenance that your team doesn't need to handle. Let them focus on business-impacting upgrades.

Keep Up with Azure's Innovation

Operating on Microsoft Azure means you have to keep up with a constant stream of new products and announcements — and R&D on new Azure services can be a full-time job. Often these new services can make a substantial impact on Customer business.

Cloud4C, an Azure Expert MSP, is so tuned-in with Microsoft's latest announcements and innovations that we suggest new tools for you to try and upgrade your services when appropriate. Oftentimes, Cloud4C is invited by Microsoft to beta new cloud services to gain competency early, then we offer that expertise to our customers.

Your MSP, Cloud4C, should be your cloud R&D department. We will tell you about new services — both those you should try and those you should ignore — and help you keep up with the latest cloud trends.

RACI for Azure Platform

Services	Microsoft	Cloud4C	Customer
Azure Cloud Build	R,A		
Provisioning Services on Azure Public Cloud Platform [As per Product and Services Matrix]	C	R,A	I
Operating System Build	C	RA	I
Database Build (HANA, ASE, MS SQL, MaxDB)	C	RA	I
Provisioning Services (Network, OS, Database, Backup, Monitoring and Security Tools)	C	R,A	I
Installation of Application		C,I	R,A
Configuration and Customisation of application and Databases		C,I	R,A
Operating System Management and Support		R,A	I
Database Management and Support		R,A	I
Disaster Recovery Site Creation using identified tools (RSYNC, HSR, Log Shipping, Export Import)	C	R,A	C,I
Security & Compliance Services		R,A	C,I
Functional Application Support		I	R,A
Infrastructure Audits Support	R,A	R,A	I
Compliance Certification for deployed infrastructure		C,I	R,A

	Cloud4C	Customer
Automation using RPA Tools (Infrastructure Level Above Hypervisor Layer)	**R,A**	**C,I**
Cloud Platform Support	**R,A**	**I**

Below is a comprehensive list of Managed services on Azure platform. The services will be applicable as per customer Solution.

	Azure Services RACI Matrix		
S.No	**Tasks**	**Cloud4C**	**Customer**
	Azure Subscription / Portal Admin		
	1. Subscribe under Pay As You Go / RI	**R,A**	**C,I**
	2. Use - Enterprise - Microsoft EA (If available)	**C,I**	**R,A**
	3. Create Subscriptions under Cloud4C CSP Partnership	**R,A**	**C,I**
	4. Create and Manage Billing and Subscriptions	**R,A**	**C,I**
	5. Azure in Open - You purchase Azure Monetary Commitment credits from your reseller in the form of an Online Service Activation (OSA) Key. You can use your credits against any consumption-based Azure service for 12 months following the activation of your OSA Key. Azure pricing is specific to the services consumed.	**R,A**	**C,I**
	Azure Resource Group		
	1. Create Resource Group (Region Specific)	**R,A**	**C,I**
	2. Specify Resource Policy [Location, Resource Type, Storage Account,	**R,A**	**C,I**
	3. Virtual Machines, Not allowed Resource Type, Blob Encryption for storage type]	**R,A**	**C,I**
	4. Resource Locking / Unlocking	**R,A**	**C,I**
	5. Manage Resource Deployments	**R,A**	**C,I**
	Azure Site Recovery - ASR		
	1. Create a recovery service vault in Azure storage account	**R,A**	**C,I**
	2. Select a replication goal	**R,A**	**C,I**
	3. Set up the source environment	**R,A**	**C,I**
	4. Set up the target environment	**R,A**	**C,I**
	5. Set up replication policy	**R,A**	**C,I**
	6. Monitor replication	**R,A**	**C,I**
	7. Run a test Migration	**R,A**	**C,I**
	8. Perform final migration and cutover	**R,A**	**C,I**
	9. Check successful migration of infra components	**R,A**	**C,I**

		Storage Types (used as per customer requirements)		
	1	Blob Storage (Hot/Cold/Archive) - Used for unstructured data if any	R,A	I
	2	Table storage - No SQL type of data	R,A	I
	3	Queue Storage - Service for storing large number of message which can be accessed worldwide	R,A	I
	4	File Storage - Azure File Storage allows applications to mount file shares from anywhere in the world, your on-premises applications can take advantage of cloud storage without change.	R,A	I
	5	Datalake Storage G2 - Used when customer is using Big data analytics	C,I	R,A
	6	Firewall on Storage Account for Network Resriction (If Needed)	R,A	C,I
	7	Private Storage Account (Private link Configuration)(If Needed)	R,A	C,I
		Storage-Replication Types		
		Local Redundant storage (LRS) - blob storage account with Hot / cold access tier	R,A	C,I
		Zone Redundant storage (ZRS) - blob storage account with Hot / cold access tier- not available in all regions	R,A	C,I
		Global Redundant storage (GRS) - blob storage account with Hot / cold access tier	R,A	C,I
		Read access (GRS) RA-GRS - blob storage account with Hot access tier	R,A	C,I
		Virtual Machine creation		
		For 99% Uptime		
	1	Create VM in Resource Group	R,A	C,I
	2	Create VM without Availability Set option and unmanaged storage	R,A	C,I
	3	Select Storage from LRS storage account	R,A	C,I
		For 99.5 % Uptime (Underlying HA)		
	4	Create Resource Group (Placement Group)	R,A	C,I
	5	Create VM with Availability Set option and unmanaged storage	R,A	C,I
	6	Select Storage from ZRS storage account	R,A	C,I
		For 99.95% Uptime (Underlying HA + Site Recovery)		
	7	Create VM in Resource Group (Placement Group)	R,A	C,I
	8	Create VM with Availability Set option and unmanaged storage	R,A	C,I
	9	Select Storage from GRS storage account or RAGRS storage account	R,A	C,I
	10	Create Site Recovery for the instance in different Region	R,A	C,I
		Premium VM Creation - SSD, Premium SSD, Ultra SSD		
		For 99% Uptime in SSD		
	11	Create Resource Group (Placement Group)	R,A	C,I

|			
12	Create VM without Managed Disk Option	**R,A**	**C,I**
	For 99.5 % Uptime (Underlying HA) in SSD		
13	Create Resource Group (Placement Group)	**R,A**	**C,I**
14	Create VM with Availability Set and Managed disk option	**R,A**	**C,I**
	For 99.95% Uptime (Underlying HA + Site Recovery) in SSD		
15	Create Resource Group (Placement Group)	**R,A**	**C,I**
16	Create VM with Availability Set and Managed disk option	**R,A**	**C,I**
17	Use Azure Site Recovery for the instance in different Region	**R,A**	**C,I**
	Azure Security Center		
1	**Vulnerability Assessment**		
2	Implement a vulnerability assessment recommendation	**C,I**	**R,A**
3	Create a new vulnerability assessment solution	**C,I**	**R,A**
4	Review the recommendation	**C,I**	**R,A**
5	**Log Information Collection**		
6	Create alert on activity log event	**C,I**	**R,A**
7	Stream it to an Event Hub for ingestion by a third-party service	**C,I**	**R,A**
8	Save logs to storage account for archival or manual inspection	**C,I**	**R,A**
9	Query it via PowerShell Cmdlet, CLI, or REST API.	**N/A**	
10	**Integration with SIEM solutions**		
11	Create an Event Hub	**C,I**	**R,A**
12	Stream the Azure Activity Log to Event Hubs	**C,I**	**R,A**
13	Install a partner SIEM connector	**C,I**	**R,A**
14	**Just In Time (Time based Access Control)**		
15	Configuring a just in time access policy	**R,A**	**C,I**
16	Requesting access to a VM	**R,A**	**C,I**
17	Editing a just in time access policy	**R,A**	**C,I**
18	Auditing just in time access activity	**R,A**	**C,I**
19	**Adaptive Application Controls**		
20	Configure a new application control policy	**C,I**	**R,A**
21	Editing and monitoring a group configured with application control	**C,I**	**R,A**
	Qradar SIEM (3rd Party)		
	Provision 1 VM as Event Collector in Master Subscription	**R,A**	**C,I**
	Deployment of log analytics workspace & log forwarding to Qradar Event Collector	**R,A**	**C,I**
	Integration of Windows and Unix VMs, security and networking components, other azure resources with Qradar EC for data collection using respective Data Connectors.	**R,A**	**C,I**

	Agent level configuration on server to point all data sources to single centralized workspace for correlation and management.	R,A	C,I
	Configuring appropriate logging levels and type for collecting data.	R,A	C,I
	License Deployment & Management	R,A	C,I
	Monitor triggered alerts and incidents	R,A	C,I
	Threat Hunting.	R,A	C,I
	Configure Co-relation with Central Event Processor (EP)	R,A	C,I
	Troubleshooting for issues identified during operations.	R,A	C,I
	Azure DDoS Protection		
1	Enable DDoS Protection Standard for New virtual network	R,A	C,I
2	Enable DDoS Protection Standard for Existing virtual network	R,A	C,I
3	Disable DDoS Protection on a virtual network	R,A	C,I
4	Configure alerts on DDoS Protection metrics	R,A	C,I
5	Configure logging on DDoS Protection Standard metrics	R,A	C,I
6	Use DDoS Protection telemetry	R,A	C,I
	Azure CDN		
1	Creating new CDN profile	R,A	C,I
2	Creating new CDN endpoint	R,A	C,I
3	Adding customer domain name to CDN (if needed)	R,A	C,I
4	Associate custom domain name with CDN endpoint	R,A	C,I
5	Set caching rules	R,A	C,I
	Azure DNS		
1	Name resolution using Portal, PowerShell or CLI	R,A,C	I
2	Configuration of DNS for custom domain name resolution	R,A	C,I
3	Cleaning up resources	R,A	C,I
4	Delegation with Azure DNS	R,A	C,I
	Network Watcher		
1	Network Topology	I	R,A,C
2	Security group view	R,A,C	I
3	NSG Flow logging	R,A,C	I
4	Virtual Network Gateway and Connection troubleshooting	R,A,C	I
5	Configuring Diagnostics Log	R,A,C	I
	Azure Monitor		

1	Create, view, and manage metric alerts using Azure Monitor	R,A	C,I
2	Metric alerts with dynamic thresholds	R,A	C,I
3	Configure metric alerts on logs	R,A	C,I
4	Configure alerts on analytic query	R,A	C,I
5	Troubleshooting log alerts	R,A,C	I
6	Alerts from operations manager (if SCOM is configured)	R,A	C,I
	Virtual Machine Scale Set		
1	Creating scale set	R,A	C,I
2	Setting up auto scaling and setting up parameters	R,A	C,I
3	Setting up load balancer	R,A,C	I
	Azure Functions		
1	Development of Apps (PAAS service provided by Azure for developers)	R	A,C,I
2	Tuning custom apps	C,I	R,A
3	SQL Azure trigger support	R,A	C,I
	Azure SQL Database		
1	What type of application will be stored	R,A	C,I
2	When used for dataware housing	R,A	C,I
3	Performance Tuning	R	A,C,I
4	Data migration scenario	R,A	C,I
	Object Storage		
1	Creation of Storage account	R,A,C	I
2	Upload and process objects and Files in the cloud	R,A	C,I
3	Type of storage replication to be used	R,A	C,I
4	Monitor and troubleshoot storage	R,A,C	I
5	creation of Storage account	R,A	C,I
6	Set Storage Life Cycle Policy	R,A	C,I
	Azure Store Simple		
1	Creating a storage acct	R,A	C,I
2	Selecting the appropriate region	R,A	C,I
3	Setting up the storsimple device on premise	R,A,C	I
4	Setting up Data manager in the same or nearest Azure region	R,A,C	I
5	Security Considerations(Confidentiality, Integrity)	R,A	C,I
	Azure Key vault		

1	Key vault creation	**R,A**	**C,I**
2	Providing access to respective users using RBAC	**I**	**R,A,C**
3	Certificate creation	**R,A**	**C,I**
4	Monitor and manage certificate creation	**R,A**	**C,I**
5	Azure key vault logging	**C,I**	**R,A**
6	Access behind firewalls	**R,A**	**C,I**
7	BYOK Configuration	**R,A**	**C,I**
	Azure IAM		
1	Create User	**C,I**	**R,A**
2	Create Group	**C,I**	**R,A**
3	Create Service Principal and Managed Identity	**R,A**	**C,I**
4	Azure Active Directory Privileged Identity Management (PIM)	**R,A**	**C,I**
5	Conditional Access Policies	**C,I**	**R,A**
6	Manage access , Deny access	**C,I**	**R,A**

7. Azure Security Services

We believe that prevailing complexities and evolving cyber threats, enterprises can no longer manage its Cyber security postures with islands of security products and myriad of logs generated from various layers of the enterprise digital ecosystem disperse across datacenters and now cloud. The evolution of the SIEM all through these years hard experience and adaptation to manifest the role of the security control that deals with collection of security information that comes up in the form of logs and events and manage them from a single interface.
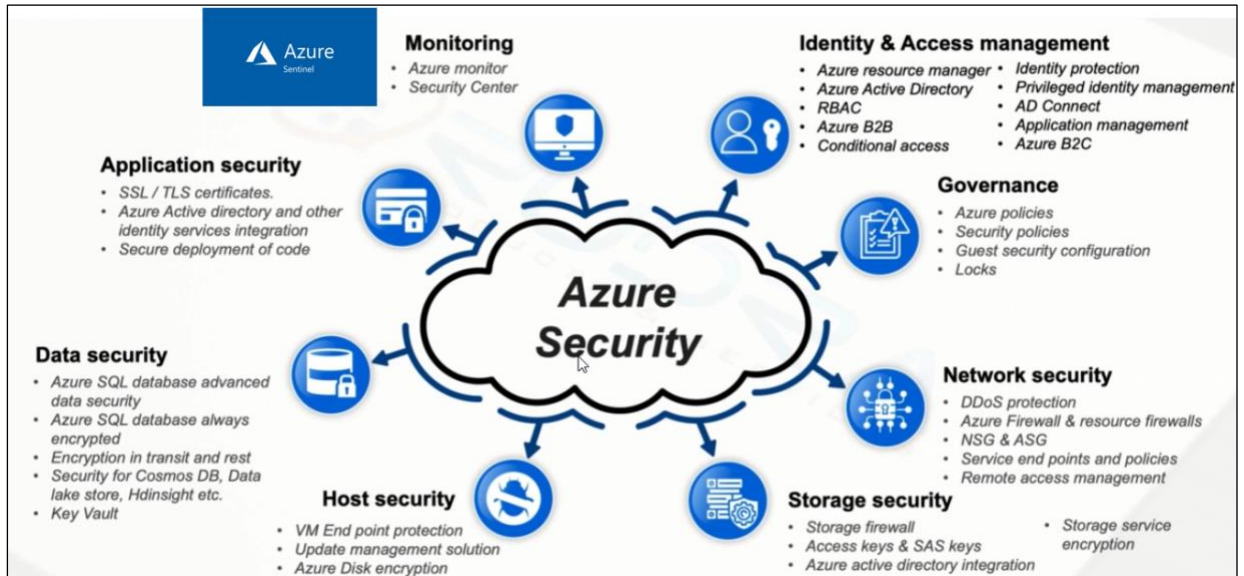
Off late, the industry witnessed massive propaganda with attachment of Artificial Intelligence and Machine Learning as the new buzz word to catch the board room discussion, but what they miss was harnessing such potentials without the power of data set and analytics in order to reap descriptive to prescriptive benefits for the analyst to undertake an informed decision. This sets the context of Human Centric Decision Matrix with power of AI/ML to the enterprise side. A must have for enterprise looking for a result oriented SOC needs to have SOAR - Security Orchestration, Automation and Response. SOAR allows an SOC Analyst to perform complex tasks such as automatically isolating from the indicator of compromise from network that is perceived as being compromised.

