

3025_Data Synchronization (Data Sync) Architecture

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Documentation Status	Final
Review Date	3/18/25
BIP Tenant Namespace	Data Synchronization
System Acronym	Data Sync
VASI ID and Link	3025
BIP Tenant App(s)	<ul style="list-style-type: none">bip-data-synchronization-bgsclaimbip-data-synchronization-bgspersonbip-data-synchronization-bgssyncidbip-data-synchronization-claimbip-data-synchronization-claim-processorbip-data-synchronization-personbip-data-synchronization-person-processorbip-data-synchronization-syncid
GitHub Link(s)	<ul style="list-style-type: none">bip-data-synchronization-bgsclaim (DVA)bip-data-synchronization-bgsperson (DVA)bip-data-synchronization-bgssyncid (DVA)bip-data-synchronization-claim (DVA)bip-data-synchronization-claim-processor (DVA)bip-data-synchronization-person (DVA)bip-data-synchronization-person-processor (DVA)bip-data-synchronization-syncid (DVA)bip-data-synchronization-config (DVA)bip-data-synchronization-trusted-cas (DVA)bip-data-synchronization-common (DVA)
BIH Link(s)	Data Synchronization
MSR Links(s)	2422
Solution and support Links	<ul style="list-style-type: none">https://data-synchronization-bgsclaim-dev.dev.bip.va.gov/swagger-ui.htmlhttps://data-synchronization-bgsperson-dev.dev.bip.va.gov/swagger-ui.htmlhttps://data-synchronization-bgssyncid-dev.dev.bip.va.gov/swagger-ui.htmlhttps://data-synchronization-claim-dev.dev.bip.va.gov/swagger-ui.htmlhttps://data-synchronization-person-dev.dev.bip.va.gov/swagger-ui.htmlhttps://data-synchronization-syncid-dev.dev.bip.va.gov/swagger-ui.html
Sponsoring organization	VBA
Number of users	15,001-30,000
Estimated Monthly Cost	
Privacy	PII - collects Veteran or Claim data
Will need 508 Compliance	No
Deployment date	1/1/2021
eMASS ID (System Name)	2050 (Data Synchronization)

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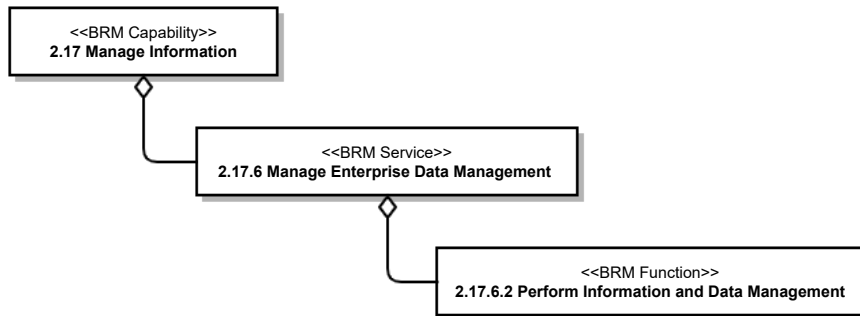
Use Case View

The Data Synchronization (Data Sync) application is a replacement for a legacy capability originally built inside of Veteran Benefits Management Service (VBMS) Core that supported synchronizing changes that occur to Person or Claim data in the Corporate Database (CorpDB) through an interface with BEP Services. Data Synchronization extracts the logical elements of the legacy application within Veteran Benefits Management Service and restructures them as a standalone application for use both in updated VBMS capabilities as well as new capabilities requiring access to Person or Claim change events.

Capability Viewpoint Vision (CV-1) (VASI Description)

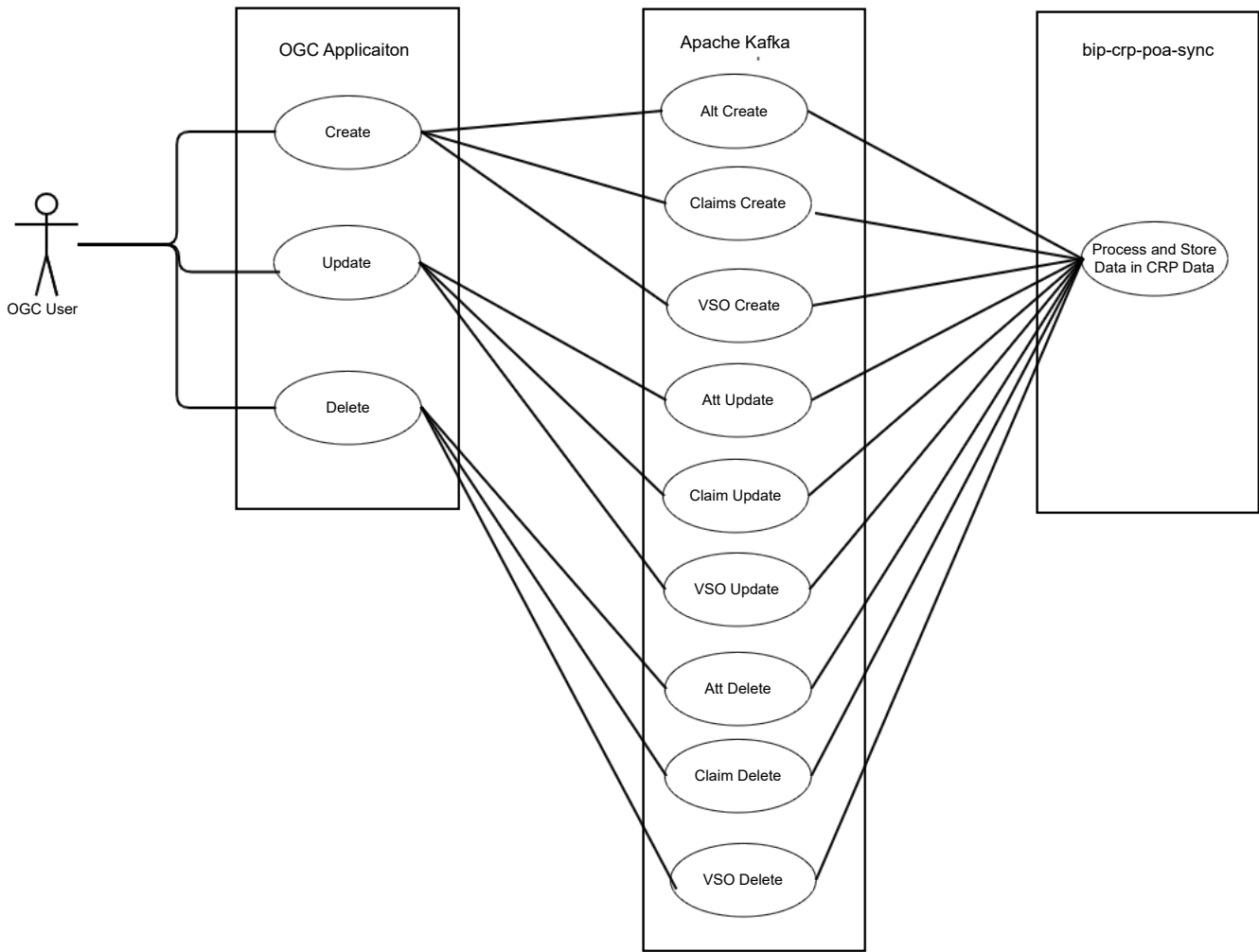
Data Synchronization (Data Sync) resides on Benefits Integration Platform as a Service (BIP - #2295) and is under the Veterans Benefits Management System (VBMS - #1728) Product. The BIP Data Synchronization application, or Data Sync is a replacement for a legacy capability originally built inside of VBMS Core that supported synchronizing changes that occur to Person or Claim data in CorpDB through an interface with BEP Services. Data Sync extracts the logical elements of the legacy application within VBMS and restructures them as a standalone application for use both in updated VBMS capabilities as well as new capabilities requiring access to Person or Claim change events.

