ThreatModel for BigQuery

Content

This publication includes:

- overall data flow diagram of Google Cloud BigQuery

- overview of the Mitre ATT&CK matrix for Google Cloud BigQuery

- prioritized list of all threat scenarios

- list of all the control activities and testing procedures

- risk-based prioritized list of control implementation

License Agreement

Source

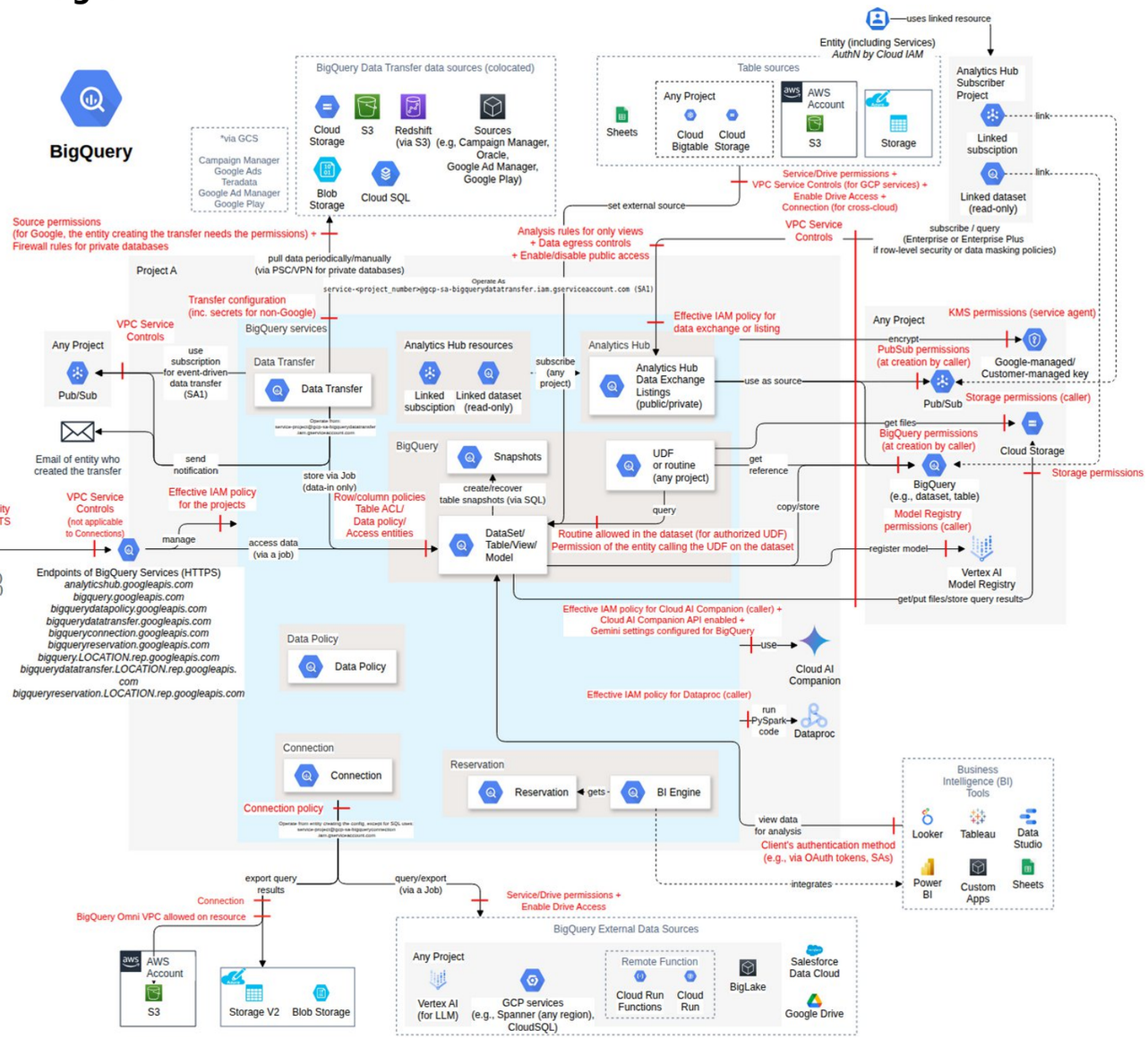
The latest version of this work is hosted on GitHub.

Contact

If you have any questions, please contact chatbot@trustoncloud.com.

BigQuery

Data Flow Diagram



Security Scorecard

Security in the Cloud	
Number of Actions*	176
Identity management	Cloud IAM
Number of IAM permissions*	123
Resource-based access	tables rows columns connections data exchanges listings
Logging coverage for APIs	64.1% (missing 52)
Number of Logging Event Names*	126
VPC Service Controls	Yes
Network Filtering	No
Encryption-at-rest	Yes
Encryption-in-transit	Yes

* See details in Appendixes

Mitre ATT&CK matrix for BigQuery

Reconnaissance	Resource Development	Initial Access	Execution	Persistence	Privilege Escalation	Defense Evasion	Credential Access	Discovery	Lateral Movement	Collection	Command and Control	Exfiltration	Impact
		Unauthorized access to data by changing connection configurations [Bigquery.T2]	Importing malicious models in BigQuery [Bigquery.T24]		Restricting access to resources by modifying privileges [Bigquery.T10]			Discovery of BigQuery sharing resources [Bigquery.T31]				Exfiltration of data by exporting tables to other services [Bigquery.T6]	Destruction of data by deleting dataset or table [Bigquery.T1]
					Unauthorized access to the table columns by adding or removing policy tags [Bigquery.T17]							Escalate privileges, loss of availability or integrity of data, or exfiltrate data via an unauthorized query on a dataset or table [Bigquery.T9]	Loss of integrity and availability by copying datasets and overwriting the destination table(s) [Bigquery.T3]
					Misconfiguration of a dataset causing loss of integrity and availability, or privilege escalation by modification of the dataset's access array [Bigquery.T21]							Data exfiltration by updating the destination dataset in transfer and transfer credentials; or DoS by schedule manipulation [Bigquery.T13]	Loss of the integrity of the training model [Bigquery.T4]
					Unauthorized access to listings by setting permissions [Bigquery.T28]							Data exfiltration by exporting query results [Bigquery.T15]	Loss of integrity and availability by appending or overwriting data, or by creating a table [Bigquery.T5]
												BigQuery ML model exfiltration [Bigquery.T18]	Loss of integrity and availability by manipulating data using routines [Bigquery.T8]
												Table exfiltration by cloning [Bigquery.T19]	Disruption of application functionality by modification of table and view configurations [Bigquery.T11]
												Exfiltration of query results to an unauthorized destination table and bucket [Bigquery.T20]	Denial of Service/Denial of Wallet by removing/creating reservations [Bigquery.T12]
												Unauthorized access to cached data from the last 24 hours [Bigquery.T26]	Loss of data during recovery by deleting a snapshot [Bigquery.T14]
												Unauthorized access to contents of a listing [Bigquery.T30]	Permanent loss of a BigQuery ML model by modifying its expiration time [Bigquery.T22]
												Email leakage via malicious listing [Bigquery.T33]	Misconfiguration of a table to cause loss of integrity and availability [Bigquery.T25]
												Expose sensitive data via auto-enabled Gemini API [Bigquery.T35]	Loss of data integrity by restoring a snapshot [Bigquery.T27]

													Denial of Service by revoking subscriptions [Bigquery.T29]
													Denial of Service by deleting data exchanges, listings, or subscriptions [Bigquery.T32]
													Denial of Service via unauthorized continuous query cancellation [Bigquery.T34]
													Data corruption via unauthorized hard failover [Bigquery.T36]

Feature Classes

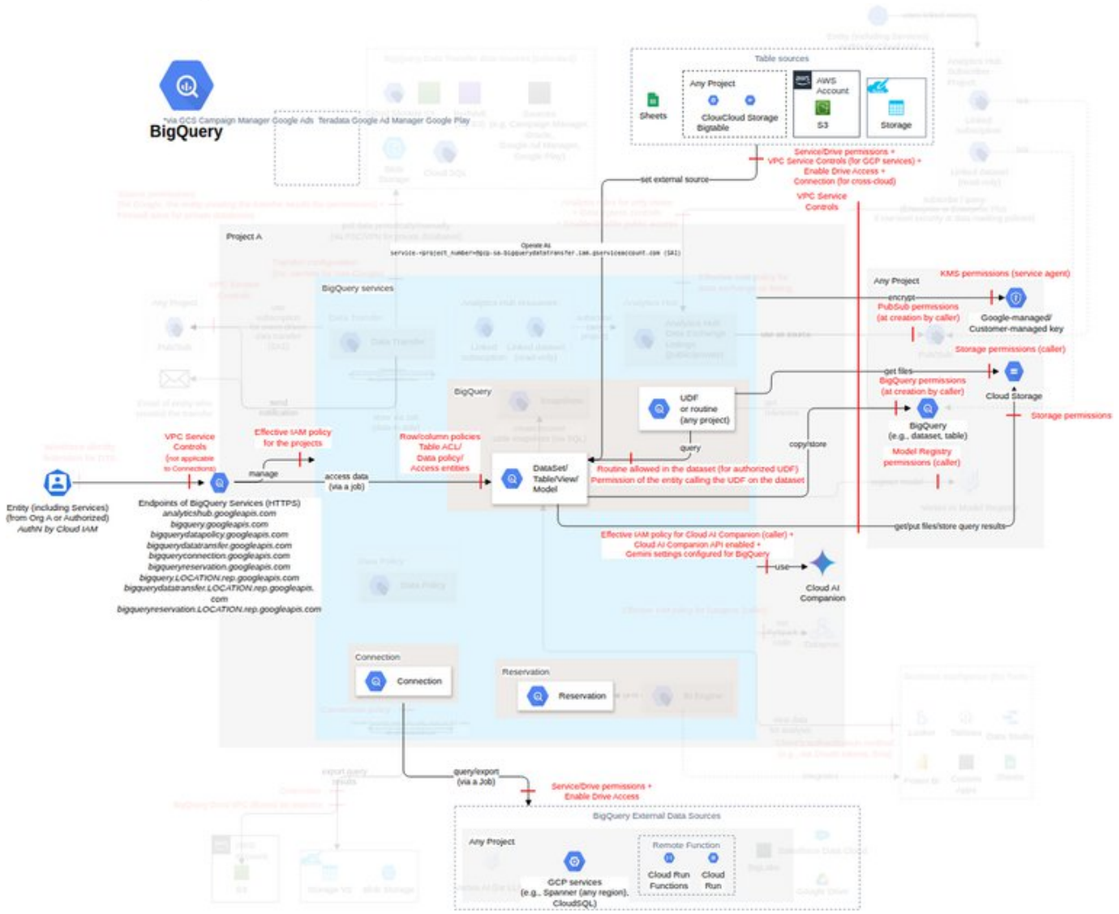
BigQuery has the following feature classes and subclasses (i.e. dependent on the usage of its class) that can be activated, restricted, or blocked using Google Cloud Identity and Access Management.

Feature	Relation	Description
Dataset and tables (FC1)	class, used by Share resources via BigQuery sharing	You can create a table inside a dataset. You can run SQL queries and jobs on datasets. Jobs are actions that BigQuery runs on your behalf to load data, export data, query data, or copy data.
Routines (stored procedures or User-Defined Functions) (FC2)	subclass of Dataset and tables	A routine is a reusable piece of code that can be executed within SQL queries.
BigQuery connections and BigQuery Omni (FC3)	subclass of Dataset and tables	To create a connection for federated queries when adding data from external data sources or exporting data to cross Cloud Storages.
BigQuery Data Transfer (FC4)	subclass of Dataset and tables	You can transfer external data from SaaS applications to Google BigQuery on a regular basis.
BigQuery reservation (FC5)	subclass of Dataset and tables	You can purchase dedicated query processing capacity.
BigQuery ML (FC6)	subclass of Dataset and tables	You can create and execute machine-learning models in BigQuery using standard SQL queries.
Table snapshot (FC7)	subclass of Dataset and tables	A BigQuery table snapshot preserves the contents of a table (called the base table) at a particular time.
Data policy (FC8)	subclass of Dataset and tables	You can provide different levels of visibility to different groups of users by using policy tags.
Share resources via BigQuery sharing (FC9)	subclass of Dataset and tables	BigQuery sharing is a data exchange platform built on top of BigQuery that enables efficient and secure sharing of data (e.g., BigQuery tables) across organizational boundaries.
Subscribe to access resources via BigQuery sharing (FC10)	class	You can subscribe to the listings.

Dataset and tables *(class, used by Share resources via BigQuery sharing, FC1)*

You can create a table inside a dataset. You can run SQL queries and jobs on datasets. Jobs are actions that BigQuery runs on your behalf to load data, export data, query data, or copy data.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

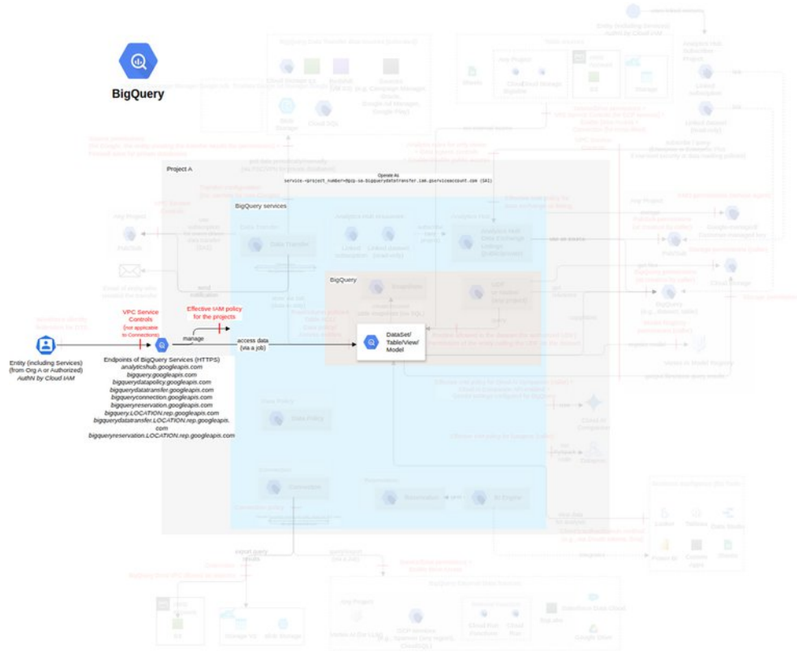
Action	IAM Permission
Creates a new empty dataset.	bigquery.datasets.create

Threat List

Name	CVSS
Escalate privileges, loss of availability or integrity of data, or exfiltrate data via an unauthorized query on a dataset or table	High (8.0)
Loss of integrity and availability by copying datasets and overwriting the destination table(s)	Medium (5.7)
Misconfiguration of a table to cause loss of integrity and availability	Medium (5.7)
Misconfiguration of a dataset causing loss of integrity and availability, or privilege escalation by modification of the dataset's access array	Medium (5.7)
Loss of integrity and availability by appending or overwriting data, or by creating a table	Medium (5.2)
Exfiltration of query results to an unauthorized destination table and bucket	Medium (4.8)
Disruption of application functionality by modification of table and view configurations	Medium (4.8)
Table exfiltration by cloning	Medium (4.2)
Exfiltration of data by exporting tables to other services	Medium (4.2)
Restricting access to resources by modifying privileges	Medium (4.2)
Destruction of data by deleting dataset or table	Low (3.5)
Denial of Service via unauthorized continuous query cancellation	Low (2.4)
Expose sensitive data via auto-enabled Gemini API	Low (2.4)
Unauthorized access to cached data from the last 24 hours	Low (2.1)

Escalate privileges, loss of availability or integrity of data, or exfiltrate data via an unauthorized query on a dataset or table

Threat Id	Bigquery.T9
Name	Escalate privileges, loss of availability or integrity of data, or exfiltrate data via an unauthorized query on a dataset or table
Description	SQL queries are run on the data stored inside tables. An attacker can run a simple SQL query (e.g., "SELECT * FROM *TABLE_NAME*") to get all the data from a specific table or to execute unauthorized queries for different attacks (e.g., replication to an unauthorized region). An attacker can also update or drop columns in a table, change the case sensitivity of datasets and their tables to escalate privileges while avoiding detection by a poorly designed access management system, set unauthorized default values for a column to corrupt or steal data, or update the metadata cache settings of object or BigLake tables to impact the query latency.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	High (8.0)
IAM Access	{ "OR": [{ "AND": ["bigquery.jobs.create", "bigquery.tables.getData"] }, "bigquery.datasets.update"] }

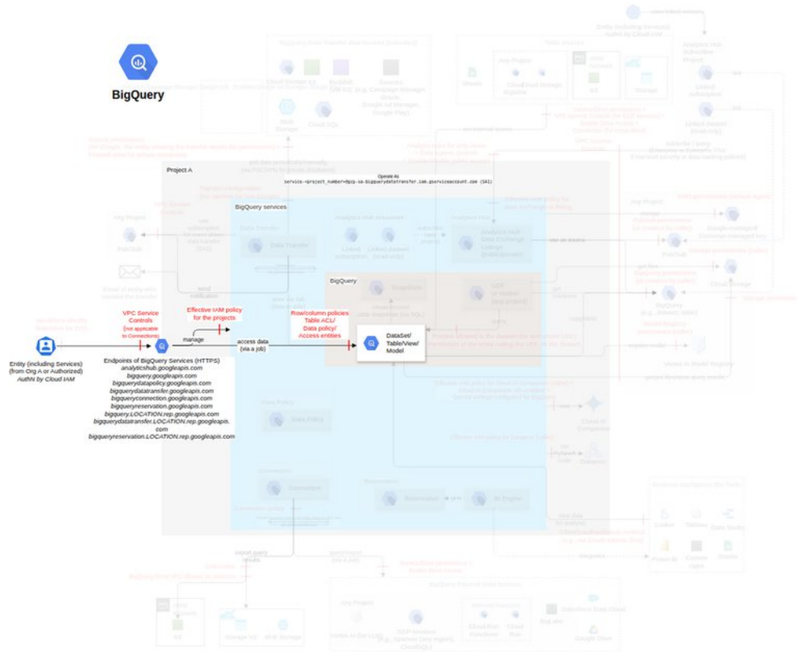


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C15 - Ensure no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", except if allowed. C60 - Define the authorized configuration for each reservation (i.e., maxSlots, edition, ignoreIdleSlots, autoscale, secondaryLocation) and its assignments (i.e., assignee, jobType).	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO24 - Enforce secure SDLC processes on routines and queries C122 - Enforce secure SDLC processes on queries (e.g., using source control, static analysis, dynamic analysis, and peer review).	High	1	-	-
CO6 - Restrict access to rows with BigQuery row-level security	High	2	-	-

C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).				
CO20 - Monitor abnormal performance of queries C56 - Monitor the abnormal behavior, such as unexpected increases in execution time or unusual resource utilization, of a query (e.g., by using the query execution graph or administrative jobs explorer).	Medium	-	-	1
CO21 - Use authorized metadata caching C57 - Define the requirements for metadata cache mode and staleness (30 minutes to 7 days) for each external table. C58 - Ensure the metadata cache mode and staleness of each external table are set according to its requirements.	Medium	2	-	-
CO33 - Define and enforce BigQuery configuration baselines at the organization and project levels C123 - Maintain the list of authorized configuration settings (e.g., default_batch_query_queue_timeout_ms, default_interactive_query_queue_timeout_ms, default_query_job_timeout_ms, enable_fine_grained_dataset_acls_option) for each organization or project. C124 - Ensure only authorized configuration settings for each organization or project are configured.	Medium	2	-	-

Loss of integrity and availability by copying datasets and overwriting the destination table(s)

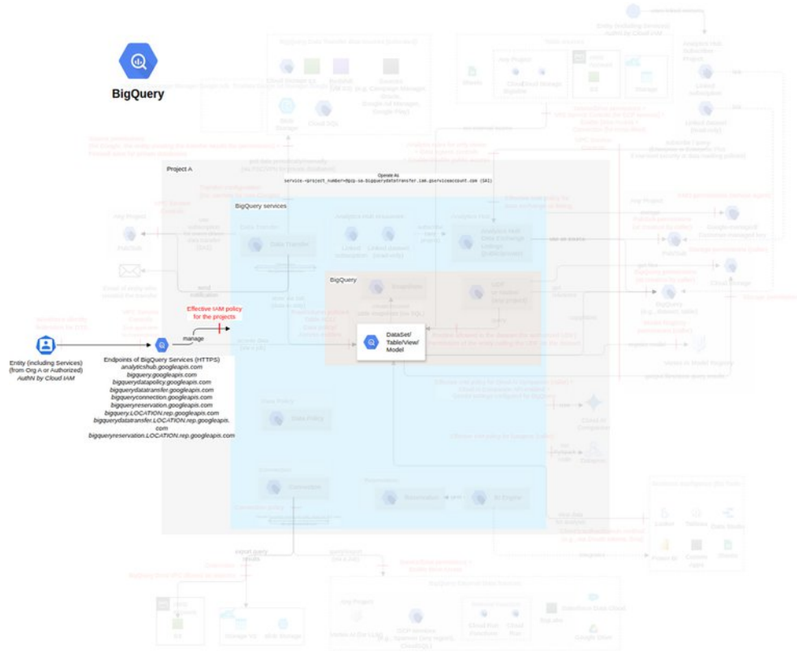
Threat Id	Bigquery.T3
Name	Loss of integrity and availability by copying datasets and overwriting the destination table(s)
Description	Datasets can be copied to another existing dataset. During this process, the tables in the destination dataset can be overwritten. An attacker can overwrite the destination table, causing a loss of integrity and availability.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (5.7)
IAM Access	{ "AND": ["bigquery.jobs.create", "bigquery.datasets.get", "bigquery.datasets.update", "bigquery.tables.create"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations. C25 - Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	High	3	-	-

Misconfiguration of a table to cause loss of integrity and availability

Threat Id	Bigquery.T25
Name	Misconfiguration of a table to cause loss of integrity and availability
Description	A table is a primary storage structure used to hold structured data within datasets. Standard BigQuery tables store structured data directly within BigQuery, external datasets and tables reference data stored outside BigQuery, and views are logical tables built using SQL queries. An attacker can create or update a table with an unauthorized configuration to cause loss of integrity or availability (e.g., by creating or updating a materialized view with an unauthorized value for staleness to deliberately serve outdated and potentially misleading data to users or applications, which could lead to inaccurate analysis results and misinformed business decisions, by referencing an external source with corrupted data, by creating a table with an unauthorized value for expiration, or by using an unauthorized key for encryption).
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (5.7)
IAM Access	{ "OR": ["bigquery.tables.create", "bigquery.tables.update"] }