Azure Sentinel is a cloud-native security information and event manager (SIEM) platform that uses built-in AI to help analyze large volumes of data across an enterprise—fast. Azure Sentinel aggregates data from all sources, including users, applications, servers and devices running on-premises or in any cloud. It includes built-in connectors for easy onboarding of popular security solutions. Collect data from any source with support for open standard formats like CEF and Syslog.

Azure Sentinel integrates with many enterprise tools, including best-of-breed security products, homegrown tools and other systems like ServiceNow. It provides an extensible architecture to support custom collectors through REST API and advanced queries. It enables you to bring your own insights, tailored detections, machine learning models and threat intelligence.

Cloud4C has built a matured SIEM practice on Azure sentinel.
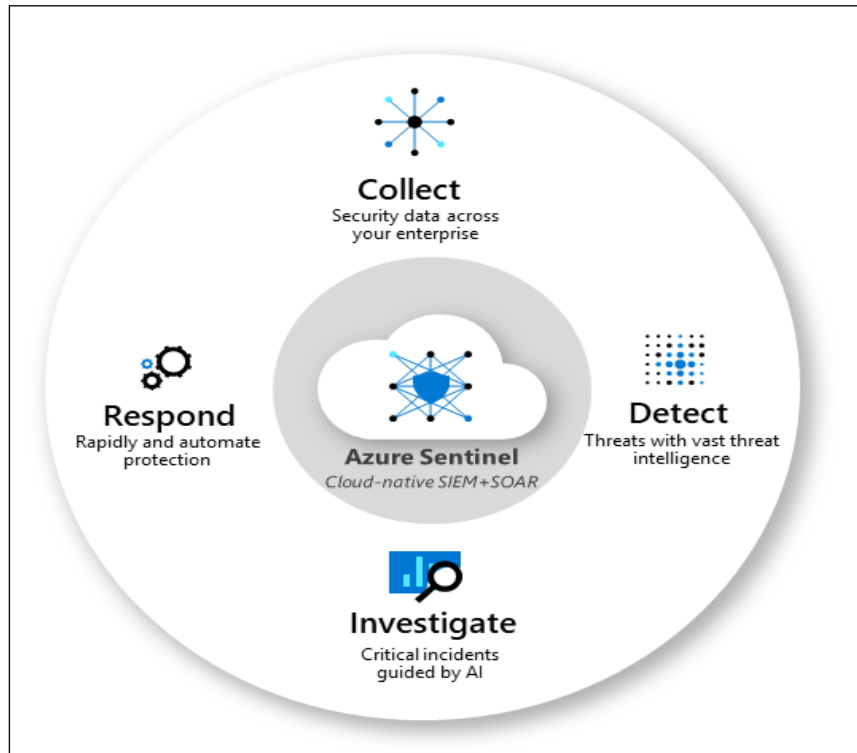
- Monitor/Log Analytics, Logic Apps / Microsoft Flow, Jupyter Notebooks and the powerful query engine.

- Cloud4C's deep experience in the domain would effectively help Customerto reap the following key benefits:
  - o Present day SOC demands – Automation/Orchestration, Artificial Intelligence & Machine Learning as proposed by Cloud4C
  - o Improved Threat Detections and accelerated investigation requires Threat Hunting playbook and notebook to expedite the task and identify the needle out of the haystack as our top drive for SOC performance
  - o Effectiveness of any investigation in cyber security requires threat Intelligence. Sentinel solves through built-in Threat Intelligence and graph security for case and suspect analysis
  - o Solution has an unparalleled view of evolving threat landscape by analysing trillion of signals processed worldwide
  - o Solution is empowered with MITRE-ATT&CK Framework in the proposed SOC solution
  - o Cutting edge technology Product from Microsoft already having visibility on the deeper of Customertechnology infrastructure and adaptation.
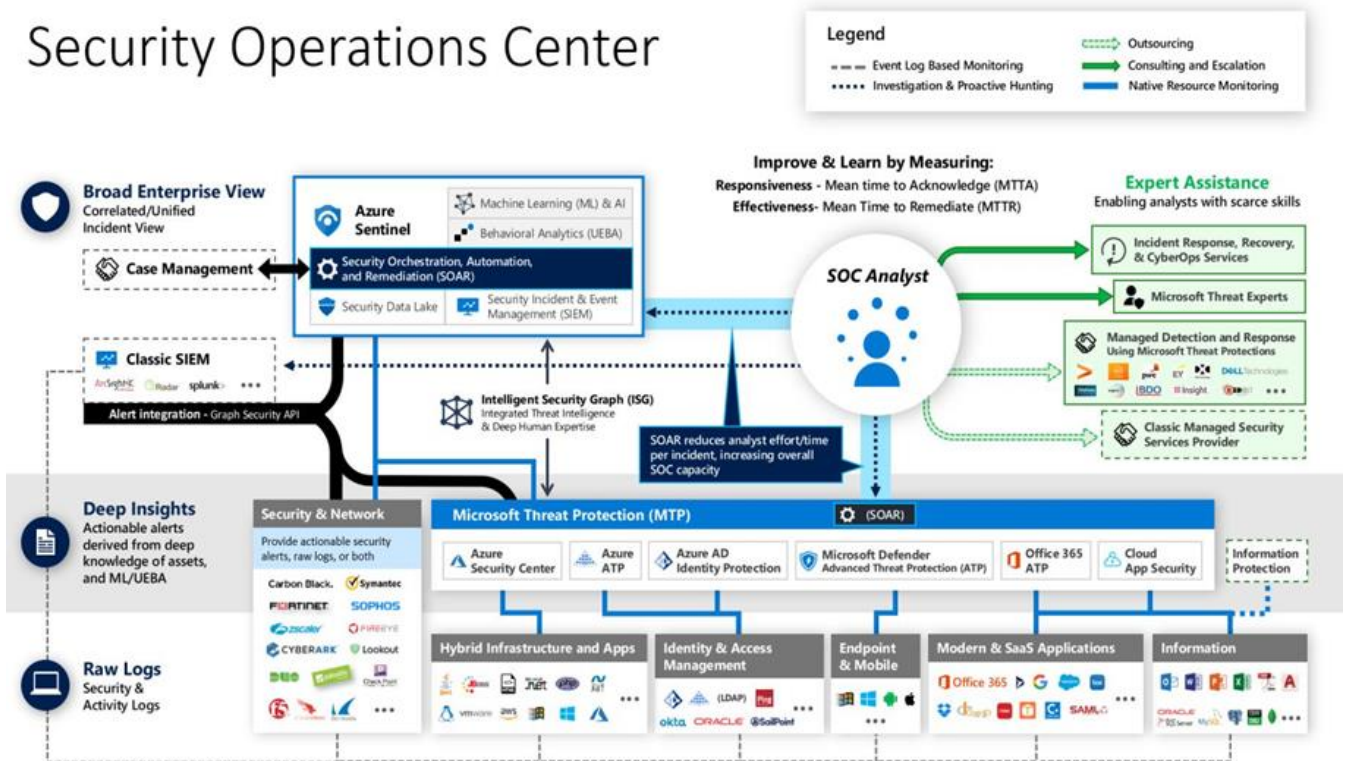
Sentinel Integration:
We integrate Customer services and apps with Azure Sentinel by forwarding event logs to the log analytics. For machines and virtual machines, we install the Azure Sentinel agent that collects the logs and

forwards them to Azure Log Analytics. For Firewalls and proxies, Azure Sentinel utilizes a Linux Syslog server. The agent is installed on it and from which the agent collects the log files and forwards them to Azure Sentinel.
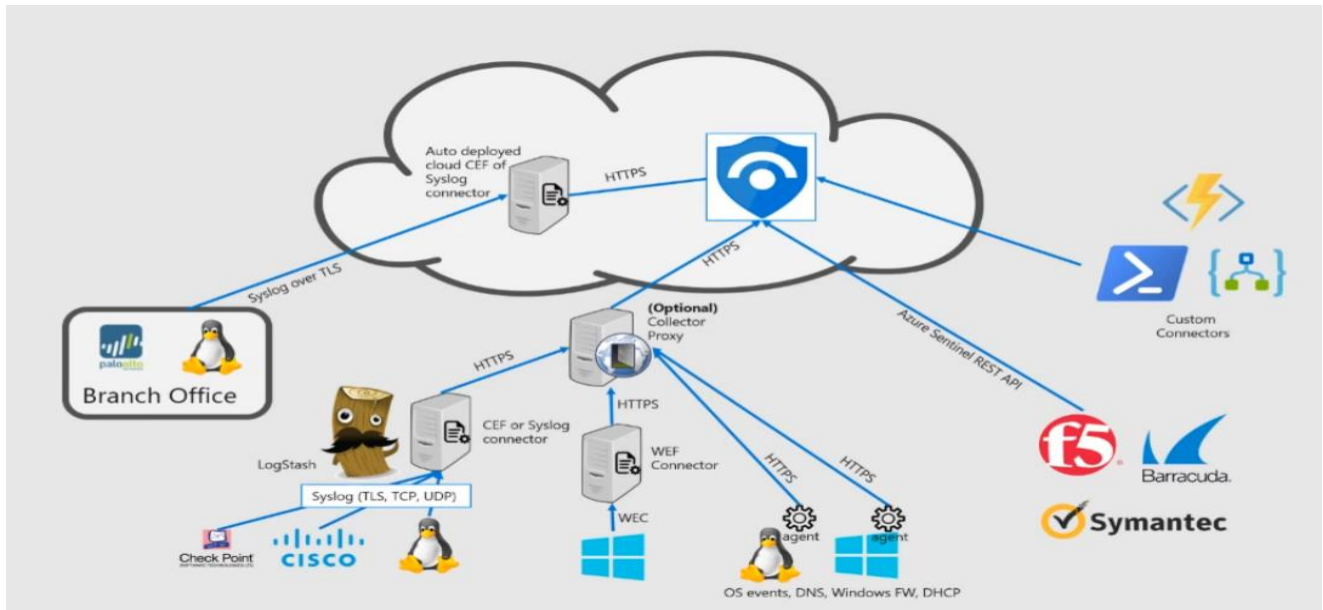
Below is the bird eye view of Security Operation Center work flow:

Azure Sentinel import the threat feeds that are integrated, which can enhance intrusion detections and ability to prioritize known threats. Below are the top features in sentinel:

- **Analytics** include a set of scheduled rule templates than can enable to generate alerts and incidents based on matches of log events from your threat indicators.
- **Workbooks** provide summarized information about the threat indicators imported into Azure Sentinel and any alerts generated from analytics rules that match your threat indicators.
- **Hunting** queries allow security investigators to use threat indicators within the context of common hunting scenarios.
- **Notebooks** can use threat indicators upon investigating anomalies and hunt for malicious behaviors

