



GENERALI

Department:

Group Operations & Processes –
IT Strategy & Delivery

Country:

GHO

Project ADA

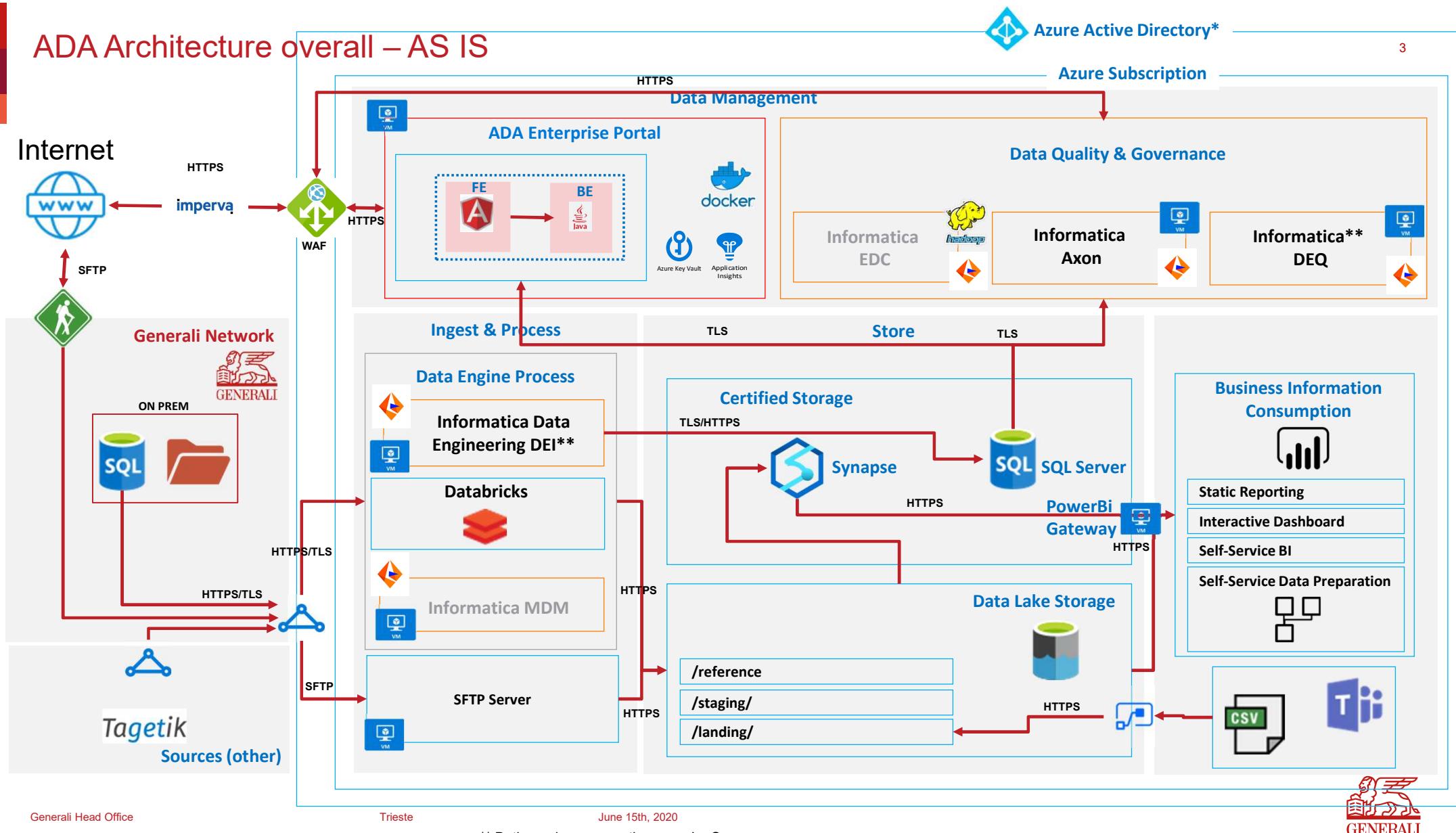
Reference Architecture

Internal

ARCHITECTURE AND COMPONENTS VIEW

ADA Architecture overall – AS IS

3



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Trieste

June 15th, 2020

Internal * Azure Active Directory managed by GOSP Infrastrucutre

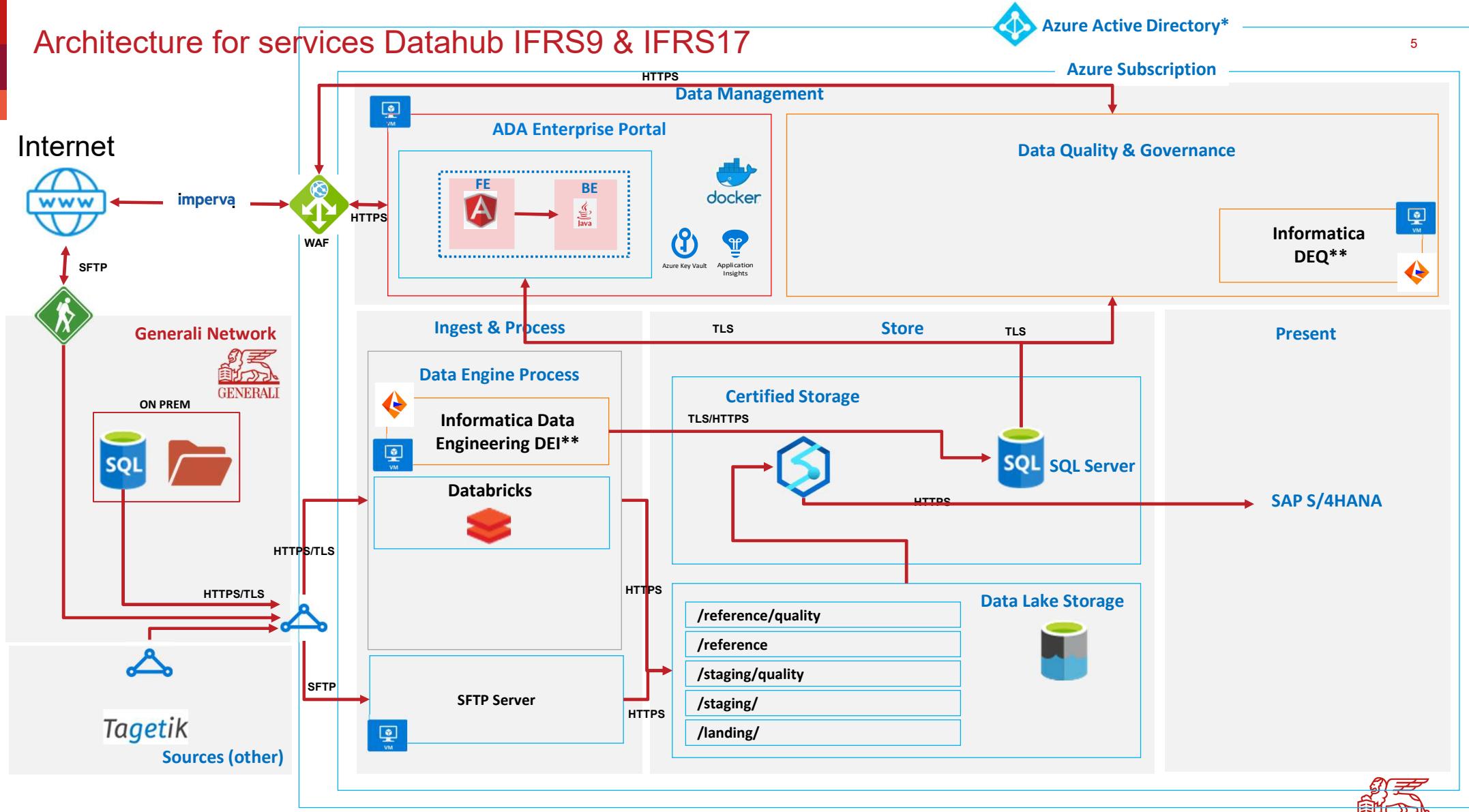
** Both services are on the same IaaS server

ARCHITECTURE VIEW PER SERVICES

- ITCF-APP-0258 Opti.Mo System
- ITCF-APP-0214 Passthrough TEAM Tool (Data hub IFRS17)
- ITCF-APP-0215 Data hub IFRS9
- ITCF-APP-0216 Data Quality & Governance (DDT)
- ITCF-APP-0217 GCFO Datalake
- ITCF-APP-0241 ECDM
- ITCF-APP-0271 Annual Integrated Reporting (AIR)
- ITCF-APP-0286 IDQS Dashboard

Architecture for services Datahub IFRS9 & IFRS17

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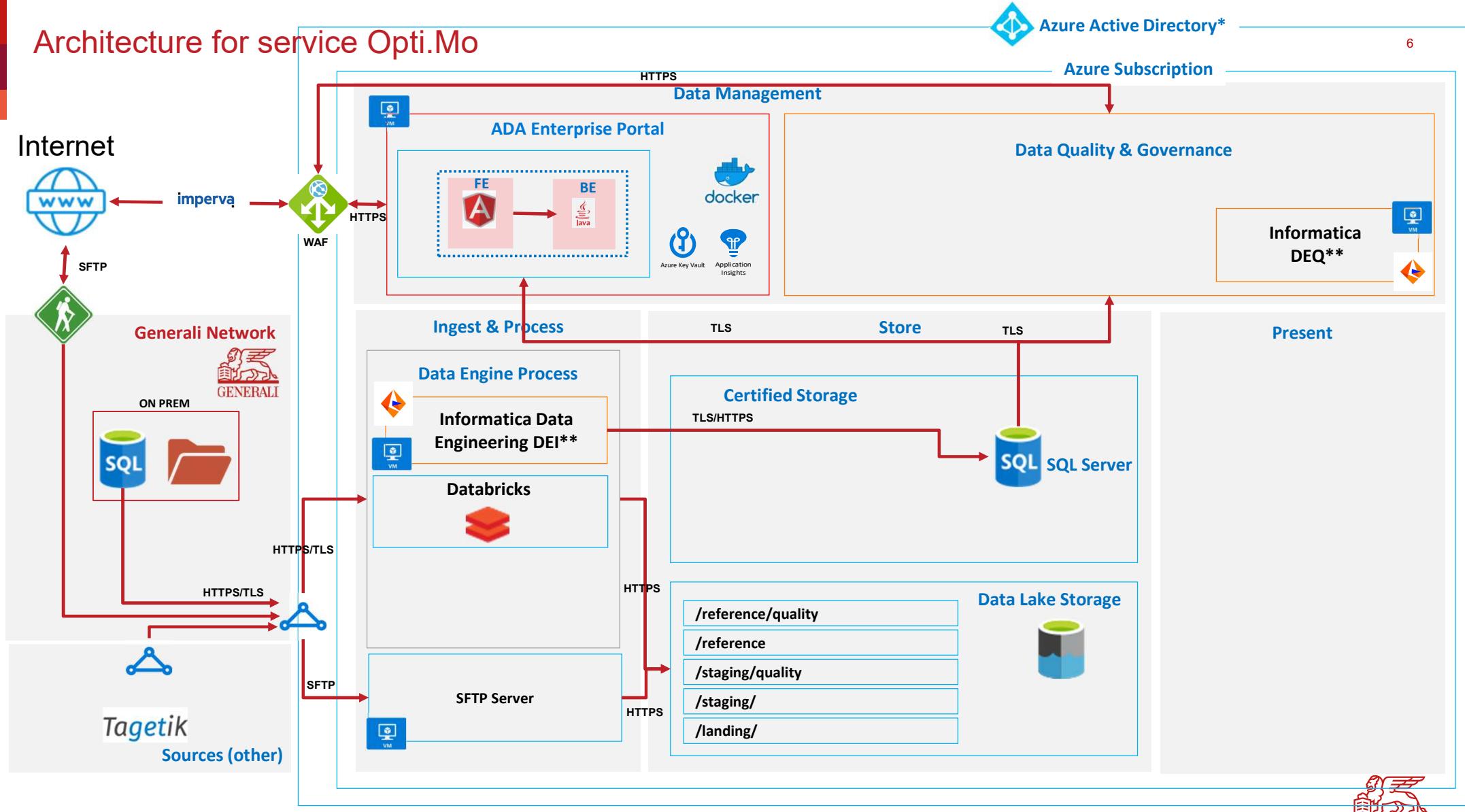
Internal * Azure Active Directory managed by GOSP Infrastrucutre

** Both services are on the same IaaS server



Architecture for service Opti.Mo

6



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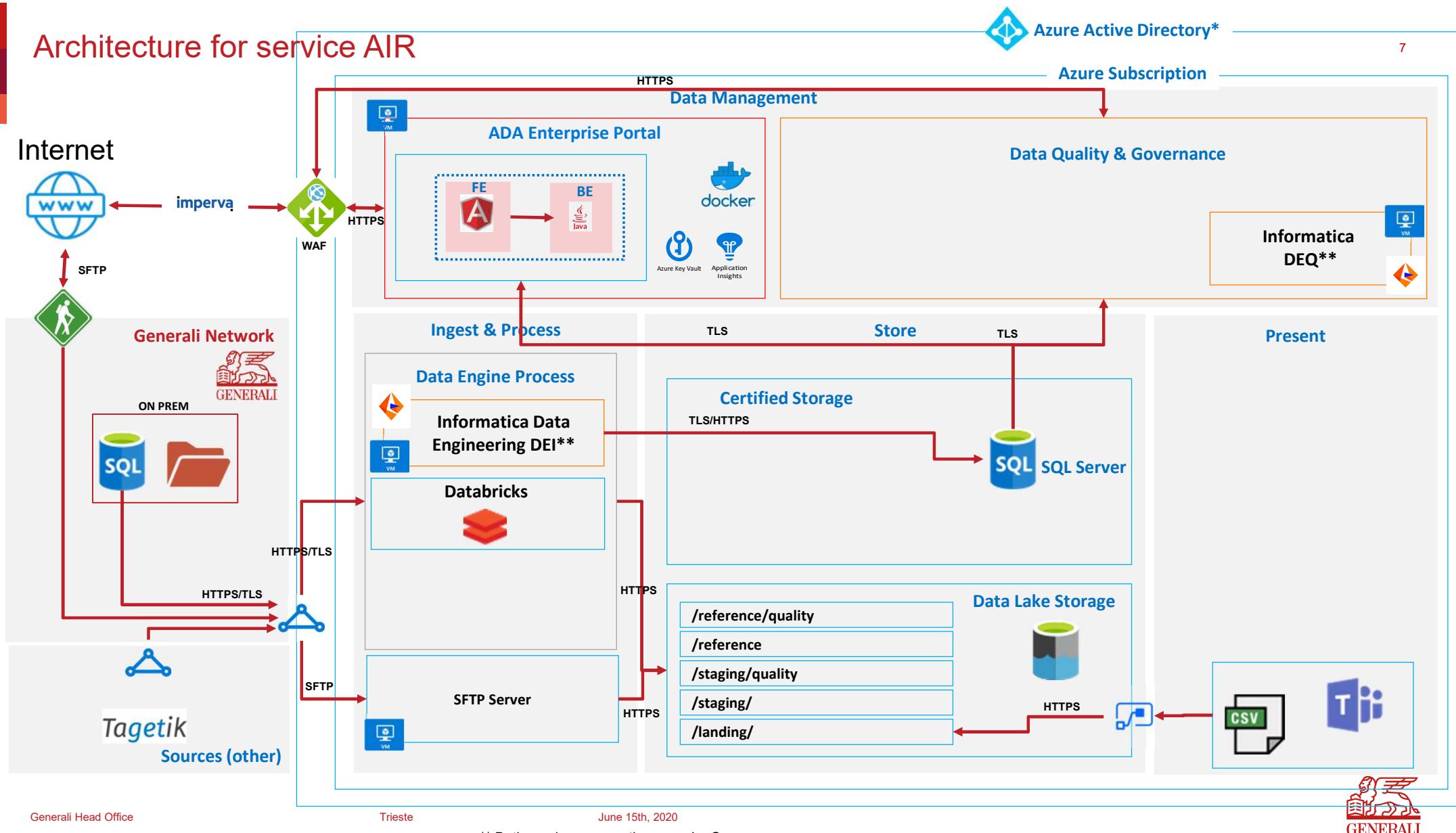
Internal * Azure Active Directory managed by GOSP Infrastrucutre