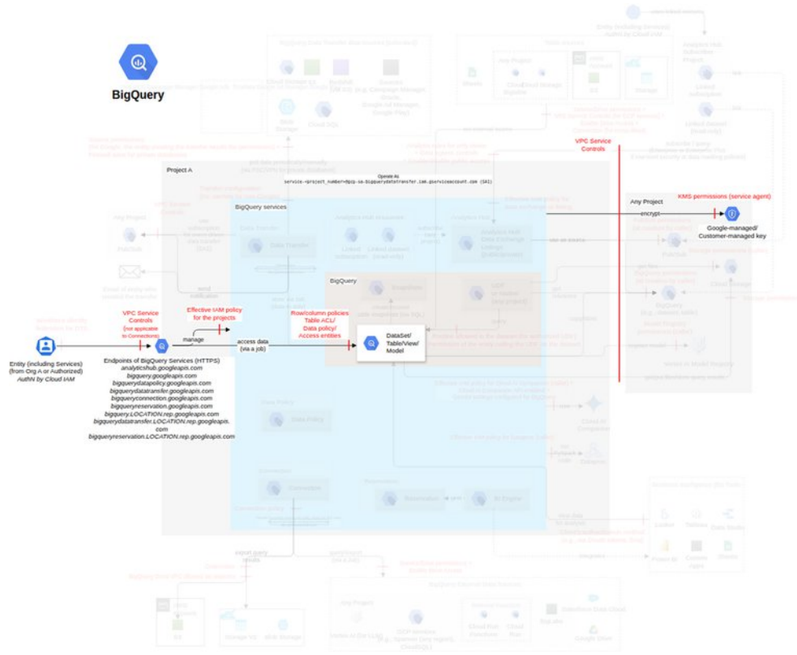


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C17 - Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset. C18 - Ensure the configuration of each BigQuery dataset is authorized. C81 - Define the authorized configuration (i.e., schema, clustering, expirationTime, view, materializedView, externalDataConfiguration, encryptionConfiguration, defaultCollation, defaultRoundingMode, and tableConstraints) for each BigQuery table. C82 - Ensure the configuration of each BigQuery table is authorized.	Very High	4	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-

Misconfiguration of a dataset causing loss of integrity and availability, or privilege escalation by modification of the dataset's access array

Threat Id	Bigquery.T21
Name	Misconfiguration of a dataset causing loss of integrity and availability, or privilege escalation by modification of the dataset's access array
Description	A dataset is a top-level container used to organize and control access to tables and views. Certain default configurations and options can be set at the organization, project, or dataset level, which indirectly affect the tables within that dataset. An attacker can create or update a dataset with unauthorized values for these configurations to cause loss of integrity and availability (e.g., setting an unauthorized value for defaultTableExpirationMs to delete a table automatically when its expirationTime is reached) or create or modify an access array for a dataset to escalate privileges.
Goal	Data manipulation
MITRE ATT&CK®	TA0004
CVSS	Medium (5.7)

IAM Access	{
	"OR": ["bigquery.datasets.create", {
	"AND": [{
	"OPTIONAL": "bigquery.datasets.setIamPolicy"
	}, "bigquery.datasets.update"]
	}]
	}

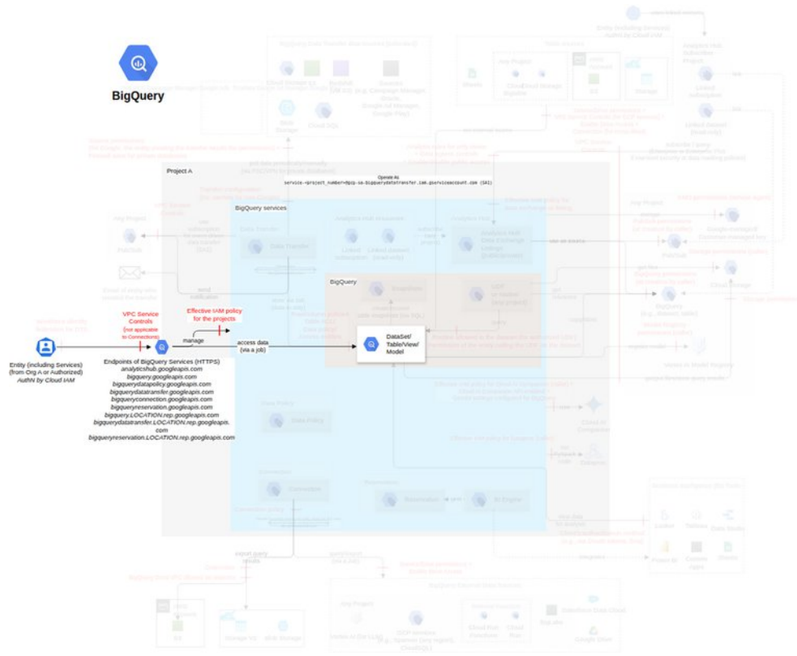


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset. C84 - Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Very High	3	1	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C17 - Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset. C18 - Ensure the configuration of each BigQuery dataset is authorized. C133 - Prevent the creation/update of a dataset without an authorized configuration (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultCollation != an authorized collation, resource.defaultRoundingMode != an authorized rounding mode, resource.maxTimeTravelHours != an authorized time travel window, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Very High	2	1	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C135 - Prevent the creation of a dataset without an authorized source (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s):	High	1	1	-

resource.linkedDatasetSource.sourceDataset.datasetId != an authorized linked data source, resource.externalDatasetReference != an authorized external dataset reference, methodTypes="UPDATE" and "CREATE", and actionType="DENY").				
CO12 - Set the expiration time of BigQuery tables as per the requirements C32 - Define the requirements for the expiration time of each BigQuery table. C136 - Prevent the creation or update of a dataset without an authorized expiration time (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultTableExpirationMs != an authorized expiration time, resource.defaultPartitionExpirationMs != an authorized partition expiration time, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	High	1	1	-
CO32 - Enforce authorized access entities only, change management, and secure decommissioning on datasets C116 - Maintain the list of authorized access entities (i.e., role, userByEmail, groupByEmail, domain, specialGroup, iamMember, view, routine, or dataset) for each dataset. C117 - Ensure only authorized access entities of each dataset are configured.	High	2	-	-
CO7 - Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys C26 - Maintain a list of authorized CMEKs to be used with each BigQuery resource (e.g., dataset, DLP function, model, data transfer), ideally dedicated (e.g., using Autokey on bigquery.googleapis.com/Dataset), and of the default CMEK at the project or organization level, and define the requirement to rotate key versions for tables. C134 - Prevent the creation of a dataset without an authorized key (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultEncryptionConfiguration.kmsKeyName != an authorized encryption key, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	High	1	1	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C3 - Define the requirements for the backup of each BigQuery dataset, table, and model. C4 - Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Medium	2	-	-

Loss of integrity and availability by appending or overwriting data, or by creating a table

Threat Id	Bigquery.T5
Name	Loss of integrity and availability by appending or overwriting data, or by creating a table
Description	Data is stored inside a BigQuery table. An attacker can create a table, overwrite table data using a load or query operation, or append additional data to an existing table by performing a load-append operation or by appending query results to the table, causing a loss of data integrity and availability.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (5.2)
IAM Access	{ "OR": ["bigquery.tables.create", "bigquery.tables.updateData", "bigquery.jobs.create"] }

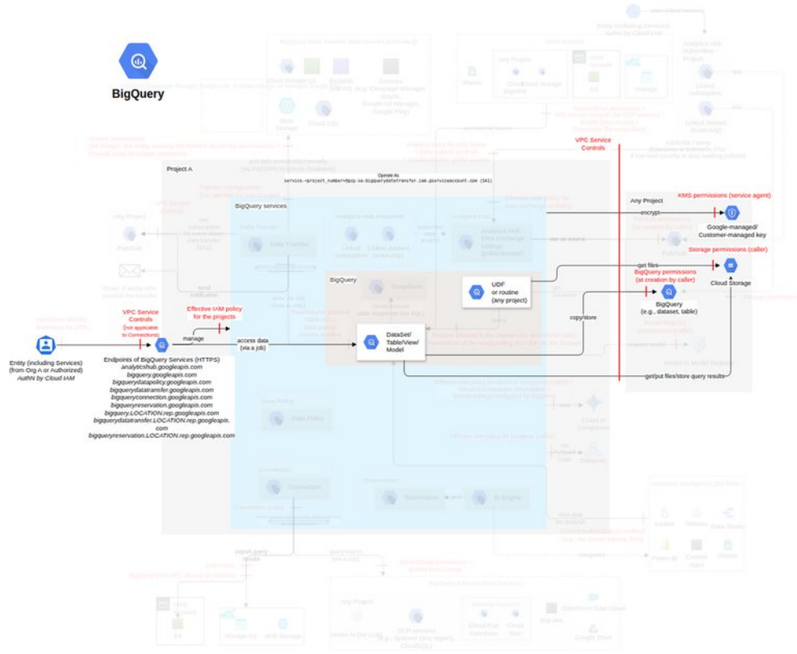


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset. C84 - Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Very High	3	1	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C81 - Define the authorized configuration (i.e., schema, clustering, expirationTime, view, materializedView, externalDataConfiguration, encryptionConfiguration, defaultCollation, defaultRoundingMode, and tableConstraints) for each BigQuery table. C82 - Ensure the configuration of each BigQuery table is authorized.	Very High	2	-	-
CO16 - Monitor data protection, data ingestion, and data quality C42 - Monitor the abnormal number of concurrent connections and throughput for the BigQuery table (e.g., by using the Monitoring metric CONSUMER QUOTA - QUOTA LIMIT).	Very Low	-	-	1

Exfiltration of query results to an unauthorized destination table and bucket

Threat Id	Bigquery.T20
Name	Exfiltration of query results to an unauthorized destination table and bucket
Description	An asynchronous job can be created, which can include various types of jobs such as query jobs, load jobs, copy jobs, and extract jobs. An attacker can execute an unauthorized query, provide an unauthorized destination table or bucket to store query results, overwrite the destination table, update the schema for the destination table, encrypt data using the DLP function with an unauthorized key, or change the encryption of the destination table.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.8)

IAM Access	{
	"AND": ["bigquery.jobs.create", {
	"OPTIONAL": "bigquery.tables.getData"
	}]
	}

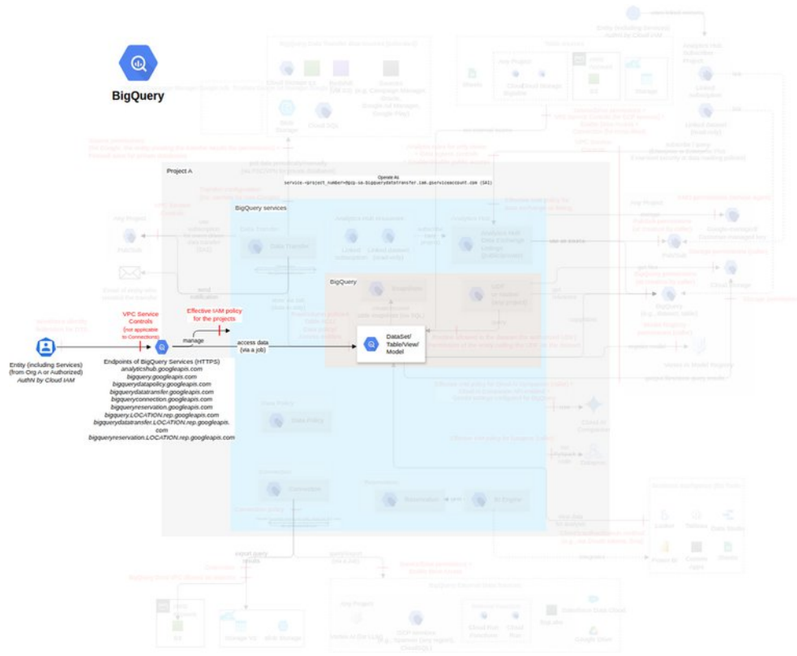


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C75 - Define the authorized configuration (e.g., createDisposition, writeDisposition, schemaUpdateOptions) for each asynchronous query job. C76 - Ensure the configuration of each asynchronous query job is authorized.	Very High	2	-	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO7 - Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys C26 - Maintain a list of authorized CMEKs to be used with each BigQuery resource (e.g., dataset, DLP function, model, data transfer), ideally dedicated (e.g., using Autokey on bigquery.googleapis.com/Dataset), and of the default CMEK at the project or organization level, and define the requirement to rotate key versions for tables. C27 - Ensure only authorized CMEKs and their versions are used with the BigQuery resource. C28 - Protect the CMEKs used by each BigQuery resource using the Cloud KMS ThreatModel (including enforcing CMEK protection using organization policy constraints/gcp.restrictCmekCryptoKeyProjects and constraints/gcp.restrictNonCmekServices as per Cloudkms.C32 and Cloudkms.C34). C85 - Define the requirements for generating, storing, accessing, distributing, rotating, backing up, and destroying encryption keys for applications (e.g., by using a dedicated secret management tool such as HashiCorp Vault or GCP Secret Manager) as per the security standards. C86 - Ensure the keys for applications are generated, stored, accessed, distributed, rotated, backed up, and destroyed as per the security standards.	High	5	-	-

CO16 - Monitor data protection, data ingestion, and data quality C87 - Establish, document, and train on procedures for responding to key compromise events, including key leaks and unapproved access. Implement a key revocation process to invalidate compromised keys and replace them with new, secure keys.	Low	1	-	-

Disruption of application functionality by modification of table and view configurations

Threat Id	Bigquery.T11
Name	Disruption of application functionality by modification of table and view configurations
Description	Specific properties are associated with tables and views during their creation. An attacker can modify these properties (e.g., schema, expiration time, encryption key), causing downstream applications' disruption or permanent data loss.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Medium (4.8)
IAM Access	{ "UNIQUE": "bigquery.tables.update" }

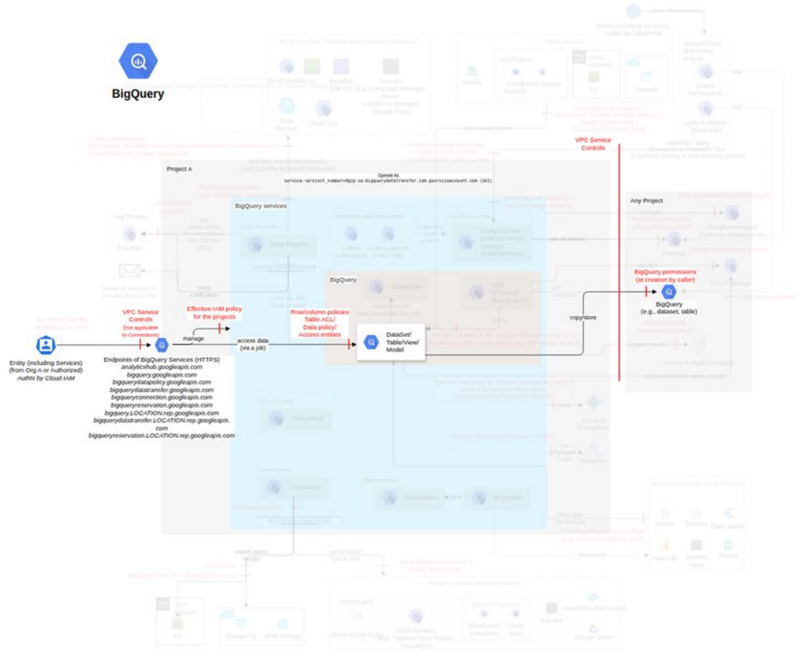


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C17 - Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset. C18 - Ensure the configuration of each BigQuery dataset is authorized.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO12 - Set the expiration time of BigQuery tables as per the requirements C32 - Define the requirements for the expiration time of each BigQuery table. C33 - Ensure the expiration time of each BigQuery table is set according to the requirements.	High	2	-	-
CO7 - Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys C26 - Maintain a list of authorized CMEKs to be used with each BigQuery resource (e.g., dataset, DLP function, model, data transfer), ideally dedicated (e.g., using Autokey on bigquery.googleapis.com/Dataset), and of the default CMEK at the project or organization level, and define the requirement to rotate key versions for tables. C27 - Ensure only authorized CMEKs and their versions are used with the BigQuery resource. C28 - Protect the CMEKs used by each BigQuery resource using the Cloud KMS ThreatModel (including enforcing CMEK protection using organization policy constraints/gcp.restrictCmekCryptoKeyProjects and constraints/gcp.restrictNonCmekServices as per Cloudkms.C32 and Cloudkms.C34).	High	4	-	-

C36 - Ensure AEAD encryption functions are used to encrypt data at the column level.				

Table exfiltration by cloning

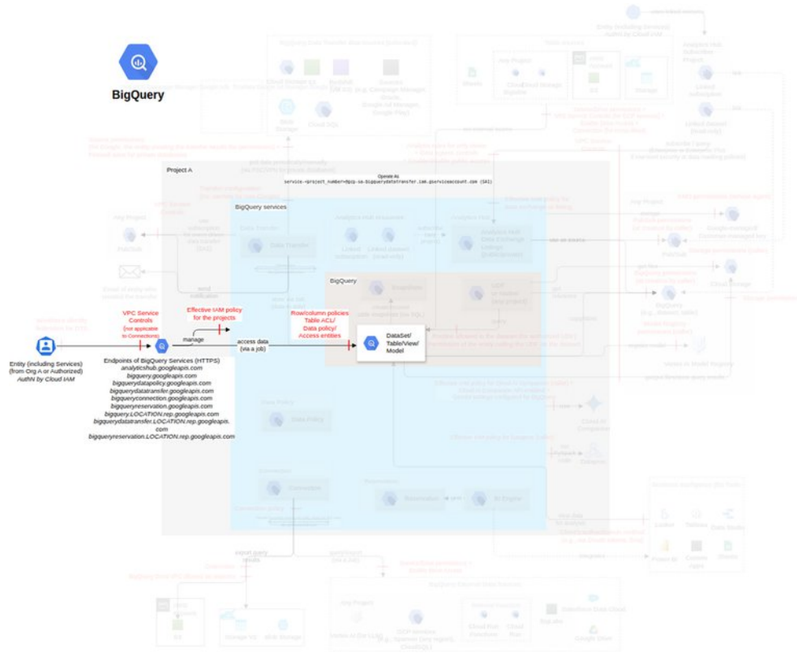
Threat Id	Bigquery.T19
Name	Table exfiltration by cloning
Description	A table clone is a writable copy of another table. It can be created in another project within the same region. An attacker can clone a table to an unauthorized project to exfiltrate data.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.2)
IAM Access	{ "UNIQUE": "bigquery.jobs.create" }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO19 - Enforce authorized configurations on jobs C53 - Define the authorized configuration for each job. C54 - Ensure each job uses an authorized configuration.	Medium	2	-	-
CO18 - Limit the amount of cloned data C50 - Define the requirements for setting the time travel of each BigQuery dataset. C51 - Ensure the time travel of each BigQuery dataset is set according to its requirements.	Low	2	-	-

Exfiltration of data by exporting tables to other services

Threat Id	Bigquery.T6
Name	Exfiltration of data by exporting tables to other services
Description	Data can be sent to other services for storing or processing. An attacker can export data to either their destination table or a service like Cloud Storage, Data Studio, or DLP.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.2)
IAM Access	{ "AND": [{ "OPTIONAL": { "AND": ["storage.objects.create", "storage.objects.delete"] } }, "bigquery.tables.export", "bigquery.jobs.create", "bigquery.tables.getData"] }

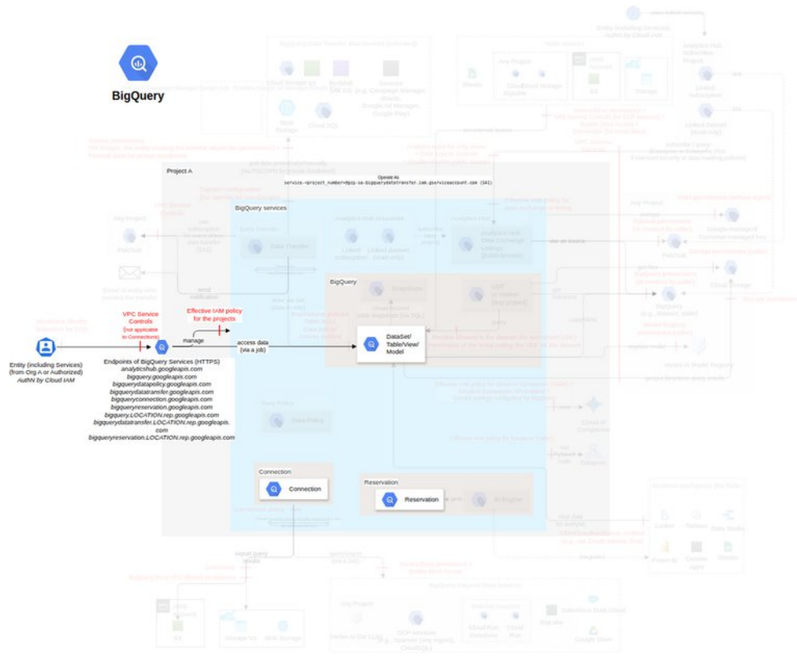


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations. C25 - Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	High	3	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO6 - Restrict access to rows with BigQuery row-level security C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	High	2	-	-
CO9 - De-identify sensitive data using Cloud DLP	Medium	1	-	-

C20 - Ensure sensitive data is identified and redacted (e.g., using Cloud DLP).				