Azure Security Center Overview

Azure Security Center is a unified infrastructure security management system that strengthens the security posture and provides advanced threat protection to the assets in the network.
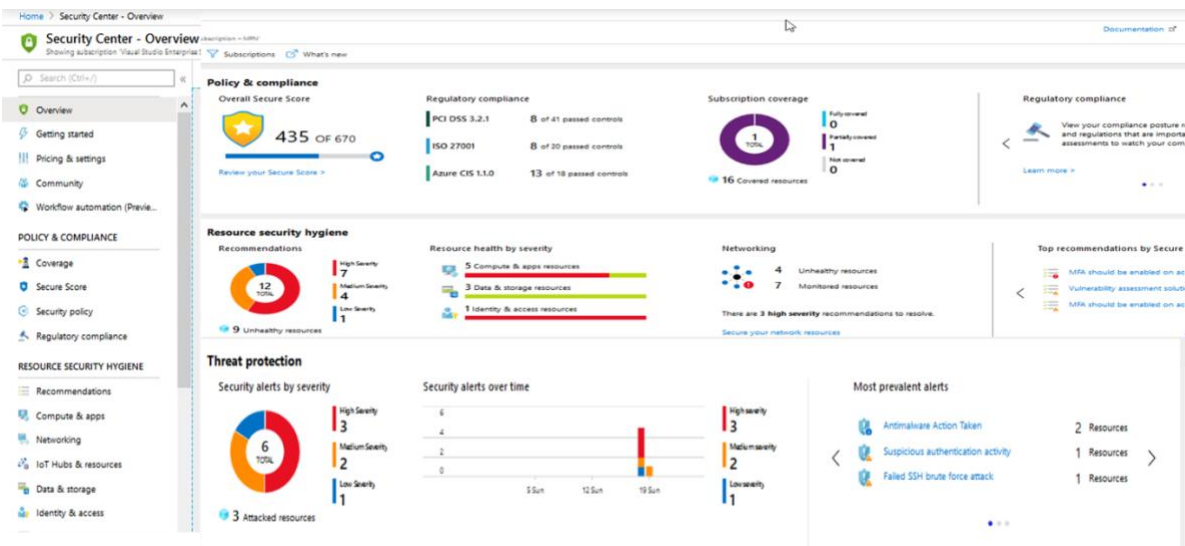
The security center provides a single view of pane for health and configuration of the elements. Security recommendations provide inputs for system engineering and the reasons for the violations. It provides an easy methodology for corrective steps.
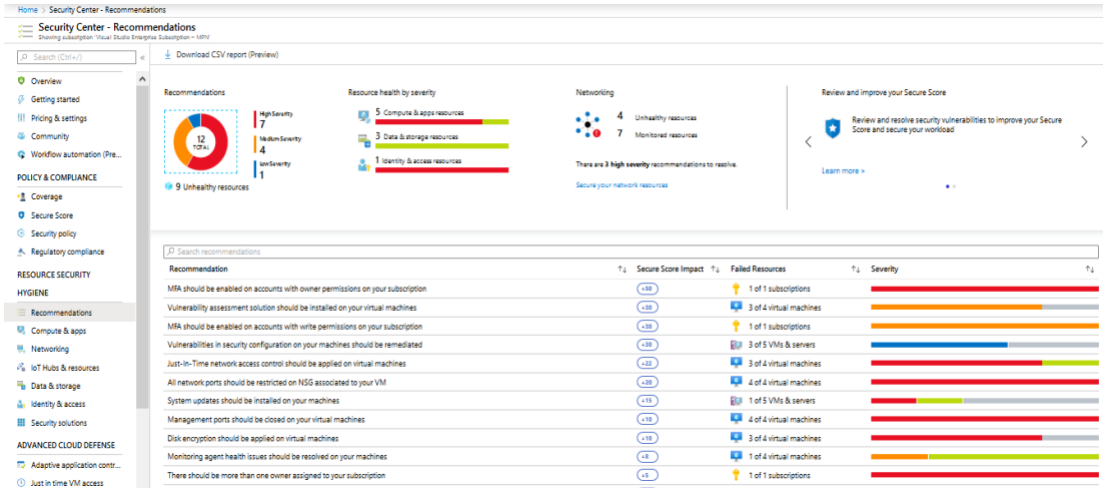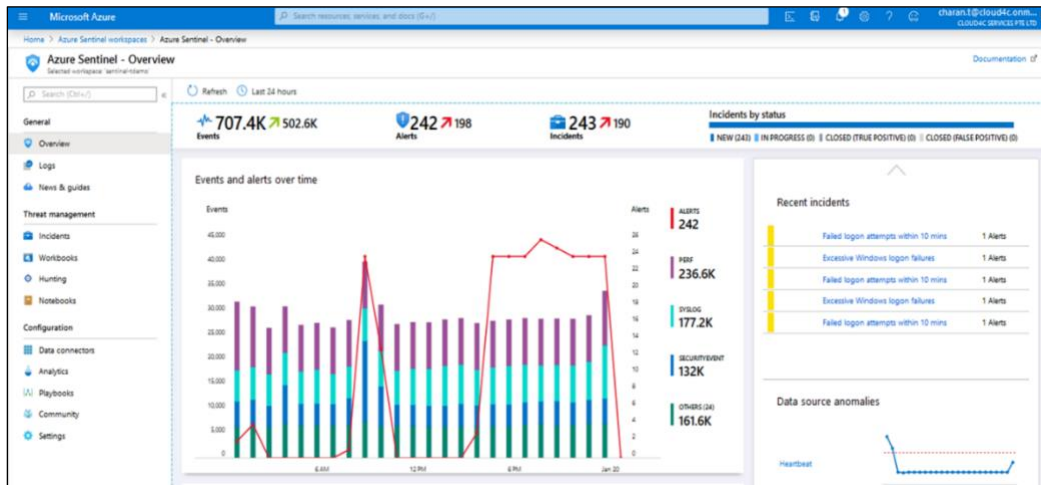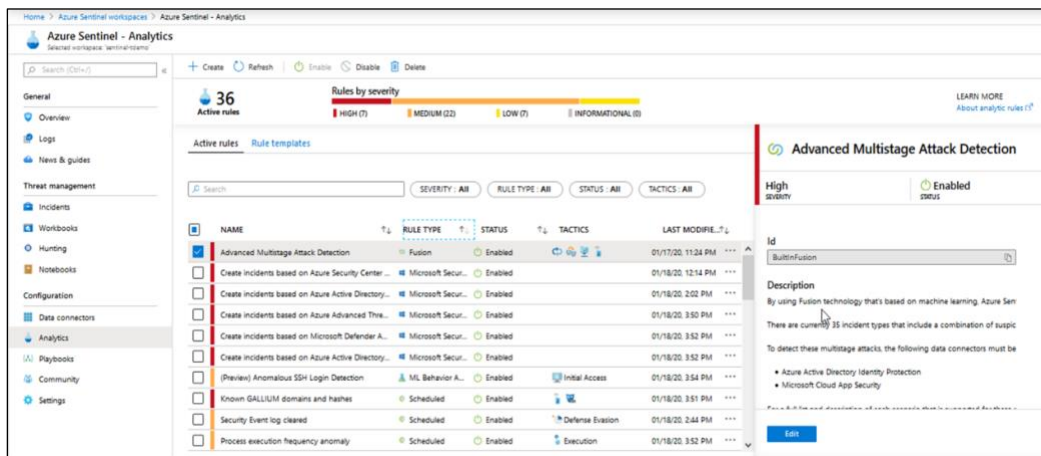
Fig. Security Recommendation for managed systems

The Sentinel SIEM dashboard is an intuitive dashboard, making the lives of SOC Analyst easy by providing a single pane of truth.

Each alert and associated analytics can be easily viewed in a single click.

All the relevant details for the root cause analysis and the ratings is easily viewed by the SOC Analyst, helping to perform the functions faster and accurately.

Azure Sentinel uses MITRE ATT&CK-based queries and introduced 12 types of queries, also known as bookmarks, for hunting.

Cloud4C SOC Portfolio

8. Annexure – Managed Services

1. Monitoring Services

Cloud4C will monitor continuously, 24X7 the health of the servers, storage, network & security equipment. The monitoring tasks include but not limited to the following:

- Monitoring of various system performance parameters (CPU, Memory & Disk space)
- Monitor Disk Utilization
- Monitor Critical System Processes
- Monitoring Alert log messages
- Alert Escalation to experts within the specified time frame & resolving calls as per SLA
- Report generation as per SLA
- Monthly consolidated performance report as per SLA:
- All defects and incidents will be reported by Cloud4C to Customer as and when occurs.
- Defects on hardware, OS and security system will be attended to and rectified within the specified time frame as per the SLA.

Alert Monitoring	Thresh hold Monitoring	Utilization Monitoring
Information	70%	CPU Utilization
		Memory Utilization
Warning	80%	Disk Utilization
		Device Availability
		Service Monitoring
Critical	90%	

2. OS Managed Services:

List of deliverables –

Cloud4C will deliver the following deliverables:

ENT-WINOS.1.1	Windows Server Service Catalog	Platinum
ENT-WSPM1.100	OS Critical and Security Patch Management	⬚
ENT-WSUT1.100	Patch Management Policy & Path Calendar	⬚
ENT-WMON1.100	Monitoring of Windows Server.	⬚
ENT-WMON1.101	Monitoring of CPU Usage	⬚
ENT-WMON1.102	Monitoring of RAM Usage	⬚
ENT-WMON1.103	Monitoring of Disk Space Usage	⬚
ENT-WMON1.104	Monitoring of DISK I/O	⬚
ENT-WMON1.105	Monitoring of Windows Time Sync	⬚
ENT-WMON1.106	Monitoring of Windows Server Services	⬚

ENT-WMSP1.100	**Monitoring of Windows Server Performance**	☐
ENT-WANT1.100	**Antivirus Patch Management**	☐
ENT-WANT1.101	Antivirus Patch Management with UAT testing	☐
ENT-WLOG1.100	**Windows Server OS Log Analysis/Management**	☐
ENT-WLOG1.101	System Log Analysis	☐
ENT-WLOG1.102	Server Access Log Analysis	☐
ENT-WLOG1.103	Application Log Collection	☐
ENT-WSEC.100	**Windows Server Security Management**	☐
ENT-WSEC.101	Security Processes - User and Group Management	☐
ENT-WSEC.102	Security Policies and Configurations	☐
ENT-WSEC.103	Security Patches and Hot Fixes	☐
ENT-WSEC.104	Windows Registry Configurations	☐
ENT-WSEC.105	Windows Services	☐
ENT-WSEC.106	File and Directory Security	☐
ENT-WSEC.107	Audit Logging	☐
ENT-WSEC.108	Windows Firewall Policy	☐
ENT-WSEC.109	Time Zone Setting	☐
ENT-WSEC.110	Event log setting	☐
ENT-WFM1.100	**Windows Server Roles / Features Management**	☐
ENT-WFM1.101	Installation of server feature.	☐
ENT-WFM1.102	Installation of IIS/File server role.	☐
ENT-WFM1.103	Modification of IIS/File server role.	☐
ENT-WFM1.104	Removal of IIS/File server role	☐
ENT-WDM1.100	**Windows Server Disk Management**	☐
ENT-WDM1.101	Configuring disks and volumes includes creating and formatting partitions, logical drives, & volumes	☐
ENT-WDM1.102	Defragmenting volumes to improve file-system performance	☐
ENT-WDM1.103	Managing file-system errors and bad sectors on a hard disk.	☐
ENT-WACC1.100	**Windows Server folder and File access security/share permission management.**	☐
ENT-WDLO1.100	**Windows Server Debug logs and Analysis**	☐
ENT-WSTM1.100	**Windows Scheduled Tasks Management**	☐
ENT-WRAM1.100	**Windows Server Remote Access Management.**	☐
ENT-WRAM1.101	Enabling Remote Desktop	☐
ENT-WRAM1.102	Disable Remote Desktop	☐
ENT-WDDM1.100	**Windows Server Device Drivers Management**	☐
ENT-WDDM1.101	Installation of Device Drivers.	☐
ENT-WDDM1.102	Modification of Device Drivers	☐
ENT-WDDM1.103	Removal of Device Drivers	☐
ENT-WSUM1.100	**Windows Server User Management**	☐
ENT-WSUM1.101	Create/Modify/Delete Users	☐
ENT-WSUM1.102	Create/Modify/Delete Groups	☐

ENT-WSUM1.103	Reset Password/Un-Lock Users	⏹
ENT-WSPM1.100	**Windows Server Problem Management**	⏹
ENT-WSCM1.100	**Windows Server Change Management**	⏹
ENT-WSIM1.100	**Windows Server Incident Management**	⏹
ENT-WTIK1.100	**Permitted Support tickets (Service Requests/Change Management) for server /Month**	**5**
ENT-WSCO1.100	**Support service coverage**	**24 H x 7 D/W**

ENT-RISC1.1	UNIX-Services Listed	Platinum
ENT-USM1.101	Uptime Monitoring notifications	⏹
ENT-USM1.102	Complete Monitoring with resources	⏹
ENT-USM1.103	Installation of OS	⏹
ENT-USM1.104	Server Hardening	⏹
ENT-USM1.105	OS Administration of Linux Servers (Redhat and Suse) (OS management Includes components which comes with default OS)	⏹
ENT-USM1.106	Basic OS Administration of Linux Servers (Community Editions).Best effort support on Community Editions	×
ENT-USM1.107	AIX/SOLARIS/HP Unix OS Management (OS management Includes components which comes with default OS)	⏹
ENT-USM1.108	OS virtualization Administration (KVM/VIO/Zones etc)	⏹
ENT-USM1.109	OS default Cluster Management (Pacemaker,PowerHA ,Sun Cluster heart beat etc)	⏹
ENT-USM1.110	Advance Authentication Services (LDAP etc)	⏹
ENT-USM1.111	Incident Management	⏹
ENT-USM1.112	Change Management	⏹
ENT-USM1.113	Problem Management	⏹
ENT-USM1.114	Performance Tuning	⏹
ENT-USM1.115	Quarterly OS Patching	⏹
ENT-USM1.116	Proactive Problem Management	⏹
ENT-USM1.117	Antivirus Management	⏹
ENT-USM1.118	Meeting Audit Compliances	⏹
ENT-USM1.119	VA Assessment and Fixing	⏹
ENT-USM1.120	Permitted Support tickets (Service Requests/Change Management) for server /Month	>10 & <20
ENT-USM1.121	Support service coverage	24x7

3. **Network Management Services**

List of deliverables –

S.No	Tasks	Cloud4C	Customer
	Azure Network Services - RACI		
	Azure VPN Gateway / NVA		
1	Creating site to site tunnels VPN (as per customer requirement)	R,A	C,I
2	Make required configuration on Customer owned site(s) gateway	C,I	RA
3	On Prem IP ranges addition/removal from pool	R,A	C,I
4	Creating point to site VPN (Certificate/RADIUS/AAD)(as per customer requirement)	R,A	C,I
5	Configure and manage Gateway for any of the above VPN	R,A	C,I
6	Manage certificates for point to site VPN (If Applicable)	R,A	C,I
7	Creation of endpoints	R,A	C,I
8	Configuration of forced tunnelling	R,A	C,I
9	Creation of rules	R,A	C,I
10	Configure monitoring of tunnels and reporting.	R,A	C,I
11	VPN throughput Validation	R,A	C,I
12	Configure & Manage HA for NVA	R,A	C,I
13	Security Profiles (APT/IPS/Web filtering etc.) Configuration (as per customer requirement)	R,A	C,I
14	Site-to-Site with NVA(IPsec/SSL) configuration (as per customer requirement)	R,A	C,I
15	Virtual Appliance/Service Mgmt	R,A	C,I
16	Logging and Reporting configuration for NVA (If included)	R,A	C,I
	Virtual Network		
1	Create Network Space with CIDR Block (Region Specific)	R,A	C,I
2	Create Address Space (to be non-conflicting with customer range if any)	R,A	C,I
3	Creating Vnet and Subnet	R,A	C,I
4	Deleting Vnet and Subnet	R,A	C,I
5	Delete Address Space	R,A	C,I
6	Associating IP to Host	R,A	C,I
7	Changing the IP Address of Device	R,A	C,I
8	Deleting the connected Device (If VM Deleted)	R,A	C,I

9	Adding/Changing DNS configuration on VNet	**R,A**	**C,I**
10	Associate / Dissociate NSG on VNet	**R,A**	**C,I**
	Public IP Address		
1	Reserve Static Public IP for host	**R,A**	**C,I**
2	Associate the Public IP to Host (Created VM)	**R,A**	**C,I**
3	Change Public IP for Host	**R,A**	**C,I**
4	Dissociate public IP from Host	**R,A**	**C,I**
5	Delete public IP	**R,A**	**C,I**
	Network Interface		
1	Create Network Interface with static IP assigned	**R,A**	**C,I**
2	Associate / Dissociate IP	**R,A**	**C,I**
3	Deleting Network Interface	**R,A**	**C,I**
4	Associate / Dissociate Network Interface	**R,A**	**C,I**
5	Associate / Dissociate Subnet	**R,A**	**C,I**
	Network Security Groups (NSG)		
1	Add NSG (Regional Specific)	**R,A**	**C,I**
2	Creating inbound security rules	**R,A**	**C,I**
3	Creating outbound security rules	**R,A**	**C,I**
4	Opening required ports	**R,A**	**C,I**
5	Number of NSGs to be applied - (depends on customer requirement)	**R,A**	**C,I**
6	Create and add ASG for workloads - (depends on customer requirement)	**R,A**	**C,I**
	Load Balancers		
1	Creating LB with Dynamic / Static IP	**R,A**	**C,I**
2	Configuration of the Load balancer (Internal / External)	**R,A**	**I**
3	Configure Front IP	**R,A**	**C,I**
4	Configure Backend Pool with Standalone VM or Availability Sets	**R,A**	**C,I**
5	Configure and Manage - Health Probes	**R,A**	**C,I**
6	Configure and Manage - Load balancing rules	**R,A**	**C,I**
	Virtual WAN		
1	Determine Cloud Resource Geography for HUB, connected Virtual Networks and on-premise connections.	**R,A**	**C,I**
2	Configure IPsec IKEv2 Site-to-Site VPN on the CloudGen Firewall	**R,A**	**C,I**
3	Is this for testing? If so, is the testing environment known?	**R,A**	**C,I**