** Both services are on the same IaaS server



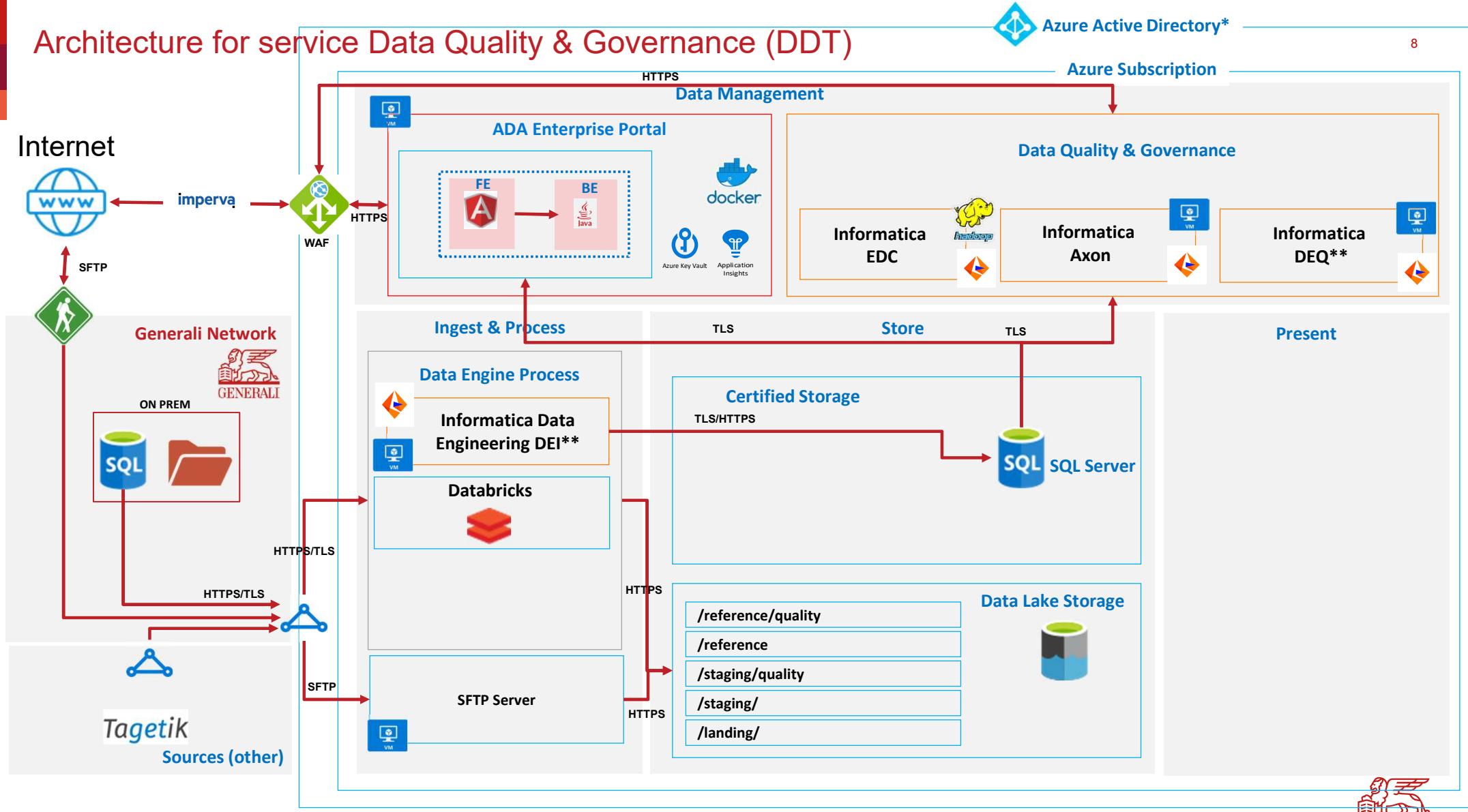
Architecture for service AIR

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Architecture for service Data Quality & Governance (DDT)

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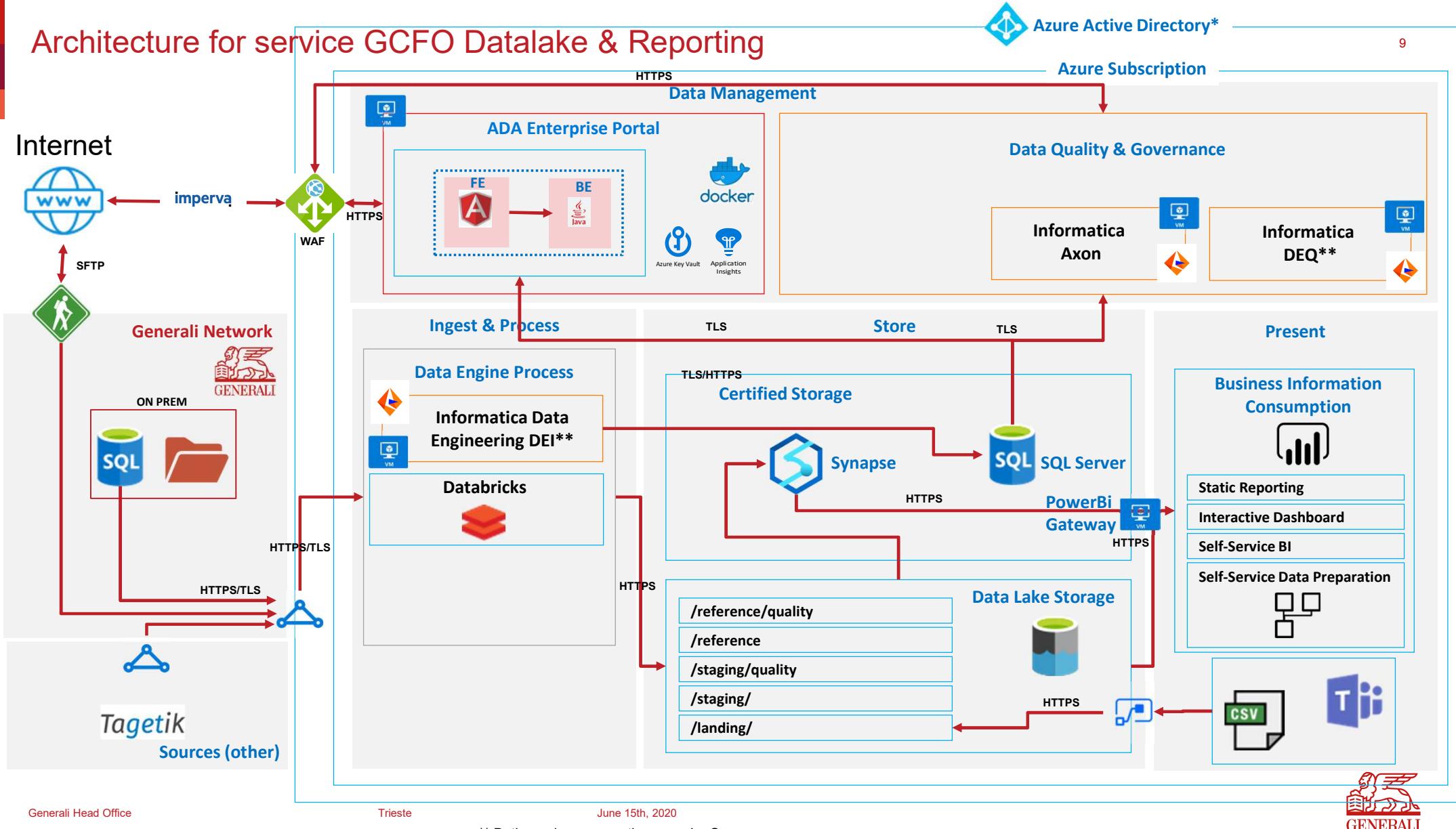
June 15th, 2020

Internal * Azure Active Directory managed by GOSP Infrastrucutre

** Both services are on the same IaaS server

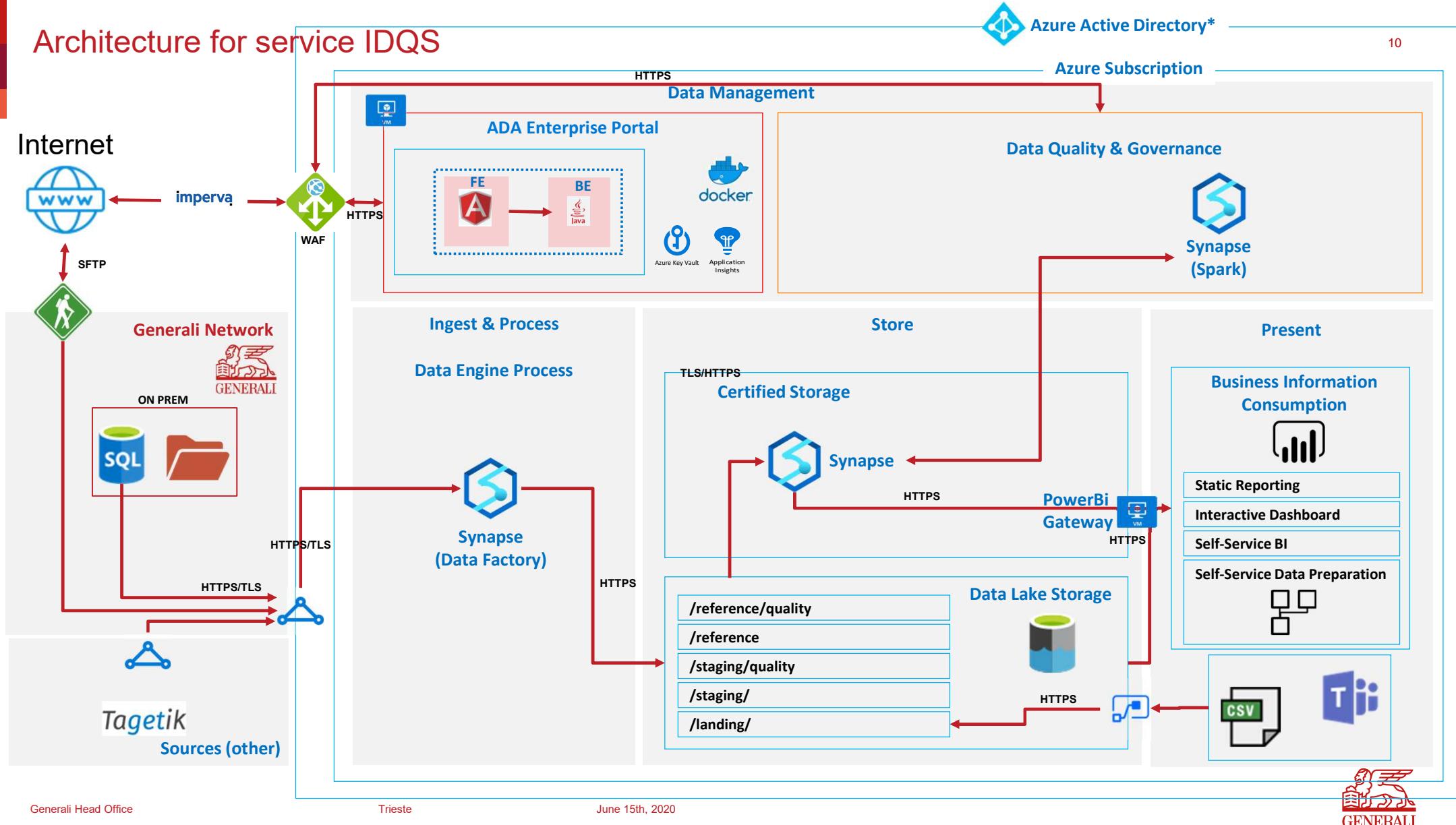
Architecture for service GCFO Datalake & Reporting