Capability Viewpoint Taxonomy (CV-2)



Use Cases

Data Sync is a background system process implemented to retrieve Person and Claim data from CorpDB when changes have occurred; it does not have users or a User Interface (UI).



Main Actors

The following table describes the actors listed in the diagram above. An actor is user in the scope of this architecture and can be a human user or a "system actor" as appropriate.

Name	Description
OGC User	User that makes the updates in the OGC application to trigger the messages to be available in the different topics within the Kafka service.

System/Tenant/Application Description

The following table describes each system/tenant/application (rectangles) listed in the diagram above.

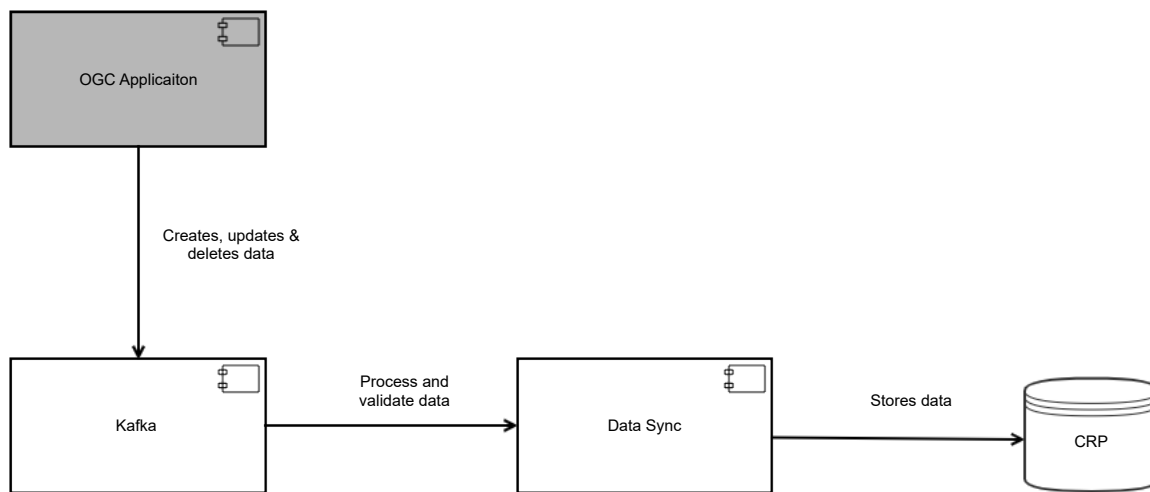
System Name	Description
OGC Application	Application where the changes are initiated.
Apache Kafka	Kafka instance from which the messages are consumed from.
bip-crp-poa-sync	Scoped application that will process and store the data in the CRP DB.

Main User Functions (Use Cases)

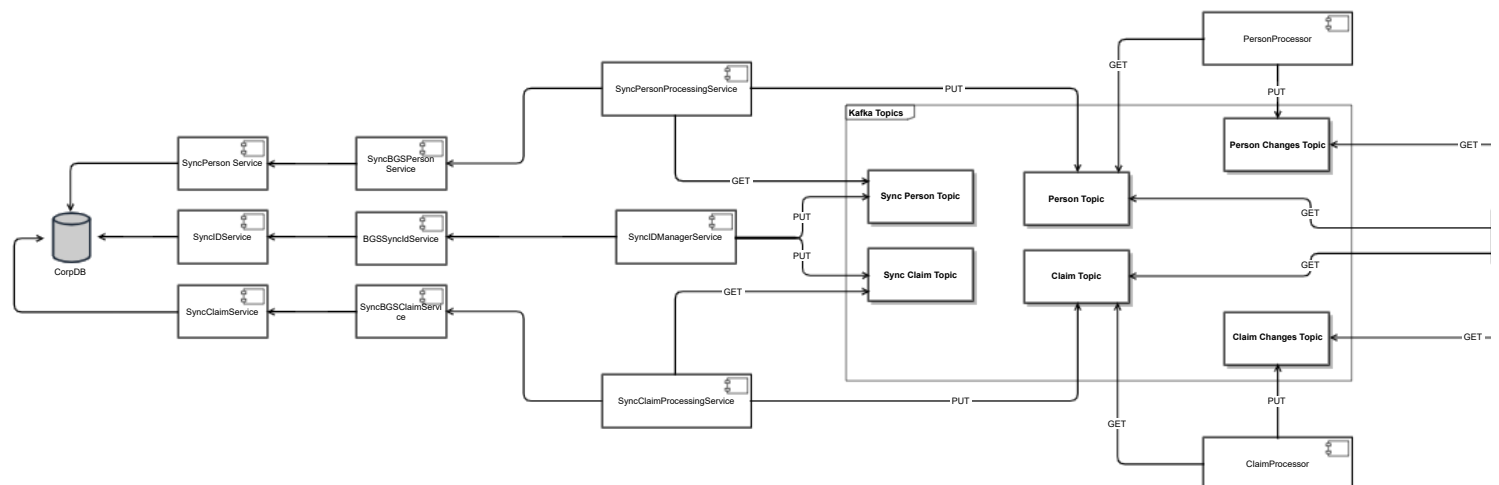
The following table describes each of the use cases (ovals) in the diagram above.

Actor(s)	System	Ability	Details
OGC User	OGC Application	Create, Update, Delete	These functions are done outside of the poa sync application, triggering the messages that will be consumed by the poa sync.