		Cloud4C	Customer
4	Access to the Hypervisor with admin permissions for hardware/software installation	C,I	R,A
5	LAN IP & subnet for virtual machine instance created on Hypervisor	R,A	C,I
	Express Route		
1	Creating the Express Route Circuit	R,A	C,I
2	Selecting the Vendor providing the ER connection to MS	C,I	R,A
3	Network Planning and performance tuning	R,A	C,I
4	Define and Manage Service, Peering location, SKU	R,A	C,I
5	Manage Routing table and rules	R,A	C,I
	Azure Traffic Manager		
1	Creating Traffic Manager profile with preferred location	R,A	C,I
2	Selecting the priority in the routing method	R,A	I
3	Adding Traffic Manager endpoints	R,A	C,I
4	Nested traffic manager profile (If needed)	R,A,C	I
5	DR using Azure DNS and Traffic manager	R,A	C,I

4. *Backup Management*

List of deliverables –

Azure Backup Services - RACI			
S.No	**Tasks**	**Cloud4C**	**Customer**
	Azure Backup (Azure to Azure)		
1	Creating Recovery services Vault	R,A	C,I
2	Configure Backup for VM	R,A	C,I
3	Configure Application consistent Backup	R,A	C,I
4	Configure Backup Policy - Define Instant restore, frequency and retention period	R,A	C,I
5	Restore Keys and secret for encrypted VM's	R,A	C,I
6	Run file level restore test	R,A	C,I
7	Run Backup restore test	R,A	C,I
8	Restore VM Backup	R,A	C,I
	Azure Backup (On-Prem to Azure)		
1	Provisioning Backup server on-premise (Azure Backup server/3rd Party backup server)	R,C,I	R,A

2	Configuring Backup server	R,A	C,I
3	Creating Recovery services Vault	R,A	C,I
4	Configure Backup for VM	R,A	C,I
5	Configure Backup Policy - Define Instant restore, frequency and retention period	R,A	C,I
6	Run file level restore test	R,A	C,I
7	Run Backup restore test	R,A	C,I
8	Restore VM Backup	R,A	C,I
	Commvault		
1	Provision MAS Server & establish trust with CommServer	R,A	C,I
2	Backup license allocation as per BOQ	R,A	C,I
3	Provision Blob Storage as per requirements	R,A	C,I
4	Connect Blob to MAS & enable encryption	R,A	C,I
5	Establish Backup Network in Mgmt zone	R,A	C,I
6	Backup Policy template Configuration	R,A	C,I
7	Backup agent installation in Client servers	R,A	R,C,
8	Agent-less VM Protection (Virtual Server Agent for Azure)	R,A	C,I
9	Azure Snapshots - crash consistent point in time copy of an Azure disk,	R,A	C,I
10	Scheduling of the backups	R,A	C,I
11	Storage policies / retention policy	R,A	C,I
12	Failure alert configuration	R,A	C,I
13	Monitor/Manually Trigger halted Backup	R,A	C,I
14	Policy Documentation	R,A	R,C,
15	Backup Summary Report	R,A	C,I
16	Capacity planning based on Retention, Frequency and Size	R,A	R,C,
17	Move Archive Data to Cool Storage tier	R,A	C,I
18	Adhoc Backup Requests under ECR	R,A	C,I

5. **DB Management:**

List of deliverables –

Azure DBaaS Services - RACI			
S.No	**Tasks**	**Cloud 4C**	**Customer**
	AZURE SQL DATABSE		
1	Creating Azure SQL Database (Single/Elastic/Managed)	R,A	C,I

2	Migration to Azure SQL Database (Single/Elastic/Managed)	R,A	C,I
3	Compatibility troubleshooting for Azure SQL Database Migration	R	A,C
4	Implementation of failover group	R,A	C,I
5	Implementation of geo-distributed database and geo-replication	R,A	C,I
6	Creation of sync groups (If required)	R,A	C,I
7	Creating server-level and database-level firewall rules	R,A	C,I
8	Configuring an Azure Active Directory (AD) administrator	R,A	C,I
9	Enable security features, such as advanced data security, auditing, data masking, and encryption	R,A	C,I
10	Configure backup and retention using Azure Blob storage	R,A	C,I
11	Manage user access with SQL authentication, Azure AD authentication, and secure connection strings	I	R,A
12	Configuring Alerts	R,A	C,I

ENT-MSSQL1.1	SQL on IaaS VM	Platinum
ENT-SQLM1.101	System Status Monitoring (Up/Down)	⍰
ENT-SQLM1.102	Monitor Performance and Resource Metrics	⍰
ENT-SQLM1.103	Automatic Threshold Comparison of Collected Metrics	⍰
ENT-SQLM1.104	Notification When Potential System Availability Issue Identified	⍰
ENT-SQLM1.105	Notification When Potential System Resource Issue Identified	⍰
ENT-SQLM1.106	SQL DB Usage Monitoring	⍰
ENT-SQLM1.107	Scan SQL Log Files for Event Types	⍰
ENT-SQLM1.108	Backup Monitoring & Verification	⍰
ENT-SQLM1.109	Configuration Change Monitoring	⍰
ENT-SQLM1.110	Notification When Configuration Change Identified	⍰
ENT-SQLM1.111	Cluster Node Change Monitoring	⍰
ENT-SQLM1.112	Notification When Cluster Node Change Identified	⍰
ENT-SQLM1.113	Troubleshoot and Analyse Root Cause for Cluster Node Change	⍰
ENT-SQLM1.114	Replication Job Monitoring	⍰
ENT-SQLM1.115	Replication Job Failure Notification	⍰
ENT-SQLM1.116	SQL Job Monitoring	⍰
ENT-SQLM1.117	SQL Job Failure Notification	⍰
ENT-SQLM1.118	User Management	⍰
ENT-SQLM1.119	Security Management	⍰
ENT-SQLM1.120	Weekly/Monthly Reports on Case Activity and System Resources	⍰
ENT-SQLM1.121	Capacity Planning & Trend Analysis	⍰
ENT-SQLM1.122	Weekly/Monthly Status Call with DBA Support Professionals	⍰

ENT-SQLM1.123	Service Requests/Change Management Tickets Handled	2

ENT-ODB1.100	ORACLE-DB Services	Platinum
ENT-ODB1.101	Database Monitoring	⯑
ENT-ODB1.102	Database Space Management	⯑
ENT-ODB1.103	Users and Roles Management	⯑
ENT-ODB1.104	Incident Management	⯑
ENT-ODB1.105	Problem Management	⯑
ENT-ODB1.106	Backup and Recovery Services	⯑
ENT-ODB1.107	Database Health Checks	⯑
ENT-ODB1.108	Alert Management	⯑
ENT-ODB1.109	Run and Maintenance Services	⯑
ENT-ODB1.110	Change Management	⯑
ENT-ODB1.111	DR Maintenance and Monitoring	⯑
ENT-ODB1.112	Call Log and Coordination with Software Vendor	⯑
ENT-ODB1.113	Patch Management	⯑
ENT-ODB1.114	Support and Fix VA Findings	⯑
ENT-ODB1.115	Cluster DB management	⯑
ENT-ODB1.116	DB Performance Tuning	⯑
ENT-ODB1.117	Database Security management	⯑
ENT-ODB1.118	Permitted Support tickets (Service Requests/Change Management) for server /Month	5
ENT-ODB1.119	Support service coverage	24x7x365 Support

6. **Active Directory Management Services**

List of deliverables –

ENT-AD1.1	Active Directory Administration	Platinum
ENT-ADADMIN1.101	**AD User Management**	⯑
ENT-ADADMIN1.102	AD User Creation	⯑
ENT-ADADMIN1.103	AD User Modification	⯑
ENT-ADADMIN1.104	AD User Deletion	⯑
ENT-ADADMIN1.105	AD User Account Lockout/Password Reset	⯑
ENT-ADADMIN1.106	AD Object restoration by Backup	⯑
ENT-ADADMIN1.107	AD Romaing User Profile Management	⯑
ENT-ADADMIN1.108	**AD Group Management**	⯑

ENT-ADADMIN1.109	AD Group Creation	⏱
ENT-ADADMIN1.110	AD Group Membership change	⏱
ENT-ADADMIN1.111	AD Group Deletion	⏱
ENT-ADADMIN1.112	AD Group Modification	⏱
ENT-ADADMIN1.113	**AD Computer Management**	⏱
ENT-ADADMIN1.114	AD Computer Creation	⏱
ENT-ADADMIN1.115	AD Computer Trust Reset.	⏱
ENT-ADADMIN1.116	AD Computer Deletion	⏱
ENT-ADADMIN1.117	AD Computer Modification	⏱
ENT-ADADMIN1.118	**AD OU Management**	⏱
ENT-ADADMIN1.119	AD OU Creation	⏱
ENT-ADADMIN1.120	AD OU Security Admin Access delegation.	⏱
ENT-ADADMIN1.121	AD OU Deletion	⏱
ENT-ADADMIN1.122	AD OU Modification	⏱
ENT-ADADMIN1.123	**AD Monitoring**	⏱
ENT-ADADMIN1.124	AD Services Monitoring	⏱
ENT-ADADMIN1.125	AD DC Replication Monitoring.	⏱
ENT-ADADMIN1.126	AD Backup Monitoring	⏱
ENT-ADADMIN1.127	**AD Proactive Preventive Maintenance**	⏱
ENT-ADADMIN1.128	AD Proactive Preventive Health Checks	⏱
ENT-ADADMIN1.129	AD Proactive Preventive Technical Audits	⏱
ENT-ADADMIN1.130	AD Proactive Preventive Risk Assessments	⏱
ENT-ADADMIN1.131	AD Directory Service Log Analysis	⏱
ENT-ADADMIN1.132	AD Admin User Access Audits.	⏱
ENT-ADADMIN1.133	AD Security Health Checks.	⏱
ENT-ADADMIN1.134	**AD Group Policy Management**	⏱
ENT-ADADMIN1.135	AD GPO Creation	⏱
ENT-ADADMIN1.136	AD GPO Deletion	⏱
ENT-ADADMIN1.137	AD GPO Modification	⏱
ENT-ADADMIN1.138	**AD Forest Management**	⏱
ENT-ADADMIN1.139	AD Trees Management	⏱
ENT-ADADMIN1.140	AD Domain Management	⏱
ENT-ADADMIN1.141	AD Sites Management	⏱
ENT-ADADMIN1.142	AD FSMO Roles Management	⏱
ENT-ADADMIN1.143	AD Time Services Management	⏱
ENT-ADADMIN1.144	AD Database Management	⏱
ENT-ADADMIN1.145	AD Integrated DNS Management	⏱
ENT-ADADMIN1.146	**24x7 Premium Support**	⏱
ENT-ADADMIN1.147	**Permitted Support tickets (Service Requests/Change Management) for server /Month**	5
ENT-ADADMIN1.148	**Support service coverage**	24 H x 7 D/W

9. SAP Managed Services

Cloud4C SAP Managed Service is a service that includes the various flavors, with incremental packages that suite the needs of our customers.

Each individual component of the service is interoperable and is used to deliver an overall service availability to maintain committed SLA.

Services	Cloud4C	SAP Functional Partner	End Customer
Cloud Pod Build (SAP Community Cloud)	R,A		
Provisioning Services on Cloud Platform [As per Product and Services Matrix]	R,A	I	I
Operating System Build	RA	C,I	I
Database Build (HANA, ASE, MS SQL, Oracle, MaxDB - as per BOQ)	RA	C,I	I
Provisioning Services (Network, OS, Database, Backup, Monitoring and Security Tools)	R,A	I	I
Licenses - Security Tools (as per BOQ)	R,A	I	I
Installation of SAP Application and Databases as per Functional Partner Checklist (Based on S2DH)	R,A	R,A,C	C,I
Configuration and Customisation of SAP application and Databases	C,I	R,A	I
SAP Basis Monitoring	R,A	C,I	I
Operating System Management and Support	R,A	C,I	I
Database Management and Support	R,A	C,I	I
Disaster Recovery Site Creation using identified tools if DR opted (ASR, HSR, Log Shipping, Export Import)	R,A	I	C,I
Backup Management and Support	R,A	I	C,I
Security & Compliance Services	R,A	I	C,I
Functional Application Support	I	R,A,C	I
Infrastructure Audits Support	R,A	C,I	I
Compliance Certification for deployed infrastructure	C,I	C,I	R,A
Automation using RPA Tools (Infrastructure Level Above Hypervisor Layer)	R,A	C,I	C,I
Cloud Platform Support	R,A	I	I

ENT-SAP1-PM	SAP Monitoring Services	Type of Task
ENT-SAP1.PM1	Monitor SAP System log	L1
ENT-SAP1.PM2	Monitor failed updates	L1
ENT-SAP1.PM3	Monitor RFC errors	L1
ENT-SAP1.PM4	Monitor stale locks and analysis of lock	L1
ENT-SAP1.PM5	Monitor audit log	L1

ENT-SAP1.PM6	Monitor System dumps	L1
ENT-SAP1.PM7	Monitoring of work process	L1
ENT-SAP1.PM8	Validate successful Backup runs	L1
ENT-SAP1.PM9	Monitoring of operating system activity on CPU utilization	L1
ENT-SAP1.PM10	Monitor the "Up/ Down" status of SAP instances	L1
ENT-SAP1.PM11	Monitor processes for in-scope SAP, Bolt-ons	L1
ENT-SAP1.PM12	Monitor SAP print queue	L1
ENT-SAP1.PM13	Monitor and respond to critical CCMS alerts	L1
ENT-SAP1.PM14	Monitor Application performance	L1
ENT-SAP1.PM15	Monitor overall Dialog Response	L1
ENT-SAP1.PM16	Monitor the top critical business Transactions	L1
ENT-SAP1.PM17	Monitor systems proactively for Response Time and CPU Utilization	L1
Pre-Requisite		
1	EWA report without any Red Flag	
2	Completion of SAP Solution Manager Monitoring Configuration & Monitoring Level Access	
3	Alert Configuration to Cloud4C Monitoring ID's from Solution Manager	
4	SAP Cockpit configuration completion from Customer end.	