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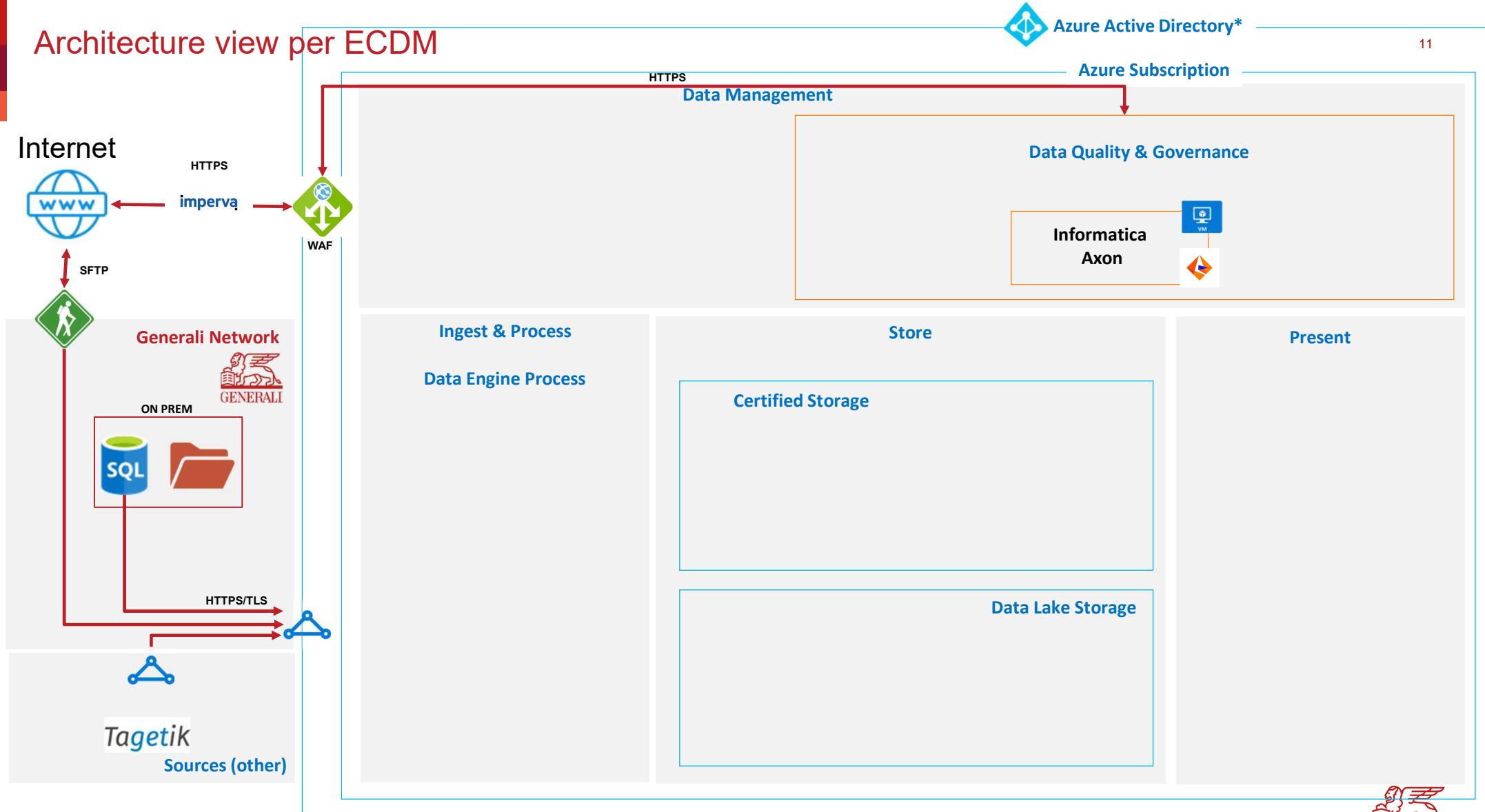
Architecture for service IDQS

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Architecture view per ECDM

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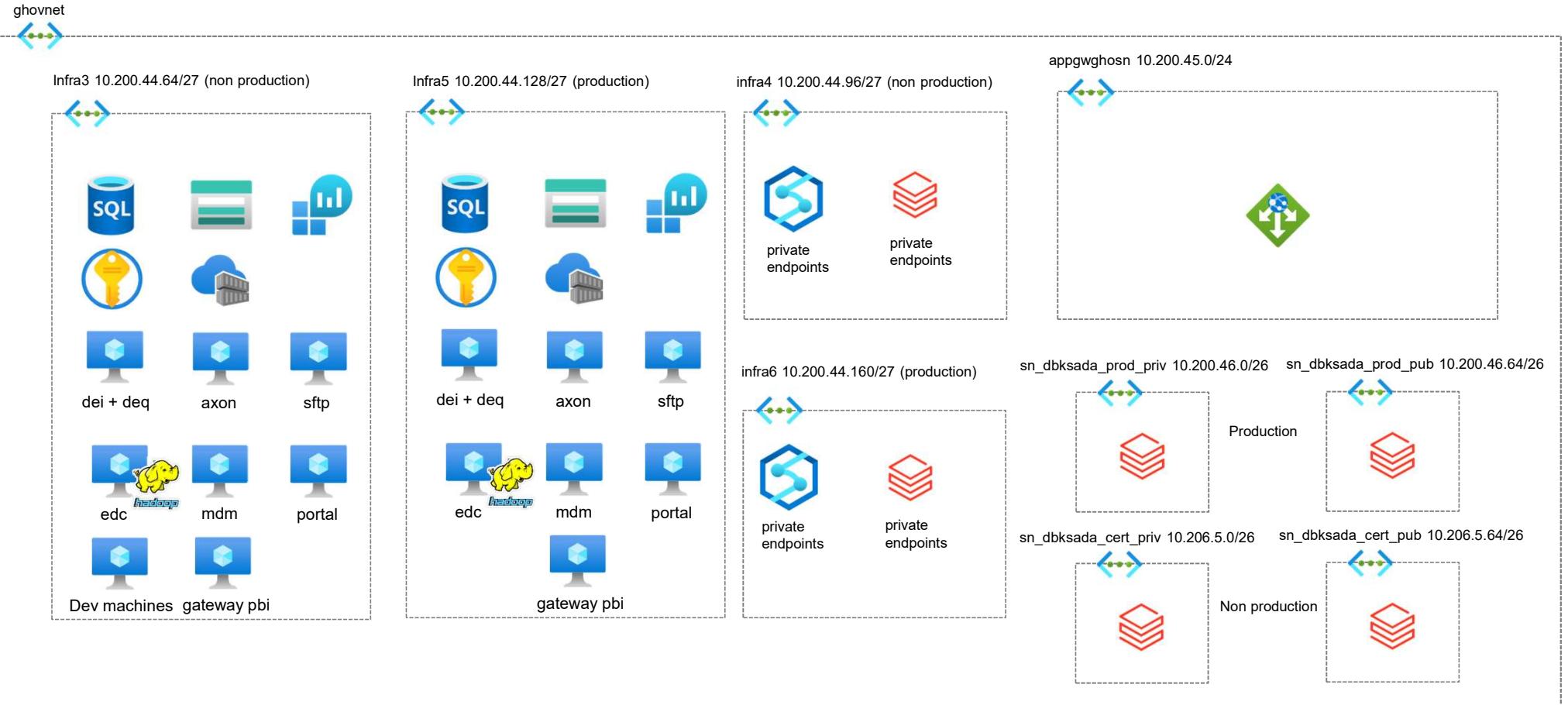
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Internal * Azure Active Directory managed by GOSP Infrastrucutre



Subnet segregation and type of resources



Resource Groups distribution

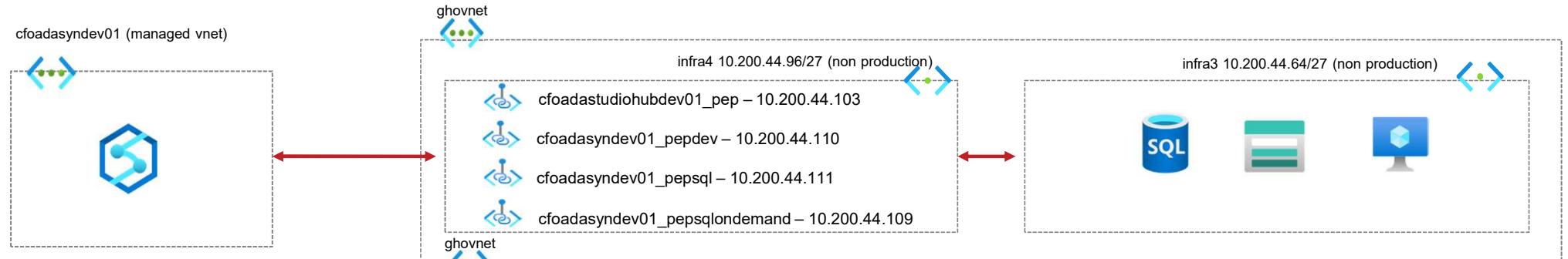
13

-  **CFO_ADA_Certification_rg:** Resource group where are stored all the core resource for ADA non production environment
-  **CFO_ADA_Certification_backup_rg_1:** Resource group where are stored backup resources of vm and sql server instance in non production environment
-  **databricks-rg-cfoadadatabrickscert-suf3gssa34gcs:** Resource group where are stored all resource of databricks certification components
-  **synapseworkspace-managedrg-7321987e-9fca-459c-accb-f3e1334421b0:** Resource group where are stored all synapse certification managed vnet components
-  **rg-managed-cfoadasyndev01:** Resource group where are stored all synapse development managed vnet components

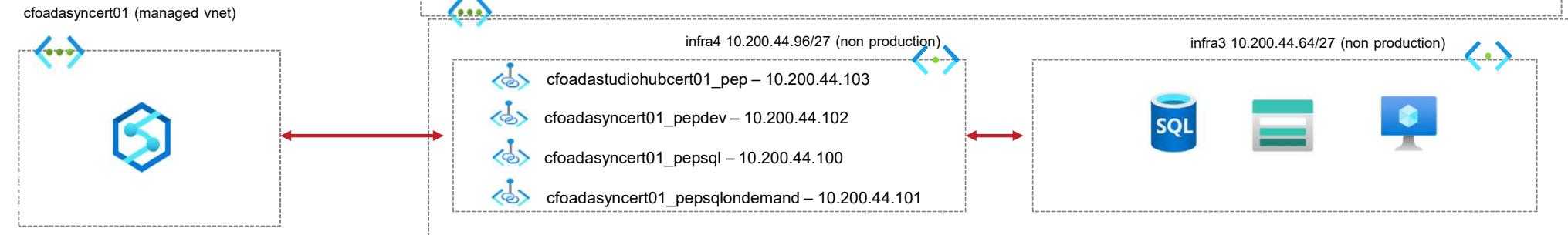
-  **CFO_ADA_Production_rg:** Resource group where are stored all the core resource for ADA production environment
-  **CFO_ADA_Production_backup_rg_1:** Resource group where are stored backup resource of vm and sql server instance in production environment
-  **databricks-rg-cfoadadatabricksprod-qx2yrluoakbec:** Resource group where are stored all resource of databricks production components
-  **synapseworkspace-managedrg-bccc3873-18fa-45af-b812-7fa801d6f010:** Resource group where are stored all synapse production managed vnet components
-  **databricks-rg-cfoadadatabricksdr-akgrs7gxlq7ns:** Resource group where are stored all resource of databricks production components
-  **synapseworkspacedr:** Resource group where are stored all synapse production DR managed vnet components

ADA SaaS: Synapse view

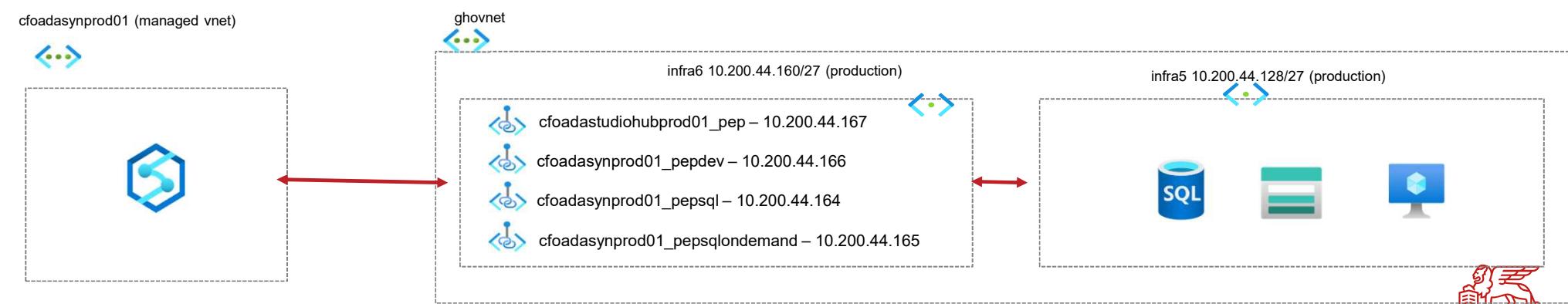
Development



Certification



Production



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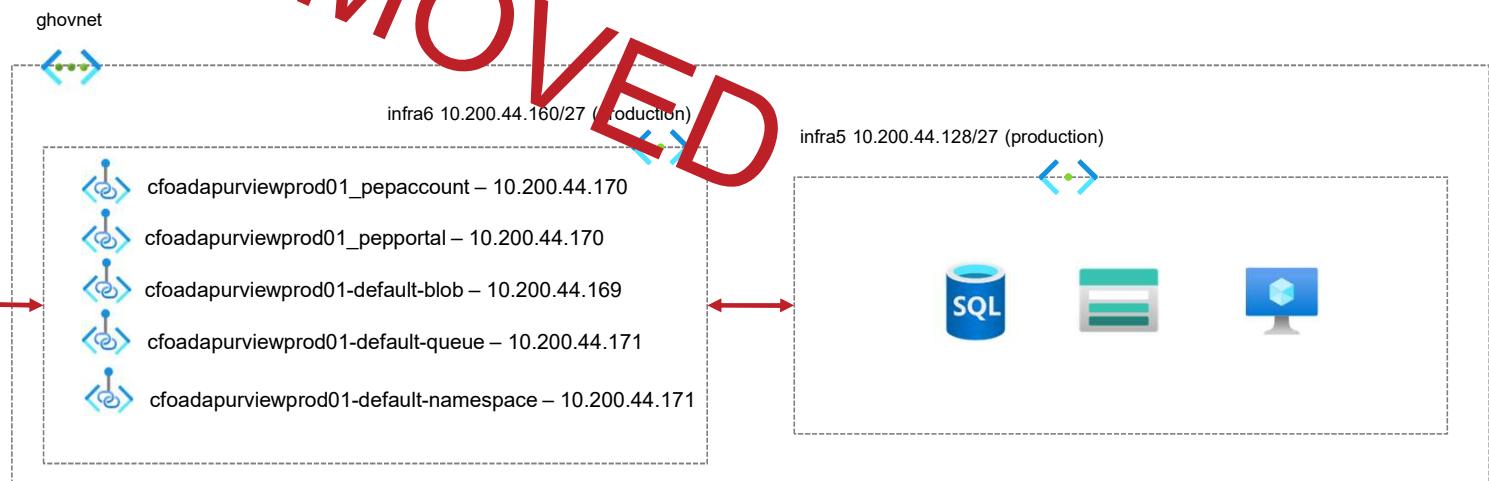
Internal