Restricting access to resources by modifying privileges

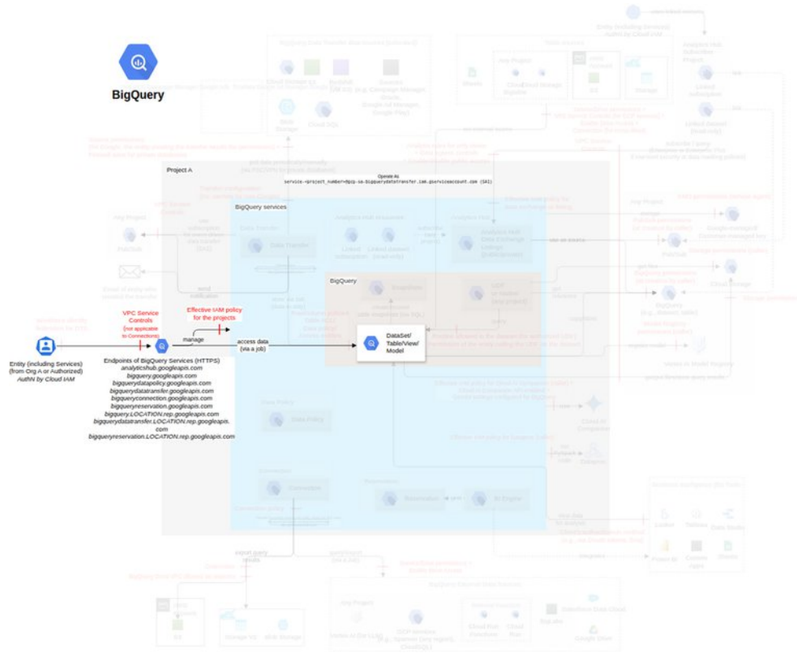
Threat Id	Bigquery.T10
Name	Restricting access to resources by modifying privileges
Description	IAM permissions can be used to allow users to perform actions on BigQuery resources (i.e., datasets, tables, connections, reservations, and assignments). An attacker can limit legitimate users' access to resources or allow unauthorized users to access resources by modifying the permissions.
Goal	Launch another attack
MITRE ATT&CK®	TA0004
CVSS	Medium (4.2)
IAM Access	{ "OR": ["bigquery.datasets.setIamPolicy", "bigquery.rowAccessPolicies.setIamPolicy", "bigquery.tables.setIamPolicy", "bigquery.connections.setIamPolicy", "bigquery.rowAccessPolicies.update", "bigqueryreservation.reservations.setIamPolicy"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-

Destruction of data by deleting dataset or table

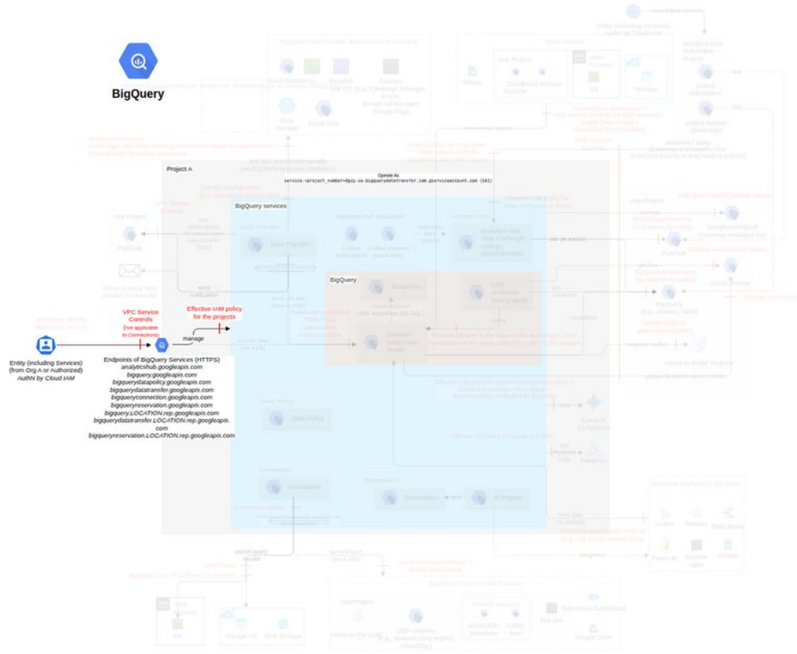
Threat Id	Bigquery.T1
Name	Destruction of data by deleting dataset or table
Description	A dataset is a container that holds tables and other datasets, and a table is a collection of rows and columns within a dataset, where the actual data is stored and queried. All tables within the dataset, before deletion, must be deleted either manually or by setting the deleteContents parameter to true. An attacker can delete the table or a dataset, causing a permanent loss of data.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Low (3.5)
IAM Access	{ "AND": ["bigquery.tables.delete", { "OPTIONAL": "bigquery.datasets.delete" }] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C84 - Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Very High	1	1	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C81 - Define the authorized configuration (i.e., schema, clustering, expirationTime, view, materializedView, externalDataConfiguration, encryptionConfiguration, defaultCollation, defaultRoundingMode, and tableConstraints) for each BigQuery table. C82 - Ensure the configuration of each BigQuery table is authorized.	Very High	2	-	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C3 - Define the requirements for the backup of each BigQuery dataset, table, and model. C4 - Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Medium	2	-	-

Denial of Service via unauthorized continuous query cancellation

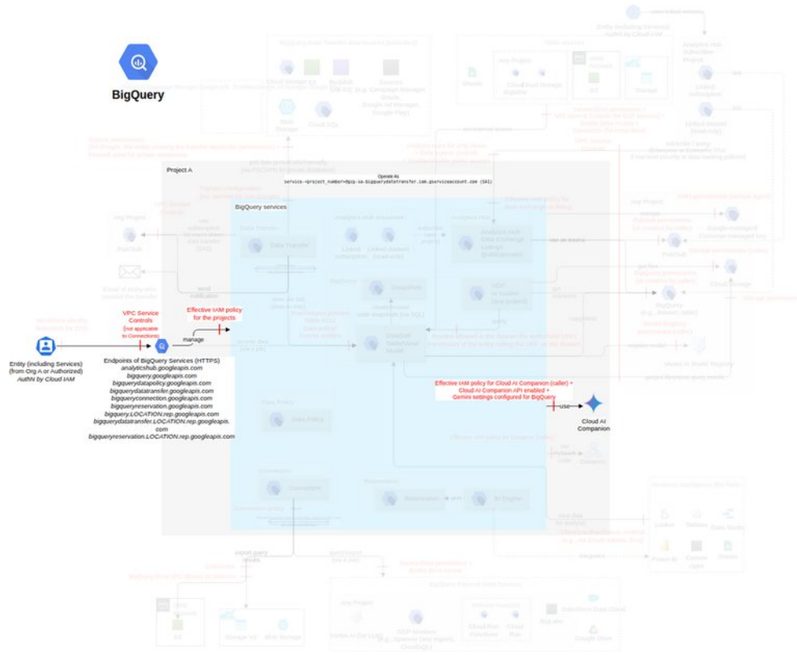
Threat Id	Bigquery.T34
Name	Denial of Service via unauthorized continuous query cancellation
Description	Continuous queries in BigQuery can be long-lived jobs that perform real-time analytics, ML inference, or replication into downstream systems. An attacker can disrupt these pipelines by continuously canceling active queries, causing loss of analytics, halting data replication, and triggering operational downtime for dependent applications.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Low (2.4)
IAM Access	{ "UNIQUE": "bigquery.jobs.update" }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-

Expose sensitive data via auto-enabled Gemini API

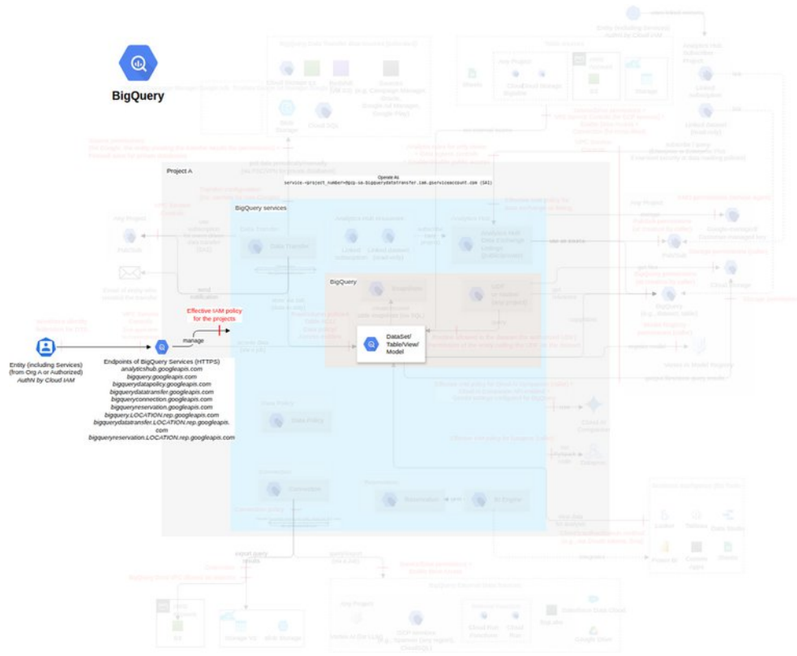
Threat Id	Bigquery.T35
Name	Expose sensitive data via auto-enabled Gemini API
Description	The Gemini for Google Cloud API is enabled by default in BigQuery projects linked to accounts based in supported locations unless explicitly opted out. An attacker can exploit Gemini integrations to prompt, extract, or process sensitive data outside BigQuery via AI features without clear user awareness or guardrails.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Low (2.4)
IAM Access	{ "AND": ["bigquery.jobs.create", "bigquery.tables.getData", "cloudaicompanion.entitlements.get"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO34 - Restrict and manage Gemini in BigQuery projects C126 - Ensure the Cloud AI Companion API is enabled/disabled for the BigQuery project following the Service Usage ThreatModel and is protected using Cloud AI Companion ThreatModel. C127 - Maintain the list of authorized BigQuery projects allowed to use Gemini. C128 - Ensure only authorized BigQuery projects are allowed to use Gemini.	High	3	-	-

Unauthorized access to cached data from the last 24 hours

Threat Id	Bigquery.T26
Name	Unauthorized access to cached data from the last 24 hours
Description	Users can read the contents of tables within BigQuery, enabling them to query and retrieve data stored in specific tables. Results from queries against table snapshots can also be returned from the cache, even if the caller loses access to the data within the last 24 hours. An attacker can retrieve data from BigQuery tables or access the query results from the cache without making any new queries.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Low (2.1)
IAM Access	{ "AND": ["bigquery.tables.getData", { "OPTIONAL": "datacatalog.categories.fineGrainedGet" }] }

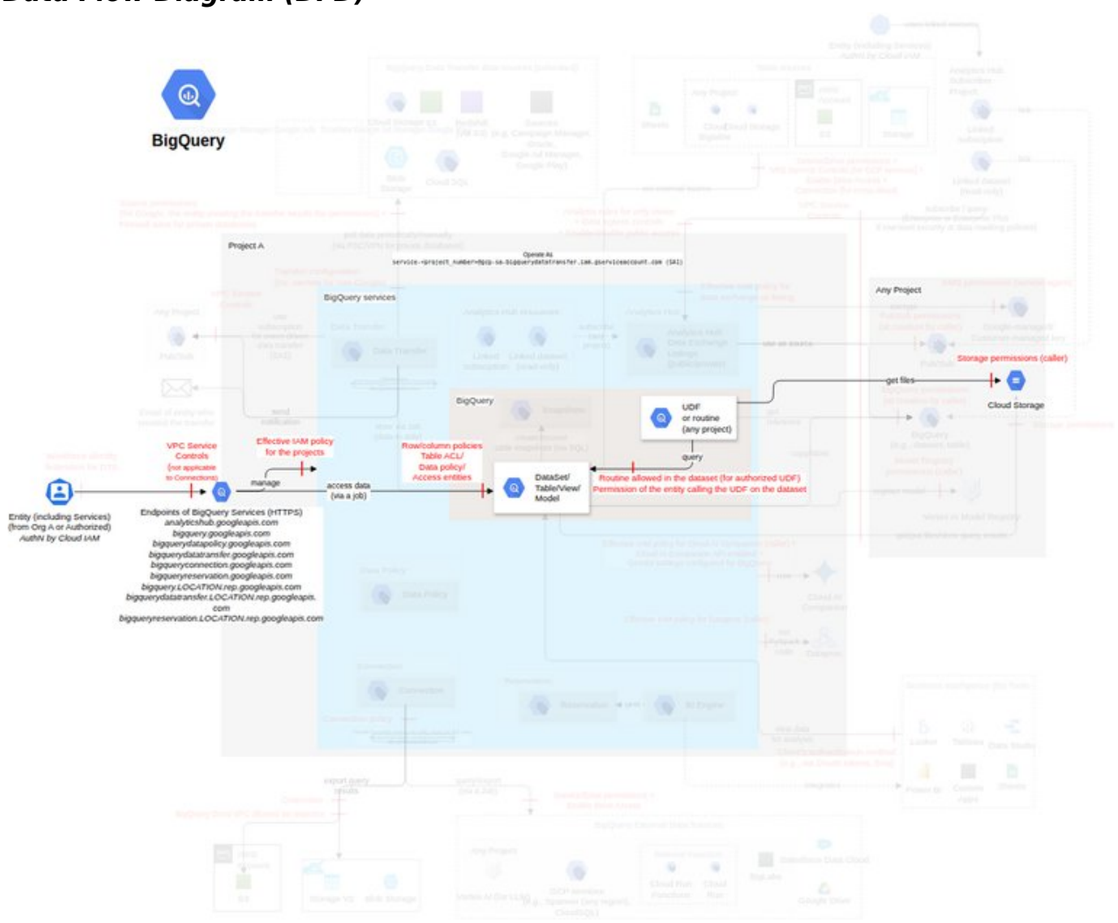


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO19 - Enforce authorized configurations on jobs C53 - Define the authorized configuration for each job. C54 - Ensure each job uses an authorized configuration.	Medium	2	-	-

Routines (stored procedures or User-Defined Functions) *(subclass of Dataset and tables, FC2)*

A stored procedure is a set of statements that can be invoked by other queries or stored procedures. A User-Defined Function (UDF) lets you create a function by using an SQL expression or JavaScript code. A UDF accepts columns of input, performs actions on the input, and returns the results of those actions as values.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

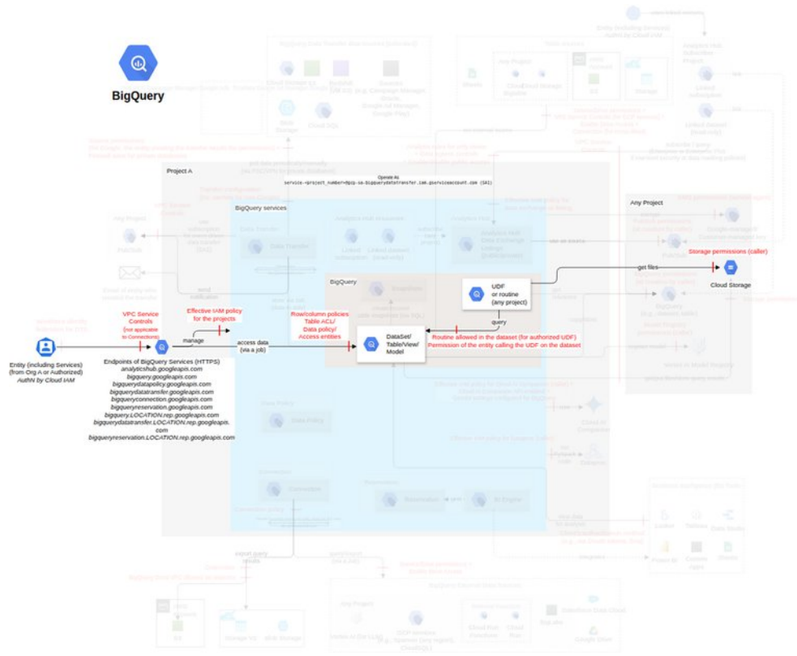
Action	IAM Permission
Creates a new routine in the dataset.	bigquery.routines.create

Threat List

Name	CVSS
Loss of integrity and availability by manipulating data using routines	Medium (5.2)

Loss of integrity and availability by manipulating data using routines

Threat Id	Bigquery.T8
Name	Loss of integrity and availability by manipulating data using routines
Description	Routines (stored procedures and UDFs) allow the creation of functions using an SQL expression or JavaScript code. They accept columns of input, perform actions on the input, and return the result of those actions as a value. An attacker can write routines to perform actions like updating, deleting, and adding data to the tables. An attacker can also execute UDFs (User-Defined Functions) from unauthorized Cloud Storage for such purposes.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (5.2)
IAM Access	{ "AND": ["bigquery.routines.create", "bigquery.jobs.create"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C15 - Ensure no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", except if allowed. C17 - Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset. C18 - Ensure the configuration of each BigQuery dataset is authorized.	Very High	3	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO23 - Use authorized User-Defined Functions C70 - Maintain a list of authorized Cloud Storage buckets to be used with query jobs for User-Defined Functions (UDFs). C71 - Ensure each query uses an authorized Cloud Storage bucket for a UDF. C73 - Protect the Cloud Storage buckets used for storing UDFs using Cloud Storage ThreatModel.	High	3	-	-
CO24 - Enforce secure SDLC processes on routines and queries C74 - Enforce secure SDLC processes on routines (e.g., using source control, static analysis, dynamic analysis, peer review).	High	1	-	-

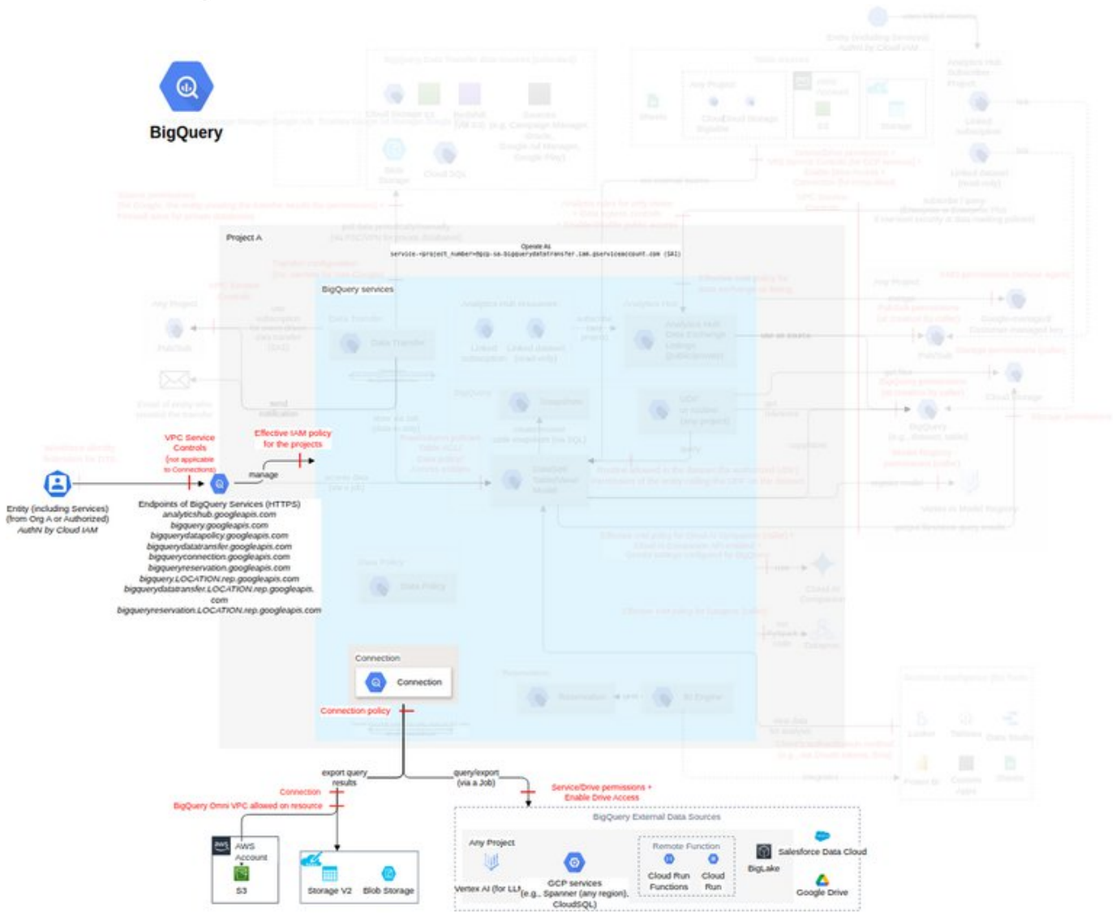
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO6 - Restrict access to rows with BigQuery row-level security C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	High	2	-	-

BigQuery connections and BigQuery Omni

(subclass of Dataset and tables, FC3)

To create a connection for federated queries when adding data from external data sources or exporting data to cross Cloud Storages.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

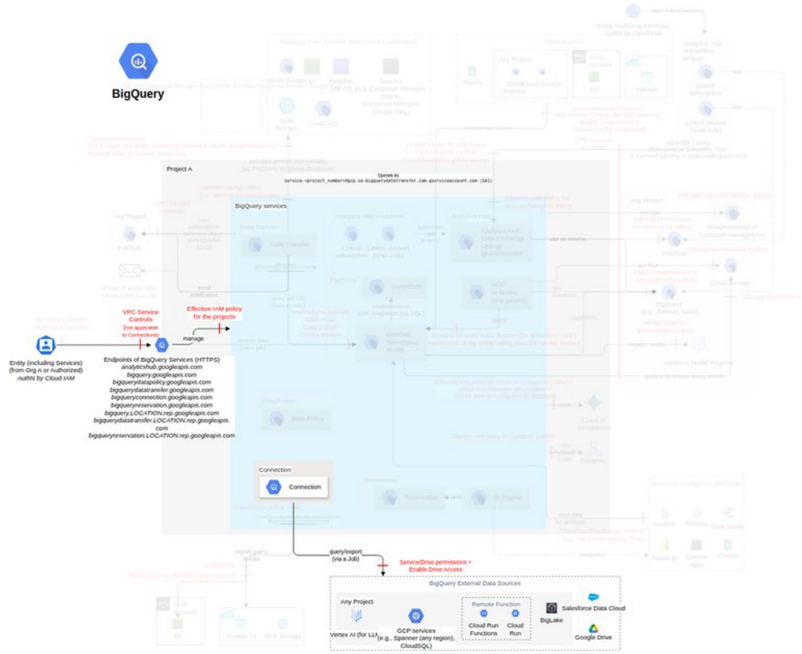
Action	IAM Permission
Creates a new connection.	bigquery.connections.create

Threat List

Name	CVSS
Unauthorized access to data by changing connection configurations	Medium (5.7)
Data exfiltration by exporting query results	Medium (4.5)