ENT-SAP1-Basis	SAP Basis Support	Type of Task
Support for SAP Basis Standard Services		
ENT-SAP1.BS1	Regular Daily, weekly and Monthly SAP Basis Administration Tasks	L1
ENT-SAP1.BS2	Troubleshooting Basis and Basis Related Application issues	L2
ENT-SAP1.BS3	Apply BASIS /NetWeaver patches	L2
ENT-SAP1.BS4	Communicate and Co-Ordinate Basis / NetWeaver Patch testing with Application Group before moving it into QAS and PRD	L1
ENT-SAP1.BS5	Job Scheduling, monitoring and troubleshooting	L1
ENT-SAP1.BS6	Maintain Transport and Change Control Management	L3
ENT-SAP1.BS7	Resolve Basis issues related to TMS setup and transport tool errors	L2
ENT-SAP1.BS8	Resolve Application and Configuration issues to transport errors	L2
ENT-SAP1.BS9	Monitoring Report	L1
ENT-SAP1.BS10	Dedicated Reporting(In Specific Format as requested by customer)	L1
Client /System Copy Operations		
ENT-SAP1.BS11	Client Copy Operations	L2
ENT-SAP1.BS12	External and Internal SAP Interface Monitoring and Administration	L2
ENT-SAP1.BS13	Plan, execute and test Homogeneous / Heterogeneous system copy on existing systems	L3
Print Management		

ENT-SAP1.BS14	Maintain printers within SAP software	L2
ENT-SAP1.BS15	Check spooler table consistency	L2
ENT-SAP1.BS16	Troubleshooting spool- and print-problems (within the SAP system)	L2
Performance and Tuning		
ENT-SAP1.BS17	Optimize SAP system (system tuning) using pro-active monitoring, planning, scheduling early watch and implementing EWA recommendations from Technical operations perspective	L3
ENT-SAP1.BS18	Provide application performance analysis (e.g. ABAP)	L3
ENT-SAP1.BS19	Support application team in resolution of app. performance problems	L3
Event Detection and Notification		
ENT-SAP1.BS20	Define Hardware , OS, DB and SAP Basis Monitoring Requirements	L3
ENT-SAP1.BS21	Define event notification and escalation procedures	L3
ENT-SAP1.BS22	Monitor console for event notification coming from Solution Manager	L3
ENT-SAP1.BS23	React to events according to event notification and escalation procedures and SLA	L3
Request Management - Technical Support (Incident Management)		
ENT-SAP1.BS24	Support Charm In Solution Manger to track Technical Requests	L2
ENT-SAP1.BS25	Track , execute and resolve any issues related to Transport Requests from Application Groups	L2
ENT-SAP1.BS26	Follow-up Basis OSS messages to closure	L2
Problem Management – Help Desk Support		
ENT-SAP1.BS27	Define problem handling process, and responsible personnel	L2
ENT-SAP1.BS28	Qualify, prioritize , log , resolve and close Technical problems	L2
ENT-SAP1.BS29	Escalate problems as necessary according to documented procedures	L2

ENT-HANA DB	SAP HANA Database Services	Type of Task
ENT-HANA DB1	Provide recommendations on database release management	L3
ENT-HANA DB2	Plan and perform file system extensions for e.g. backup activities	L2
ENT-HANA DB3	Monitor database resource consumption to detect issues in technical operations	L1
ENT-HANA DB4	Monitor table growth to proactively prevent operational issues and ensure that the service stays within the contractual sizing boundaries	L3
ENT-HANA DB5	Design table partitioning strategy/architecture	L3
ENT-HANA DB6	Partition tables (technical execution)	L3
ENT-HANA DB7	Perform row store / column store migration	L3
ENT-HANA DB8	Monitor database for technical issues; analyse and resolve technical database failures	L2
ENT-HANA DB9	Clean-up HANA log and trace files (traces, statistic files etc.) to free up capacity and keep HANA system clean and healthy	L1

ENT-HANA DB10	Maintain technical configuration parameters for SAP HANA and SAP HANA XS based on SAP standards and recommendations	**L2**
ENT-HANA DB11	Start/stop database	**L1**
ENT-HANA DB12	Add/remove SAP HANA node to adjust SAP HANA capacity	**L3**
ENT-HANA DB13	Creation of additional schema for existing SAP HANA DataMart	**L3**
ENT-HANA DB14	Renaming of SAP HANA database (ID, instance number)	**L3**
ENT-HANA DB15	Change SAP HANA database architecture (single node to multi node or vice versa)	**L2**
ENT-HANA DB16	Management of standby databases (HANA System Replication) for high availability	**L2**
ENT-HANA DB17	Update SAP HANA database software	**L2**
ENT-HANA DB18	Implement updates to the managed HANA DATABASE Patching using Near Zero Downtime Option of Software Update Manager (ZDO)	**L2**
ENT-HANA DB19	Update and maintain SAP HANA Studio	**L2**
ENT-HANA DB20	SAP HANA Transports Management Setup	**L3**
ENT-HANA DB21	Implement / maintain additional SAP tools (e.g. SAP HANA Analytics Foundation Browser)	**L3**
ENT-HANA DB22	Identify, analyse and optimize expensive SQL-statements to improve application performance	**L2**
ENT-HANA DB23	System troubleshooting, e.g. blocked transactions, to overcome issues and bring SAP HANA back to normal state of operations	**L2**
ENT-HANA DB24	Create/modify users for HANA modelling in the SAP HANA Studio	**L1**
ENT-HANA DB25	User, roles and permissions management for non-technical users	**L1**
ENT-HANA DB26	User, roles and permissions management for technical and administration users	**L1**
ENT-HANA DB27	Perform database backups (regular full backups and log backups)	**L1**
ENT-HANA DB28	Restore and recover SAP HANA after technical issues	**L3**
ENT-HANA DB29	dbcc (database consistency check)	**L2**
ENT-HANA DB30	Implement SAP HANA database encryption on SAP HANA database already installed	**L3**
ENT-HANA DB31	Operate encrypted HANA database	**L3**

| **ENT-SYBASE-MON1.1**	**SYBASE SQL DB Services Monitoring**	**Platinum**
ENT-SYBASE-MON1.101	Provide recommendations on database release management	⬚
ENT-SYBASE-MON1.102	Monitor database resource consumption (memory, CPU, storage) to detect issues in technical operations	⬚
ENT-SYBASE-MON1.103	Perform database extensions to increase database capacity	⬚
ENT-SYBASE-MON1.104	Monitor table extension parameters to avoid issues	⬚
ENT-SYBASE-MON1.105	Monitor database for technical issues; analyse and resolve technical database failures	⬚

ENT-SYBASE-MON1.106	Schedule periodic statistical database collectors to generate statistical performance data	⬜
ENT-SYBASE-MON1.107	Reorganize database logs to free up space	⬜
ENT-SYBASE-MON1.108	Maintain/change database parameters	⬜
ENT-SYBASE-MON1.109	Start/stop database	⬜
ENT-SYBASE-MON1.110	Create and check optimizer statistics to maintain database performance	⬜
ENT-SYBASE-MON1.111	Perform upgrades of database software	⬜
ENT-SYBASE-MON1.112	Apply database patches	⬜
ENT-SYBASE-MON1.113	Perform database backups (regular database and log backups)	⬜
ENT-SYBASE-MON1.114	Restore and recover database after technical issues	⬜
ENT-SYBASE-MON1.115	Perform dbcc (database consistency check)	⬜
ENT-SYBASE-MON1.116	Assist customer in optimizing SQL statements (indexes, selects etc.) for application improvements	⬜

ENT-SAP1.BAK	SAP Backup Services	Type of Task
Backup & Restore		
ENT-SAP1.BK1	Backup of the System including FS and Database	L1
ENT-SAP1.BK2	Frequency & Schedule of the Backup	L1
ENT-SAP1.BK3	Retention Policies	L2
ENT-SAP1.BK4	Restoration of Data on Client request other than System Failures	L3
ENT-SAP1.BK5	Validation of logical integrity & consistency of the restored information	L3

Customer Onboarding:

Customer Onboarding process starts when the Order is confirmed, a PO/signed contract is given by customer to Cloud4C. An internal order is raised in our system with customer landscape, Solution & customer contact details.

On Boarding Process
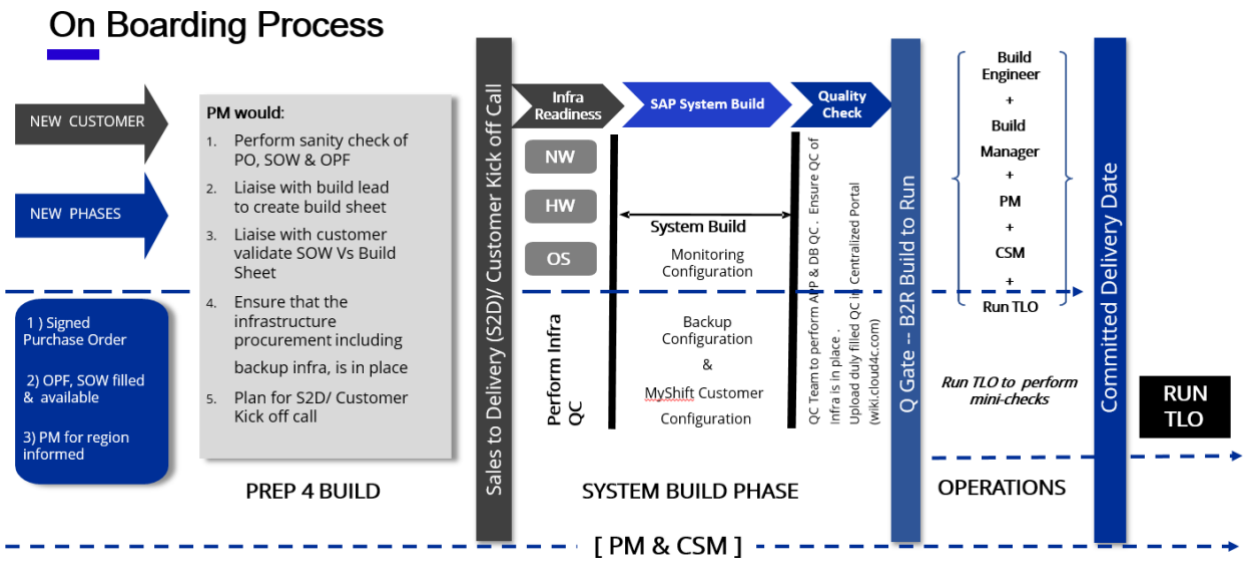
Onboarding Process - Roadmap
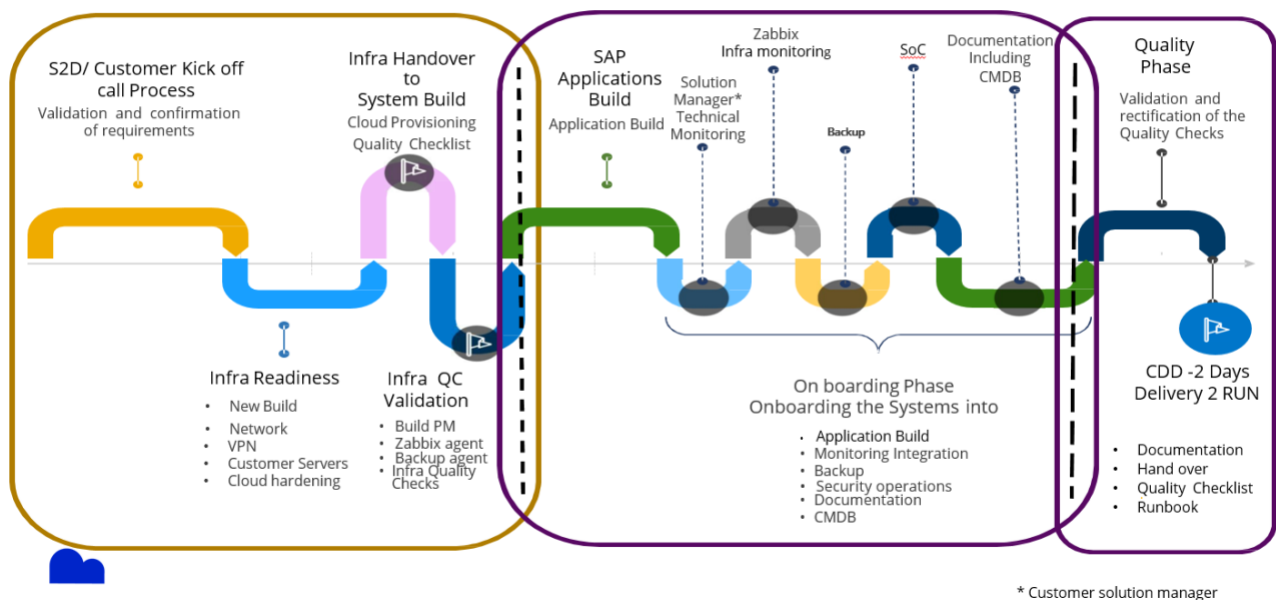
Help Desk / Service Desk:

A Service Desk is a primary IT service called for in IT service management (ITSM) as defined by the Information Technology Infrastructure Library (ITIL). It is intended to provide a Single Point of Contact ("SPOC") to meet the communication needs of both Users and IT employees. But also to satisfy both Customer and IT Provider objectives "User" refers to the actual user of the service, while "Customer" refers to the entity that is paying for service.