ADA SaaS: Purview view

Certification

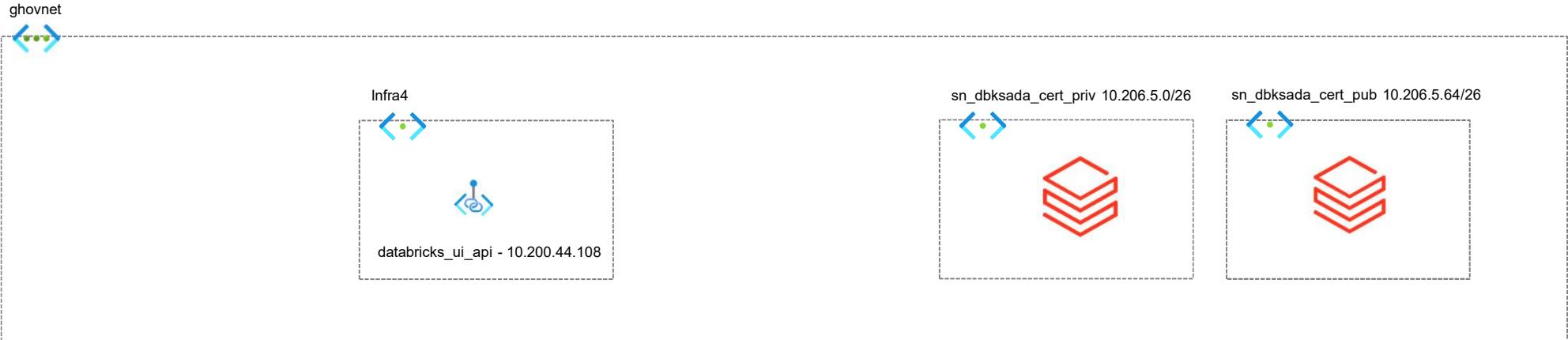
Production



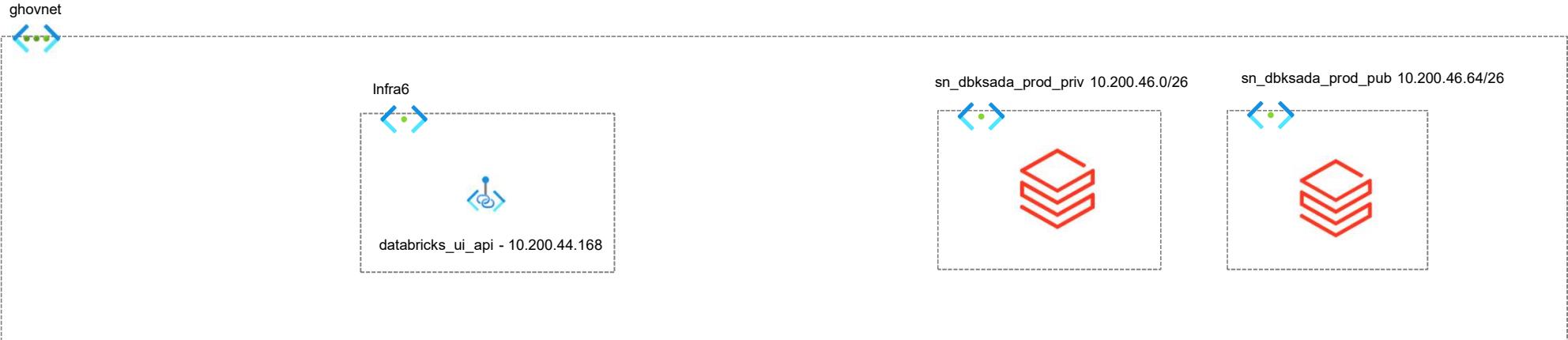


Certification

ADA SaaS: Databricks view

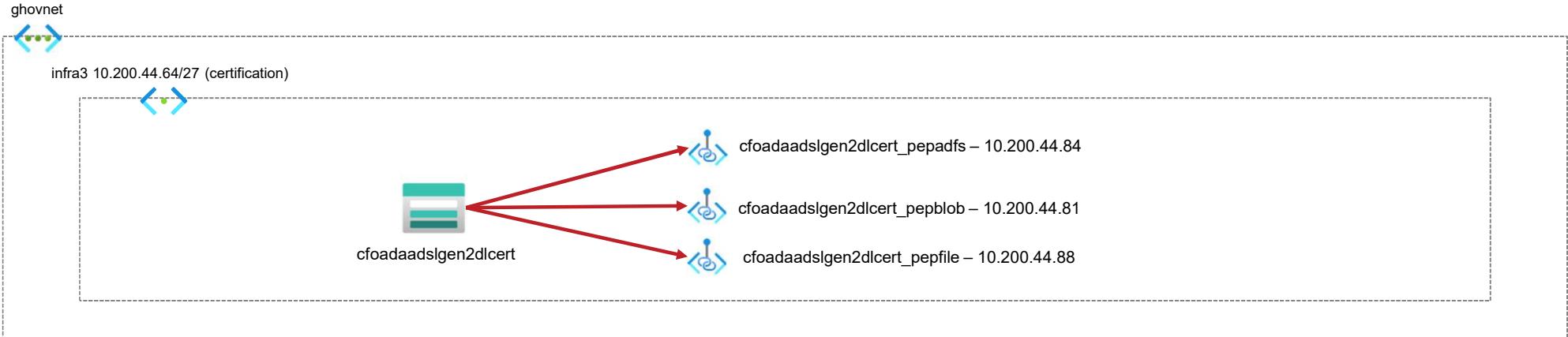


Production

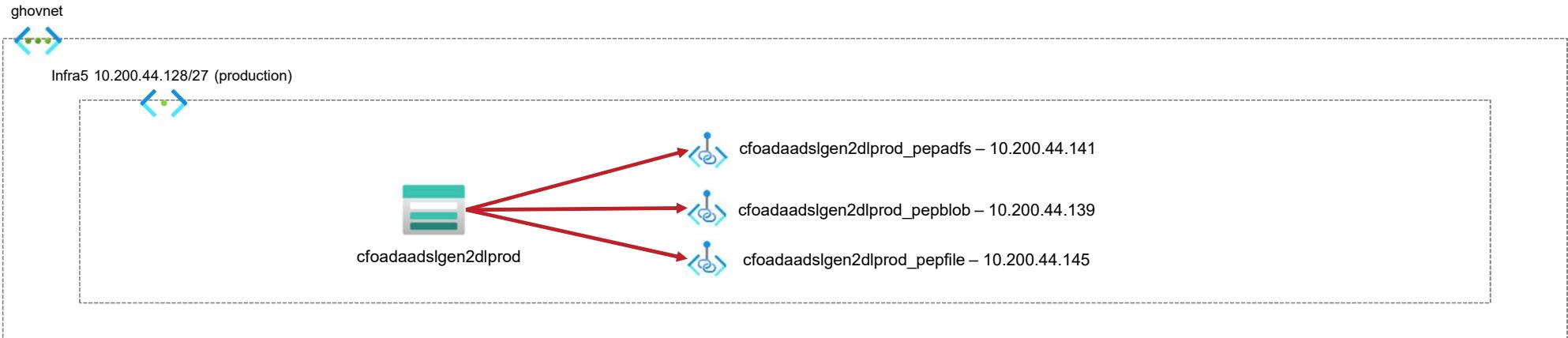


ADA SaaS: Storage account view

Certification

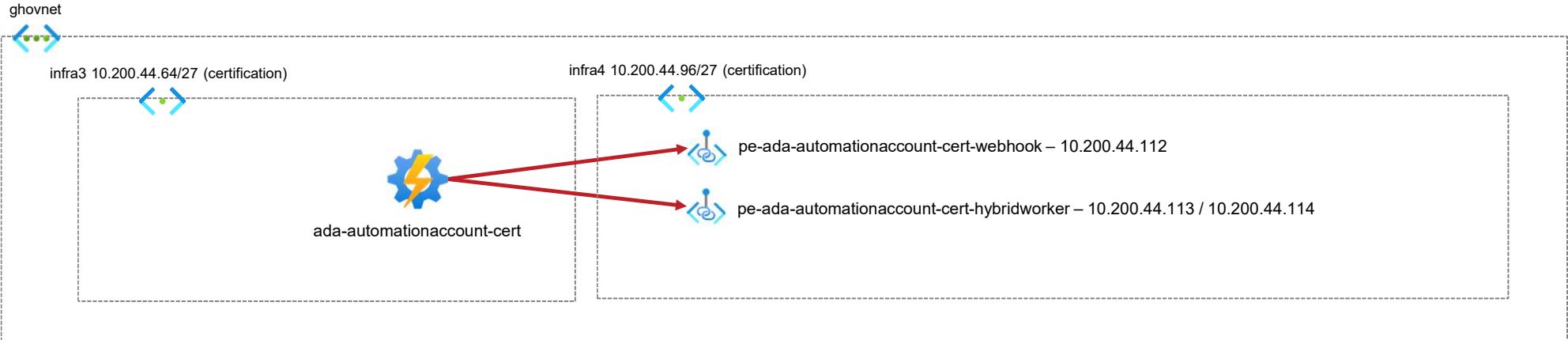


Production

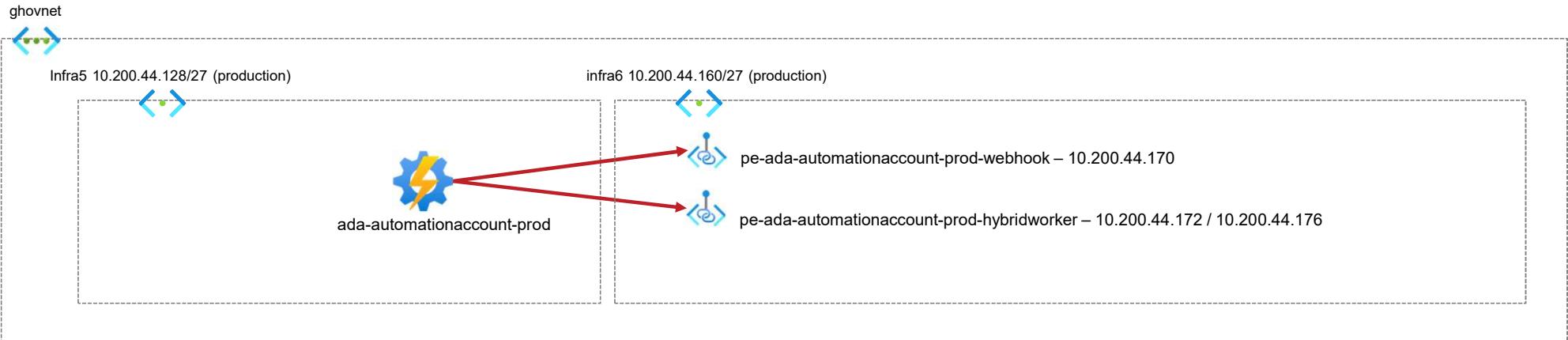


ADA PaaS: Automation account view

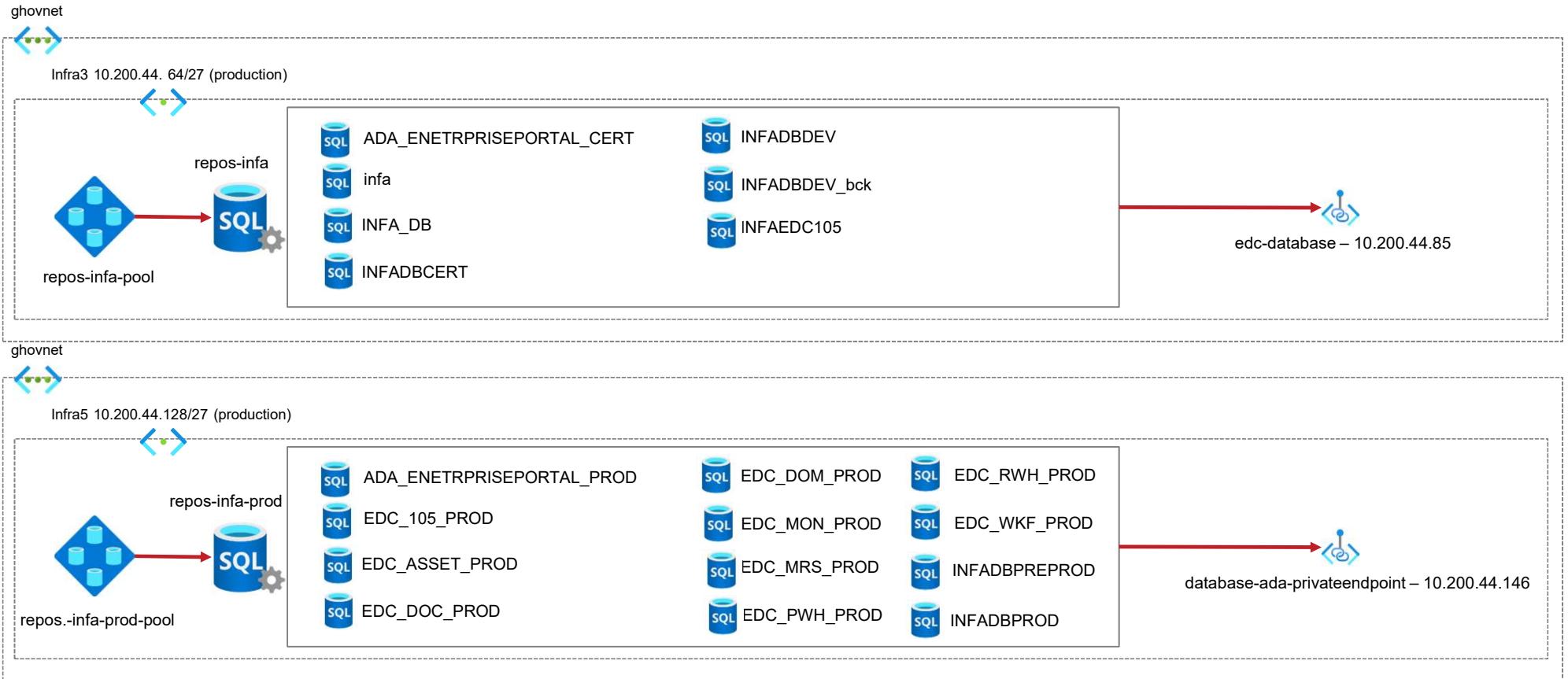
Certification



Production



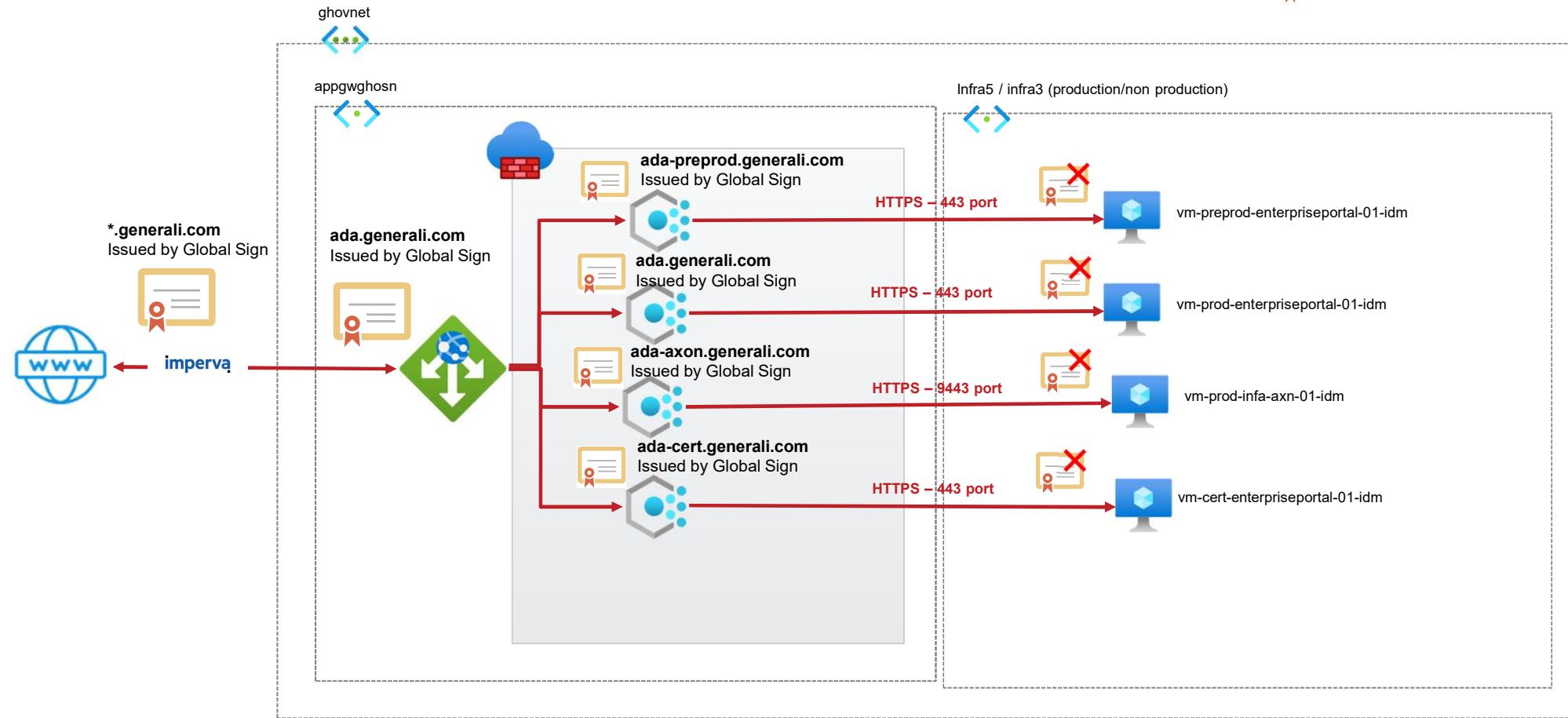
ADA SaaS: SQL Elastic pool view



ADA SaaS: Application Gateway view

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-  Self-signed certificate
-  Signed by Global Sign



SYSTEM MONITORING

Monitoring - Infrastructure

Risorse monitorate:

- Sia ambiente di produzione che ambiente di non produzione
- Sia infrastruttura di tipo IaaS che PaaS/SaaS

Strumenti adottati:

- **Azure Log Analytics:** serve per la raccolta delle informazioni e lo storage dei dati raccolti e da analizzare
- **Azure Monitoring with Email Alert:** strumento messo a disposizione da Microsoft per tracciare e monitorare i log presenti in Azure Log Analytics, che al verificarsi di superamento di soglie pre-impostate invia una mail di segnalazione al supporto AMS
- **Dashboard custom:** dashboard preconfezionate per una maggior efficacia delle analisi in fase di troubleshooting di un eventuale problema verificato

IaaS Monitoring



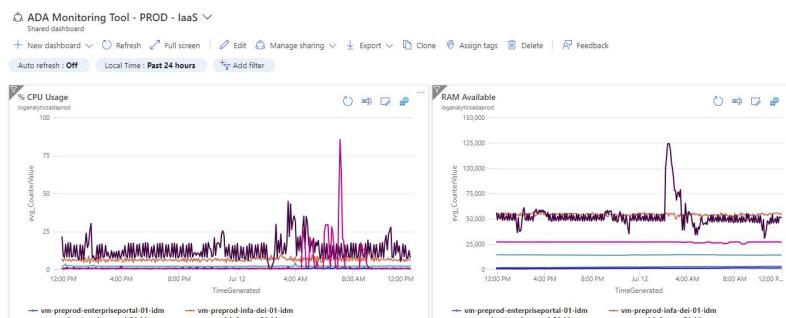
Sono stati configurati per ogni ambiente (prod e non-prod) 14 server IaaS collegati direttamente al servizio SaaS Azure Log Analytics.

Le principali informazioni raccolte in Azure Log Analytics sono %CPU di utilizzo, memoria disponibile e spazio disco disponibile con una retention di 30 giorni.

Soglie implementate per la segnalazione via mail e attivazione del team AMS di NTT sono:

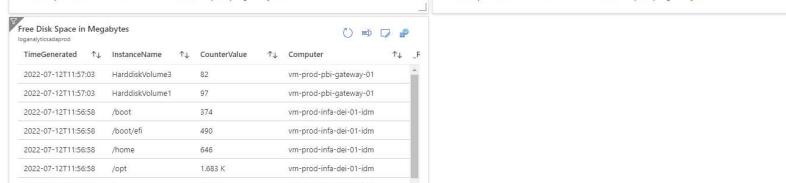
- % CPU media nell'arco di 1 minuto sopra il 90% per più di 10 volte nell'arco della giornata
- % media di memoria disponibile nell'arco di 10 minuti sopra il 90% per più di 10 volte nell'arco della giornata
- Spazio disco medio nell'arco di 2h oltre la soglia del 85%

Sviluppate delle dashboard specifiche per i vari ambienti screenshot di esempio qui sotto.



% CPU Usage

RAM Available



Free Disk Space in Megabytes

PaaS/SaaS Monitoring



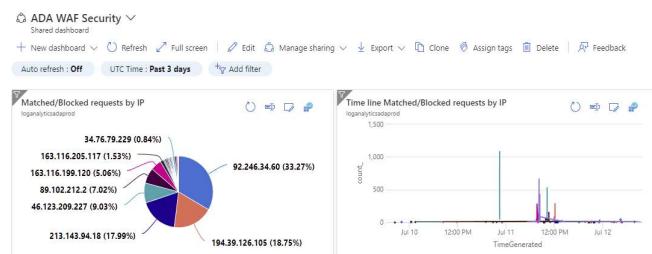
Sono stati configurati per ogni ambiente (prod e non-prod) dei monitoraggi anche su tutte le risorse PaaS/SaaS di Azure adottate da ADA come lo Storage Account (alias DataLake), Azure Application Gateway e Azure SQL elastic pool. Attività ancora da completare invece per quanto riguarda lo strumento Synapse.

Non tutte le risorse sono state agganciate a Azure Log Analytics come per la parte IaaS. Ad esempio Azure SQL elastic pool è stato salvato in un altro datalake di appoggio per questione di costi e volumi generati, è possibile comunque con azure monitor e dashboard custom monitorare le DWH che sono una unità di misura specifica di microsoft, combinazione di cpu e spazio memoria, che indica il livello di consumo della risorsa.