Unauthorized access to data by changing connection configurations

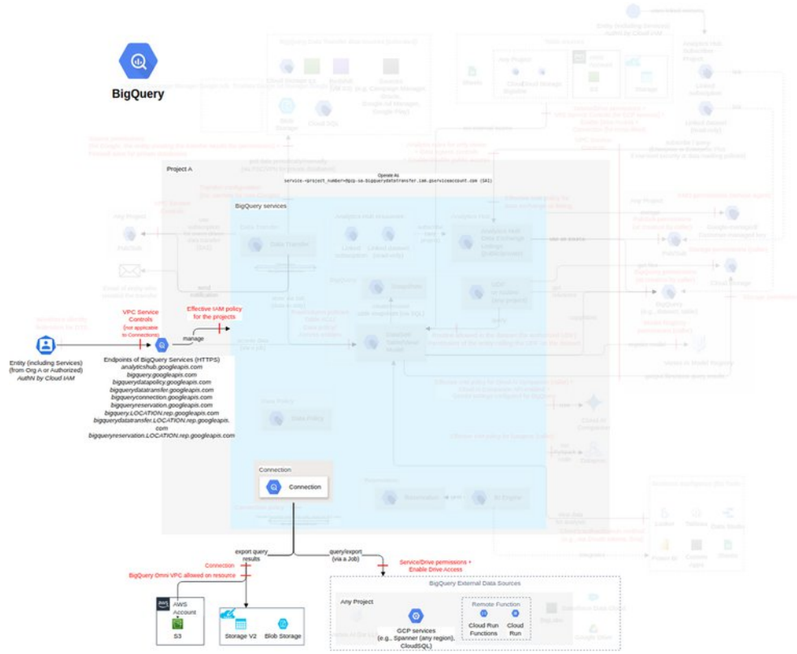
Threat Id	Bigquery.T2
Name	Unauthorized access to data by changing connection configurations
Description	BigQuery federations enable BigQuery to query data residing in Cloud SQL or other places in real-time, without copying or moving data. For each federation, a connection is created. An attacker can use an existing connection by viewing the connection list or sharing it with another user to get unauthorized access to tables residing in other sources.
Goal	Launch another attack
MITRE ATT&CK®	TA0001
CVSS	Medium (5.7)
IAM Access	{ "OR": ["bigquery.connections.update", "bigquery.connections.get", "bigquery.connections.list", "bigquery.connections.use", "bigquery.connections.setIamPolicy"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C6 - Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns). C7 - Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	High	3	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations. C25 - Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	High	3	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views. C44 - Define the criteria to use authorized data policies for each column in each table. C45 - Ensure only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	High	4	-	-
CO6 - Restrict access to rows with BigQuery row-level security C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	High	2	-	-

Data exfiltration by exporting query results

Threat Id	Bigquery.T15
Name	Data exfiltration by exporting query results
Description	BigQuery Omni uses BigQuery connections to export query results to GCP services (e.g., Spanner, BigTable, and Cloud Storage), Amazon S3, or Azure Storage. An attacker can create a connection to export query results to their GCP services, Amazon S3, or Azure Storage to exfiltrate data.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.5)
IAM Access	{ "AND": ["bigquery.connections.create", "bigquery.jobs.create", "bigquery.tables.getData", "bigquery.tables.export", "bigquery.connections.use"] }

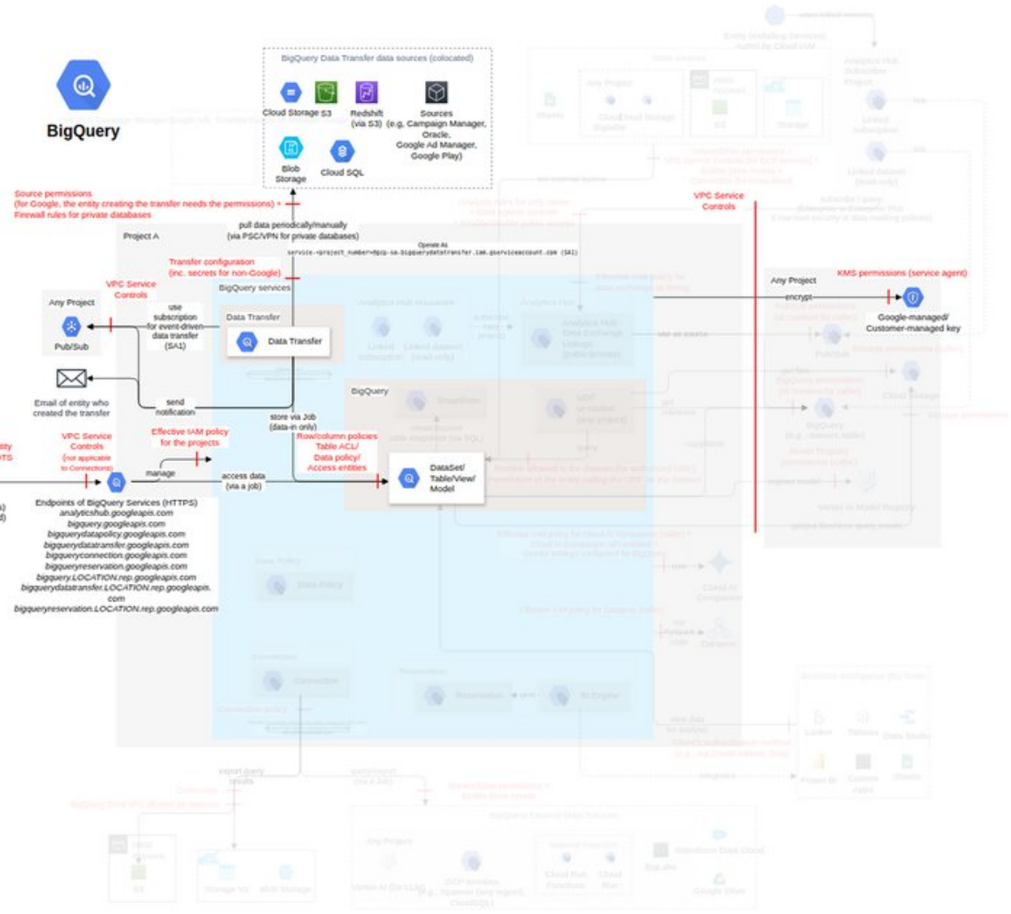


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO14 - Limit use of BigQuery Omni C38 - Define the requirements for using BigQuery Omni (AWS and/or Azure). C39 - Ensure the use of BigQuery Omni as per the requirements (e.g., using organizational constraints constraints/bigquery.disableBQOmniAWS and constraints/bigquery.disableBQOmniAzure).	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations. C25 - Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	High	3	-	-

BigQuery Data Transfer *(subclass of Dataset and tables, FC4)*

You can transfer external data from SaaS applications to Google BigQuery on a regular basis.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

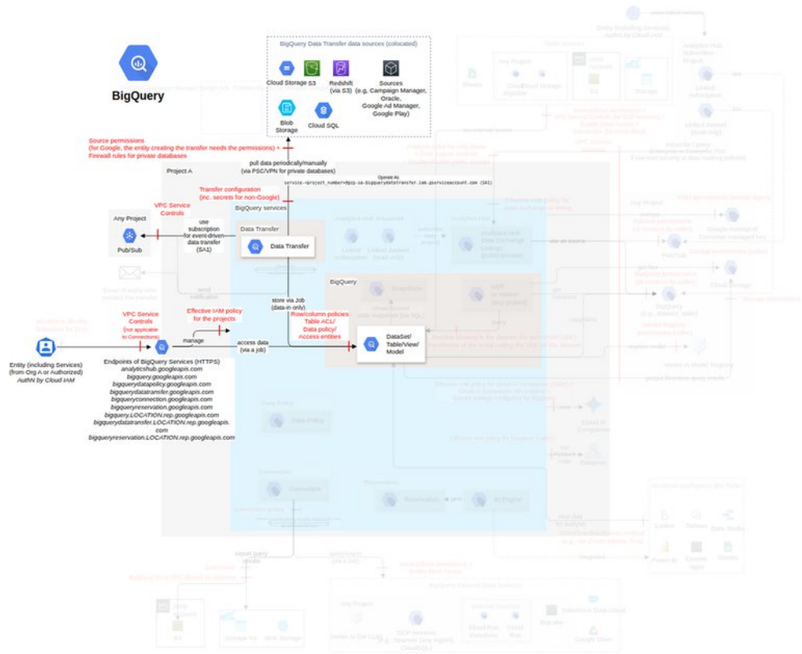
Action	IAM Permission
Creates a new data transfer configuration.	bigquery.transfers.update

Threat List

Name	CVSS
Data exfiltration by updating the destination dataset in transfer and transfer credentials; or DoS by schedule manipulation	Medium (5.7)

Data exfiltration by updating the destination dataset in transfer and transfer credentials; or DoS by schedule manipulation

Threat Id	Bigquery.T13
Name	Data exfiltration by updating the destination dataset in transfer and transfer credentials; or DoS by schedule manipulation
Description	The BigQuery Data Transfer Service automates data movement into BigQuery on a scheduled, managed basis using the credentials of the provided service account or the user who created or updated it. An attacker can create or update the destination dataset or transfer credentials or transfer job configuration to point to their own dataset, giving them full control over the transfer for exfiltration, create transfers of data from unauthorized sources to cause data poisoning, or modify ingestions (via schedule changes, disabling a config, altering refresh windows, creating transfers with an unauthorized encryption key), leading to Denial of Service.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (5.7)
IAM Access	{ "AND": ["bigquery.transfers.update", "bigquery.datasets.get", "bigquery.datasets.update", { "OPTIONAL": { "AND": ["bigquery.datasets.setIamPolicy", "bigquery.datasets.getIamPolicy"] } }] }



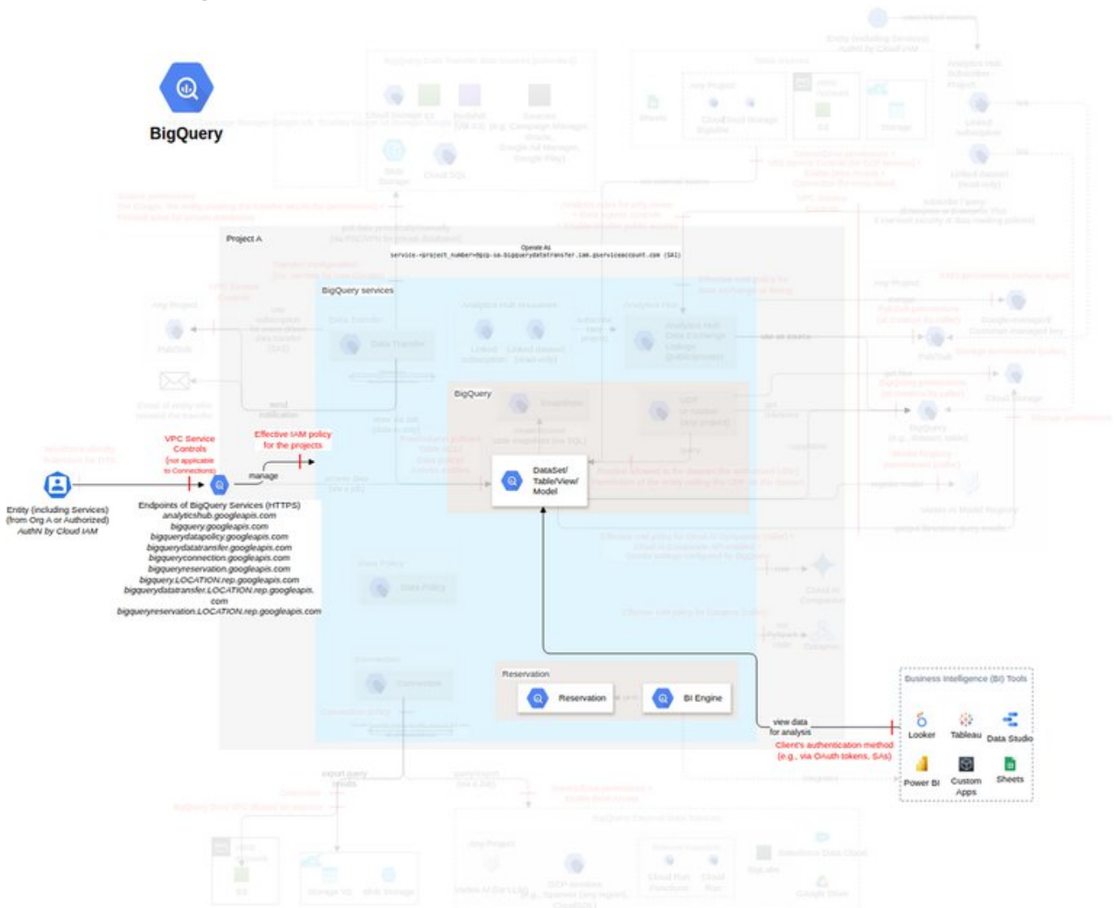
Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO22 - Secure and use the authorized sources and their respective authorized configurations with BigQuery Data Transfer C66 - Maintain a list of authorized sources (e.g., Cloud Storage, Amazon S3, Oracle, Salesforce) and their respective authorized configurations (i.e., destination dataset, schedule, config status, encryption key, parameters) to be used with each transfer. C67 - Ensure each transfer uses an authorized source and its authorized configuration. C69 - Protect the sources used with each transfer, using the respective service's ThreatModel. C119 - Prevent the creation/update of a transfer without an authorized source and/or destination (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataSourceId != an authorized data source, resource.destinationDatasetId != an authorized dataset, methodTypes="UPDATE" and "CREATE", and actionType="DENY"). C120 - Prevent the create/update of a transfer without an authorized ingestion (i.e., schedule, refresh window, and status of transfer configuration) (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataRefreshWindowDays != authorized data refresh window, resource.disabled != authorized config status, resource.emailPreferences.enableFailureEmail != authorized failure email status, resource.encryptionConfiguration.kmsKeyName != authorized KMS key, resource.schedule != authorized schedule, resource.scheduleOptions.disableAutoScheduling != authorized autoscheduling status, resource.scheduleOptions.endTime != authorized end time, resource.scheduleOptions.startTime != authorized start time, resource.scheduleOptionsV2.timeBasedSchedule.endTime != authorized end time, resource.scheduleOptionsV2.timeBasedSchedule.schedule != authorized schedule, resource.scheduleOptionsV2.timeBasedSchedule.startTime != authorized start time, resource.scheduleOptionsV2.eventDrivenSchedule.pubsubSubscription != authorized Pub/Sub subscription, resource.notificationPubsubTopic != authorized Pub/Sub topic, methodTypes="UPDATE" and "CREATE", and actionType="DENY"). C137 - Protect the network attachments used with private database sources, using the Compute Engine ThreatModel.	High	4	2	-
CO15 - Enable logs for BigQuery Data Transfer	Medium	1	-	1

C41 - Ensure Cloud Audit Logs for BigQuery Data Transfer are enabled (ref). C88 - Monitor the creation/modification of unauthorized data transfers (e.g., by using Cloud Logging events "google.cloud.bigquery.datatransfer.v1.DataTransferService.CreateTransferConfig" and "google.cloud.bigquery.datatransfer.v1.DataTransferService.UpdateTransferConfig" and their fields request.serviceAccountName, request.transferConfig.dataSourceId, request.transferConfig.destinationDatasetId, request.transferConfig.emailPreferences, request.transferConfig.notificationPubsubTopic, and request.transferConfig.schedule).				
CO33 - Define and enforce BigQuery configuration baselines at the organization and project levels C123 - Maintain the list of authorized configuration settings (e.g., default_batch_query_queue_timeout_ms, default_interactive_query_queue_timeout_ms, default_query_job_timeout_ms, enable_fine_grained_dataset_acls_option) for each organization or project. C124 - Ensure only authorized configuration settings for each organization or project are configured.	Medium	2	-	-

BigQuery reservation *(subclass of Dataset and tables, FC5)*

BI Engine allows you to analyze data stored in BigQuery with sub-second query response time and high concurrency, using BI reservations.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

Action	IAM Permission
Creates a new reservation resource.	bigquery.reservations.create

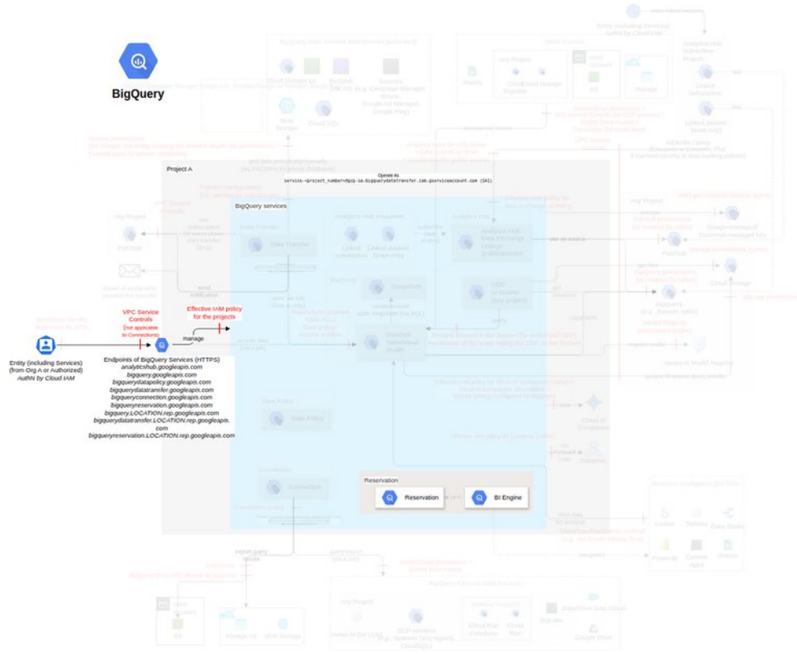
Threat List

Name	CVSS
Denial of Service/Denial of Wallet by removing/creating reservations	Medium (4.8)
Data corruption via unauthorized hard failover	Low (2.4)

Denial of Service/Denial of Wallet by removing/creating reservations

Threat Id	Bigquery.T12
Name	Denial of Service/Denial of Wallet by removing/creating reservations
Description	A slot is a dedicated vCPU that runs queries. Each slot is allocated to a reservation. An attacker can remove a reservation, failing any jobs that are currently executing with slots from that reservation, which may decrease the performance for future jobs, create a reservation with unauthorized configurations, modify an existing reservation to achieve the same objective, or incur additional costs by changing the assignee.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Medium (4.8)

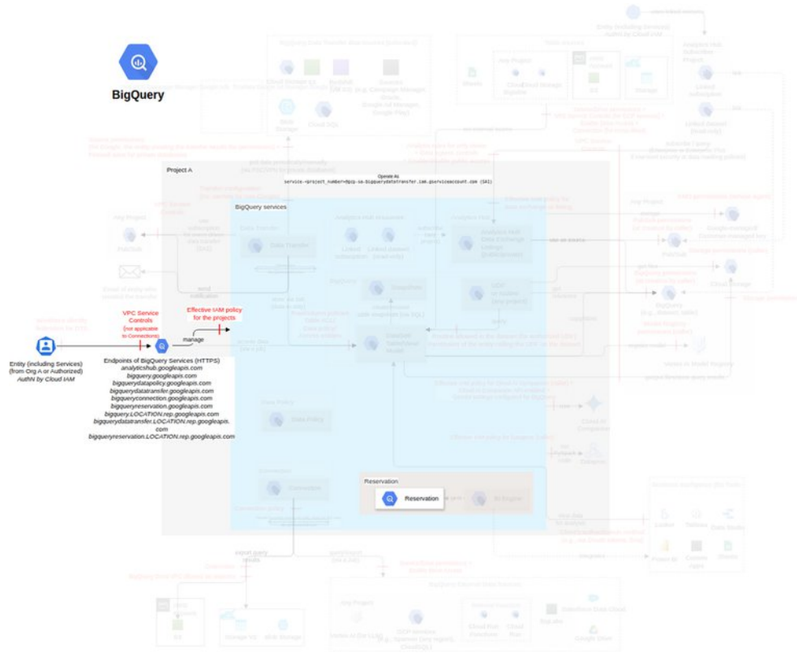
IAM Access	{
	"OR": [{
	"AND": ["bigquery.reservations.delete", "bigquery.reservationAssignments.delete"]
	}, {
	"AND": [{
	"OR": ["bigquery.reservationAssignments.create", "bigquery.reservationAssignments.update"]
	}, {
	"OR": ["bigquery.reservations.create", "bigquery.reservations.update"]
	}]
	}]
	}



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel. C84 - Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Very High	1	1	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C60 - Define the authorized configuration for each reservation (i.e., maxSlots, edition, ignoreIdleSlots, autoscale, secondaryLocation) and its assignments (i.e., assignee, jobType). C61 - Ensure each reservation and its assignments use an authorized configuration. C63 - Monitor the creation/modification of unauthorized reservations (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateReservation" and "google.cloud.bigquery.reservation.v1.ReservationService.UpdateReservation", and their fields request.reservation.autoscale.maxSlots and request.reservation.edition). C64 - Monitor the creation/modification of unauthorized assignments (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateAssignment" and its fields request.assignment.assignee, request.assignment.jobType, and request.parent, and event "google.cloud.bigquery.reservation.v1.ReservationService.UpdateAssignment" and its fields request.assignment.assignee and request.assignment.jobType).	Very High	2	-	2
CO13 - Monitor BigQuery capacity and utilization C35 - Monitor slot consumption (e.g., using slot recommender), job concurrency, job execution time, job errors, and bytes processed across the entire organization (e.g., using BigQuery Admin Resource Charts). C43 - Monitor slot capacity (e.g., using the slot estimator) to estimate the correct number of slots for the BigQuery workload.	Medium	-	-	2

Data corruption via unauthorized hard failover

Threat Id	Bigquery.T36
Name	Data corruption via unauthorized hard failover
Description	Users can promote a BigQuery reservation's secondary region to primary, with options for soft or hard failover. An attacker can initiate a hard failover without waiting for full data replication, resulting in some data corruption.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Low (2.4)
IAM Access	{ "UNIQUE": "bigquery.reservations.update" }