Primary Systems High Level Operational Viewpoint (OV-1)



Gray Rectangle = External resource to resource being documented
 White Rectangle = Internal resource to resource being documented



Data Sync Component References

Service/API	Description	Ports	Protocols
OGC Application	OGC Application is the source application for the Accredited Rep Data where the changes in the data will initially take place.		
Kafka Topics	This is the integration piece between the OGC application and the new data sync application to allow for asynchronous handling to keep the CRP DB in sync for the accredited rep data stored with the OGC application database.		
BEP Services #1898	BEP Services, formerly known as Benefits Integration Services (BIS) and Benefits Gateway Services (BGS), provides secure integration web services to VBA Corporate Database providing access to Veteran, Claims, Ratings, and Awards data. BIS acts as an advisor during conceptual design of new projects and enhancements to the existing systems. BIS ensures maximum reuse of services and components among and between new development initiatives and current systems in operations/sustainment.	443	SOAP

Component	Description
vbms-external-contracts repo	Provides service facades to connect BEP Services SOAP to BIP Data Sync services
SyncPersonProcessingService	Watches the Sync Person Topic for changed records, then retrieves the full object from BEP Services SyncPersonService (by way of SyncBGSPersonService) and pushes to the Person Topic
SyncIDManagerService	Retrieves IDs of any Person or Claim record that has changed from BEP Services SyncIDService (by way of BGSSyncIDService) and pushes to the appropriate Kafka Topic (Sync Person or Sync Claim)
SyncClaimProcessingService	Watches the Sync Claim Topic for changed records, then retrieves the full object from BEP Services SyncClaimService (by way of SyncBGSClaimService) and pushes to the Claim Topic

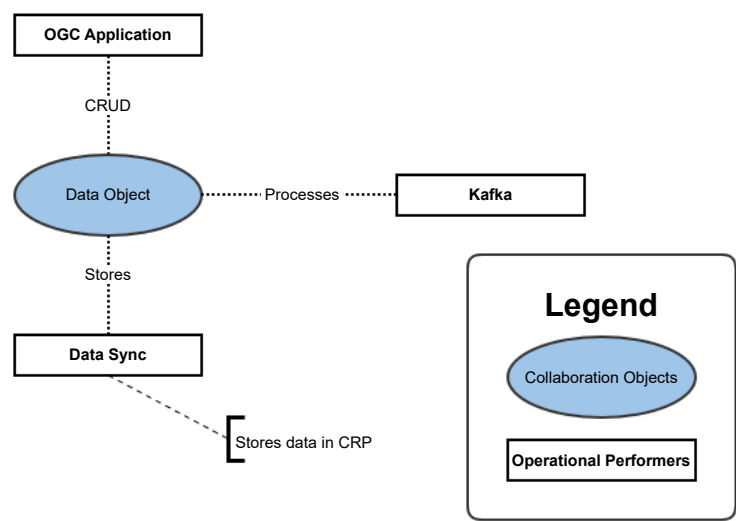
SyncBGSPersonService	Interface between SyncPersonProcessingService and BEP Services SyncPersonService
SyncBGSClaimService	Interface between SyncClaimProcessingService and BEP Services SyncClaimService
PersonProcessor	Returns a sample info object based on search by PID
Kafka Topics	<ul style="list-style-type: none">• Sync Claim Topic: Holds the changed Claim ID and Sync ID• Sync Person Topic: Holds the changed Person ID and Sync ID• Claim Topic: Holds the raw BEP Services Claim object• Person Topic: Holds the raw BEP Services Person object• Claim Changes Topic: Holds Claim change objects• Person Changes Topic: Holds Person change objects
ClaimProcessor	Returns a list of Claim objects based on list of Claim IDs
BGSSyncIDService	Interface between SyncIDManagerService and BEP Services SyncIDService

Data Sync interacts with CorpDB via BEP Services, and external consumers can utilize DS to query the Kafka topics to retrieve change information or objects. *Data Sync External Systems* describes Data Sync's relationship to external systems.

Data Sync External Systems

System	Component	Description
Corporate	CorpDB	Database containing Person and Claim records
BEP Services	SyncIDService	Returns the ID of any Person or Claim record that has changed
BEP Services	SyncPersonService	Returns the changed Person object
BEP Services	SyncClaimService	Returns the changed Claim object
External Consumer	Consumer Utilization	<ul style="list-style-type: none">• Can query the Person Changes Topic or Claim Changes Topic for an object containing a map of changed values• Can query the Person Topic or Claim Topic for the latest representation of the full object

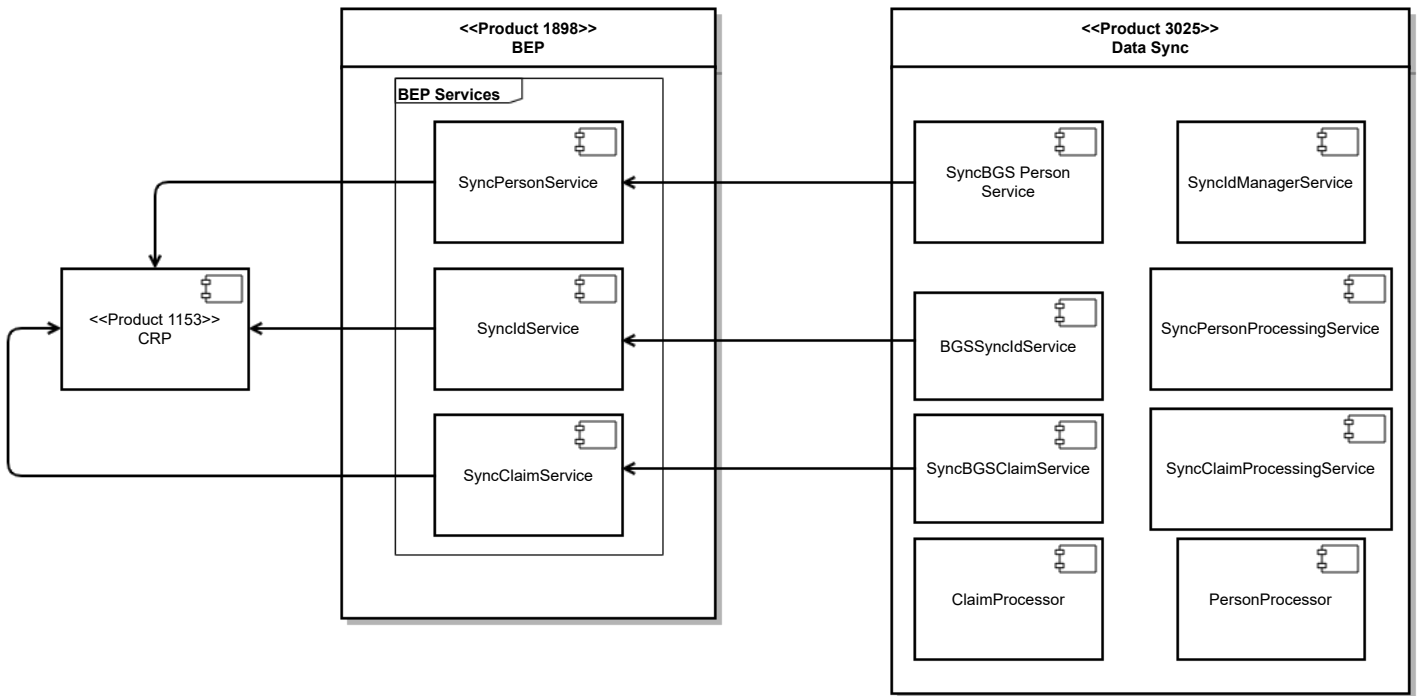
Operational Resource Flow (OV-2)