Sono state definite le seguenti soglie di monitoraggio che possono generare una mail di alert verso l'ams di NTT:

- SQL elastic pool soglia impostata per l'unità di misura DWH al 90% sull'intera risorsa al 40% su ogni singola istanza di database
- Storage Account soglia impostata sulla latenza del network superior ai 45 millisecondi, inoltre segnala se vengono superate le 50 transazioni in errore nell'arco della giornata (tipo di errori timeout, authorization error, client other error)
- Alert ancora da impostare per l'application gateway e synapse

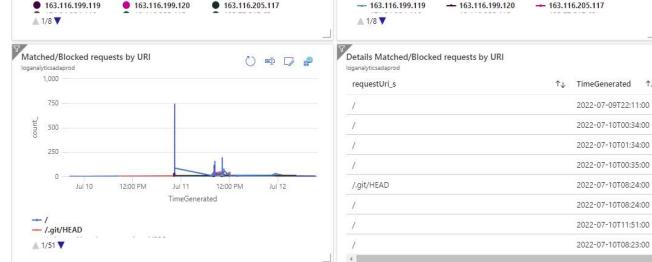
Sviluppate delle custom dashboard per le risorse, Sql Elastic pool, Application gateway e Storage account. Qui sotto dashboard di esempio per monitoraggio dei tentativi di intrusion sul firewall WAF dell'application gateway da internet.



ADA WAF Security

Matched/Blocked requests by IP

Time line Matched/Blocked requests by IP



Details Matched/Blocked requests by IP

Matched/Blocked requests by URI

Transition to New Relic

Monitoring - Application

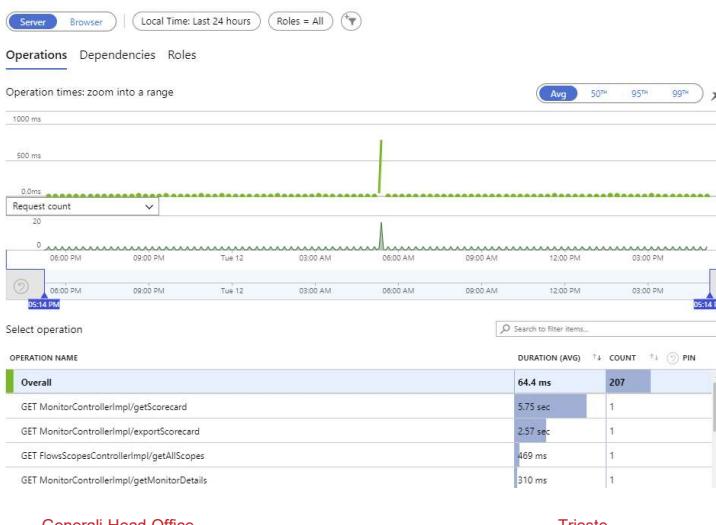
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Risorse monitorate:

- Sia ambiente di produzione che ambiente di non produzione
- L'applicazione monitorata è "Enterprise ADA Portal"

Strumenti adottati:

- **Application Insight ed alerts:** serve a collezionare i log applicativi come eccezioni, utenti connessi, tempi di risposta di applicativi web, log custom generati dall'applicativo, verifica raggiungibilità e latenza dell'applicativo web da diverse regioni nel mondo.

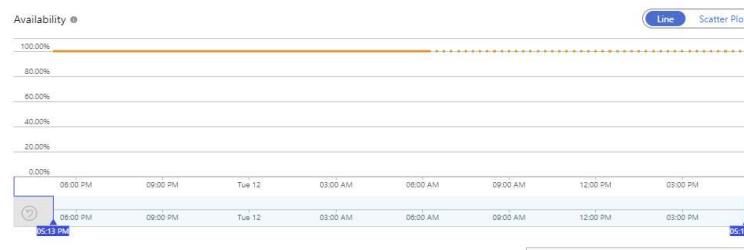


ADA Enterprise Portal

Sono stati configurati per ogni ambiente (prod e non-prod) il servizio azure insight per il monitoraggio dell'applicazione ADA Enterprise Portal, con possibilità di monitoraggio realtime e alert nel caso in cui portale non è raggiungibile con il servizio di availability.

Gli aspetti applicativi da monitorare con questo strumento sono:

- Live metrics monitoraggio realtime del carico della macchina come "Incoming request", "Outgoing Request", Committed Memory, % CPU, Exception Rate
- Availability del portale da differenti regioni del mondo e latenza di risposta del ping con invio alert email quando non disponibile al gruppo AMS che si attiva per la risoluzione
- Application Failure per il monitoraggio delle eccezioni generate dall'applicativo
- Performance per il monitoraggio dei tempi di risposta di determinate chiamate



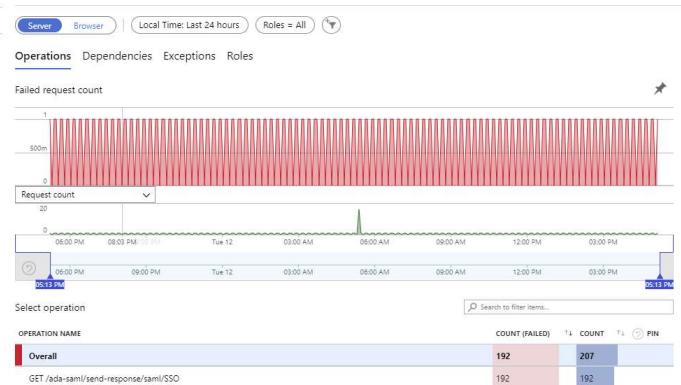
Availability



Performance



Failure



Internal

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Monitoring – Operations

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ADA Datahub for TEAM Tool / ADA Datahub IFRS9

Sono stati implementati una serie di flussi dati in ingresso e uscita dal Sistema sia per il processo IFRS17/TEAM Tool sia per il processo IFRS9.