The ITIL approach considers the service desk to be the central point of contact between service providers and users/customers on a day-to-day basis. It is also a focal point for reporting Incidents (disruptions or potential disruptions in service availability or quality) and for users making service requests (routine requests for services).
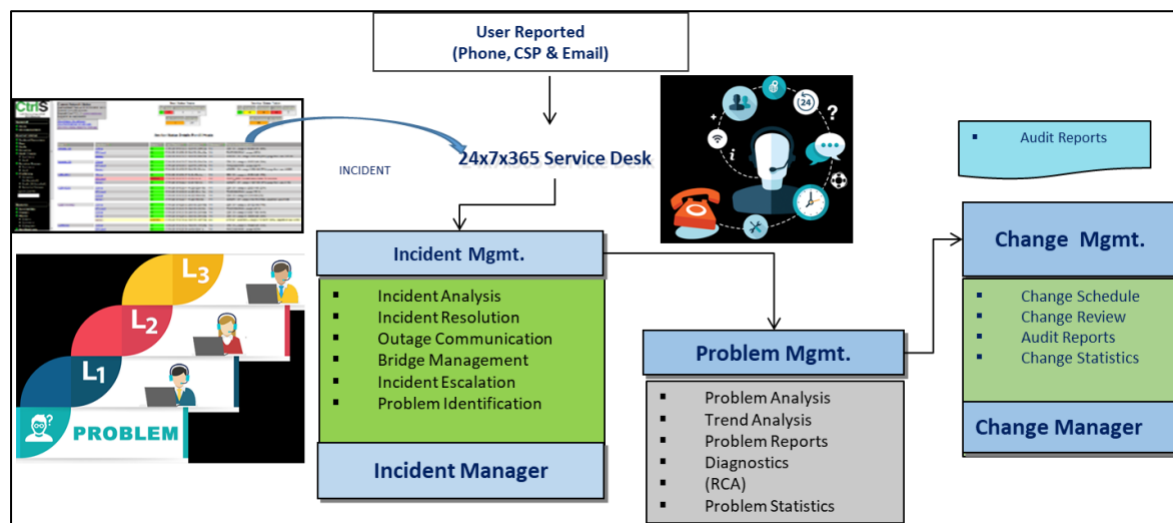
Service Desk Deliverables:

Deliverables	Key Roles and Tasks
Incident Detection & Recording	▸ Receive End-User calls/ emails ▸ Incident logging
Incident Classification	• Classify Incident as per Customer Severity Definition
Investigation & Diagnosis	• Diagnosis of Incident through questioning end-user
Initial Support	▸ Resolution of Standard Problems using SOPs and Knowledge Base ▸ Remote Troubleshooting of Desktops
Escalation	▸ Escalate to Field Support or appropriate technology resources ▸ Advance Notification of Critical Incidents

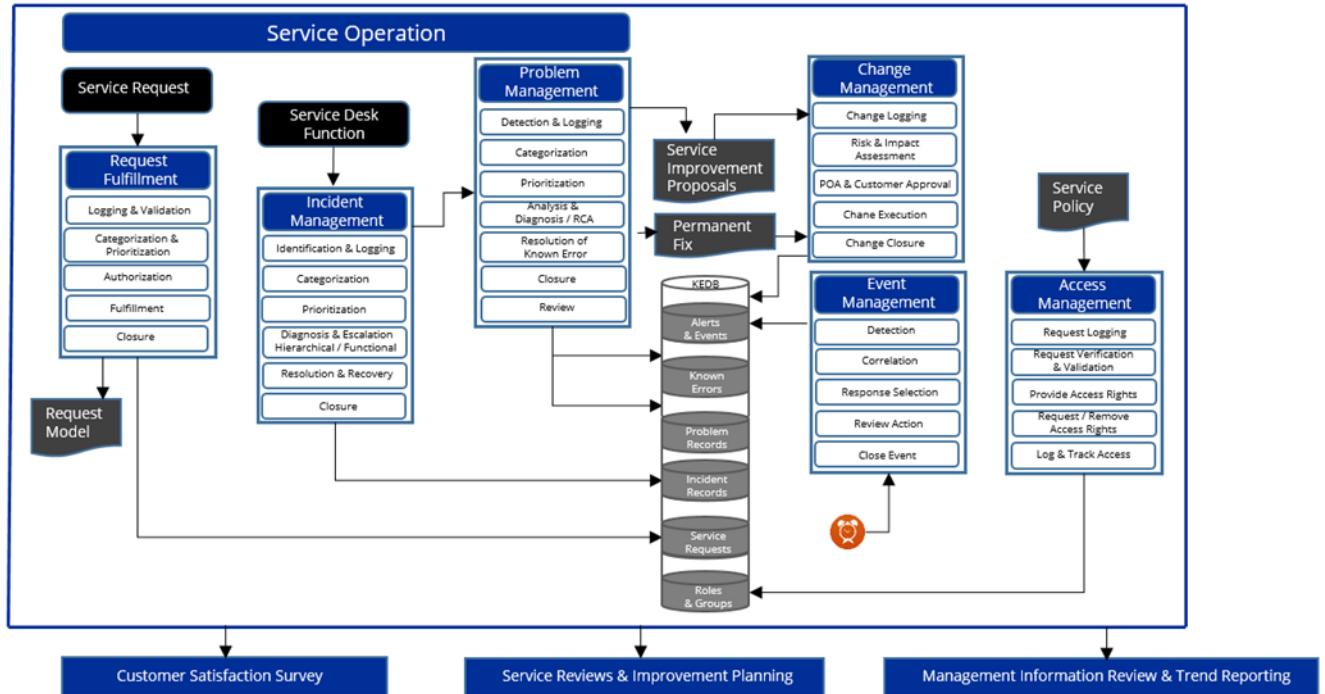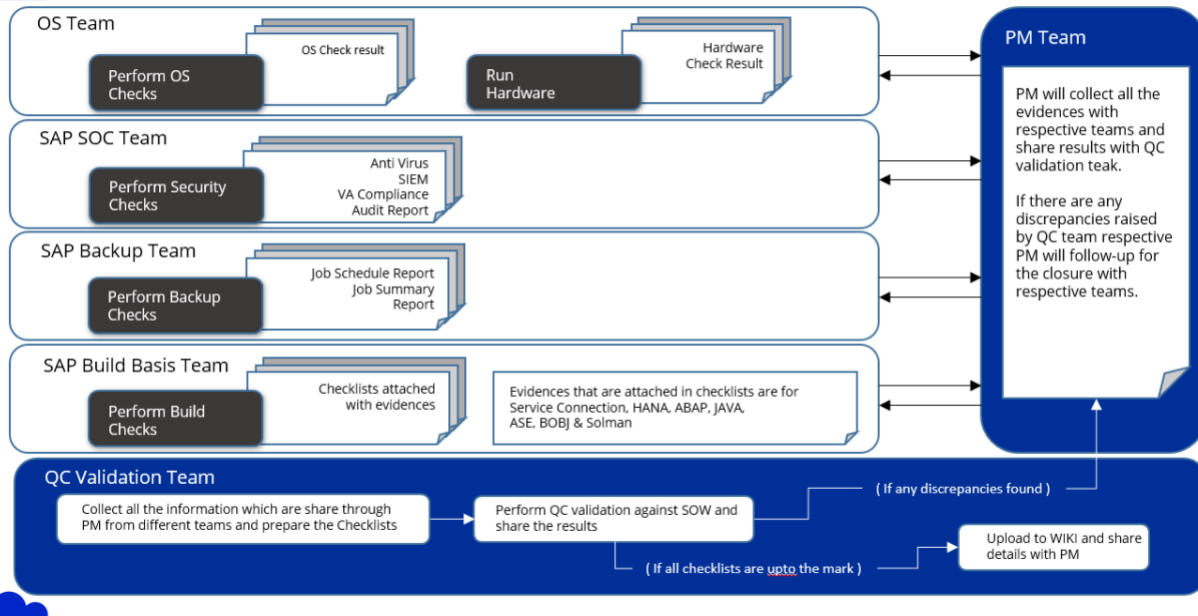| Incident Closure	▶ Follow-up with support groups and close incident after user acceptance
Trend Analysis	▶ Perform regular trend analysis of Help Desk Incidents ▶ Initiate appropriate Problem/ Change Management process

Ticket Flow & Governance:
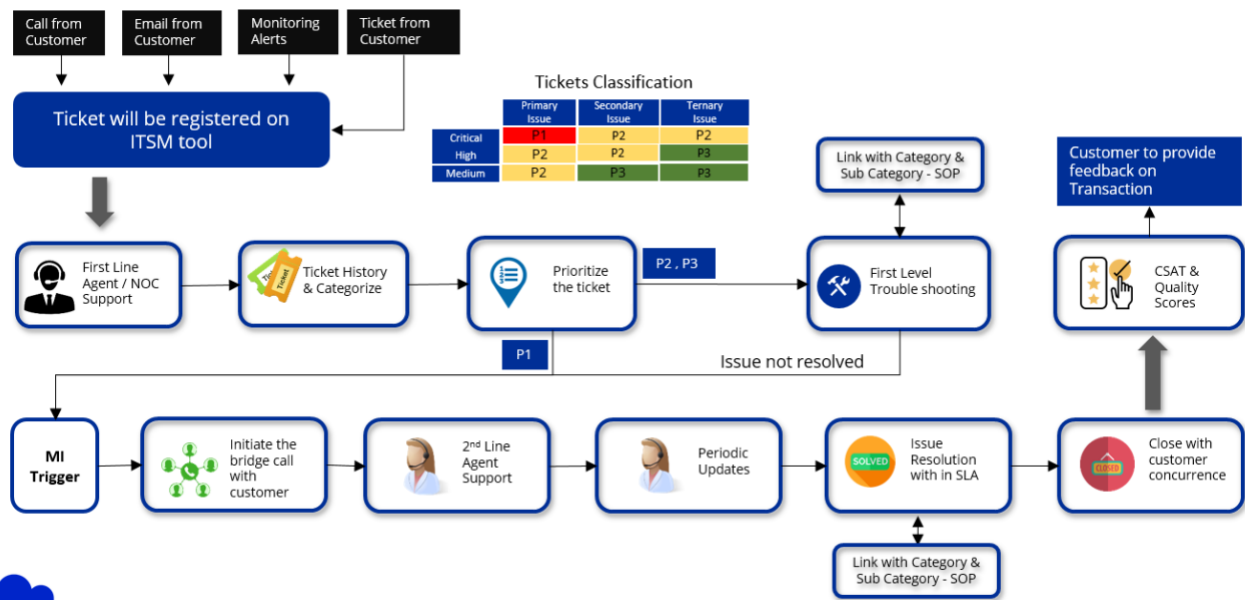
Ticket Governance
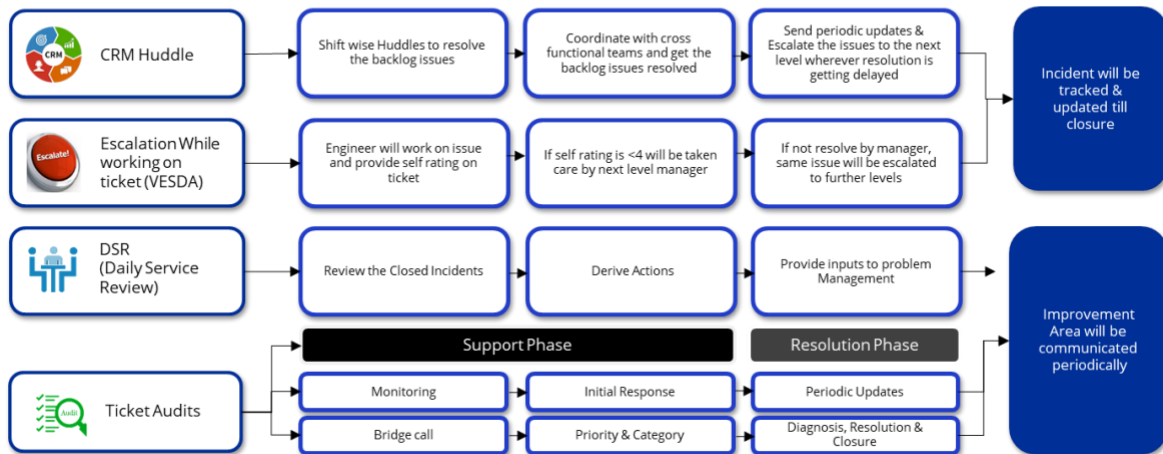
Service Operation Processes:


Service Validation & Testing Lifecycle

Incident Management

Incident Management is the process for dealing with all incidents. This process can include:

- Failures,
- Questions
- Queries
  - ▶ Incidents can be reported by users (usually through a telephone call to the Service Desk), by technical staff, or event monitoring tools that automatically detect and send reports. Incident Management includes any event which disrupts, or which could disrupt, a service.
  - ▶ Incidents can also be reported, logged, or both, by technical staff.
  - ▶ Both incidents and Service Requests are reported to the Service Desk

Alert and Incident Management
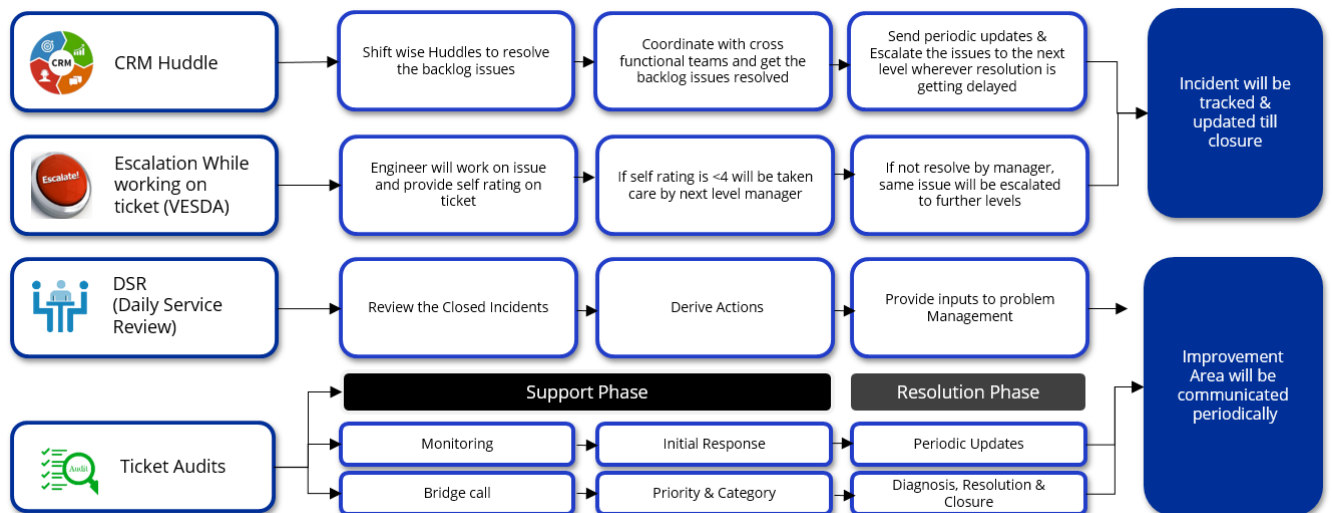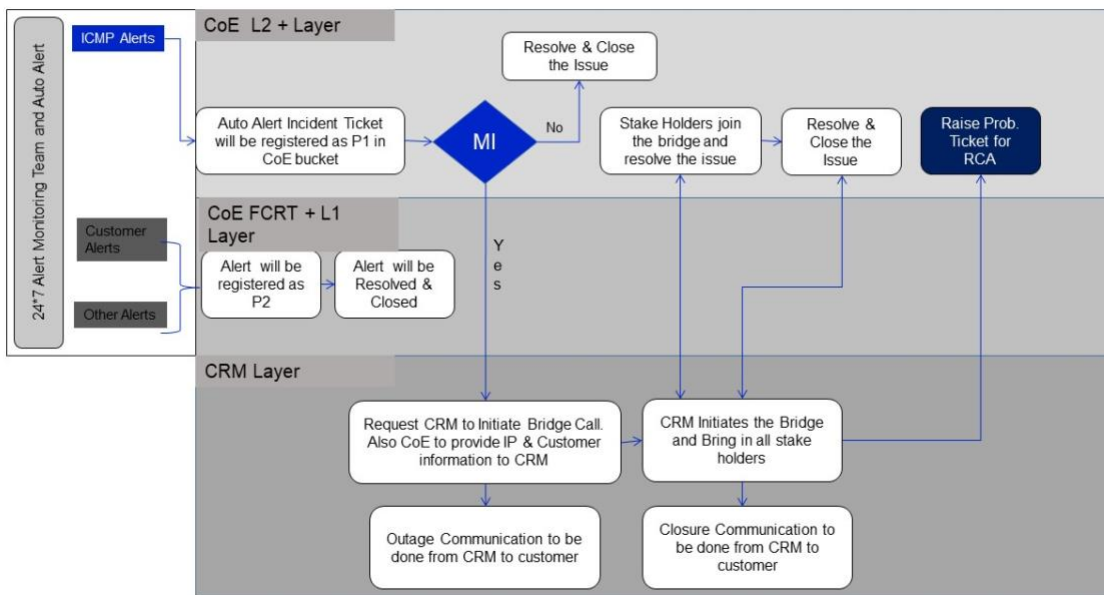
Problem Management:

The primary objectives of problem management are to:

- Prevent problems and resulting incidents from happening
- Eliminate recurring incidents
- Minimize the impact of incidents that cannot be prevented

Problem Management includes the activities required to diagnose the root cause of incidents and to determine the resolution to those problems. It is also responsible for ensuring that the resolution is implemented through the appropriate control procedures, especially Change Management and Release Management.