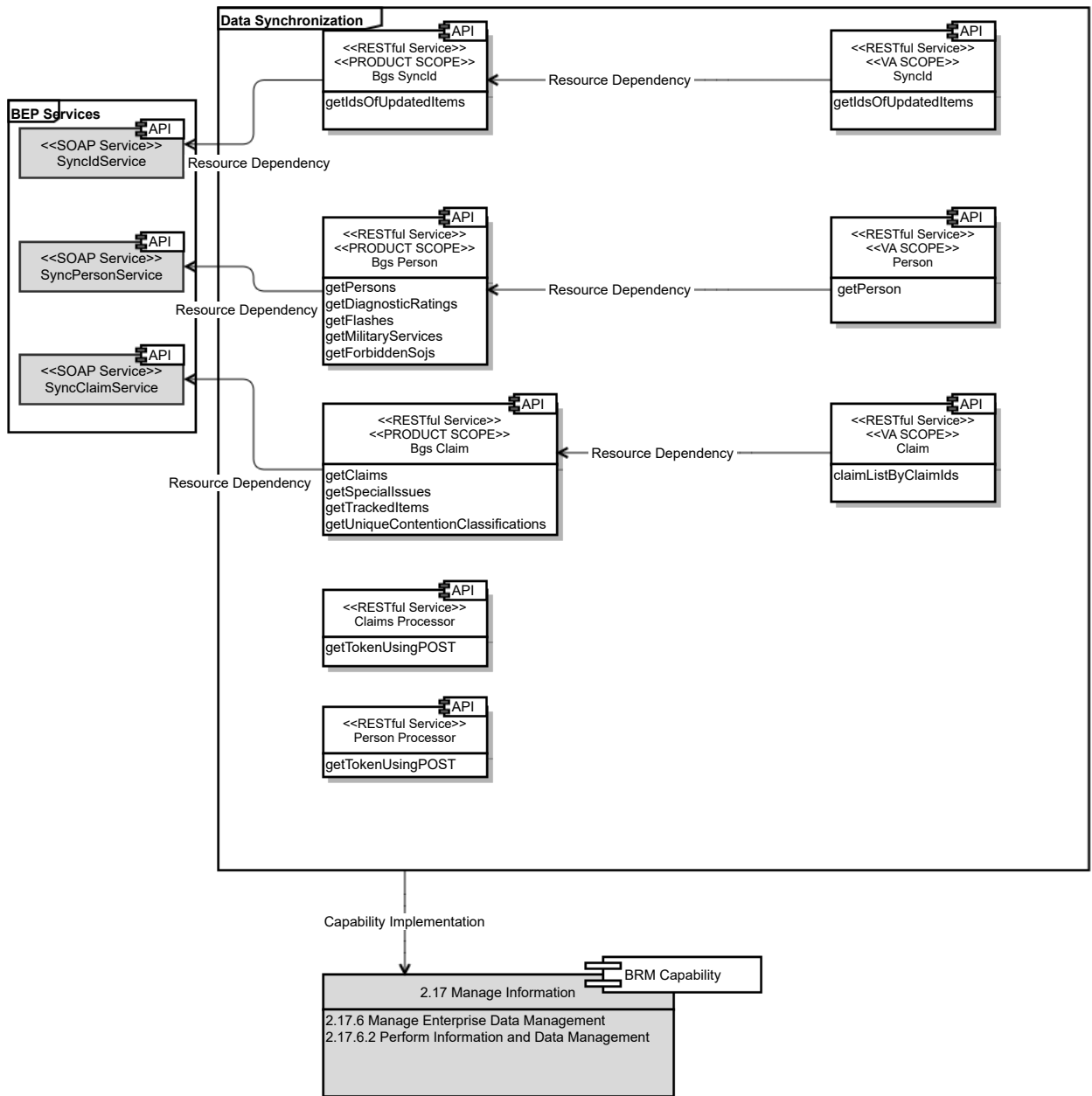
Logical View

The Logical View describes the conceptual view of the functionality and of the systems that will participate. This view defines what nouns are involved and the relationship between them. For example, it may decompose the design into sub-systems and packages, and for significant packages, the decomposition into classes and class utilities. This section may include the Business Object Model, states and transitions for key objects, and other key details about classes and attributes.

Systems Interface Description (SV-1)



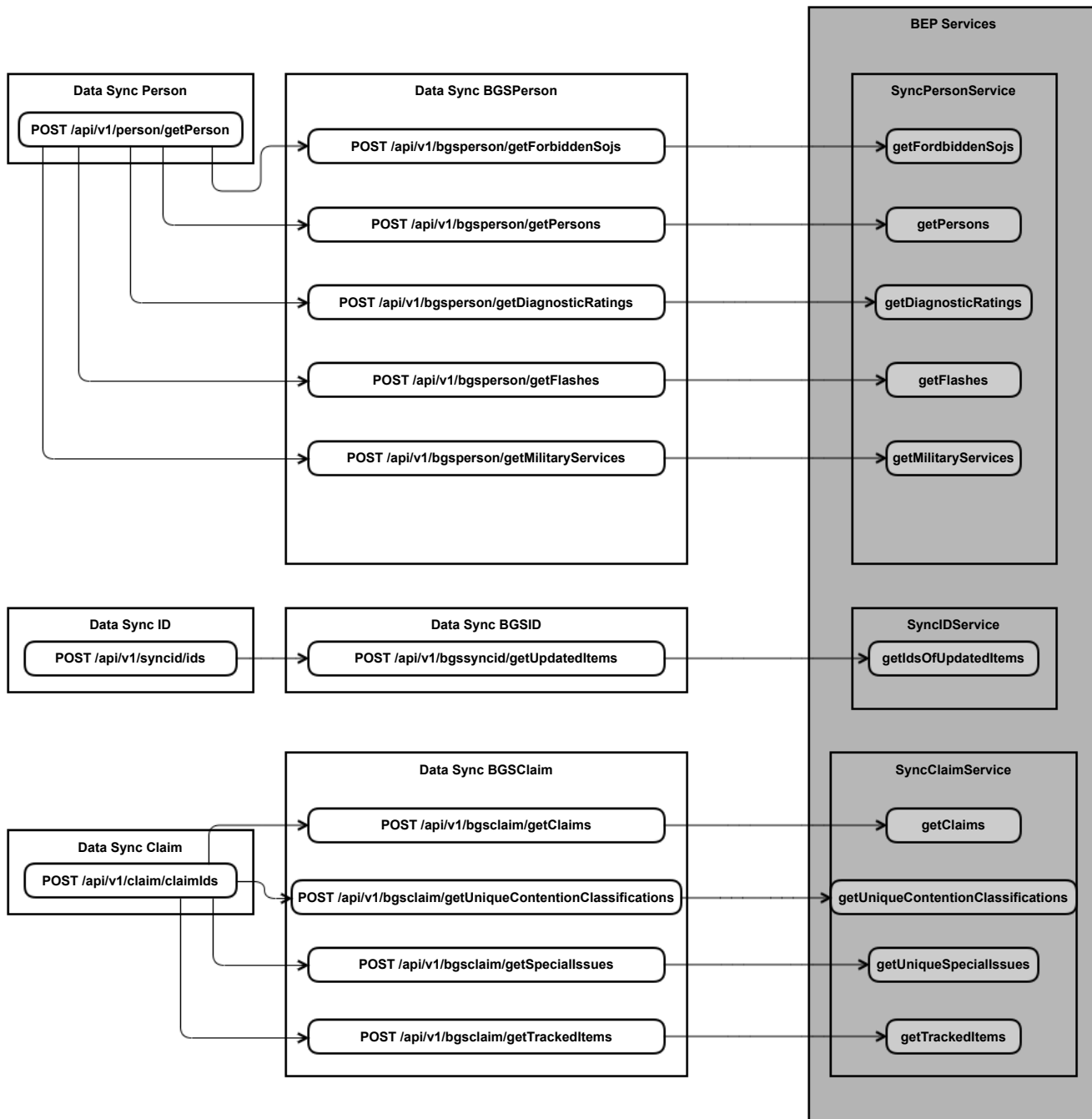
Services Context (SvcV-1) (VASI APIs)