Per un primo monitoraggio dei flussi sui processi NEXT ad uso e consumo delle local BU operative è stata messa a disposizione una sezione di monitoraggio per verificare il caricamento dei dati in ingresso o uscita con una serie di informazioni:

- Risultati delle regole di qualità applicate sui dati input/output, definendo regole bloccanti, alert con scarto, alert senza scarto e relative indici di conformità nel rispetto delle policy di DQ
- Data di caricamento del flusso, data avvio ed esecuzione del flusso, data esecuzione delle regole di qualità sui dati e orario conclusione del flusso.
- Esito overroll del flusso sulla singola esecuzione
- Trend della data quality sulla tipologia di flusso

Risorse monitorate:

- Sia ambiente di produzione che ambiente di non produzione

Strumenti adottati:

- ADA Enterprise Portal:

Interfaccia web per il monitoraggio dei flussi in ingresso e in uscita del sistema ADA

Dettaglio esecuzione flusso

Flow Data

Scope	Team Tool
Flow Name	BU_IN_BUTR2
Domain	HR003
Description	Flow for IFRS balance sheet data for Solvency2 purposes
Approval Status	

Loading Data

Details	HR_HR003_BUTR2_N_20220381_20220220.csv
Upload Date	Jul 05 2022 - 15:15
Upload Result	Upload Succeeded
Workflow State	
Timeline (UTC+00:00)	
File Arrival Date: Jul, 04 2022 - 15:49	
Upload Date: Jul, 05 2022 - 15:15	
DQ Controls Date: Jul, 05 2022 - 15:15	
End Date: Jul, 05 2022 - 15:16	

Data Quality Result

View on Controls

Conformity Index (controls): 100.00 %
Conformity Index 2 (controls): 100.00 %



View on Records

Conformity Index (data records): 100.00 %
Conformity Index 2 (data records): 100.00 %



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Internal

Lista esecuzioni flussi input/output



Loadings (15435)							
Domain			Details				
SCOPE	FLOW NAME	DOMAIN	UPLOAD DATE (UTC+00:00)	END DATE (UTC+00:00)	CONTROLS	DETAILS	
Team Tool	TT_OUT_FASTCLOSE	HR003	2022-07-06T02:38:58	2022-07-06T02:32:01.267	0 0 0 0 0 0 0 0	>380K ✓ 2021_12_HR003_FASTCLOSE_06072022_0138	
Team Tool	TT_OUT_FASTCLOSE	HR003	2022-07-05T02:23:07	2022-07-06T02:36:17.16	0 0 0 0 0 0 0 0	>380K ✓ 2021_12_HR003_FASTCLOSE_06072022_0123	
Team Tool	TT_OUT_FASTCLOSE	HR003	2022-07-06T02:00:18	2022-07-06T02:20:30.483	0 0 0 0 0 0 0 0	>380K ✓ 2020_12_HR003_FASTCLOSE_06072022_0100	
Team Tool	BU_IN_BUTR2	HR003	2022-07-05T15:15:06	2022-07-05T15:16:59.333	0 0 0 0 0 0 0 0	>5K ✓ HR_HR003_BUTR2_N_20220381_20220220.csv	

Scorecard

Search

Hide rules not applied

scorecard_HR003_BUTR2 (Number of rules: 25)

NAME	TYPE	CRITERIA (LEVEL 2)	DQ GENERAL PRINCIPLES (LEVEL 1)	TOTAL ROWS	INVALID CHECKS	CONFORMITY INDEX	COMPLETION BAR	SCORE TREND
COMPANY_DTP_BT_Is_Accurate	ACCURACY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
UNDERWRITING_TYPE_Is_Accurate	ACCURACY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
FUNCTIONAL_CURRENT_IS_REQUIRED	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
LEGAL_ENTITY_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
ACCOUNT_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
SUBMAINT_CLOB_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
UNDERWRITING_TYPE_Is_Present	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
CORPORATE_TYPE_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
REPORTING_DATE_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
BT_ID_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
FUNCTIONAL_AMOUNT_Is_Required	COMPLETENESS	COMPLETENESS	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
COMPANY_DTP_in_Domain	CONSISTENCY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
REPORTING_DATE_IS_YYYY_MM_DD_Format	CONSISTENCY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
LEGAL_ENTITY_in_Domain	CONSISTENCY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→
CORPORATE_TYPE_in_Domain	CONSISTENCY	ACCURACY	215	0	100	100%	<div style="width: 100%; background-color: green;"></div>	→

Items per page: 15 | 1 - 15 of 25

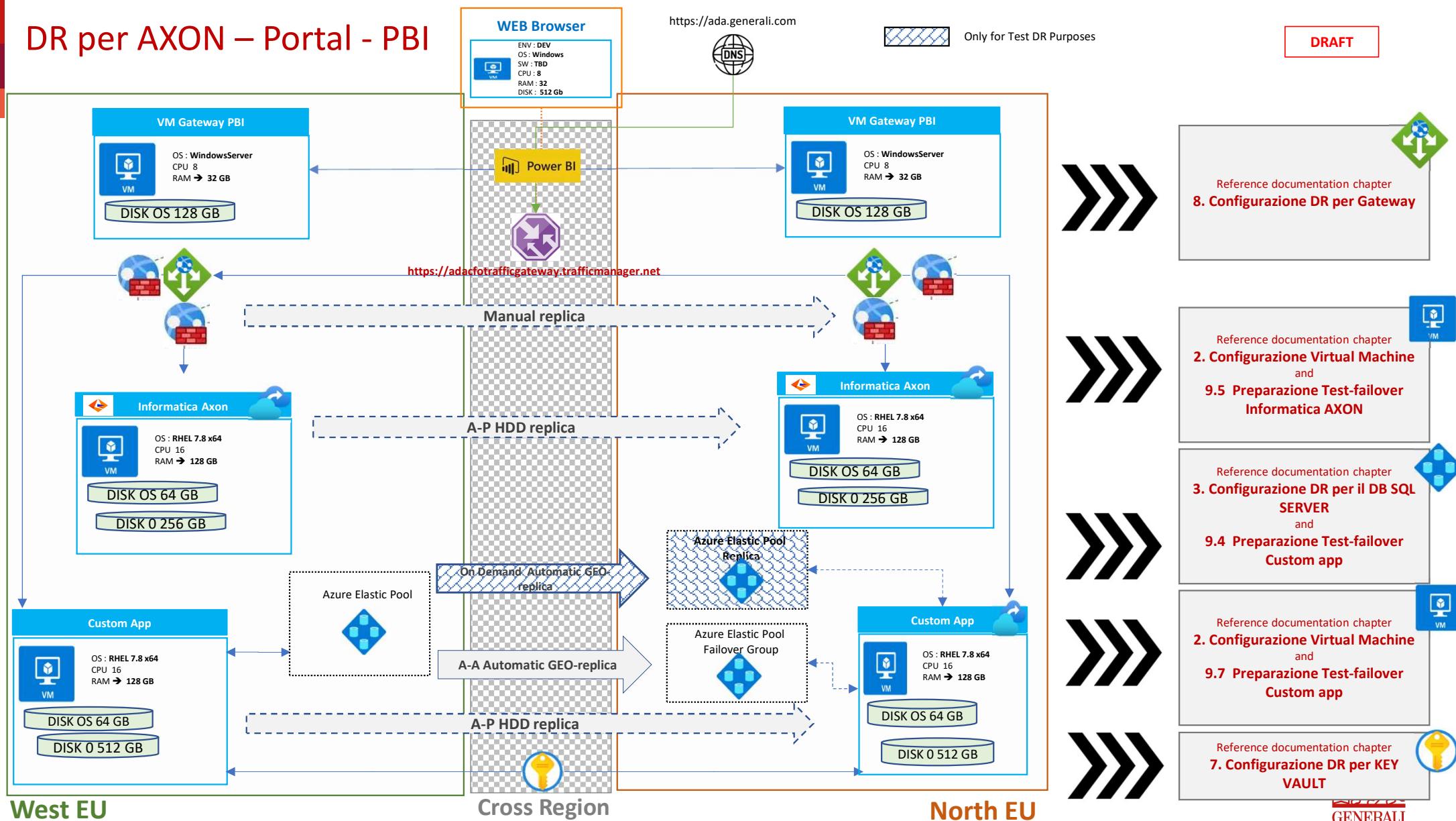
[Download an Inland Policy](#) [Export Scorecard](#)