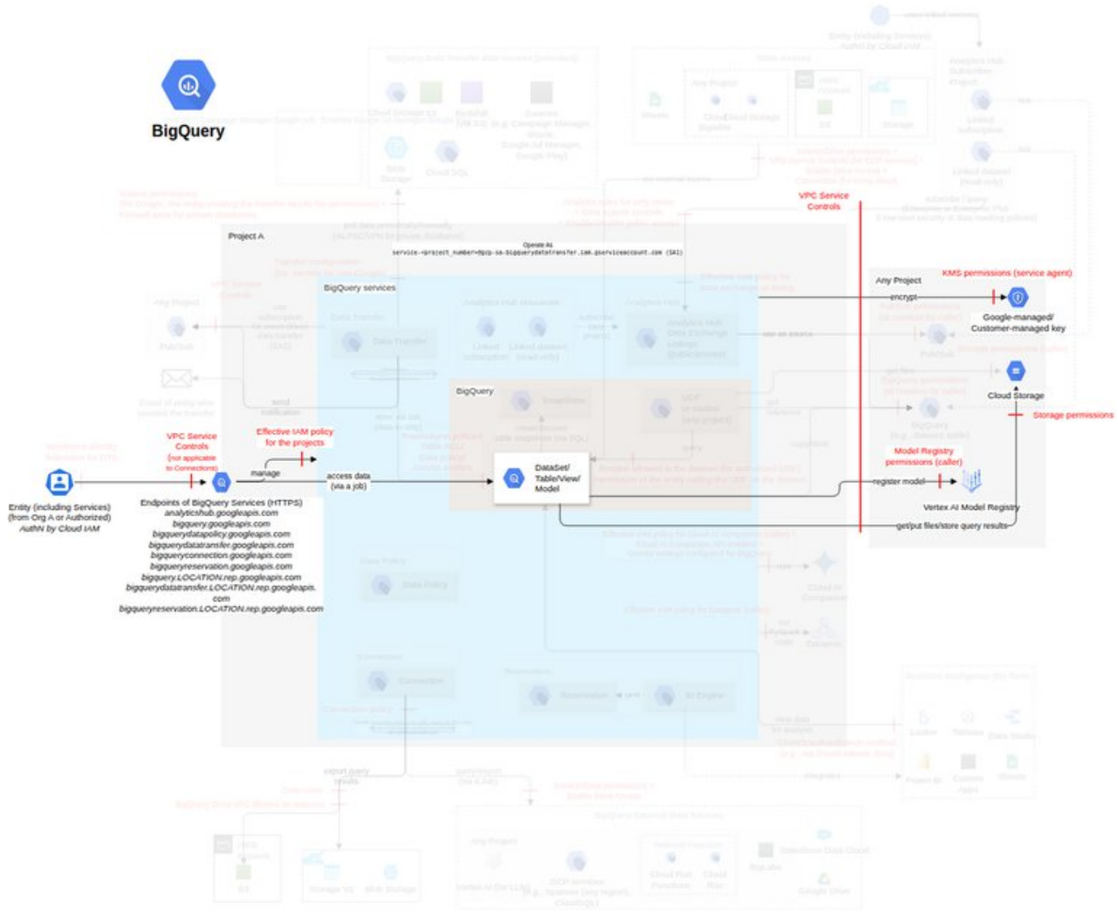


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO14 - Limit use of BigQuery Omni C38 - Define the requirements for using BigQuery Omni (AWS and/or Azure). C39 - Ensure the use of BigQuery Omni as per the requirements (e.g., using organizational constraints constraints/bigquery.disableBQOmniAWS and constraints/bigquery.disableBQOmniAzure).	Very High	2	-	-
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C130 - Define the failover process (e.g., use soft failover mode by default, document the justification for any hard failover, require approval for exceptions, record the chosen failover mode in the change process, validate replication status) for reservations. C131 - Ensure a reservation is failed over according to the process. C132 - Monitor the failover mode of a reservation (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.FailoverReservation" and its field request.failoverMode).	High	2	-	1

BigQuery ML *(subclass of Dataset and tables, FC6)*

You can create and execute machine-learning models in BigQuery using standard SQL queries.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

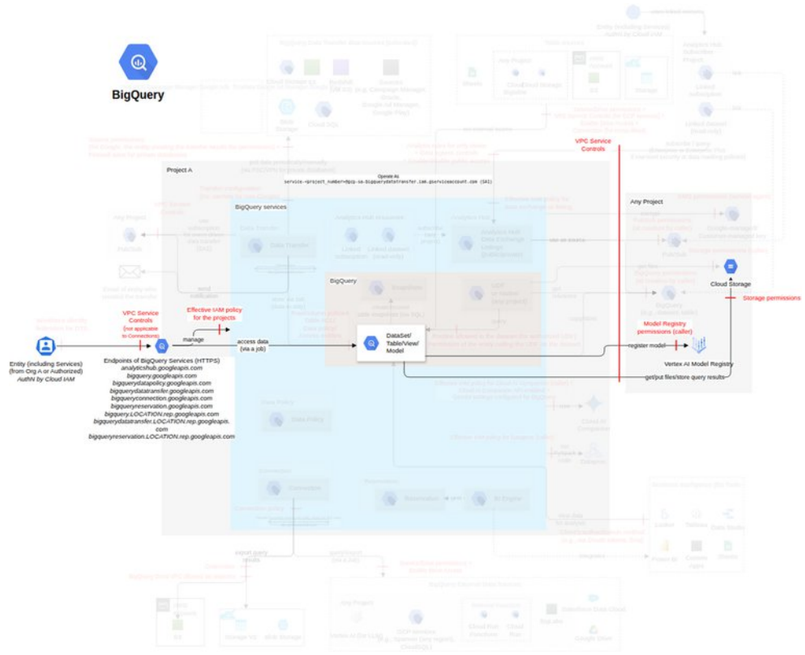
Action	IAM Permission
Create new models.	bigquery.models.create

Threat List

Name	CVSS
BigQuery ML model exfiltration	Medium (4.8)
Importing malicious models in BigQuery	Medium (4.7)
Loss of the integrity of the training model	Medium (4.2)
Permanent loss of a BigQuery ML model by modifying its expiration time	Medium (4.1)

BigQuery ML model exfiltration

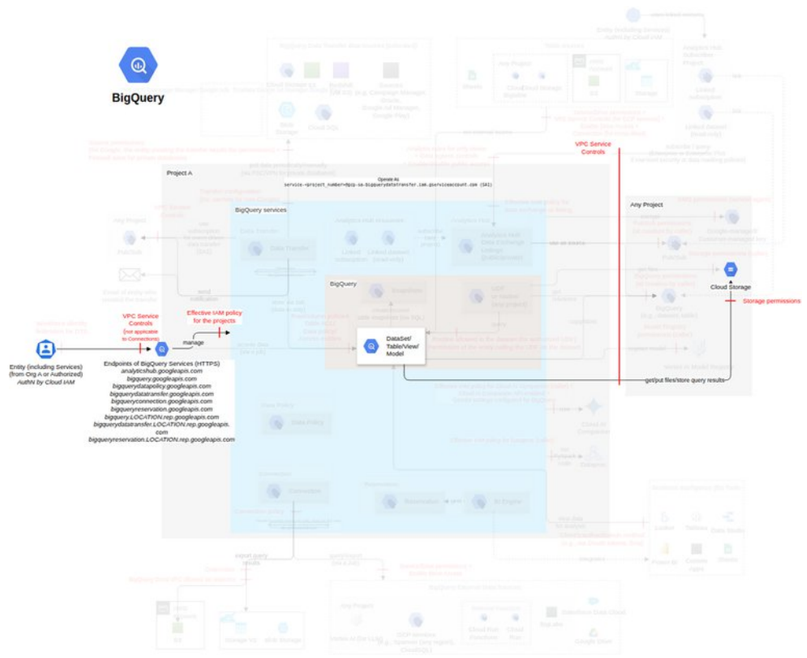
Threat Id	Bigquery.T18
Name	BigQuery ML model exfiltration
Description	BigQuery ML models can be integrated with the Vertex AI Model Registry for management purposes and exported to Cloud Storage. An attacker can register an existing model with their Vertex AI Model Registry or export it to unauthorized Cloud Storage to exfiltrate the model.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.8)
IAM Access	{ "AND": ["bigquery.jobs.create", { "OR": ["bigquery.models.updateData", "bigquery.models.export"] }] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	High	2	-	-
CO17 - Register BigQuery models as per the requirements C47 - Define the requirements to register the BigQuery models with the Vertex AI Model Registry for each BigQuery model. C48 - Ensure each BigQuery model is registered with the Vertex AI Model Registry according to its requirements.	Medium	2	-	-

Importing malicious models in BigQuery

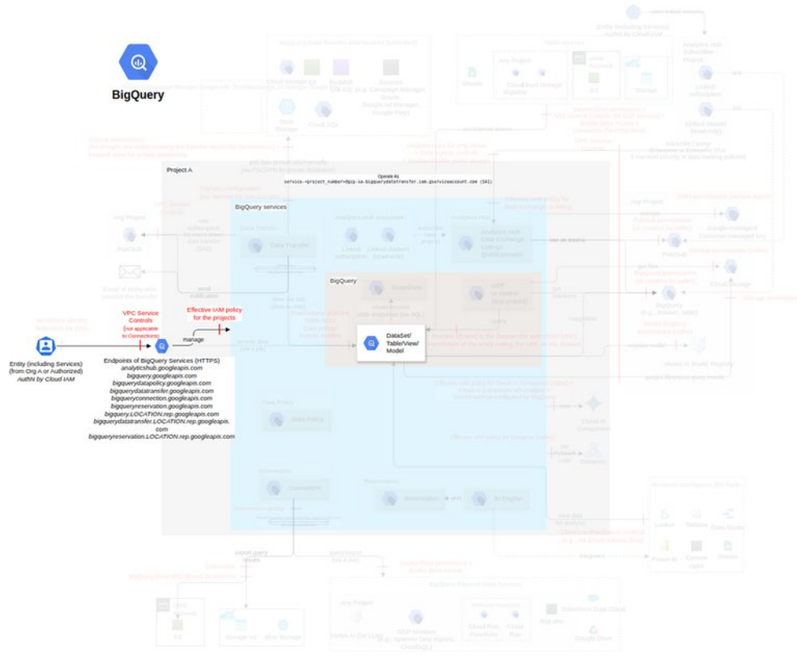
Threat Id	Bigquery.T24
Name	Importing malicious models in BigQuery
Description	Models can be imported from Cloud Storage buckets into BigQuery. An attacker can import a malicious or unauthorized model into BigQuery to perform harmful actions within BigQuery, affecting the integrity of the system, causing disruptions, potentially accessing and manipulating sensitive data within BigQuery, or misusing resources, such as excessive consumption of computing resources.
Goal	Disruption of Service
MITRE ATT&CK®	TA0002
CVSS	Medium (4.7)
IAM Access	{ "AND": ["bigquery.jobs.create", "storage.objects.get", "bigquery.models.create"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	High	2	-	-

Loss of the integrity of the training model

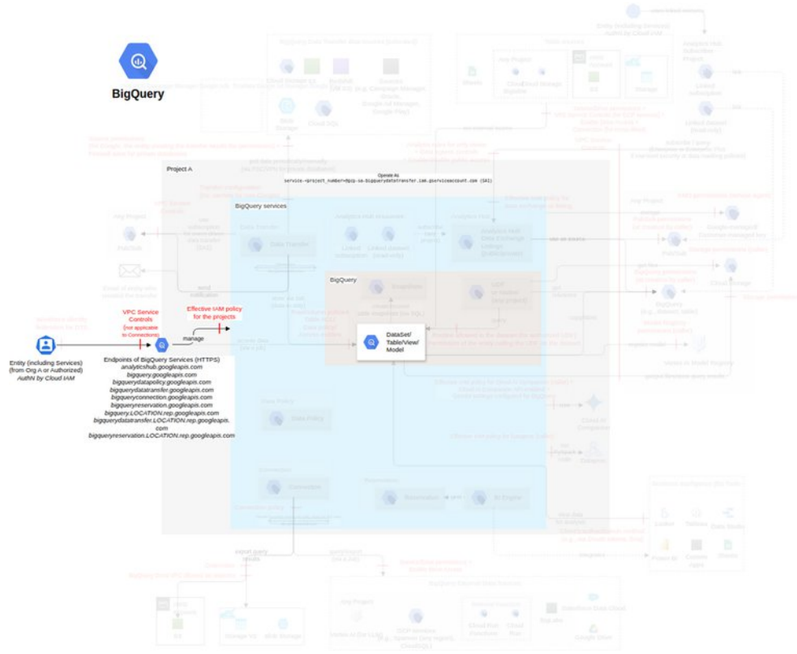
Threat Id	Bigquery.T4
Name	Loss of the integrity of the training model
Description	ML models are trained on data, and the accuracy of a model depends on the quantity and quality of the training data. The training data is stored in the form of tables or views. An attacker can decrease the quality of a model by adding bogus data to tables and views or by removing data from them, thereby decreasing the effectiveness of the resulting model and harming business decisions based on predictions from this model.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (4.2)
IAM Access	{ "AND": ["bigquery.jobs.create", { "OR": ["bigquery.models.updateData", "bigquery.models.updateMetadata"] }] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO26 - Use fingerprinting for ML models to ensure their integrity C89 - Define the requirements for generating, embedding, storing, accessing, updating, revoking, and destroying fingerprints for ML models as per the security requirements. C90 - Ensure the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements.	High	2	-	-
CO16 - Monitor data protection, data ingestion, and data quality C42 - Monitor the abnormal number of concurrent connections and throughput for the BigQuery table (e.g., by using the Monitoring metric CONSUMER QUOTA - QUOTA LIMIT). C65 - Monitor the quality of data used with the ML models (e.g., by data profiling).	Low	-	-	2

Permanent loss of a BigQuery ML model by modifying its expiration time

Threat Id	Bigquery.T22
Name	Permanent loss of a BigQuery ML model by modifying its expiration time
Description	A model's expiration time in BigQuery determines when it will be automatically deleted, serving as its "time to live" (TTL), and can also be adjusted after the model has been created. An attacker can update the expiration time of a model to cause its permanent loss.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Medium (4.1)
IAM Access	{ "UNIQUE": "bigquery.models.updateMetadata" }

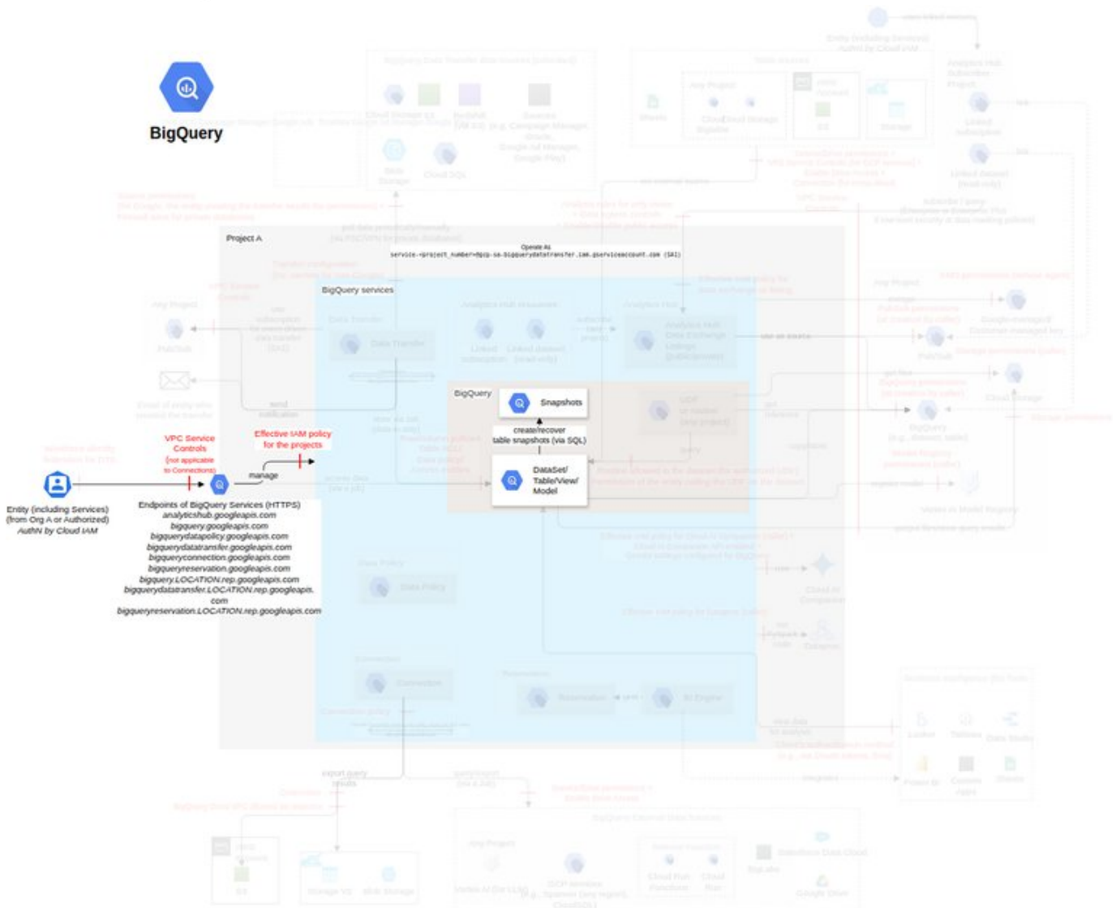


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO25 - Set an authorized expiration time for each ML model C78 - Define the authorized expiration time for each ML model. C79 - Ensure the expiration time for each ML model is authorized.	Medium	2	-	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C3 - Define the requirements for the backup of each BigQuery dataset, table, and model. C4 - Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Medium	2	-	-

Table snapshot *(subclass of Dataset and tables, FC7)*

A BigQuery table snapshot preserves the contents of a table (called the base table) at a particular time. You can save a snapshot of a current table or create a snapshot of a table as it was at any time in the past seven days.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

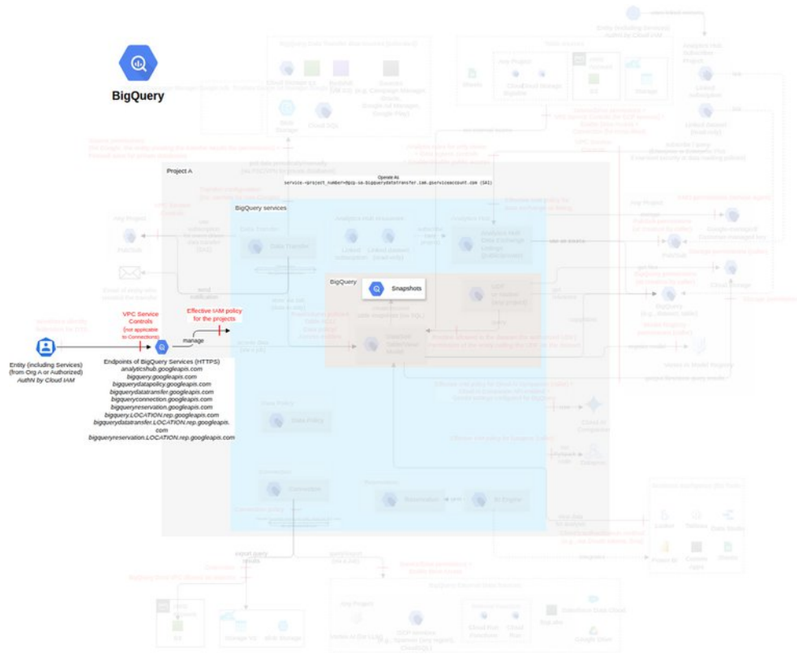
Action	IAM Permission
Create new table snapshots.	bigquery.tables.createSnapshot

Threat List

Name	CVSS
Loss of data integrity by restoring a snapshot	Medium (5.7)
Loss of data during recovery by deleting a snapshot	Medium (4.3)

Loss of data integrity by restoring a snapshot

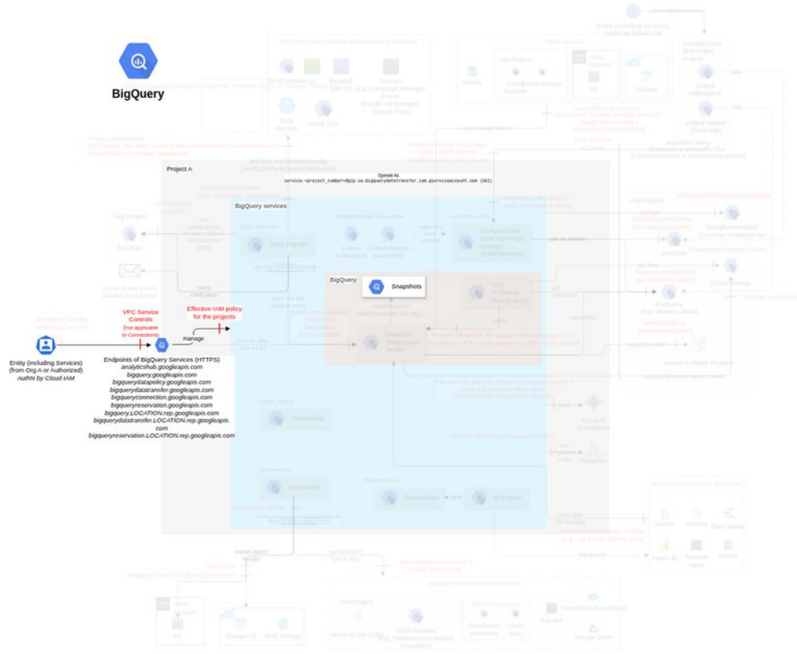
Threat Id	Bigquery.T27
Name	Loss of data integrity by restoring a snapshot
Description	Snapshots are created to preserve the contents of a table at a specific time. These can be used to restore data to an existing table or a new table. An attacker can overwrite the contents of an existing table by restoring a snapshot to it.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (5.7)
IAM Access	{ "AND": ["bigquery.jobs.create", "bigquery.tables.restoreSnapshot", "bigquery.tables.getData", "bigquery.tables.updateData", "bigquery.tables.update", { "OPTIONAL": "bigquery.tables.create" }] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C3 - Define the requirements for the backup of each BigQuery dataset, table, and model. C4 - Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Medium	2	-	-

Loss of data during recovery by deleting a snapshot

Threat Id	Bigquery.T14
Name	Loss of data during recovery by deleting a snapshot
Description	Snapshots can be used to restore previous data. An attacker (or someone by negligence) can delete snapshots to block data recovery.
Goal	Data manipulation
MITRE ATT&CK®	TA0040
CVSS	Medium (4.3)
IAM Access	{ "UNIQUE": "bigquery.tables.deleteSnapshot" }