Service	Description
getIdsOfUpdatedItems	Retrieves IDs of Updated Items from SyncPersonService
getPersons	Retrieves Persons when giving a list of Person IDs
getDiagnosticRatings	Retrieves Diagnostic Ratings when giving a list of Person IDs
getFlashes	Retrieves Flashes when giving a list of Person IDs
getMilitaryServices	Retrieves Military Services when giving a list of Person IDs
getForbiddenSojs	Retrieves Forbidden Sojs when giving a list of Person IDs
getClaims	Retrieves Claims from SyncClaimService
getSpecialIssues	Retrieves Special Issues when giving a list of Claim IDs

getTrackedItems	Retrieves Tracked Items when giving a list of Claim IDs
getUniqueContentionClassifications	Retrieves Unique Contention Classifications when giving a list of Claim IDs
getTokenUsingPOST	
getIdsOfUpdatedItems	Retrieves the Claim or Person ID related with the next batch of Sync IDs
getPerson	Retrieve Person Information by PID from mocked partner sample service
claimListByClaimIds	Retrieves Claim list by list of Claim IDs

Services Resource Flow (SvcV-2)



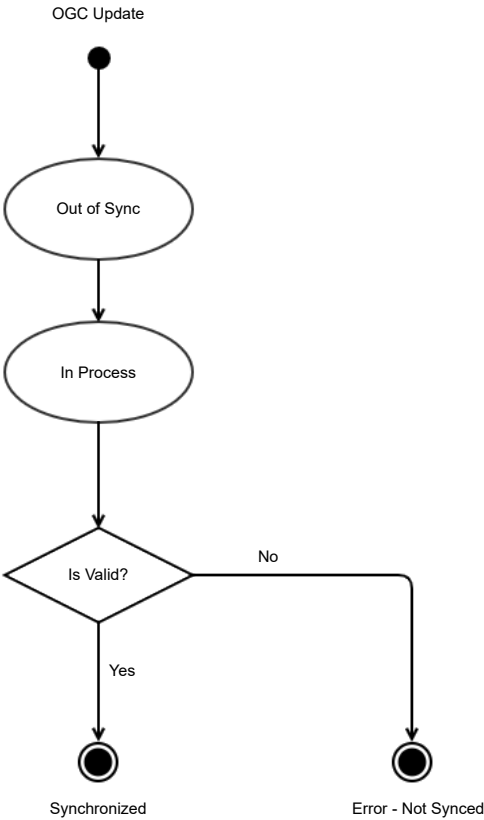
Data Sync Service	Connection Type	HTTPS Request Method	HTTPS Request Path	Endpoint Connection	System or Service Connection	Product and VASI ID	System
Data Sync Person	HTTPS	POST	/api/v1/bgsperson/getForbiddenSojs	getForbiddenSojs	SyncPersonService	BEP - #1898	BIS
			/api/v1/bgsperson/getPersons	getPersons			
			/api/v1/bgsperson/getDiagnosticRatings	getDiagnosticRatings			
			/api/v1/bgsperson/getFlashes	getFlashes			
			/api/v1/bgsperson/getMilitaryServices	getMilitaryServices			
Data Sync ID	HTTPS	POST	/api/v1/bgssyncid/getUpdatedItems	getIdsOfUpdatedItems	SyncIDService	BEP - #1898	BIS
Data Sync Claim	HTTPS	POST	/api/v1/bgscclaim/getClaims	getClaims	SyncClaimService	BEP - #1898	BIS
			/api/v1/bgscclaim/getUniqueContentionClassifications	getUniqueContentionClassifications			
			/api/v1/bgscclaim/getSpecialIssues	getUniqueSpecialIssues			

Data Sync Service	Connection Type	HTTPS Request Method	HTTPS Request Path	Endpoint Connection	System or Service Connection	Product and VASI ID	System
			/api/v1/bgsclaim/getTrackedItems	getTrackedItems			

Internal and External Systems-Systems Matrix (SV-3/SvcV-3) (VASI Interfaces)

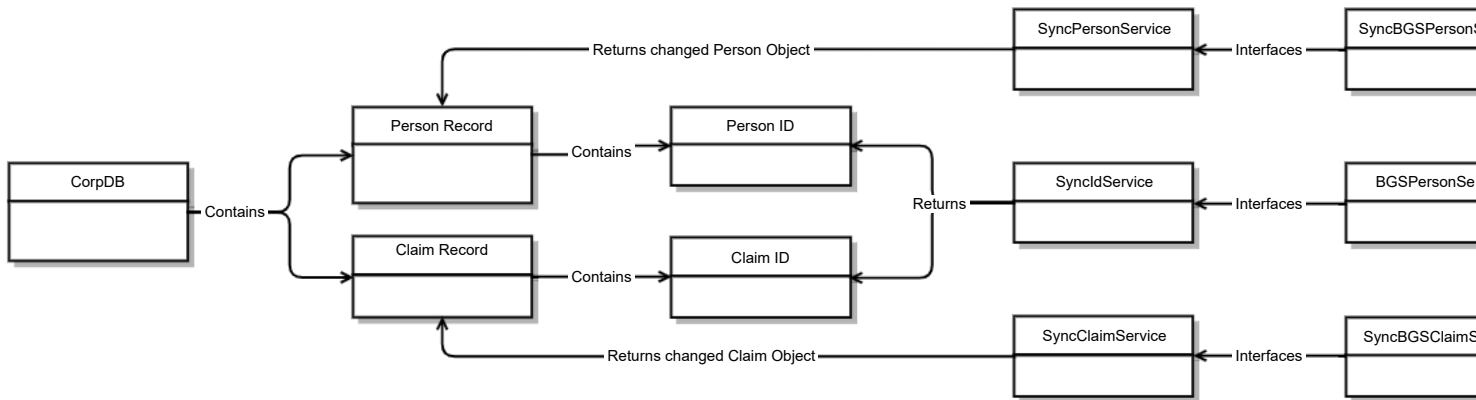
System/Service A	System/Service B	Internal or External	Consumer or Dependency (in relation to System A)
Data Synchronization:bgssyncId #3025	BEP:BEP Services:SyncIdService #1898	Internal VA	Dependency
Data Synchronization:bgsperson #3025	BEP:BEP Services:SyncPersonService #1898	Internal VA	Dependency
Data Synchronization:bgsclaim #3025	BEP:BEP Services:SyncClaimService #1898	Internal VA	Dependency