Dettaglio scorecard del flusso

DR on REGION NORTH EU

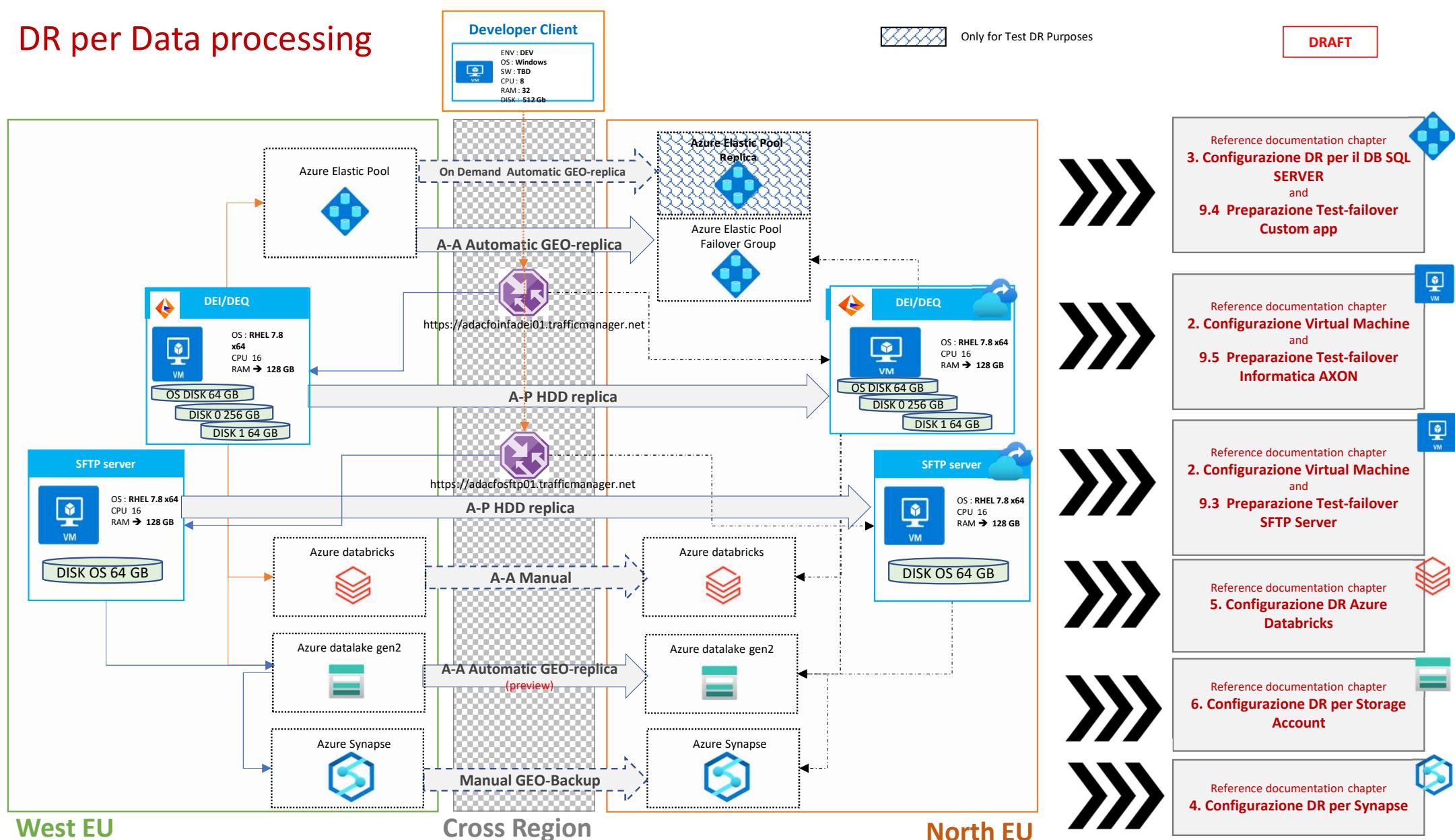
DR per AXON – Portal - PBI

DRAFT



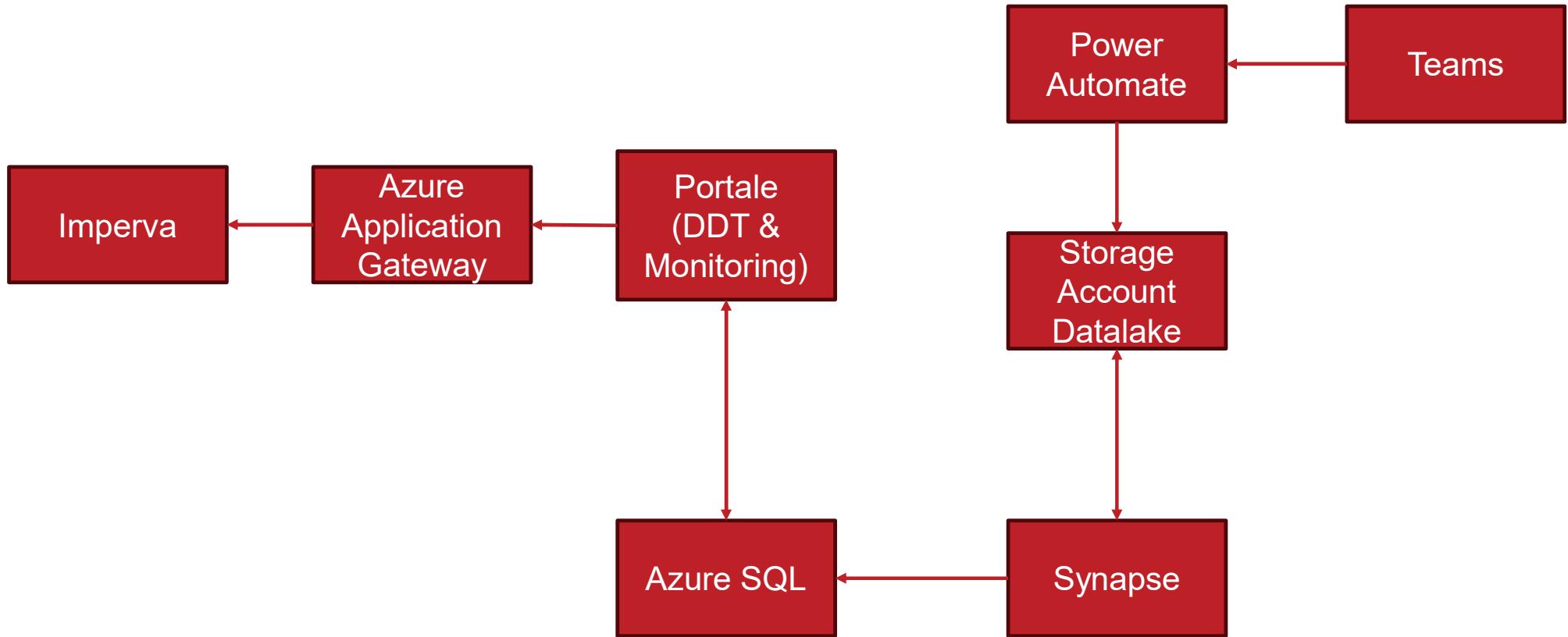
DR per Data processing

DRAFT

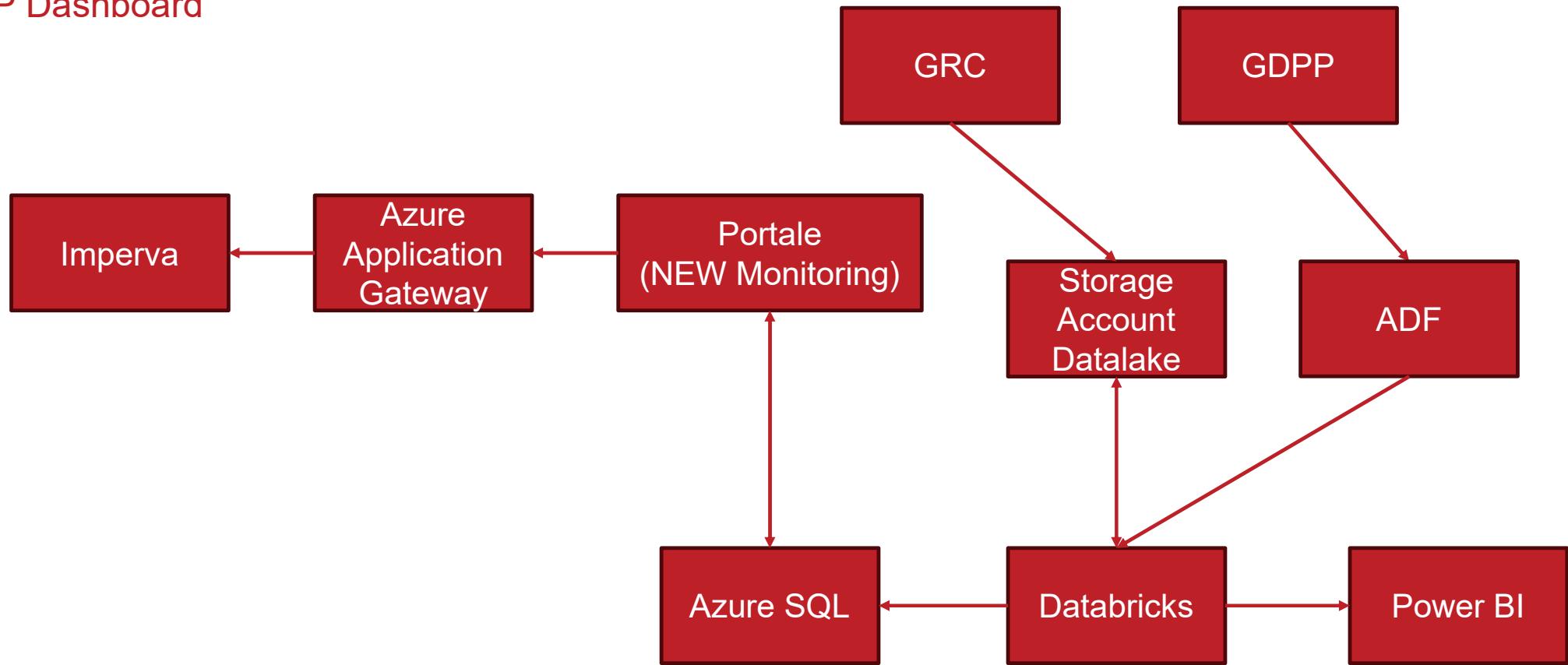


Architettura per Servizio

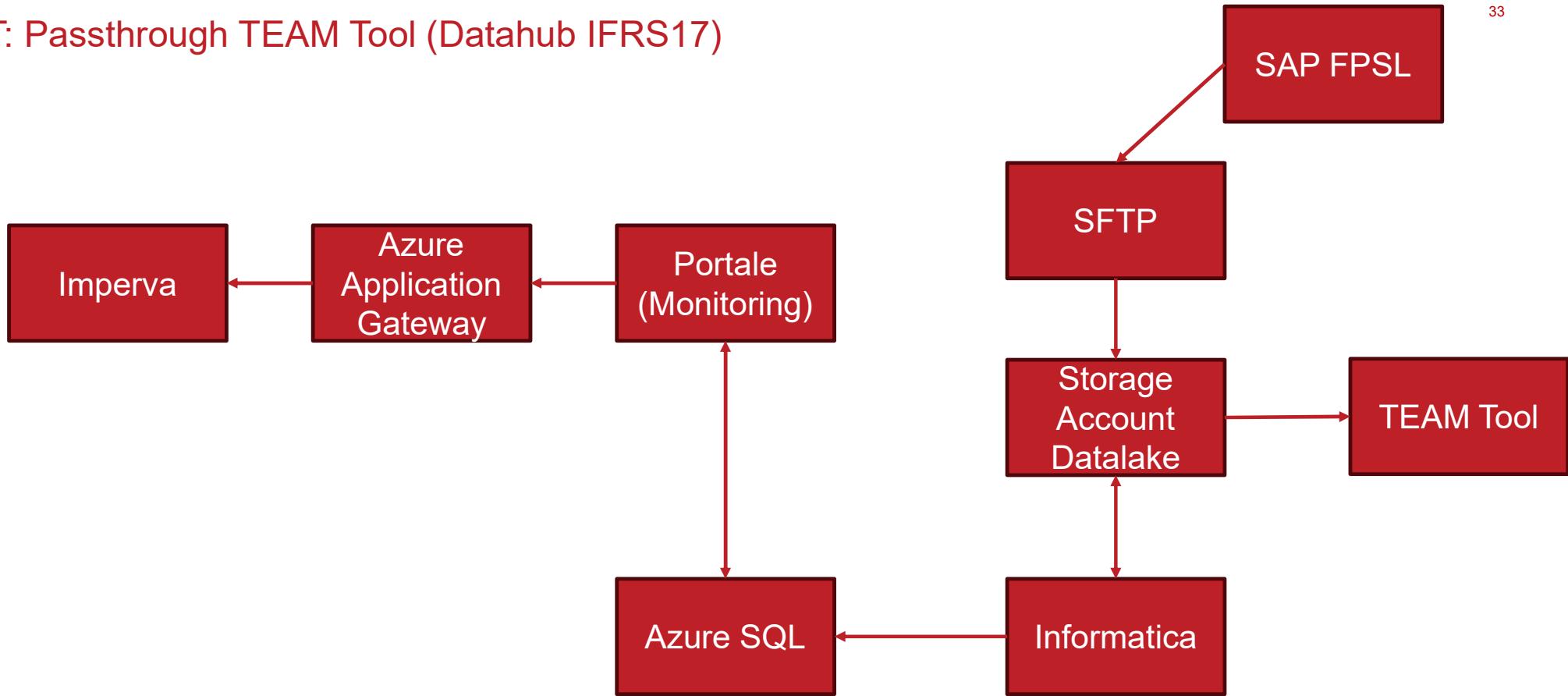
Data Discovery Tool



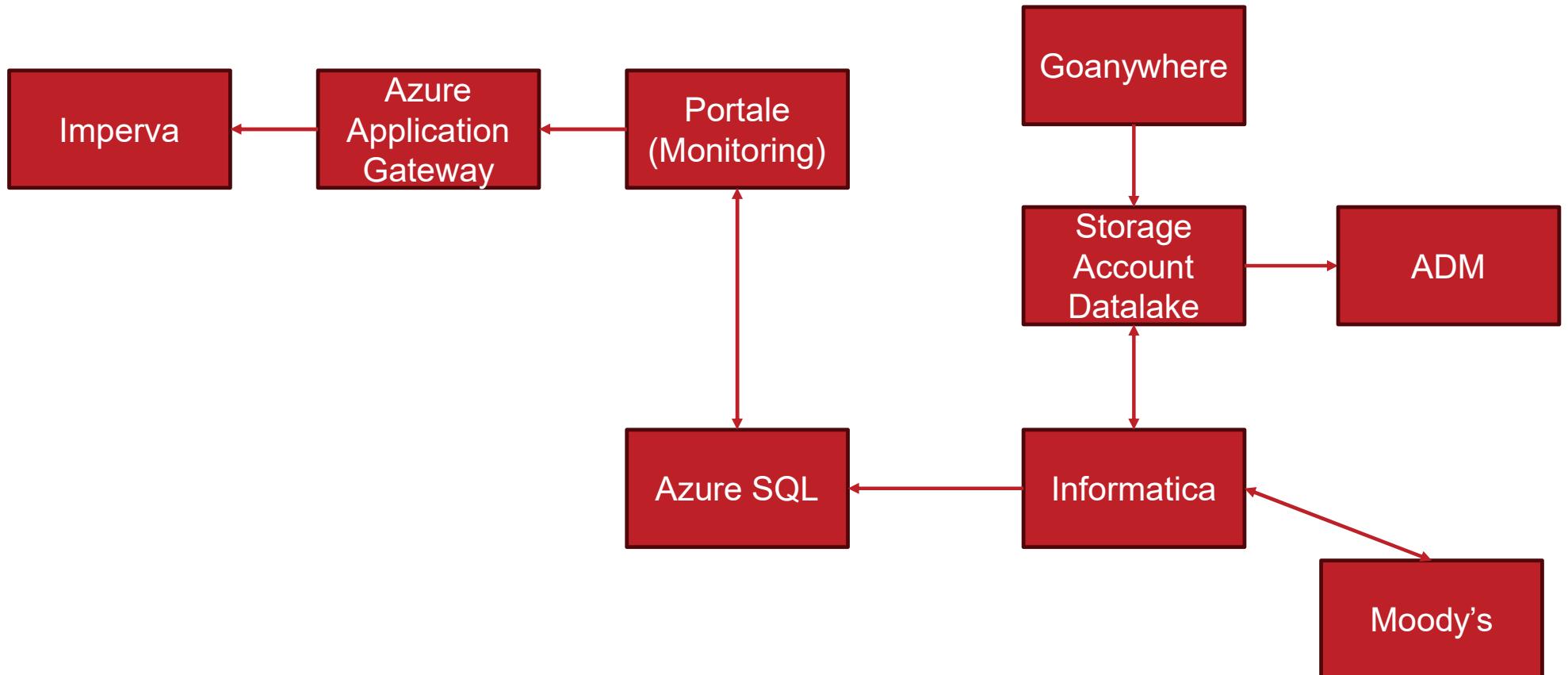
GDPP Dashboard



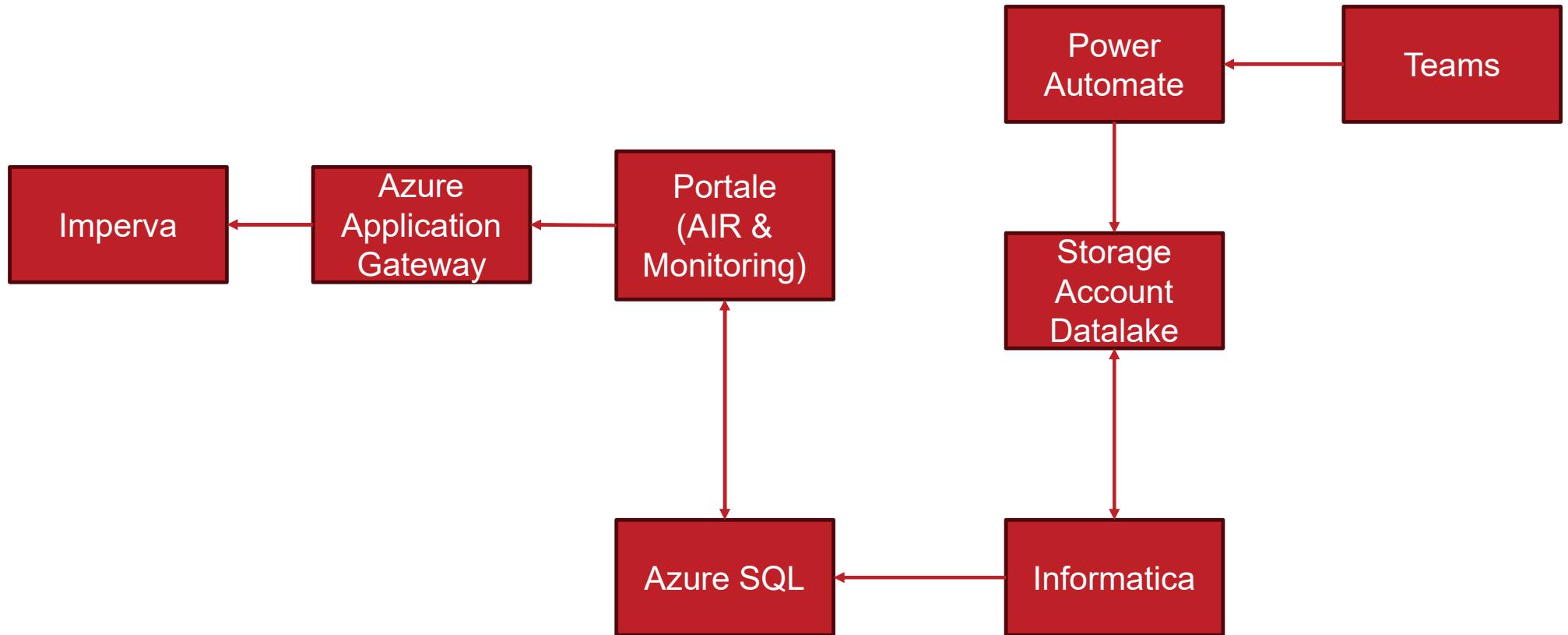
NEXT: Passthrough TEAM Tool (Datahub IFRS17)