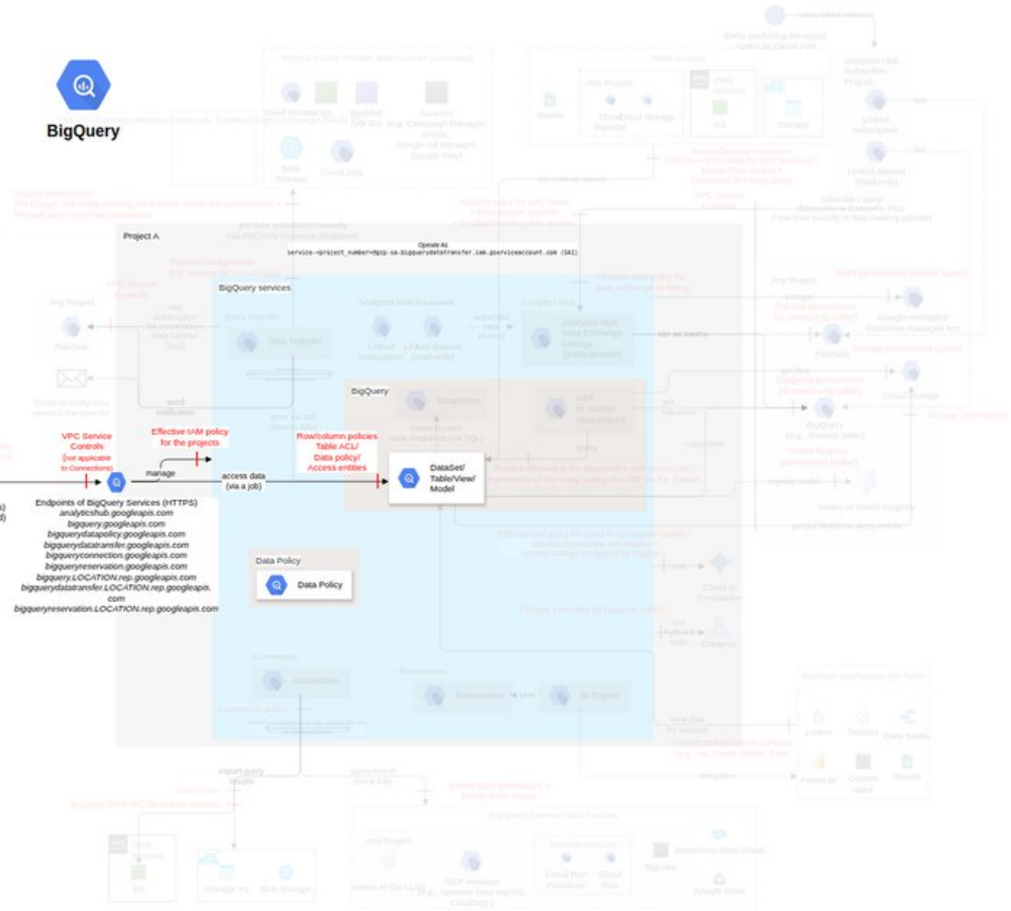


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO3 - Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) C3 - Define the requirements for the backup of each BigQuery dataset, table, and model. C4 - Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Medium	2	-	-

Data policy *(subclass of Dataset and tables, FC8)*

Policy tags are tags with access control policies that can be applied to subresources.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

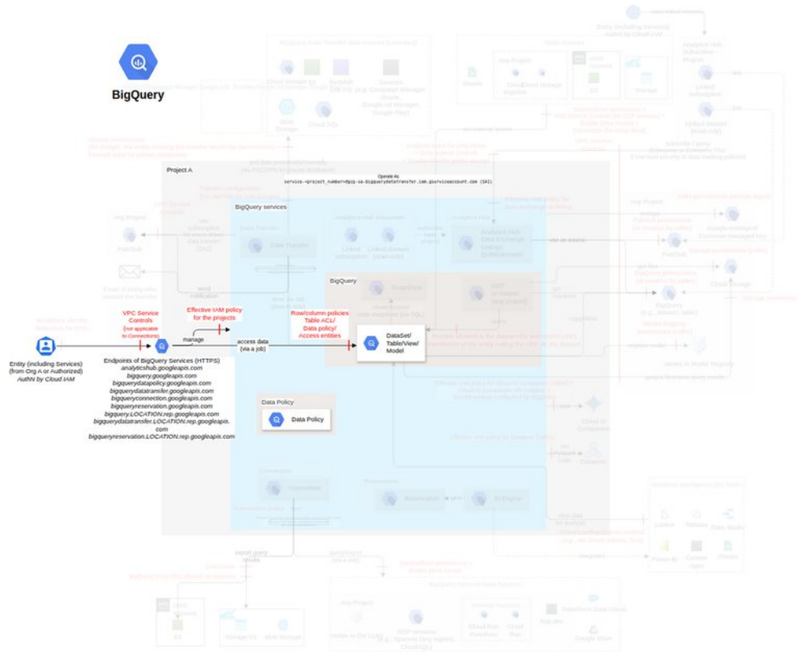
Action	IAM Permission
Creates a new data policy under a project with the given dataPolicyId (used as the display name), policy tag, and data policy type.	bigquery.dataPolicies.create

Threat List

Name	CVSS
Unauthorized access to the table columns by adding or removing policy tags	Medium (6.2)

Unauthorized access to the table columns by adding or removing policy tags

Threat Id	Bigquery.T17
Name	Unauthorized access to the table columns by adding or removing policy tags
Description	Policy tags are attached to a column in a BigQuery table to control the visibility of sensitive data to different groups of users. An attacker can create or update a data policy or its data masking rules and associate it with a column by attaching the policy tags associated with the column policy to the column in order to escalate privileges or leak data.
Goal	Launch another attack
MITRE ATT&CK®	TA0004
CVSS	Medium (6.2)
IAM Access	{ "AND": [{ "OPTIONAL": "bigquery.dataPolicies.setIamPolicy" }, { "OR": ["bigquery.dataPolicies.create", "bigquery.dataPolicies.update"] }, "datacatalog.taxonomies.get", "bigquery.tables.setCategory", "bigquery.tables.create"] }

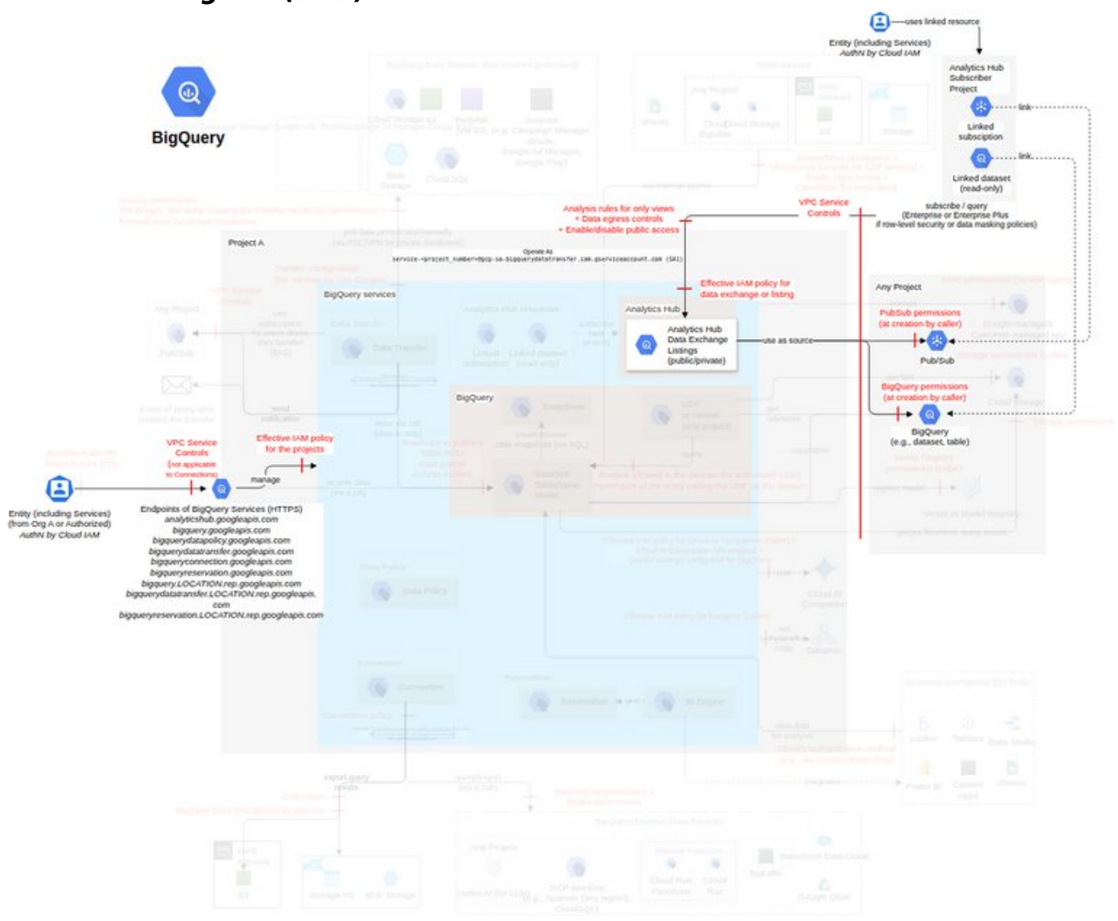


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO5 - Restrict access to columns and protect sensitive data C44 - Define the criteria to use authorized data policies for each column in each table. C45 - Ensure only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	Medium	2	-	-

Share resources via BigQuery sharing *(subclass of Dataset and tables, FC9)*

BigQuery sharing is a data exchange platform built on top of BigQuery that enables efficient and secure sharing of data (e.g., BigQuery tables) across organizational boundaries. An exchange is a collection of data and analytics assets designed for sharing.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

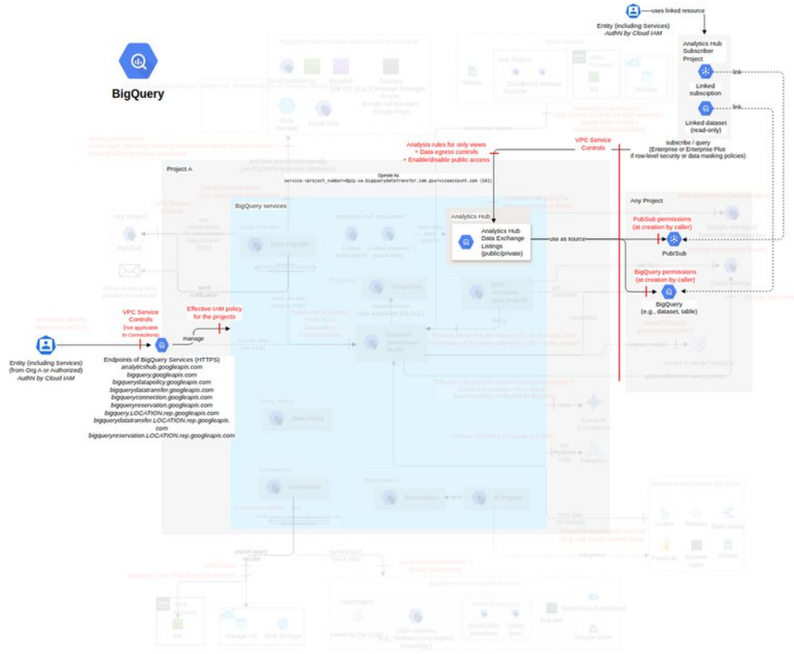
Action	IAM Permission
Creates a new data exchange.	analyticshub.dataExchanges.create
Creates a new listing.	analyticshub.listings.create

Threat List

Name	CVSS
Unauthorized access to contents of a listing	Medium (4.2)
Unauthorized access to listings by setting permissions	Medium (4.0)
Discovery of BigQuery sharing resources	Low (3.5)
Denial of Service by revoking subscriptions	Low (3.5)
Denial of Service by deleting data exchanges, listings, or subscriptions	Low (2.4)

Unauthorized access to contents of a listing

Threat Id	Bigquery.T30
Name	Unauthorized access to contents of a listing
Description	A listing contains BigQuery resources (e.g., tables, models, views) or a Pub/Sub topic that is published within a data exchange. An attacker can create a public listing to provide access to its content or launch an attack against subscribers by phishing (e.g., providing their own email ID or URL) in primaryContact, requestAccess, dataProvider, or publisher.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Medium (4.2)
IAM Access	{ "AND": [{ "OR": ["analyticshub.listings.create", "analyticshub.listings.update"] }, { "OR": ["bigquery.datasets.get", "pubsub.topics.get"] }] }

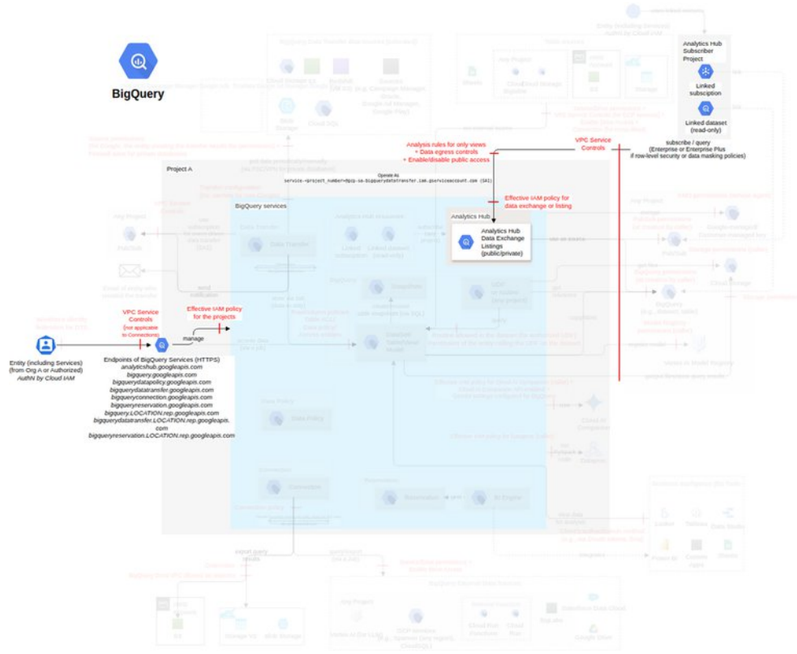


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing.	High	1	-	-
CO28 - Enforce access to sensitive data via data clean rooms C92 - Define the requirements to configure a data exchange as a data clean room (e.g., sharing sensitive data with 3rd parties). C93 - Ensure required data exchanges are configured as data clean rooms (i.e., sharingEnvironmentConfig.dcrExchangeConfig).	High	2	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO6 - Restrict access to rows with BigQuery row-level security C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	High	2	-	-
CO27 - Ensure sensitive data is not added in the listing fields	Medium	2	-	-

C110 - Maintain a list of authorized emails or URLs (i.e., primaryContact, requestAccess, dataProvider, or publisher) to be used by listings and data exchanges. C111 - Ensure listings and data exchanges use authorized emails.				
CO31 - Restrict the export of data by enabling restricted export C113 - Define the requirements for enabling restricted export for listings. C114 - Ensure the restricted export for listings is enabled according to the requirements.	Medium	2	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C98 - Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, RestrictedExportConfig, logLinkedDatasetQueryUserEmail = true) for each listing and identify the requirements for deploying a public listing. C99 - Ensure the configuration of each listing is authorized, and discoveryType is public only if required. C106 - Protect the Pub/Sub topic used by a listing, using the Pub/Sub ThreatModel.	Medium	3	-	-

Unauthorized access to listings by setting permissions

Threat Id	Bigquery.T28
Name	Unauthorized access to listings by setting permissions
Description	A data exchange or a listing can be subscribed to. An attacker can provide unauthorized subscribers with access to a listing's content by setting permissions for listings at the project, data exchange, or listing level.
Goal	Data manipulation
MITRE ATT&CK®	TA0004
CVSS	Medium (4.0)
IAM Access	{ "OR": ["analyticshub.dataExchanges.setIamPolicy", "analyticshub.listings.setIamPolicy"] }

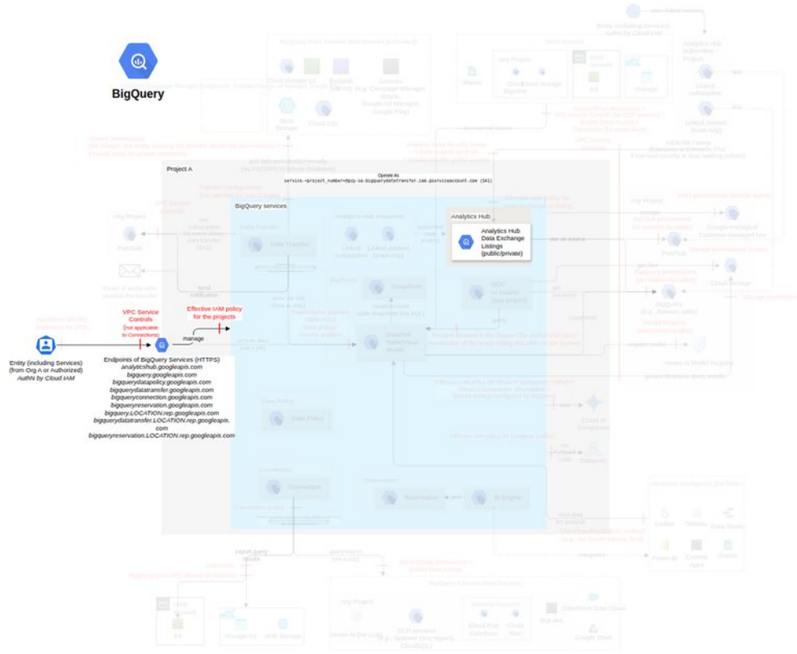


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing.	High	1	-	-
CO28 - Enforce access to sensitive data via data clean rooms C92 - Define the requirements to configure a data exchange as a data clean room (e.g., sharing sensitive data with 3rd parties). C93 - Ensure required data exchanges are configured as data clean rooms (i.e., sharingEnvironmentConfig.dcrExchangeConfig).	High	2	-	-
CO29 - Restrict access to listings and data exchanges to authorized subscribers only C103 - Maintain the list of authorized subscriptions for each listing and data exchange. C104 - Ensure only authorized subscriptions for listings and data exchanges are configured.	High	2	-	-
CO5 - Restrict access to columns and protect sensitive data C9 - Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms). C10 - Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	High	2	-	-
CO6 - Restrict access to rows with BigQuery row-level security	High	2	-	-

C12 - Define the criteria for the sensitivity of rows in each table. C13 - Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).				
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C95 - Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, logLinkedDatasetQueryUserEmail = true) for each data exchange and identify the requirements for deploying the public data exchange. C96 - Ensure the configuration of each data exchange is authorized, and discoveryType is public only if required. C98 - Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, RestrictedExportConfig, logLinkedDatasetQueryUserEmail = true) for each listing and identify the requirements for deploying a public listing. C99 - Ensure the configuration of each listing is authorized, and discoveryType is public only if required.	Medium	4	-	-

Discovery of BigQuery sharing resources

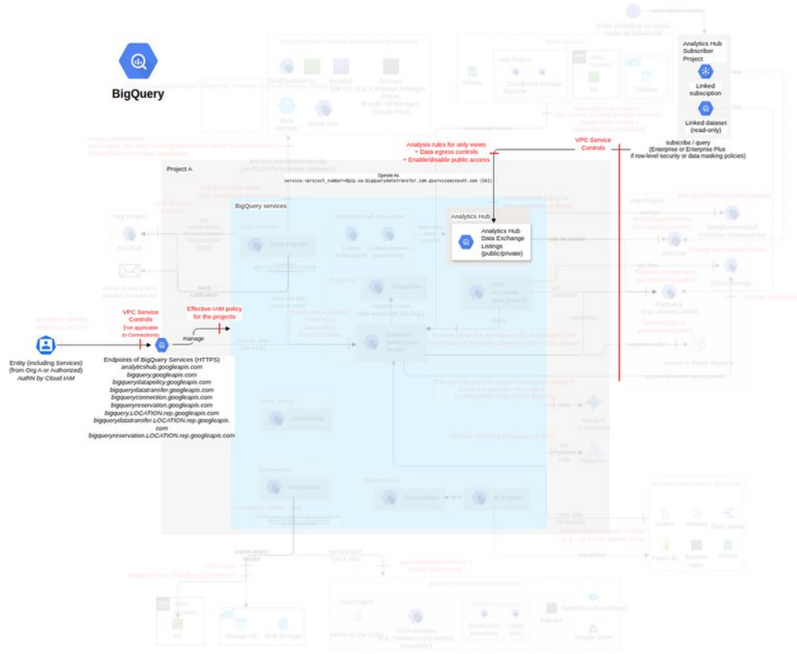
Threat Id	Bigquery.T31
Name	Discovery of BigQuery sharing resources
Description	Email IDs are configured for the provider, publisher, and subscriber of a data exchange and listing. An attacker can gather these and launch attacks against them.
Goal	Launch another attack
MITRE ATT&CK®	TA0007
CVSS	Low (3.5)
IAM Access	{ "OR": ["analyticshub.listings.list", "analyticshub.dataExchanges.list", "analyticshub.listings.viewSubscriptions", "analyticshub.listings.get", "analyticshub.dataExchanges.get", "analyticshub.subscriptions.get", "analyticshub.subscriptions.list"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO27 - Ensure sensitive data is not added in the listing fields C101 - Ensure no sensitive data is included in the fields of the listings (i.e., displayName, description, documentation, icon).	Medium	1	-	-
CO8 - Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings C95 - Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, logLinkedDatasetQueryUserEmail = true) for each data exchange and identify the requirements for deploying the public data exchange. C96 - Ensure the configuration of each data exchange is authorized, and discoveryType is public only if required. C98 - Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, RestrictedExportConfig, logLinkedDatasetQueryUserEmail = true) for each listing and identify the requirements for deploying a public listing. C99 - Ensure the configuration of each listing is authorized, and discoveryType is public only if required.	Medium	4	-	-