Problem Management will also maintain information about problems and the appropriate workarounds and resolutions so that the organization is able to reduce the number and impact of Incidents over time. In this respect Problem Management has a strong interface with Knowledge Management, and tools such as the Known Error Database will be used for both.

Problem Management – Process
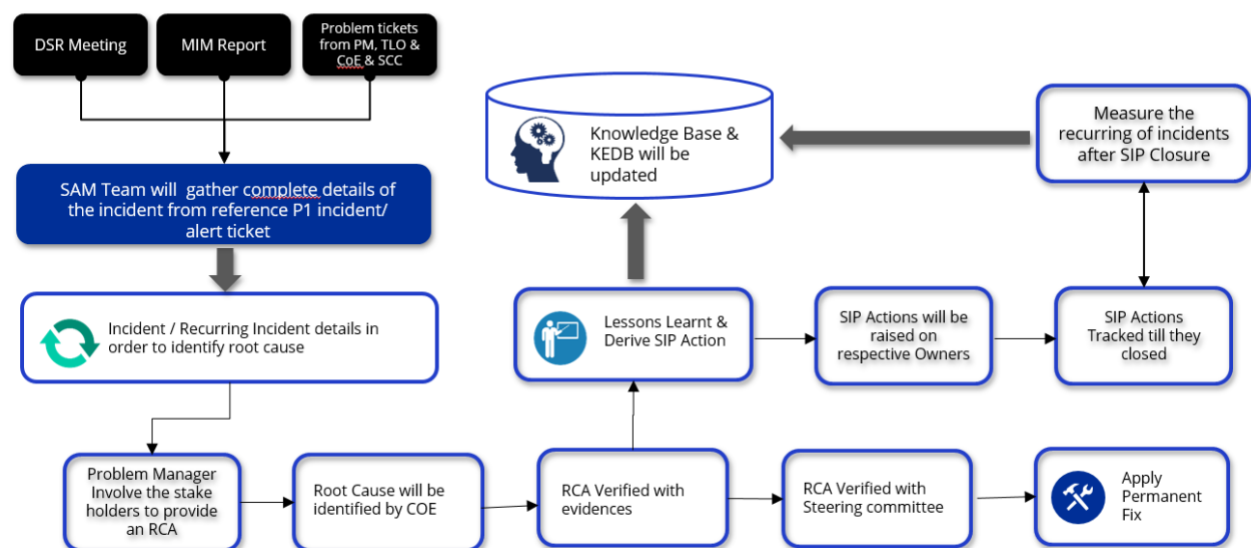
Problem Management – Governance
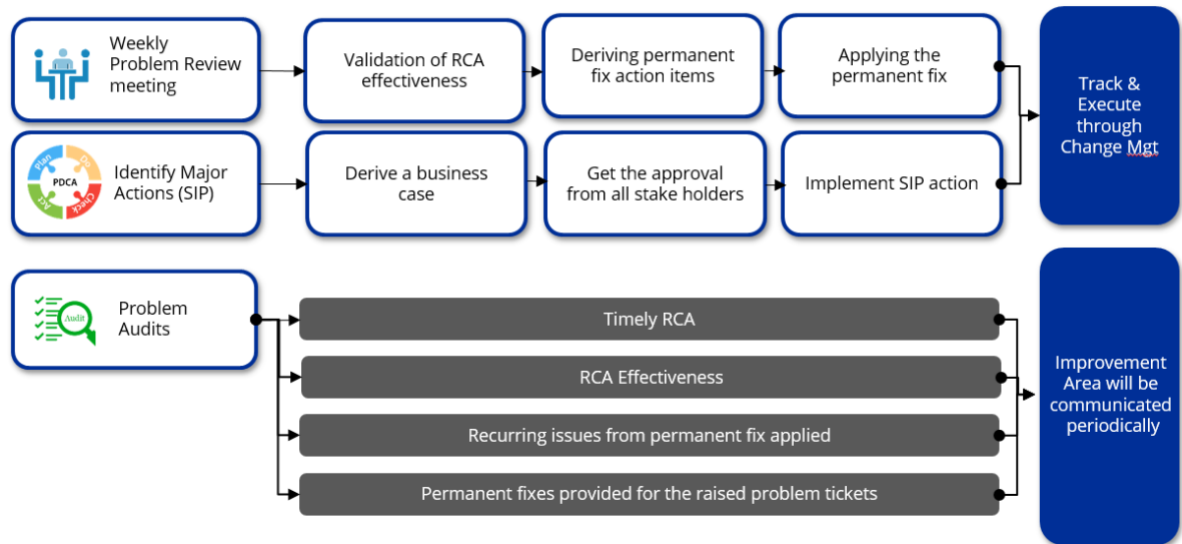

Change Management:-

The objective of change management is to ensure rigorous change control procedure & successful roll out of change into the production.

Cloud4C believes that Customer will follow a rigorous change control procedure to ensure the effective roll out of a change into the production system. Cloud4C team will be part of the CAB who is responsible for the implementation of change at DC site where Cloud4C will perform the risk analysis of any change and identify the impact of that change onto the existing system. Cloud4C in coordination with Application owners will also work out a Roll Back plan in case of things not working properly.

Timelines of any change will be in lines with the timelines defined by CAB and as per criticality of the change

A complete process covering Problem & Change Management as per ITIL process is showed below:

Change Management
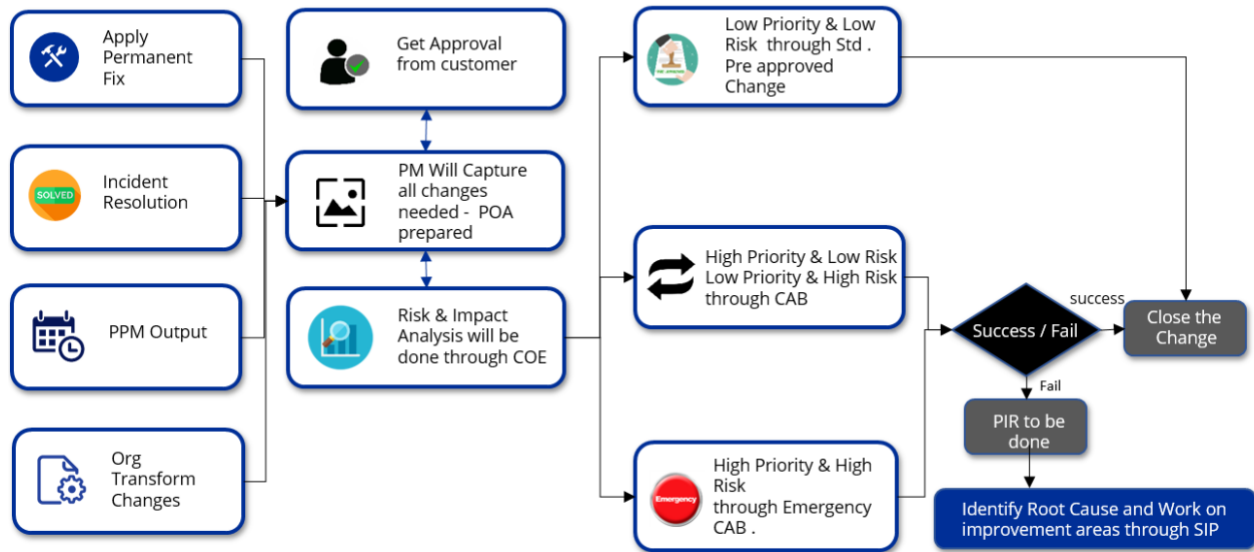
The platform may require additional capacity in the infrastructure to support organic growth or sudden increase in transaction volume and usage. Any Infrastructure changes that are to be accommodated to hardware addition or configuration changes must be supported through emergency or rapid change control once identified through a change management process including SLA reviews. Extended capacity planning that requires additional physical infrastructure modifications has to be completed within 5 to 7 business days. This will also be handled through change management process including SLA reviews.

Both Customer and Cloud4C will avoid emergency hardware provision through planned capacity and growth review allowing for proactive planning for capacity changes. Customer will have final say for change prioritization and scheduling the change for execution

The list of activities for release management shall include, but not be limited to:
- Evaluating Production Readiness of Changes based on predefined checklist
- Tracking all the production fixes and maintenance activities going in or overlaying by new changes
- Opening all the CRQs related to holding production jobs and/or executing the deployment scripts
- Opening support bridge if required, for Severity 1
- Conducting Post Mortem analysis as needed
- Tracking new production fixes due to install related issues and install the same in mid-month releases

Delay for consideration and completion of Change Requests		
Category	Delay for consideration	Completion Time
Minor	1 hour	4 hours or other longer period fixed by the Client

Medium	4 hours	2 days or other longer period fixed by the Client
Major	1 Business Day	10 days or other longer period approved by the Client

The matrix above shows the delays of handling and resolution for changes based on their characteristic Minor / Medium / Major.

Definitions

Standard Changes: Pre-Approved changes are typically pre-approved and require no CAB approvals. However, a business level approval would be mandatory. These changes are low risk, low impact with High frequency changes.

*Normal Changes***:** A change that requires Change Management approval, and encompasses the majority of changes which carry High/Medium Risk, High/Medium Impact.

*Emergency Changes***:** A Change that must be introduced as soon as possible, with response to a Priority 1 or Priority 2 Production incident.
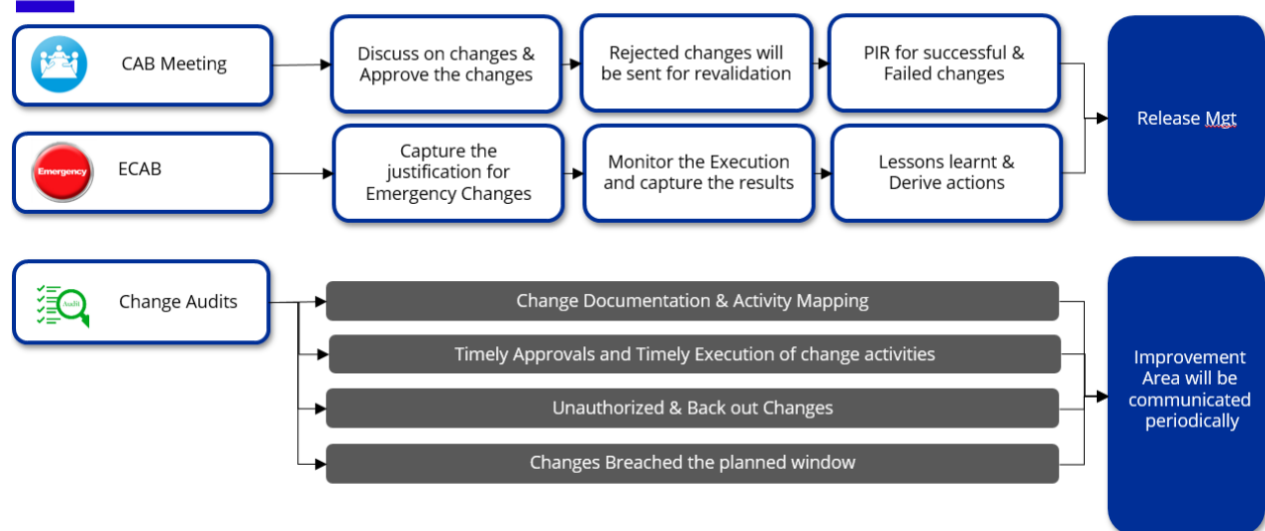
SLA – Managed Services

The below table describes the various Service Levels-

The Incidents and Service Requests are classified into the following severity levels

Incident Priority			Urgency		
			3 - Low	2 - Medium	1 – High
			Issue prevents the user from performing a portion of their duties.	Issue prevents the user from performing critical time sensitive functions	Service or major portion of a service is unavailable
Impact	3 – Low	• Degraded Service Levels but still processing within SLA constraints	P3	P3	P2
	2 – Medium	• Degraded Service Levels but not processing within SLA constraints or able to perform only minimum level of service • It appears cause of incident falls across multiple functional areas	P2	P2	P1
	1 – High	• Maximum number of customers are affected for customer • Public facing service is unavailable • Any item listed in the Crisis Response tables	P1	P1	P1

For Azure Platform SLA – Please refer the below link:

https://azure.microsoft.com/en-in/support/legal/sla/summary/

Service Levels:

The below table describes the various Service Levels-

The Incidents and Service Requests are classified into the following severity levels

Priority	Priority Definition	Mean Time to Assist (MTTA)	Mean Time to Repair (MTTR)	Updates
Priority 1 High	• Maximum number of customers are affected • Service Impact & Unavailability • Item listed in the Crisis Response table	15minutes*	**4 Hours**	30 Minutes
Priority 2 Medium	• Services available however degraded performance.	30 minutes*	**8 Hours**	1 Hour Interval
Priority 3 Low	Degraded Service Levels but still processing within SLA constraints	1 Hour *	**24 Hours**	4 Hours

Call Severity Matrix

- **P1 Incident:** Any incident reported as a complete Stop, Down, Outage will be Critical and needed to be highest priority.
- **P2 Incident:** Any Incident Reported for Slow performance in Service, Latency and Packet drops or Service Performance alerts which are creating high impact on customer business.
- **P3 Incident:** All Service Request will be treated as P3, excluding few which are having business urgency. Incidents which are not creating business impact and urgency will be prioritized as a P3.