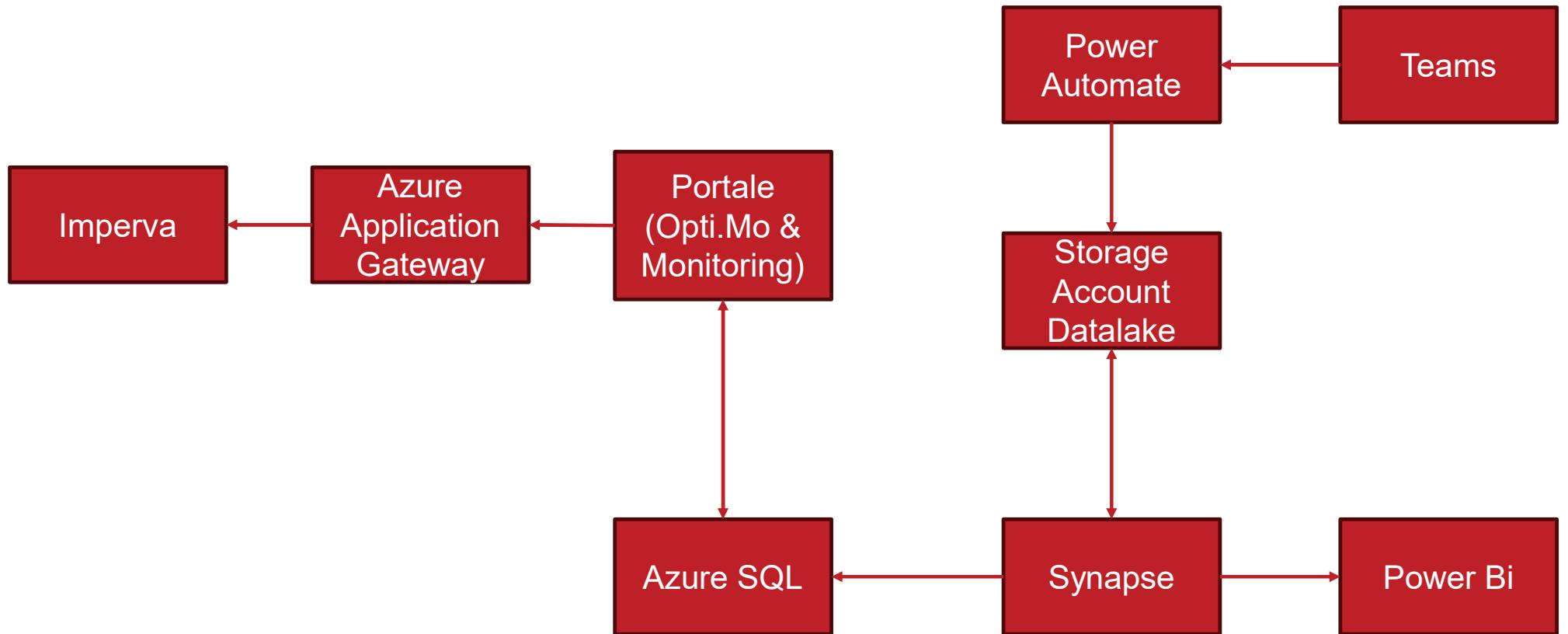
NEXT: Datahub IFRS9



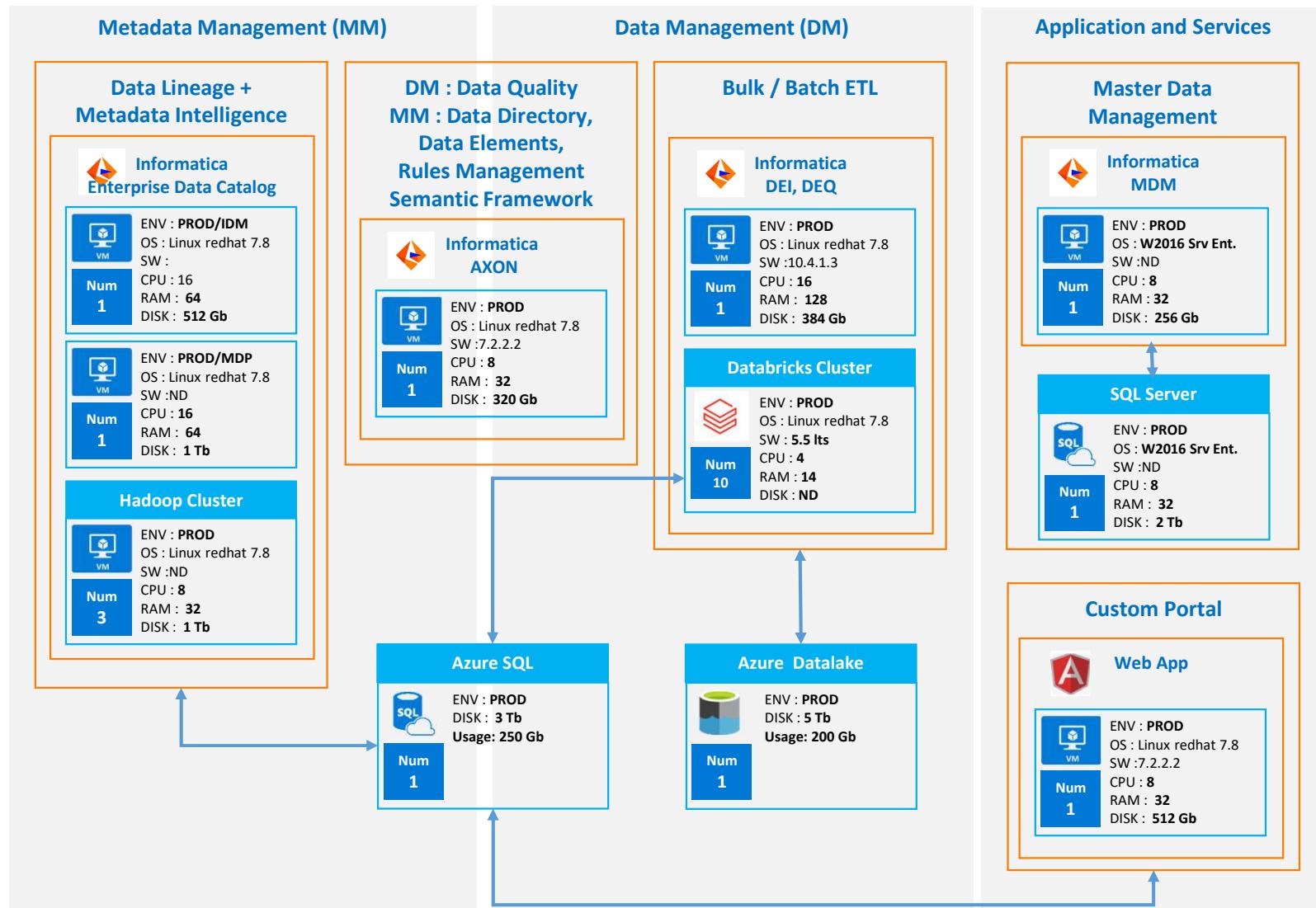
NEXT: AIR



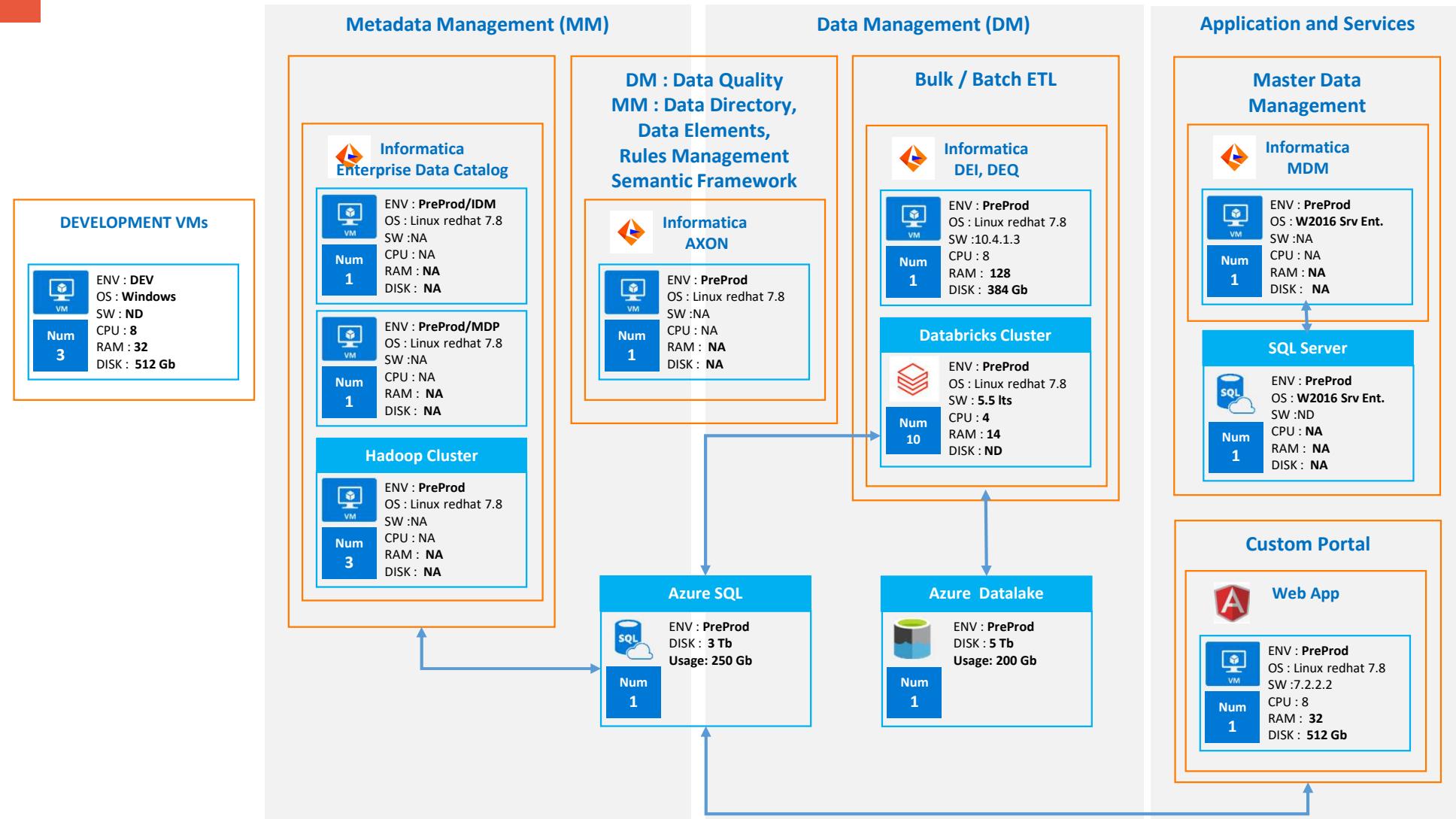
NEXT: Opti.Mo



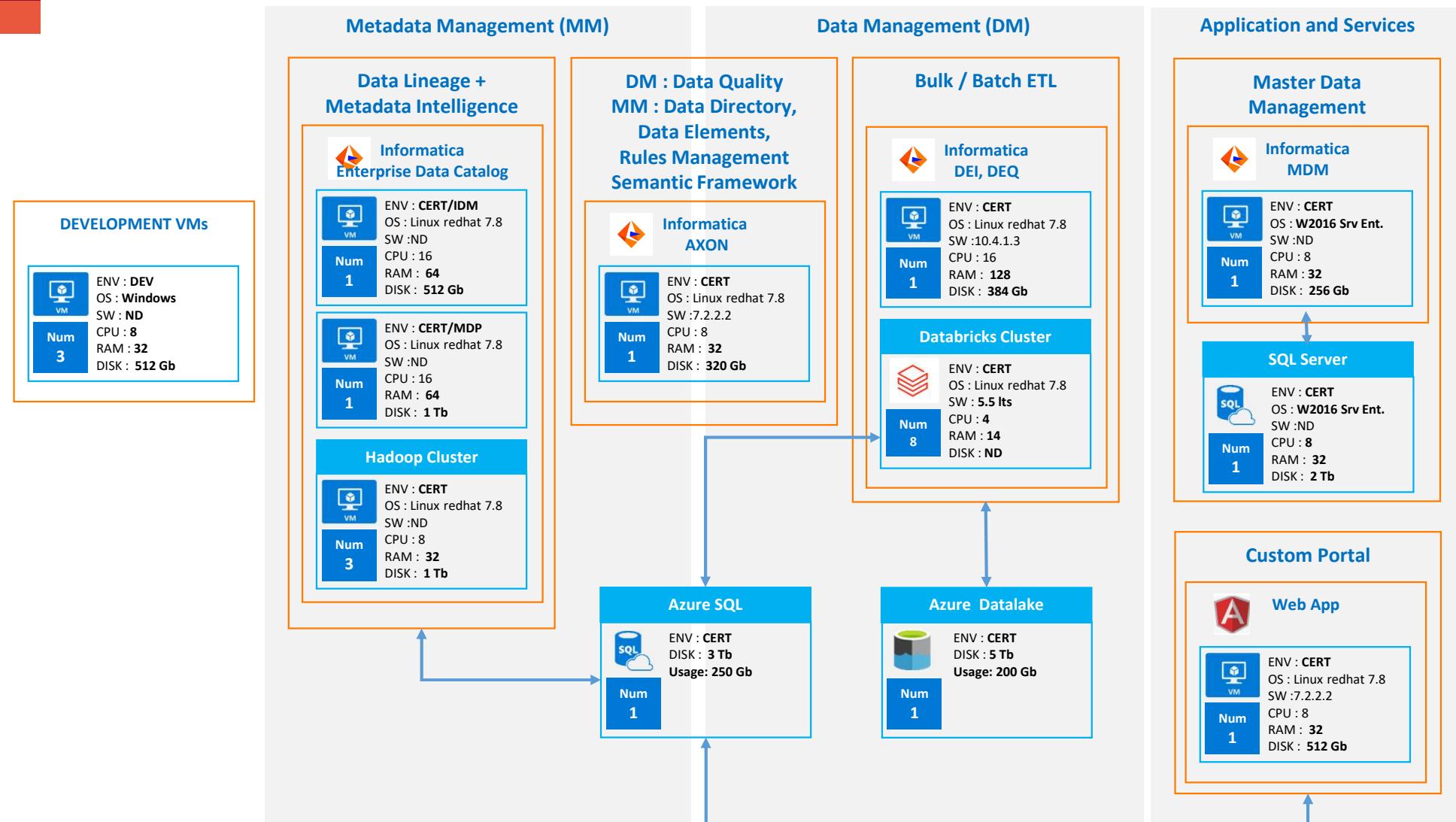
Microsoft Enhanced Scenario : Focus on components, PROD



Microsoft Enhanced Scenario : Focus on components, PRE PROD



Microsoft Enhanced Scenario : Focus on components, CERT



Microsoft Enhanced Scenario : Focus on Acomponents, DEV

DRAFT