State Transitions (OV-6b)

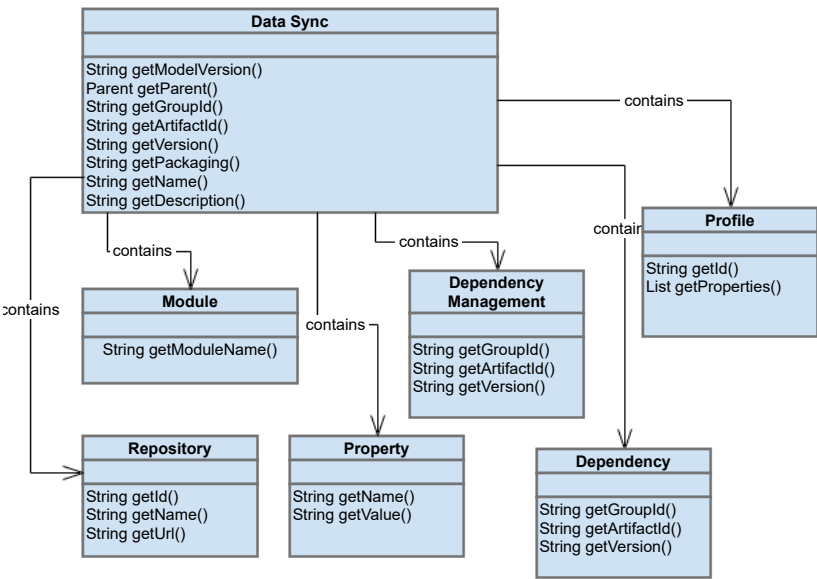


Data Models

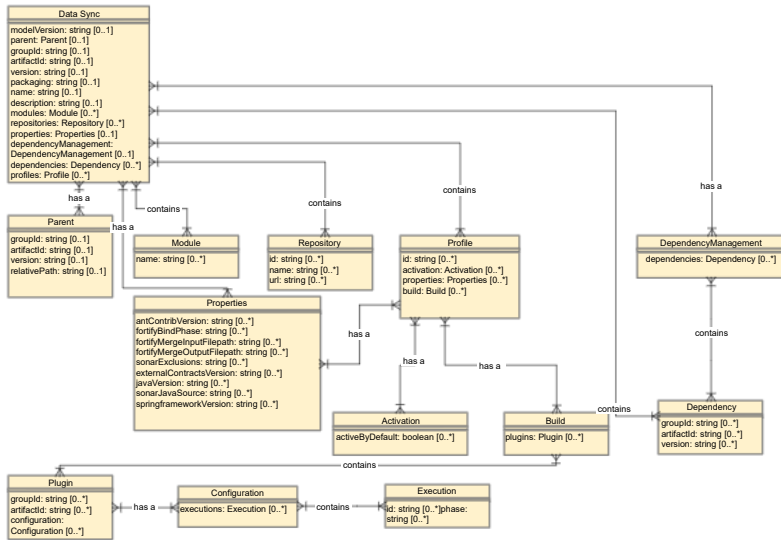
Conceptual Data Viewpoint Model (DIV-1)



Logical Data Viewpoint Model (DIV-2)



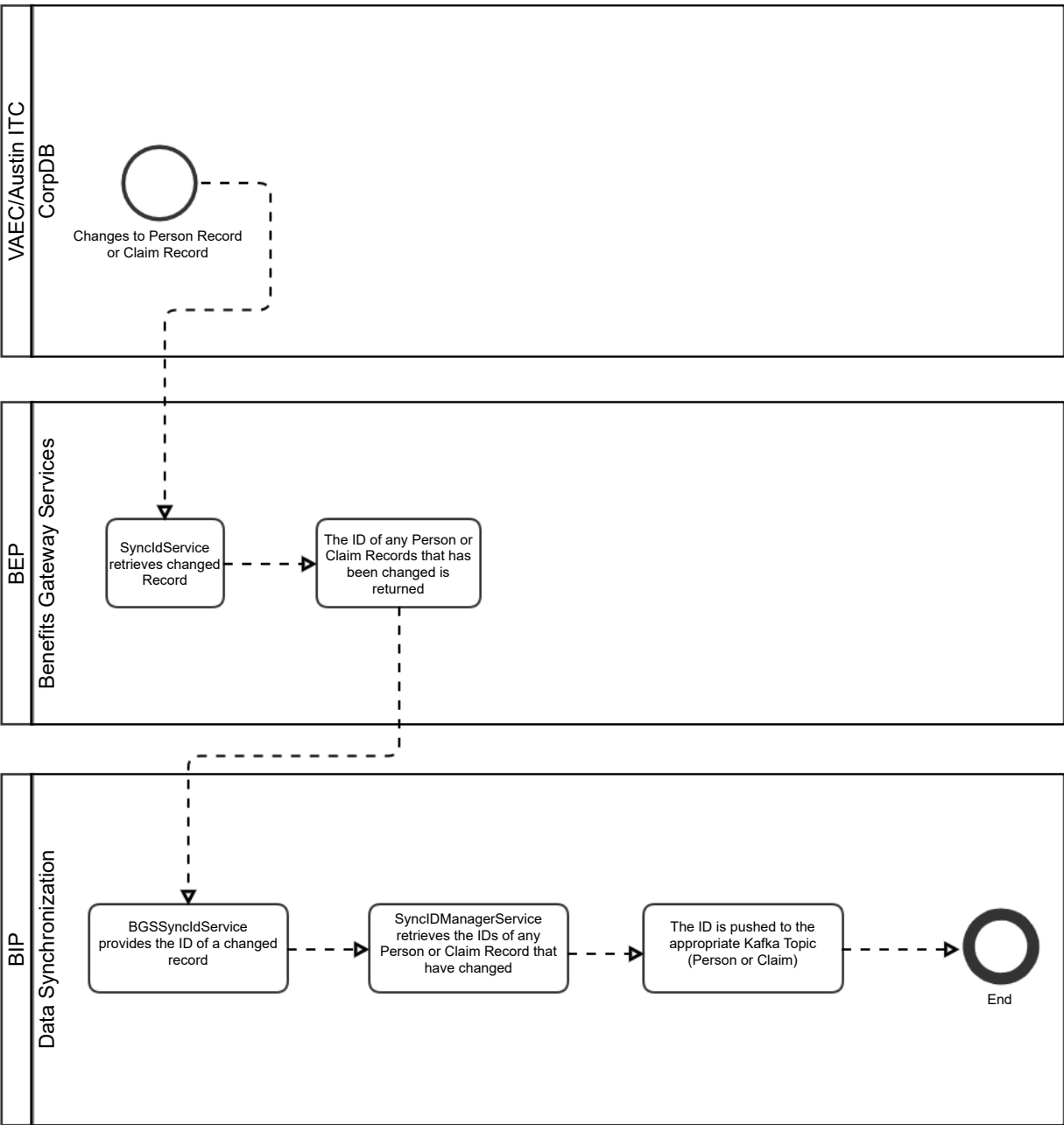
Physical Data Viewpoint Model (DIV-3)