Disclaimer:

Cloud4C will use reasonable efforts to resolve problems as quickly as possible. As Cloud4C offers this service based on a combination of Azure & Marketplace Solutions.

For example - Cloud4C will not offer any service credits to the Customer in case of non-availability of his website due to Unavailability of Azure Platform or Malfunction of marketplace solution.
In such cases, Cloud4C will work with the customer to remedy problems at the earliest.

Roles & Responsibilities:

Responsibility	Service Desk	COE/ Support Groups	COE Lead/ Supervisor/ COE Manager	Service Delivery Manager	Major Incident Manager/Shift Manager/COE Manager
Communication between two organizations for Priority 1 and Priority 2 Incidents			C	I	A/R
Determine Impact and Urgency of Incident and ensure management through resolution. Priority 1 & Priority 2 Incidents.		R	C	I	A/R
Communication and Escalation per client requirements.	R	R	A/R	I	R
Monitor and manage Incident queues with the Incident.	R	R	A/R		R
Ensure efficient and smooth hand over to other support teams if required.	R	R			A/R
Co-operate with other Resolver teams to ensure an Incident is managed and resolved effectively and efficiently.	R	R	A	R	R
The management of meeting contracted SLA for Priority 1 and Priority 2 Incidents through Incident resolution.			I	I	A/R
Check for broadcast messages for any changes currently being implemented on the infrastructure	R	A/R			R
Investigation and diagnosis activities to restore service and resolve the Incident.	R	R	A/R	I	R
Escalate to Major Incident Manager.	R	R	A		I
Incident Ownership of Priority 1 and 2 Incidents.					A/R
Major Incident declaration.					A/R
Escalate to Major Incident Manager if a scheduled change has overrun its outage/ degrade window adversely affecting services	R	R	A/R	I	I
Major Incident Handling - coordinate effort and resources (internally and externally).	I	C	I	I	A/R
Major Incident communication and escalation.	I	C	C	I	A/R

Act as timekeeper for the Incident. Create a timeline for the Incident (30 minutes, 50%, 75%). Adjust this timeline during the course of the Incident to exclude time that is not Cloud4C accountable. Ensure that the ticket is updated accordingly.		R	R		A/R
Post Major Incident Management activities.	I	I	I	I	A/R
Incident resolution.	R	R	A	I	R
Confirmation of ticket resolution and closure within the Service Delivery tool and confirmation with the client for Priority 1 and Priority 2 Incidents.		C	I	I	A/R
Post Incident report QA and review.				A	R
Incident report presentation to the client.				A/R	
Legend: A = Accountable R = Responsible I = Informed C = Consulted					

Knowledge Management:

- Knowledge Management System is tightly integrated with ITSM System
- Every ticket will be associated with knowledge article
- Knowledge articles will be revised on quarterly basis
- Known Errors Identified from Root causes will be uploaded in KMDB
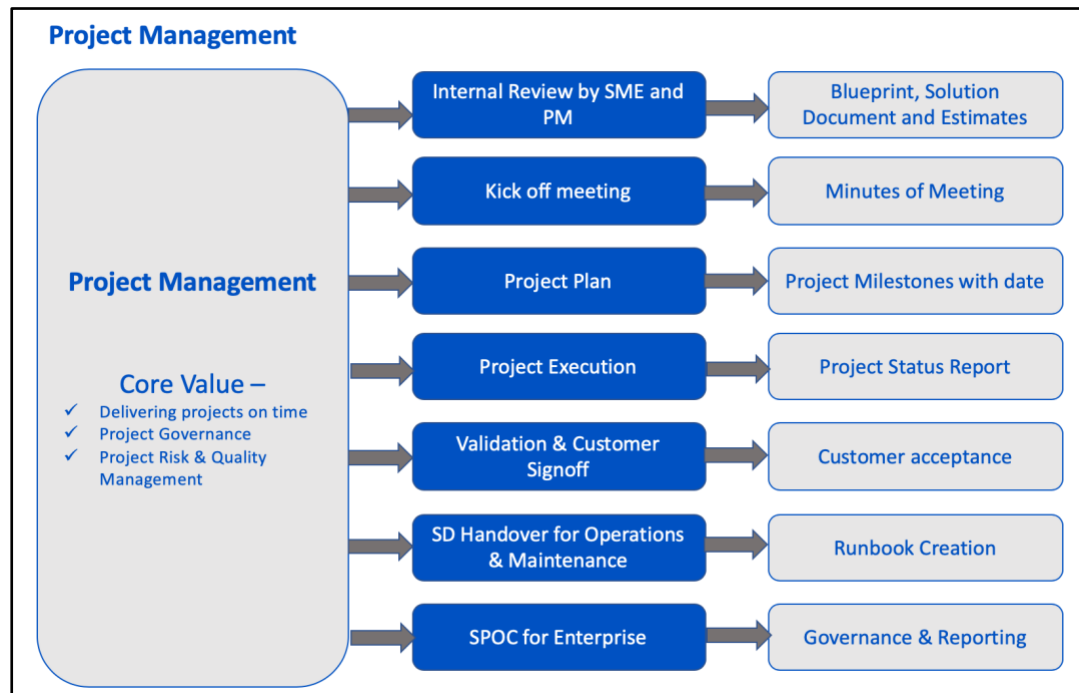- Landscape documents will be uploaded in KMDB which can be accessed by all CoE's

11. Project Management & Governance Structure

Cloud4c will assign a dedicated SPOC for client who will act as single point of contact. A detailed project plan with timelines will be submitted to customer after the due diligence phase.

Service Delivery for customer will be performed as per ITIL framework using centralized service desk which will act as a single point of contact for all incidents or alerts. Every incident will have a unique ticket ID which will be used as a reference number for tracking the same. Cloud4c will ensure that the flow of ticket is smooth and as per defined process. Resolution of incident will be performed by multiple teams working in conjunction with each other. Resolver group includes PM, L2& L3 resources with a technology CoE & OEM if required.

Core of the Project Management will be as follows:
- Participating in internal review calls to understand the scope & assumptions
- Kick off meeting with the Customer
- Preparing a detailed project plan
- Responsible for smooth execution of the project
- Coordinating with internal team for implementation
- Participating in timely review with the Customer
- Timely updating the status
- Handover to Service Delivery for routing issues

Project Management

Project Management		
Project Management **Core Value –** ✓ Delivering projects on time ✓ Project Governance ✓ Project Risk & Quality Management	Internal Review by SME and PM	Blueprint, Solution Document and Estimates
	Kick off meeting	Minutes of Meeting
	Project Plan	Project Milestones with date
	Project Execution	Project Status Report
	Validation & Customer Signoff	Customer acceptance
	SD Handover for Operations & Maintenance	Runbook Creation
	SPOC for Enterprise	Governance & Reporting

Project Manager will be responsible for preparing & maintaining the following documents:

- Project Charter
- Project Plan
- Risk register
- Issue Register
- CMDB
- Lesson Reports
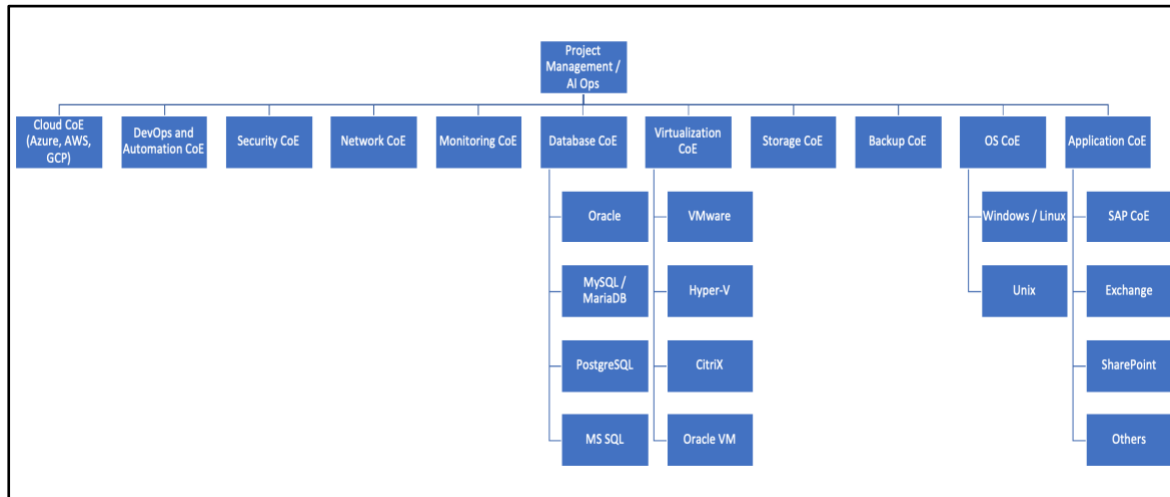
Governance Structure:-

Cloud4C recognizes that Governance is an essential component for successful contract management and ongoing Client–Cloud4C relationship. To ensure a long-lasting and mutually rewarding relationship, Cloud4C governance model is based on the following principles:

- Simplicity and flexibility in the governance structure facilitating ease of communication
- Proactive multi-tiered governance approach and structure
- Mutual trust and respect based on transparency
- Well-defined objectives and service levels and measurable performance indicators
- Transparent and live status reports
- Well-defined roles and responsibilities
- Well-defined and agreed interfaces between parties
- Open communication between Parties
- Deployment of the most suitable and experienced resources on a regular basis

Goals and Objectives:

The goal of creating a governance model is to ensure that Cloud4C is viewed by key stakeholders in Customer as an integral component of CUSTOMER IT organization. Therefore, Cloud4C governance team shall, during the transition period and continuously over time, work with CUSTOMER to achieve the following goals:

- Identifying and solving structural issues that hinder end-to-end performance of IT service delivery
- Allowing Customer full control over its overall IT strategy, architecture, and associated plans, while providing Customer with recommendations and views on industry best practices
- Focusing on measurable results in the areas that are critical to Customer `s business and objectives
- Delivering of high-quality IT services to meet Customer business needs
- Providing a central repository for all standard operational management procedures and practices
- Delivering high satisfaction levels for Customer `s Participants
- Developing the business rationale and benefits of any proposed changes and communication of these to Customer IT
- Eliminate and mitigate business risks with appropriate planning and monitoring of current trends
- Working within the mutually agreed-upon structure for execution of processes and procedures
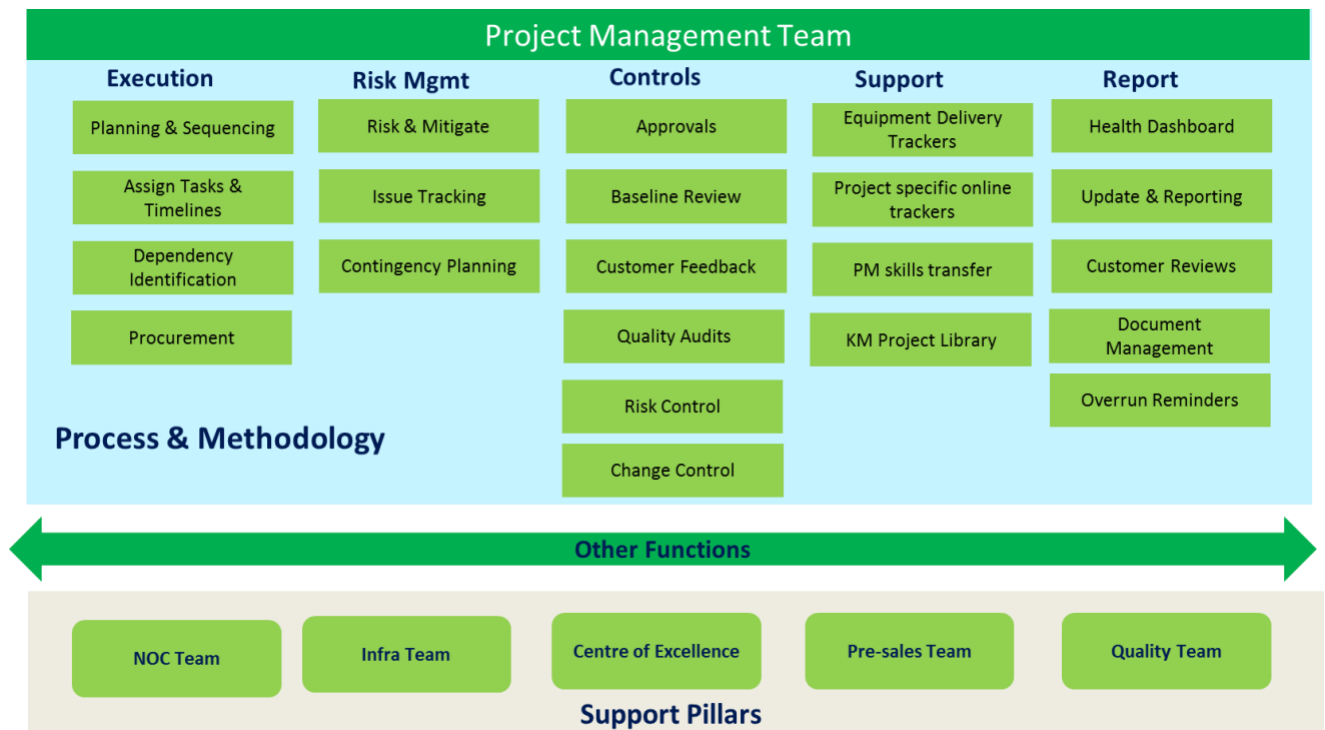
Reports:-

Cloud4C will provide periodic reports categorized into the following two types to Customer giving it insight into the Operational performance of the team.

Service Support Reports – These reports will enable transparency into the day-to-day operations. They will provide a unified infrastructure view and detailed insight into health of the infrastructure components.

Disaster Recovery Reports – These reports underpin the business aspects that Cloud4C takes into consideration to maintain a steady and satisfying relation.

All SLA and KPI reports will be customized and generated as per Customer service levels, the data and reports will be real time and will be pulled out for individuals as per the custom access provided.