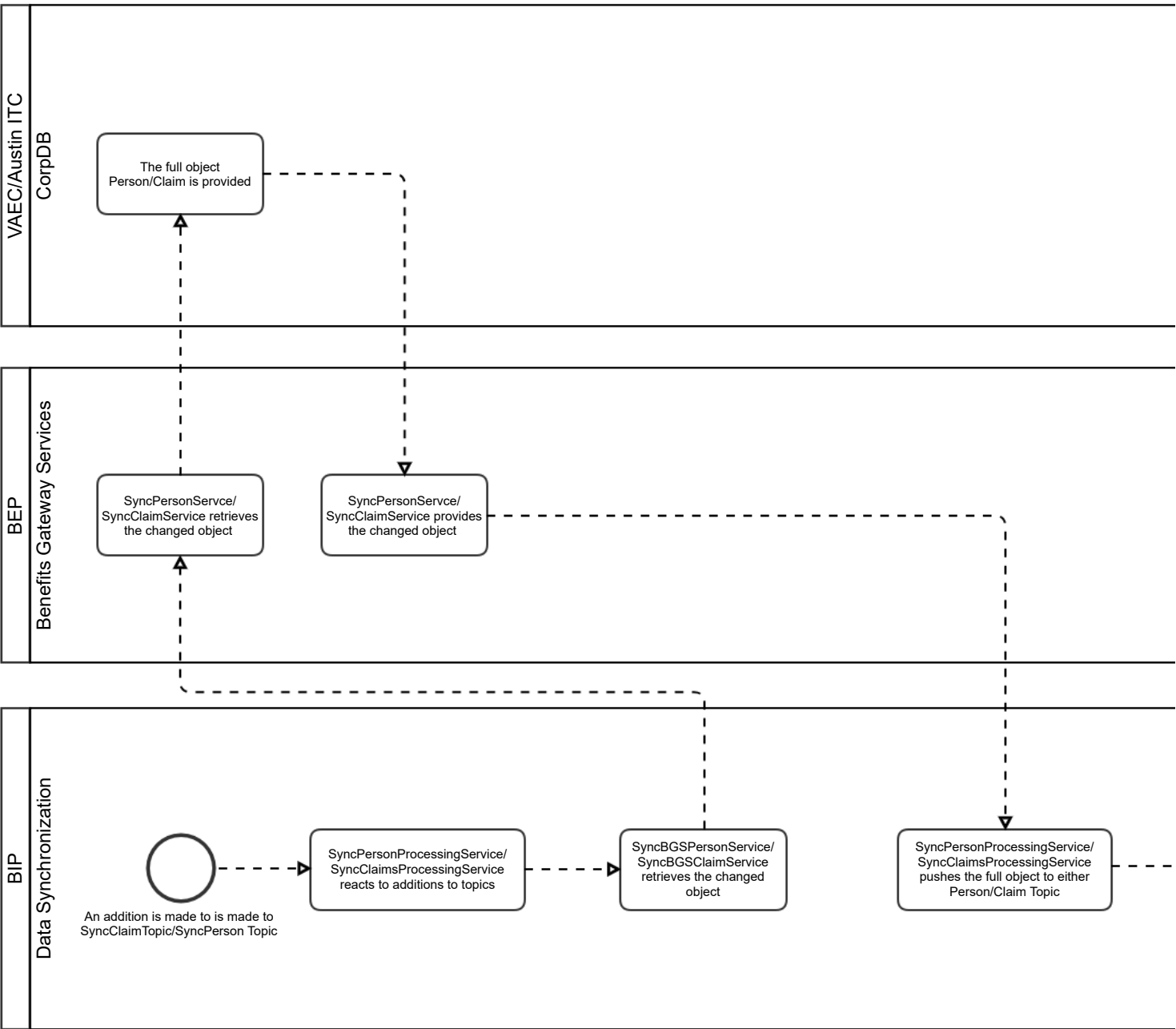
Process View (Business Process Model)

Main Business Process Model (OV-6d)

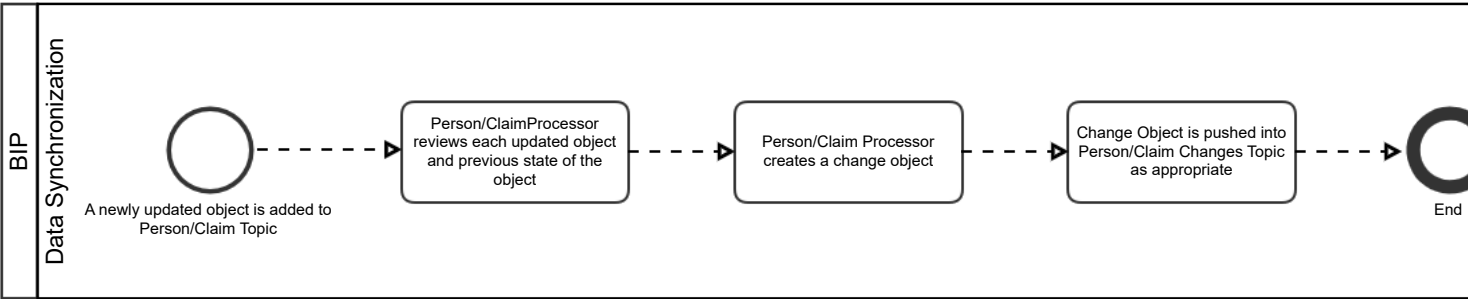
Syncing from BEP Services Sequence

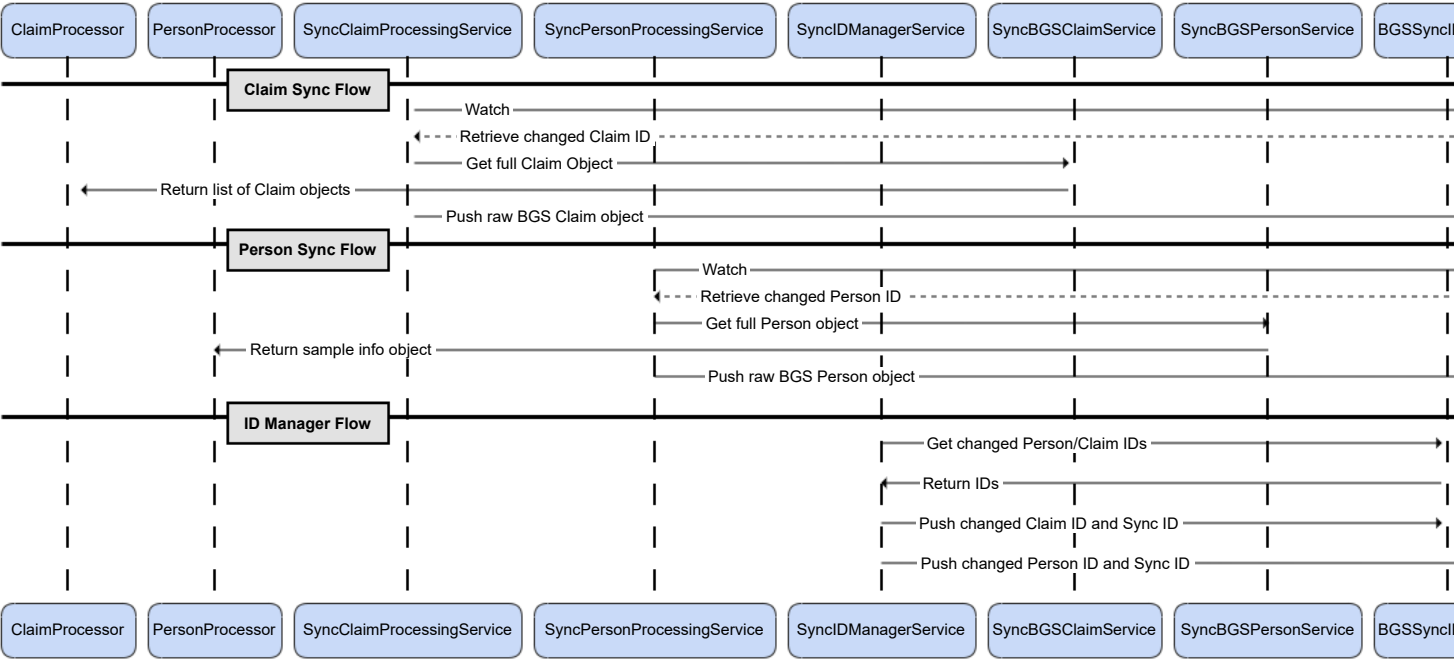


Retrieving the Full Object Sequence



Processing and Publishing the Changes Sequence





*Plant UML File Attached

Implementation View

Primary System Technologies (SV-9) (VASI Technology Components)

For standard tools see [VBMS SV-9 Master Table](#).

Software Type	Software Vendor	Software Name	Software Version	TRM Link	TRM ID
Development Tool	Confluent	Confluent Platform	7.3.0	Link	15386
Cloud Services/Server Virtualization	Amazon	OpenSearch	N/A	N/A	N/A
Operating System	Red Hat	Red Hat Enterprise Linux (RHEL)	7.x	Link	6367

Deployment View

Environment Mapping

Environment	Description
DEV	Current development version, dev cluster
TEST	Sprint release version, dev cluster
INT	Environment where OBPI authors schedules, dev cluster
IVV/SQA	Sprint release version, stage cluster
UAT	Sprint release version, BEP Services link test dependency, stage cluster
PAT	Sprint release version, stage cluster
PDT	Sprint release version, stage cluster
DEMO	Previous release version, stage cluster
PERF	Performance testing, latest release ready for production, prod cluster
COLA	Previous release
PrePROD	Next production release
ProdTest	Next production release
Prod	Current production environment

Connectivity to External Systems

Data Sync does not connect to external systems outside of the VA network.

System Configuration

The Data Sync network infrastructure resides within the AWS VPC. Network administration is managed by AWS and VAEC/NSOC. This includes:

- NAT
- Firewall policies
- New subnet requests
- Resolution of physical infrastructure issues

Via the AWS console, ProdOps can access the VPC for server management activities. These include:

- Configuring security groups
- Configuring the application and network load balancers
- NACL

System Monitoring and Metrics

Data Sync's availability will be ensured by actively monitoring the PROD environment to detect and resolve minor incidents before they become serious problems. Standard industry and application-integrated tools are used to alert PRODOps. These tools include AppDynamics, Oracle Enterprise Manager (OEM), Nagios, Hazelcast, and Splunk, as well as custom scripts. These tools allow PRODOps to resolve potential issues and to contact end users before these issues become outages. They also allow for real-time monitoring by providing alerts to both PRODOps and VA business managers.

System Logging and Auditing

Build audits are performed to verify the product matches. The Configuration Items (Cis) described in the specification, other documents, and the package is reviewed before release. The audits and reviews vary in complexity and formality. At a minimum, each named build goes through the following audits:

- A comparison of the Version Description Document (VDD) and the build change log
- A comparison of the VDD and query of Jira or GitHub work items tagged with the build label
- A review of the change log and work items contained in the build to ensure that code commits were targeted to the appropriate repository stream
- A review of Jira or GitHub work items to ensure appropriate detail and work item state and traceability to requirements and test cases are captured

Configuration audits are broken into functional and physical configuration audits. They occur either at delivery or now of effecting the change. Configuration audits are functional and physical. A functional configuration audit ensures functional and performance attributes of a CI are achieved. A physical configuration audit ensures a CI is installed in accordance with the requirements of its detailed design documentation.

Logging follows practices of the BIP Platform. For detailed logging on the clusters and the tenant's applications, the BIP Platform leverages an Elasticsearch, Fluentd and Kibana (EFK) stack to aggregate and visualize logs. Fluentd captures the logs and forwards them to AWS S3 and Elasticsearch. Elasticsearch has similar functionality to a database and stores these logs and indexes for fast retrieval. Kibana is then used by developers and operations engineers to see the logs stored in Elasticsearch. Logs are duplicated into sS3 and retained there for a certain period of time (30 days non-PII environments, 90 days PII environment) after which they are lifecycled from S3 Standard to S3 Glacier, which is a cheaper storage class for objects that have to be accessed infrequently. *BIP Platform Logging* shows the components of BIP Platform logging.

Security Strategy

Data Sync follows the standard practices of the BIP Platform.

[datasync](#) [cp](#) [product](#) [architecture](#)