Denial of Service by revoking subscriptions

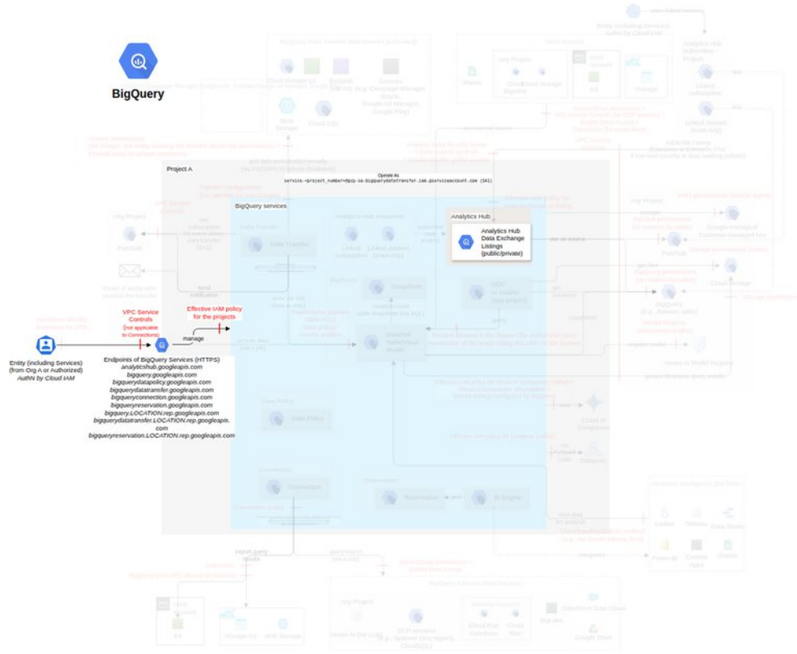
Threat Id	Bigquery.T29
Name	Denial of Service by revoking subscriptions
Description	A subscription is created upon subscribing to a listing. An attacker can revoke a subscription for a legitimate subscriber, causing Denial of Service to the subscriber.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Low (3.5)
IAM Access	{ "UNIQUE": "analyticshub.listings.update" }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing. C23 - Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations. C25 - Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	High	3	-	-
CO29 - Restrict access to listings and data exchanges to authorized subscribers only C103 - Maintain the list of authorized subscriptions for each listing and data exchange. C104 - Ensure only authorized subscriptions for listings and data exchanges are configured.	High	2	-	-

Denial of Service by deleting data exchanges, listings, or subscriptions

Threat Id	Bigquery.T32
Name	Denial of Service by deleting data exchanges, listings, or subscriptions
Description	A data exchange, its individual listings, and their subscriptions can be deleted. Data exchanges and listings with active Pub/Sub subscriptions can't be deleted. An attacker can delete any of these resources to cause Denial of Service for their subscribers.
Goal	Disruption of Service
MITRE ATT&CK®	TA0040
CVSS	Low (2.4)
IAM Access	{ "OR": ["analyticshub.dataExchanges.delete", "analyticshub.listings.delete", "analyticshub.subscriptions.delete"] }

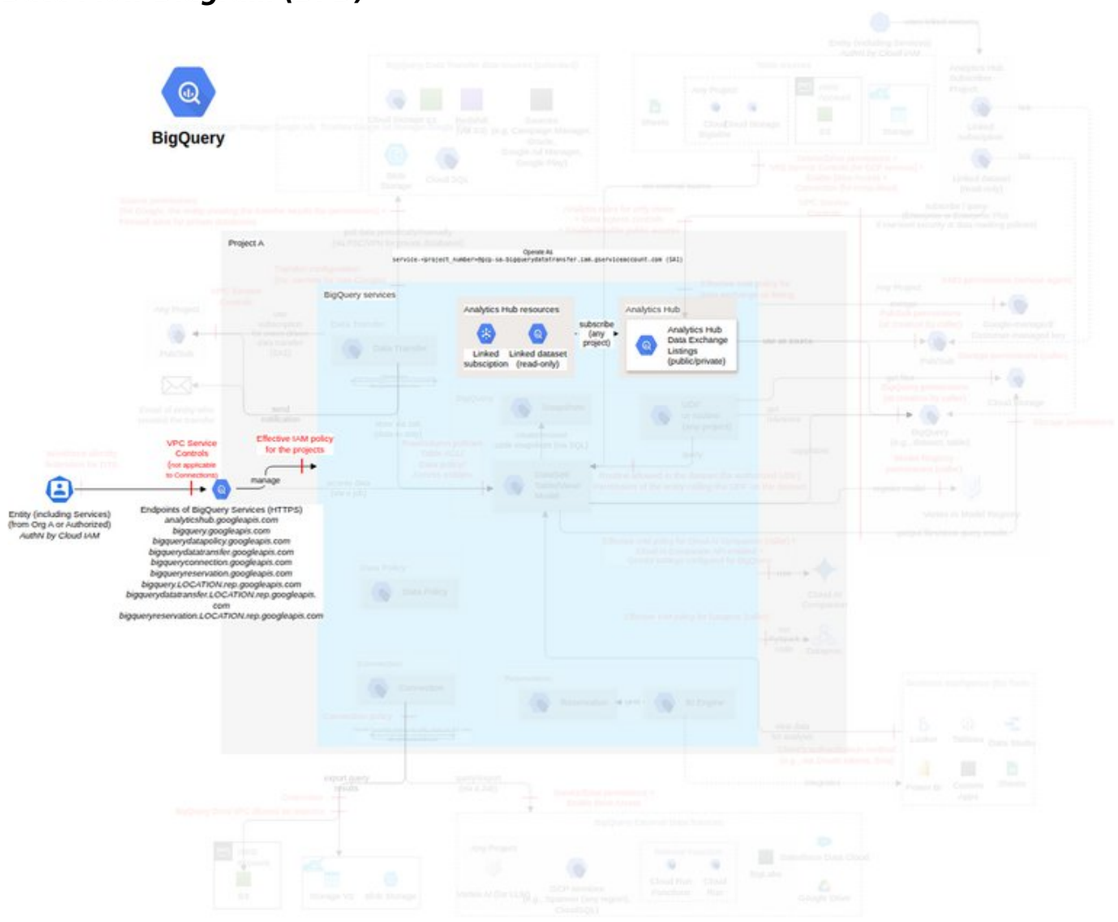


Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO2 - Enforce network-level restrictions leveraging VPC origin and VPC Service Controls C2 - Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel. C121 - Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Very High	2	-	-
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO10 - Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings C22 - Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing.	High	1	-	-
CO29 - Restrict access to listings and data exchanges to authorized subscribers only C103 - Maintain the list of authorized subscriptions for each listing and data exchange. C104 - Ensure only authorized subscriptions for listings and data exchanges are configured.	High	2	-	-

Subscribe to access resources via BigQuery sharing *(class, FC10)*

You can subscribe to the listings.

Data Flow Diagram (DFD)



Actions and IAM Permissions to deny the feature

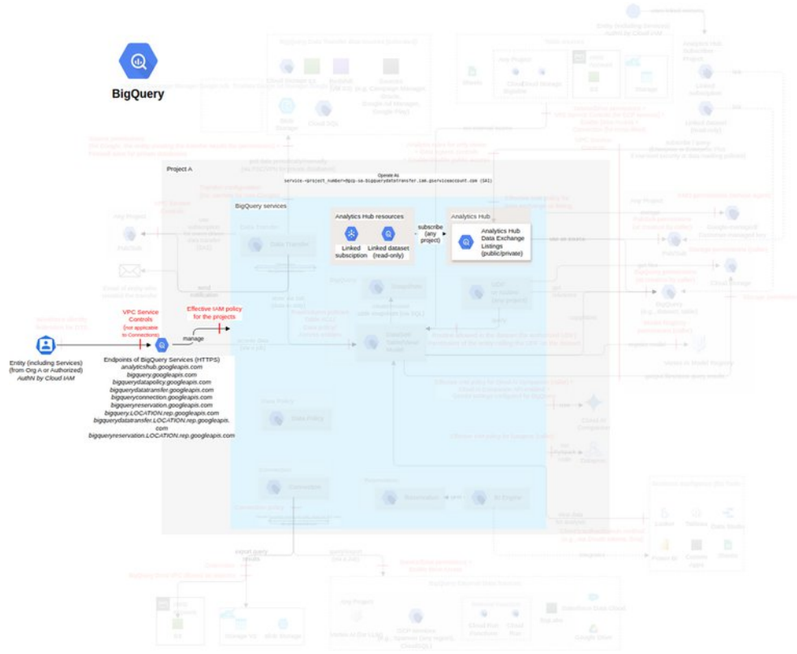
Action	IAM Permission
Subscribes to a listing. Currently, with BigQuery sharing, you can create listings that reference only BigQuery datasets. Upon subscription to a listing for a BigQuery dataset, BigQuery sharing creates a linked dataset in the subscriber's project.	analyticshub.listings.subscribe
Creates a subscription to a data clean room.	analyticshub.dataExchanges.subscribe

Threat List

Name	CVSS
Email leakage via malicious listing	Low (2.0)

Email leakage via malicious listing

Threat Id	Bigquery.T33
Name	Email leakage via malicious listing
Description	When a subscriber subscribes to a listing, a linked source is created in the subscriber's project, which acts as a reference or pointer to the source in the provider's project. An attacker can subscribe to a malicious public listing, impersonating a legitimate provider to share their email IDs and launch further attacks.
Goal	Data theft
MITRE ATT&CK®	TA0010
CVSS	Low (2.0)
IAM Access	{ "OR": ["analyticshub.dataExchanges.subscribe", "analyticshub.listings.subscribe"] }



Control Objectives	Priority	# of associated Controls		
		Directive	Preventative	Detective
CO1 - Limit access to the IAM actions required to execute attacks C1 - Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	High	1	-	-
CO30 - Restrict and manage subscriptions to authorized listings and data exchanges only C107 - Maintain the list of listings and/or data exchanges authorized to be subscribed to, and by whom. C108 - Ensure only authorized entities you control are subscribed to the authorized listings and data exchanges.	High	2	-	-

Control Implementation

Limit access to the IAM actions required to execute attacks [Bigquery.CO1]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C1] Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	Request the list of authorized IAM members that have the permissions required to launch attacks, its review process, and its review records.	High	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9 Bigquery.FC10	Bigquery.T1 (Very High) Bigquery.T2 (Very High) Bigquery.T3 (Very High) Bigquery.T4 (Very High) Bigquery.T5 (Very High) Bigquery.T6 (Very High) Bigquery.T8 (Very High) Bigquery.T9 (Very High) Bigquery.T10 (Very High) Bigquery.T11 (Very High) Bigquery.T12 (Very High) Bigquery.T13 (Very High) Bigquery.T14 (Very High) Bigquery.T15 (Very High) Bigquery.T17 (Very High) Bigquery.T18 (Very High) Bigquery.T19 (Very High) Bigquery.T20 (Very High) Bigquery.T21 (Very High) Bigquery.T22 (Very High) Bigquery.T24 (Very High) Bigquery.T25 (Very High) Bigquery.T26 (Very High) Bigquery.T27 (Very High) Bigquery.T28 (Very High) Bigquery.T29 (Very High) Bigquery.T30 (Very High) Bigquery.T31 (Very High) Bigquery.T32 (Very High) Bigquery.T33 (Very High) Bigquery.T34 (Very High) Bigquery.T35 (Very High) Bigquery.T36 (Very High)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C6] Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns).	Request the list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset, its review process, and its review records.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	Bigquery.T2 (Very Low) Bigquery.T3 (Very Low) Bigquery.T5 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T11 (Very Low) Bigquery.T21 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C7, depends on Bigquery.C6, assured by Bigquery.C8] Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access the tables, views, and table data in a specific dataset, 2) its records of execution for all new IAM entities, and 3) the plan to	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T5 (High) Bigquery.T6 (High)	High

		move any older IAM entities.			Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T11 (High) Bigquery.T21 (Medium)	
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C8] Verify only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	Configure an unauthorized IAM entity to have access to 1) a table or 2) a view; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	-	High
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C84, depends on Bigquery.C81,Bigquery.C75,Bigquery.C60,Bigquery.C17] Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Create/update/delete an unauthorized BigQuery resource; it should be denied.	Low	Bigquery.FC1 Bigquery.FC5	Bigquery.T1 (High) Bigquery.T5 (High) Bigquery.T12 (High) Bigquery.T21 (High)	High

Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO2]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C2] Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel.	Request how the Compute ThreatModel is applied for enforcing VPC origin.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9	Bigquery.T1 (High) Bigquery.T3 (High) Bigquery.T4 (High) Bigquery.T5 (High) Bigquery.T6 (High) Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T10 (High) Bigquery.T11 (High) Bigquery.T12 (High) Bigquery.T13 (High) Bigquery.T14 (High) Bigquery.T17 (High) Bigquery.T18 (High) Bigquery.T19 (High) Bigquery.T20 (High) Bigquery.T21 (High) Bigquery.T22 (High) Bigquery.T24 (High) Bigquery.T26 (High) Bigquery.T27 (High) Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T30 (High) Bigquery.T31 (High) Bigquery.T32 (High) Bigquery.T34 (High) Bigquery.T36 (High)	Very High
Directive (COSO)	[Bigquery.C121] Enforce VPC Service Controls considering the environment's	Request how the Access Context Manager ThreatModel is	Low	Bigquery.FC1	Bigquery.T1 (High)	Very High

Protect (NIST CSF)	sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	applied for enforcing VPC Service Controls.		Bigquery.FC2 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9	Bigquery.T3 (High) Bigquery.T4 (High) Bigquery.T5 (High) Bigquery.T6 (High) Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T10 (High) Bigquery.T11 (High) Bigquery.T12 (High) Bigquery.T13 (High) Bigquery.T14 (High) Bigquery.T17 (High) Bigquery.T18 (High) Bigquery.T19 (High) Bigquery.T20 (High) Bigquery.T21 (High) Bigquery.T22 (High) Bigquery.T24 (High) Bigquery.T26 (High) Bigquery.T27 (High) Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T30 (High) Bigquery.T31 (High) Bigquery.T32 (High) Bigquery.T34 (High) Bigquery.T36 (High)	

Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations) [Bigquery.CO3]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C3] Define the requirements for the backup of each BigQuery dataset, table, and model.	Request the backup requirements for each BigQuery dataset, table, and model.	Low	Bigquery.FC1 Bigquery.FC6 Bigquery.FC7	Bigquery.T1 (Very Low) Bigquery.T14 (Very Low) Bigquery.T21 (Very Low) Bigquery.T22 (Very Low) Bigquery.T27 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C4, depends on Bigquery.C3, assured by Bigquery.C5] Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Request the mechanism ensuring BigQuery datasets, tables, and models are backed up (e.g., by creating snapshots or exports) according to their requirements, the evidence of their execution, and their regular testing of restoration.	High	Bigquery.FC1 Bigquery.FC6 Bigquery.FC7	Bigquery.T1 (High) Bigquery.T14 (High) Bigquery.T21 (High) Bigquery.T22 (High) Bigquery.T27 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C5] Verify all BigQuery datasets, tables, and models are backed up according to the requirements.	Change the backup mechanism to be outside the requirements; it should be detected.	High	Bigquery.FC1 Bigquery.FC6 Bigquery.FC7	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C130] Define the failover process (e.g., use soft failover mode by default, document the justification for any hard failover, require approval for exceptions, record the	Request the failover process for reservations, its review process, and its review records.	Low	Bigquery.FC5	Bigquery.T36 (Very Low)	Low

	chosen failover mode in the change process, validate replication status) for reservations.					
Directive (COSO) Protect (NIST CSF)	[Bigquery.C131, depends on Bigquery.C130] Ensure a reservation is failed over according to the process.	Request the mechanism ensuring that the reservation is failed over according to the process.	Medium	Bigquery.FC5	Bigquery.T36 (High)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C132, depends on Bigquery.C130] Monitor the failover mode of a reservation (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.FailoverReservation" and its field request.failoverMode).	Fail over a reservation in hard mode; it should be detected.	Medium	Bigquery.FC5	Bigquery.T36 (Medium)	Very Low

Restrict access to columns and protect sensitive data [Bigquery.CO5]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C9] Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms).	Request the criteria for the sensitivity of columns in a table and each view and their requirements for data protection.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T26 (Very Low) Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C10, depends on Bigquery.C9, assured by Bigquery.C11] Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive columns of tables and views, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T6 (High) Bigquery.T8 (Medium) Bigquery.T9 (Medium) Bigquery.T26 (Medium) Bigquery.T28 (Medium) Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C11] Verify only authorized IAM entities are allowed to access sensitive columns of each table and each view.	Configure an unauthorized IAM entity with access to a sensitive column; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C44] Define the criteria to use authorized data policies for each column in each table.	Request the criteria for using data policies for each column in each table.	Very Low	Bigquery.FC3 Bigquery.FC8	Bigquery.T2 (Very Low) Bigquery.T17 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C45, depends on Bigquery.C44, assured by Bigquery.C46] Ensure only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive columns of a table with data policies, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC3 Bigquery.FC8	Bigquery.T2 (Medium) Bigquery.T17 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C46] Verify only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	Configure an unauthorized IAM entity with access to a sensitive column in a data policy; it should be detected.	Low	Bigquery.FC3 Bigquery.FC8	-	Medium

Restrict access to rows with BigQuery row-level security [Bigquery.CO6]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C12] Define the criteria for the sensitivity of rows in each table.	Request the criteria for the sensitivity of rows in a table.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C13, depends on Bigquery.C12, assured by Bigquery.C14] Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive rows of a table, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Medium) Bigquery.T6 (High) Bigquery.T8 (Medium) Bigquery.T9 (High) Bigquery.T28 (Medium) Bigquery.T30 (Medium)	High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C14] Verify only authorized IAM entities are allowed to access sensitive rows of a table.	Configure an unauthorized IAM entity with access to a sensitive row; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	-	High

Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys [Bigquery.CO7]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C26] Maintain a list of authorized CMEKs to be used with each BigQuery resource (e.g., dataset, DLP function, model, data transfer), ideally dedicated (e.g., using Autokey on bigquery.googleapis.com/Dataset), and of the default CMEK at the project or organization level, and define the requirement to rotate key versions for tables.	Request the list of authorized CMEKs and their versions to be used by the BigQuery resource and the default CMEK per project or at the organization level, and the requirement to rotate key versions for tables, their review process, and their review records.	Very Low	Bigquery.FC1	Bigquery.T11 (Very Low) Bigquery.T20 (Very Low) Bigquery.T21 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C27, depends on Bigquery.C26, assured by Bigquery.C29] Ensure only authorized CMEKs and their versions are used with the BigQuery resource.	Request 1) the mechanism ensuring only authorized CMEKs are configured, 2) its records of execution for all new BigQuery resources, and 3) the plan to move any older BigQuery resources.	Medium	Bigquery.FC1	Bigquery.T11 (Medium) Bigquery.T20 (Medium)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C28, depends on Bigquery.C26] Protect the CMEKs used by each BigQuery resource using the Cloud KMS ThreatModel (including enforcing CMEK protection using organization policy constraints/gcp.restrictCmekCryptoKeyProjects and constraints/gcp.restrictNonCmekServices as per Cloudkms.C32 and Cloudkms.C34).	Request how the Cloud KMS ThreatModel is applied to BigQuery resources.	High	Bigquery.FC1	Bigquery.T11 (Medium) Bigquery.T20 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C29] Verify each BigQuery resource is encrypted using an authorized CMEK and its version.	Use an unauthorized 1) CMEK or a 2) version with a BigQuery resource; it should be detected.	Low	Bigquery.FC1	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C36, depends on Bigquery.C26, assured by Bigquery.C37] Ensure AEAD encryption functions are used to encrypt	Request the mechanism ensuring AEAD encryption functions are used to encrypt data at the column level.	Medium	Bigquery.FC1	Bigquery.T11 (Medium)	Medium

	data at the column level.					
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C37] Verify AEAD encryption functions are used to encrypt data at the column level.	Do not encrypt the data at the column level; it should be detected.	Low	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C85, depends on Bigquery.C26] Define the requirements for generating, storing, accessing, distributing, rotating, backing up, and destroying encryption keys for applications (e.g., by using a dedicated secret management tool such as HashiCorp Vault or GCP Secret Manager) as per the security standards.	Request the requirements for generating, storing, accessing, distributing, using, rotating, backing up, and destroying keys for applications, their review process, and its review records.	Medium	Bigquery.FC1	Bigquery.T20 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C86, depends on Bigquery.C85,Bigquery.C26] Ensure the keys for applications are generated, stored, accessed, distributed, rotated, backed up, and destroyed as per the security standards.	Request 1) the mechanism ensuring the keys for applications are generated, stored, accessed, distributed, rotated, backed up, and destroyed as per the security standards, 2) its records of execution for all new keys, and 3) the plan to move any older keys.	Medium	Bigquery.FC1	Bigquery.T20 (High)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C134, depends on Bigquery.C26] Prevent the creation of a dataset without an authorized key (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultEncryptionConfiguration.kmsKeyName != an authorized encryption key, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a dataset with unauthorized key; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium

Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO8]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C15, assured by Bigquery.C16] Ensure no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", except if allowed.	Request 1) the mechanism ensuring no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", 2) its records of execution for all datasets, and 3) the plan to move any older datasets.	Low	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (High) Bigquery.T9 (High)	Very High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C16] Verify no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers" (e.g., using the Security Command Center finding PUBLIC_DATASET).	Modify a dataset to allow access to 1) "AllUsers", or 2) "AllAuthenticatedUsers"; it should be detected.	Very Low	Bigquery.FC1 Bigquery.FC2	-	Very High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C17] Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset.	Request the authorized configuration for each BigQuery dataset, its review process, and its review records.	Low	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (Very Low) Bigquery.T11 (Very Low) Bigquery.T21 (Very Low) Bigquery.T25 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C18, depends on Bigquery.C17, assured by Bigquery.C19] Ensure the configuration of each BigQuery dataset is authorized.	Request the mechanism ensuring the configuration of each BigQuery dataset is authorized, and the evidence	High	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (High) Bigquery.T11 (High)	Medium

		of its execution.			Bigquery.T21 (High) Bigquery.T25 (Medium)	
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C19] Verify all BigQuery datasets have authorized configurations.	Create a dataset with an unauthorized configuration; it should be detected.	High	Bigquery.FC1 Bigquery.FC2	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C60] Define the authorized configuration for each reservation (i.e., maxSlots, edition, ignoreIdleSlots, autoscale, secondaryLocation) and its assignments (i.e., assignee, jobType).	Request the authorized configuration for each reservation and its assignments.	Low	Bigquery.FC1 Bigquery.FC5	Bigquery.T9 (Very Low) Bigquery.T12 (Very Low)	Very High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C61, depends on Bigquery.C60, assured by Bigquery.C62] Ensure each reservation and its assignments use an authorized configuration.	Request the mechanism ensuring the reservation and its assignments use an authorized configuration, and the evidence of its execution.	High	Bigquery.FC5	Bigquery.T12 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C62] Verify all reservations and their assignments use an authorized configuration.	Use an unauthorized configuration with 1) a reservation, or 2) an assignment; it should be detected.	High	Bigquery.FC5	-	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C63, depends on Bigquery.C60] Monitor the creation/modification of unauthorized reservations (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateReservation" and "google.cloud.bigquery.reservation.v1.ReservationService.UpdateReservation", and their fields request.reservation.autoscale.maxSlots and request.reservation.edition).	Create/update the reservation with unauthorized values; it should be detected.	Medium	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C64, depends on Bigquery.C60] Monitor the creation/modification of unauthorized assignments (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateAssignment" and its fields request.assignment.assignee, request.assignment.jobType, and request.parent, and event "google.cloud.bigquery.reservation.v1.ReservationService.UpdateAssignment" and its fields request.assignment.assignee and request.assignment.jobType).	Create/update the assignment with unauthorized values; it should be detected.	Medium	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C75] Define the authorized configuration (e.g., createDisposition, writeDisposition, schemaUpdateOptions) for each asynchronous query job.	Request the authorized configuration for each asynchronous query job, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T20 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C76, depends on Bigquery.C75, assured by Bigquery.C77] Ensure the configuration of each asynchronous query job is authorized.	Request the mechanism ensuring the configuration of each asynchronous query job is authorized, and the evidence of its execution.	High	Bigquery.FC1	Bigquery.T20 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C77] Verify all asynchronous query jobs have authorized configurations.	Create an asynchronous query job with unauthorized configurations; it should be detected.	High	Bigquery.FC1	-	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C81] Define the authorized configuration (i.e., schema, clustering, expirationTime, view, materializedView, externalDataConfiguration, encryptionConfiguration, defaultCollation, defaultRoundingMode, and	Request the authorized configuration for each BigQuery table, its review process, and its review records.	Medium	Bigquery.FC1	Bigquery.T1 (Very Low) Bigquery.T5 (Very Low) Bigquery.T25 (Very Low)	High

	tableConstraints) for each BigQuery table.					
Directive (COSO) Protect (NIST CSF)	[Bigquery.C82, depends on Bigquery.C81, assured by Bigquery.C83] Ensure the configuration of each BigQuery table is authorized.	Request the mechanism ensuring the configuration of each BigQuery table is authorized, and the evidence of its execution.	High	Bigquery.FC1	Bigquery.T1 (Low) Bigquery.T5 (Medium) Bigquery.T25 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C83] Verify all BigQuery tables have authorized configurations.	Create a table with an unauthorized configuration; it should be detected.	High	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C95] Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, logLinkedDatasetQueryUserEmail = true) for each data exchange and identify the requirements for deploying the public data exchange.	Request the authorized configuration for each data exchange and the criteria for its discovery type, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T31 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C96, depends on Bigquery.C95, assured by Bigquery.C97] Ensure the configuration of each data exchange is authorized, and discoveryType is public only if required.	Request 1) the mechanism ensuring authorized configurations are used, 2) its records of execution for all new data exchanges, and 3) the plan to move any older data exchanges.	High	Bigquery.FC9	Bigquery.T28 (Medium) Bigquery.T31 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C97] Verify all data exchanges have authorized configurations.	Create a data exchange with an unauthorized configuration; it should be detected.	High	Bigquery.FC9	-	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C98] Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, RestrictedExportConfig, logLinkedDatasetQueryUserEmail = true) for each listing and identify the requirements for deploying a public listing.	Request the authorized configuration for each listing and requirement for its discovery type, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T30 (Very Low) Bigquery.T31 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C99, depends on Bigquery.C98, assured by Bigquery.C100] Ensure the configuration of each listing is authorized, and discoveryType is public only if required.	Request 1) the mechanism ensuring that authorized configurations are used, 2) its records of execution for all new listings, and 3) the plan to move any older listings.	High	Bigquery.FC9	Bigquery.T28 (Medium) Bigquery.T30 (Medium) Bigquery.T31 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C100] Verify all listings have authorized configurations.	Create a listing with an unauthorized configuration; it should be detected.	High	Bigquery.FC9	-	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C106, depends on Bigquery.C98] Protect the Pub/Sub topic used by a listing, using the Pub/Sub ThreatModel.	Request how the Pub/Sub ThreatModel is applied to topics used by a listing.	High	Bigquery.FC9	Bigquery.T30 (High)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C133, depends on Bigquery.C17] Prevent the creation/update of a dataset without an authorized configuration (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultCollation != an authorized collation, resource.defaultRoundingMode != an authorized rounding mode, resource.maxTimeTravelHours != an authorized time travel window, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create or update a dataset with unauthorized configuration; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium

De-identify sensitive data using Cloud DLP [Bigquery.CO9]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C20, assured by Bigquery.C21] Ensure sensitive data is identified and redacted (e.g., using Cloud DLP).	Request the mechanism to identify and redact sensitive data.	High	Bigquery.FC1	Bigquery.T6 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C21] Verify sensitive data is identified and redacted (e.g., using Cloud DLP).	Add non-redacted sensitive data; it should be detected.	High	Bigquery.FC1	-	Medium

Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO10]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C22] Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing.	Request the list of all authorized sources and destinations to be used with each dataset, table, model, connection, job, and listing, its review process, and its review records.	High	Bigquery.FC1 Bigquery.FC3 Bigquery.FC6 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T3 (Very Low) Bigquery.T6 (Very Low) Bigquery.T15 (Very Low) Bigquery.T18 (Very Low) Bigquery.T20 (Very Low) Bigquery.T21 (Very Low) Bigquery.T24 (Very Low) Bigquery.T28 (Very Low) Bigquery.T29 (Very Low) Bigquery.T30 (Very Low) Bigquery.T32 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C23, depends on Bigquery.C22, assured by Bigquery.C24] Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	Request 1) the mechanism ensuring only authorized sources and destinations are configured, 2) its records of execution for all new sources and destinations, and 3) the plan to move any older sources and destinations.	Medium	Bigquery.FC1 Bigquery.FC3 Bigquery.FC6 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T6 (High) Bigquery.T15 (High) Bigquery.T18 (High) Bigquery.T20 (High) Bigquery.T24 (High) Bigquery.T29 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C24] Verify each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	For a BigQuery dataset, table, model, connection, job, or listing, use an unauthorized 1) source or 2) destination; it should be detected.	Medium	Bigquery.FC1 Bigquery.FC3 Bigquery.FC6 Bigquery.FC9	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C25, depends on Bigquery.C22] Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	Request how the respective source and destination ThreatModels are applied to BigQuery.	High	Bigquery.FC1 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T6 (High) Bigquery.T15 (High) Bigquery.T29 (Medium)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C135, depends on Bigquery.C22] Prevent the creation of a dataset without an authorized source (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.linkedDatasetSource.sourceDataset.datasetId	Create a dataset with an unauthorized source; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium

	!= an authorized linked data source, resource.externalDatasetReference != an authorized external dataset reference, methodTypes="UPDATE" and "CREATE", and actionType="DENY").					

Set the expiration time of BigQuery tables as per the requirements [Bigquery.CO12]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C32] Define the requirements for the expiration time of each BigQuery table.	Request the requirements for the expiration time of each BigQuery table.	Low	Bigquery.FC1	Bigquery.T11 (Very Low) Bigquery.T21 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C33, depends on Bigquery.C32, assured by Bigquery.C34] Ensure the expiration time of each BigQuery table is set according to the requirements.	Request the mechanism ensuring the expiration time of each BigQuery table is set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T11 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C34] Verify the expiration time of each BigQuery table is set to its requirements.	Set the expiration time of a BigQuery table to be outside its requirements; it should be detected.	High	Bigquery.FC1	-	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C136, depends on Bigquery.C32] Prevent the creation or update of a dataset without an authorized expiration time (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultTableExpirationMs != an authorized expiration time, resource.defaultPartitionExpirationMs != an authorized partition expiration time, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create or update a dataset with an unauthorized expiration time; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium

Monitor BigQuery capacity and utilization [Bigquery.CO13]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Detective (COSO) Detect (NIST CSF)	[Bigquery.C35] Monitor slot consumption (e.g., using slot recommender), job concurrency, job execution time, job errors, and bytes processed across the entire organization (e.g., using BigQuery Admin Resource Charts).	Create a job and use slots in an abnormal way; it should be detected.	Low	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C43] Monitor slot capacity (e.g., using the slot estimator) to estimate the correct number of slots for the BigQuery workload.	Increase or decrease slot capacity widely; it should be detected.	Low	Bigquery.FC5	Bigquery.T12 (Low)	Low

Limit use of BigQuery Omni [Bigquery.CO14]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO)	[Bigquery.C38]	Request the requirements for the use of BigQuery Omni.	Low	Bigquery.FC3	Bigquery.T15 (Very Low)	High

Identify (NIST CSF)	Define the requirements for using BigQuery Omni (AWS and/or Azure).			Bigquery.FC5	Bigquery.T36 (Very Low)	
Directive (COSO) Protect (NIST CSF)	[Bigquery.C39, depends on Bigquery.C38, assured by Bigquery.C40] Ensure the use of BigQuery Omni as per the requirements (e.g., using organizational constraints constraints/bigquery.disableBQOmniAWS and constraints/bigquery.disableBQOmniAzure).	Request the implementation to ensure the use of BigQuery Omni as per the requirements and its records of execution.	Medium	Bigquery.FC3 Bigquery.FC5	Bigquery.T15 (Very High) Bigquery.T36 (Very Low)	High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C40] Verify the use of BigQuery Omni as per the requirements.	Use BigQuery Omni outside the requirements; it should be detected.	Low	Bigquery.FC3 Bigquery.FC5	-	High

Enable logs for BigQuery Data Transfer [Bigquery.CO15]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C41] Ensure Cloud Audit Logs for BigQuery Data Transfer are enabled (ref).	Request the implementation for enabling the Cloud Audit Logs for BigQuery Data Transfer and its records for execution.	Medium	Bigquery.FC4	Bigquery.T13 (Low)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C88, depends on Bigquery.C66] Monitor the creation/modification of unauthorized data transfers (e.g., by using Cloud Logging events "google.cloud.bigquery.datatransfer.v1.DataTransferService.CreateTransferConfig" and "google.cloud.bigquery.datatransfer.v1.DataTransferService.UpdateTransferConfig" and their fields request.serviceAccountName, request.transferConfig.dataSourceId, request.transferConfig.destinationDatasetId, request.transferConfig.emailPreferences, request.transferConfig.notificationPubsubTopic, and request.transferConfig.schedule).	Create/update an unauthorized data transfer; it should be detected.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium

Monitor data protection, data ingestion, and data quality [Bigquery.CO16]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Detective (COSO) Detect (NIST CSF)	[Bigquery.C42] Monitor the abnormal number of concurrent connections and throughput for the BigQuery table (e.g., by using the Monitoring metric CONSUMER QUOTA - QUOTA LIMIT).	Create 1) an abnormal number of concurrent connections and 2) abnormal throughput for a BigQuery table; it should be detected.	Low	Bigquery.FC1 Bigquery.FC6	Bigquery.T4 (Low) Bigquery.T5 (Very Low)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C65] Monitor the quality of data used with the ML models (e.g., by data profiling).	Ingest bogus data in a table; it should be detected.	Low	Bigquery.FC6	Bigquery.T4 (Low)	Low
Directive (COSO) Respond (NIST CSF)	[Bigquery.C87] Establish, document, and train on procedures for responding to key compromise events, including key leaks and unapproved access. Implement a key revocation process to invalidate compromised keys and replace them with new, secure keys.	Request the plan for key compromised events, and the records and results of the last Incident Response simulation.	High	Bigquery.FC1	Bigquery.T20 (Medium)	Low

Register BigQuery models as per the requirements [Bigquery.CO17]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C47] Define the requirements to register the BigQuery models with the Vertex AI Model Registry for each BigQuery model.	Request the registration requirements for each BigQuery model.	Low	Bigquery.FC6	Bigquery.T18 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C48, depends on Bigquery.C47, assured by Bigquery.C49] Ensure each BigQuery model is registered with the Vertex AI Model Registry according to its requirements.	Request the mechanism ensuring the BigQuery model is registered according to its requirements, and its records of execution.	High	Bigquery.FC6	Bigquery.T18 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C49] Verify all BigQuery models are registered with the Vertex AI Model Registry according to their requirements.	Register a model with a Vertex AI Model Registry outside the requirements; it should be detected.	High	Bigquery.FC6	-	Medium

Limit the amount of cloned data [Bigquery.CO18]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C50] Define the requirements for setting the time travel of each BigQuery dataset.	Request the requirements for setting time travel for each BigQuery dataset.	Low	Bigquery.FC1	Bigquery.T19 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C51, depends on Bigquery.C50, assured by Bigquery.C52] Ensure the time travel of each BigQuery dataset is set according to its requirements.	Request the mechanism ensuring the time travel of each BigQuery dataset is set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T19 (Low)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C52] Verify the time travel of each BigQuery dataset is set to its requirements.	Set the time travel of a BigQuery dataset to an unauthorized value; it should be detected.	High	Bigquery.FC1	-	Low

Enforce authorized configurations on jobs [Bigquery.CO19]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C53] Define the authorized configuration for each job.	Request the authorized configuration for each job, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T19 (Very Low) Bigquery.T26 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C54, depends on Bigquery.C53, assured by Bigquery.C55] Ensure each job uses an authorized configuration.	Request the mechanism ensuring the job uses an authorized configuration and its records of execution.	High	Bigquery.FC1	Bigquery.T19 (High) Bigquery.T26 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C55] Verify all jobs use an authorized configuration.	Use an unauthorized configuration with a job; it should be detected.	High	Bigquery.FC1	-	Medium

Monitor abnormal performance of queries [Bigquery.CO20]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Detective (COSO) Detect (NIST CSF)	[Bigquery.C56] Monitor the abnormal behavior, such as unexpected increases in execution time or unusual resource utilization,	Run a query with abnormal behavior; it should be detected.	Low	Bigquery.FC1	Bigquery.T9 (Medium)	Medium

	of a query (e.g., by using the query execution graph or administrative jobs explorer).					

Use authorized metadata caching [Bigquery.CO21]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C57] Define the requirements for metadata cache mode and staleness (30 minutes to 7 days) for each external table.	Request the requirements for enabling metadata cache and setting its staleness (30 minutes to 7 days) for each external table.	Low	Bigquery.FC1	Bigquery.T9 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C58, depends on Bigquery.C57, assured by Bigquery.C59] Ensure the metadata cache mode and staleness of each external table are set according to its requirements.	Request the mechanism ensuring the metadata cache mode and staleness of each external table are set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T9 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C59] Verify the metadata cache mode and staleness of each external table are set to their requirements.	Set the metadata cache mode and staleness of an external table outside the requirements; it should be detected.	Medium	Bigquery.FC1	-	Medium

Secure and use the authorized sources and their respective authorized configurations with BigQuery Data Transfer [Bigquery.CO22]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C66] Maintain a list of authorized sources (e.g., Cloud Storage, Amazon S3, Oracle, Salesforce) and their respective authorized configurations (i.e., destination dataset, schedule, config status, encryption key, parameters) to be used with each transfer.	Request the list of all authorized sources and their respective authorized configurations to be used with each transfer, its review process, and its review records.	Low	Bigquery.FC4	Bigquery.T13 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C67, depends on Bigquery.C66, assured by Bigquery.C68] Ensure each transfer uses an authorized source and its authorized configuration.	Request 1) the mechanism ensuring only an authorized source and its authorized configuration are configured, 2) its records of execution for all new sources, and 3) the plan to move any older sources.	Medium	Bigquery.FC4	Bigquery.T13 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C68] Verify each transfer uses an authorized source and its authorized configuration.	For a transfer, 1) use an unauthorized source, 2) remove an authorized source, or 3) use an unauthorized configuration for a source; it should be detected.	Medium	Bigquery.FC4	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C69, depends on Bigquery.C66] Protect the sources used with each transfer, using the respective service's ThreatModel.	Request how the respective service ThreatModel is applied to protect each BigQuery Data Transfer source.	High	Bigquery.FC4	Bigquery.T13 (Medium)	Low
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C119, depends on Bigquery.C66] Prevent the creation/update of a transfer without an authorized source and/or destination (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataSourceId != an authorized data source, resource.destinationDatasetId != an authorized dataset, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a transfer with an unauthorized 1) data source or create/update with an unauthorized 2) destination dataset; it should be denied.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium

Preventative (COSO) Protect (NIST CSF)	[Bigquery.C120, depends on Bigquery.C66] Prevent the create/update of a transfer without an authorized ingestion (i.e., schedule, refresh window, and status of transfer configuration) (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataRefreshWindowDays != authorized data refresh window, resource.disabled != authorized config status, resource.emailPreferences.enableFailureEmail != authorized failure email status, resource.encryptionConfiguration.kmsKeyName != authorized KMS key, resource.schedule != authorized schedule, resource.scheduleOptions.disableAutoScheduling != authorized autoscheduling status, resource.scheduleOptions.endTime != authorized end time, resource.scheduleOptions.startTime != authorized start time, resource.scheduleOptionsV2.timeBasedSchedule.endTime != authorized end time, resource.scheduleOptionsV2.timeBasedSchedule.schedule != authorized schedule, resource.scheduleOptionsV2.timeBasedSchedule.startTime != authorized start time, resource.scheduleOptionsV2.eventDrivenSchedule.pubsubSubscription != authorized Pub/Sub subscription, resource.notificationPubsubTopic != authorized Pub/Sub topic, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a transfer with an unauthorized key or create/update a transfer with an unauthorized schedule; it should be denied.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C137, depends on Bigquery.C66] Protect the network attachments used with private database sources, using the Compute Engine ThreatModel.	Request how the Compute Engine ThreatModel is applied to protect network attachments used with private database sources.	High	Bigquery.FC4	Bigquery.T13 (Medium)	Low

Use authorized User-Defined Functions [Bigquery.CO23]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C70] Maintain a list of authorized Cloud Storage buckets to be used with query jobs for User-Defined Functions (UDFs).	Request the list of Cloud Storage buckets used with query jobs for User-Defined Functions (UDFs).	High	Bigquery.FC2	Bigquery.T8 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C71, depends on Bigquery.C70, assured by Bigquery.C72] Ensure each query uses an authorized Cloud Storage bucket for a UDF.	Request 1) the mechanism ensuring queries use an authorized Cloud Storage bucket for UDFs, 2) its records of execution for all new UDFs, and 3) the plan to move any older UDFs.	Medium	Bigquery.FC2	Bigquery.T8 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C72] Verify each query uses an authorized Cloud Storage bucket for its UDF.	For a UDF, use an unauthorized bucket; it should be detected.	Medium	Bigquery.FC2	-	Medium
Directive (COSO)	[Bigquery.C73, depends on Bigquery.C70] Protect the Cloud Storage buckets used for storing UDFs	Request how the Cloud Storage ThreatModel is applied to	High	Bigquery.FC2	Bigquery.T8 (Medium)	Low

Protect (NIST CSF)	using Cloud Storage ThreatModel.	buckets used for storing UDFs.				

Enforce secure SDLC processes on routines and queries [Bigquery.CO24]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C74] Enforce secure SDLC processes on routines (e.g., using source control, static analysis, dynamic analysis, peer review).	Request the process and records of enforcing the SDLC process on routines to ensure the review of their code.	Medium	Bigquery.FC2	Bigquery.T8 (High)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C122] Enforce secure SDLC processes on queries (e.g., using source control, static analysis, dynamic analysis, and peer review).	Request 1) the processes and records of enforcing a secure SDLC on queries, 2) the records of execution for all new queries, and 3) the plan to move any older queries.	Medium	Bigquery.FC1	Bigquery.T9 (High)	High

Set an authorized expiration time for each ML model [Bigquery.CO25]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C78] Define the authorized expiration time for each ML model.	Request the authorized expiration time for each ML model.	Low	Bigquery.FC6	Bigquery.T22 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C79, depends on Bigquery.C78, assured by Bigquery.C80] Ensure the expiration time for each ML model is authorized.	Request the mechanism ensuring the expiration time for each ML model is authorized, and the evidence of its execution.	High	Bigquery.FC6	Bigquery.T22 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C80] Verify all ML models have an authorized expiration time.	Create an ML model with an unauthorized expiration time; it should be detected.	High	Bigquery.FC6	-	Medium

Use fingerprinting for ML models to ensure their integrity [Bigquery.CO26]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C89] Define the requirements for generating, embedding, storing, accessing, updating, revoking, and destroying fingerprints for ML models as per the security requirements.	Request the requirements for generating, embedding, storing, accessing, updating, revoking, and destroying fingerprints for ML models, their review process, and its review records.	Medium	Bigquery.FC6	Bigquery.T4 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C90, depends on Bigquery.C89, assured by Bigquery.C91] Ensure the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements.	Request 1) the mechanism ensuring the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements, 2) their records of execution for all new keys, and 3) the plan to move any older keys.	Medium	Bigquery.FC6	Bigquery.T4 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C91] Verify the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements.	1) Generate, 2) embed, 3) store, 4) access, 5) update, 6) revoke, or 7) destroy a fingerprint outside the security requirements; it should be detected.	High	Bigquery.FC6	-	Medium

Ensure sensitive data is not added in the listing fields [Bigquery.CO27]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C101, assured by Bigquery.C102] Ensure no sensitive data is included in the fields of the listings (i.e., displayName, description, documentation, icon).	Request the mechanism ensuring sensitive data is not included in the fields of listings, and the evidence of its execution.	Medium	Bigquery.FC9	Bigquery.T31 (Medium)	Very Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C102] Verify no sensitive data is included in the fields of listings.	Add sensitive data to a field of a listing; it should be detected.	High	Bigquery.FC9	-	Very Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C110, depends on Bigquery.C22] Maintain a list of authorized emails or URLs (i.e., primaryContact, requestAccess, dataProvider, or publisher) to be used by listings and data exchanges.	Request the list of all authorized emails to be used by listings and data exchanges, its review process, and its review records.	High	Bigquery.FC9	Bigquery.T30 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C111, depends on Bigquery.C110, assured by Bigquery.C112] Ensure listings and data exchanges use authorized emails.	Request 1) the mechanism ensuring only authorized emails are configured, 2) its records of execution for all new emails, and 3) the plan to move any older emails.	Medium	Bigquery.FC9	Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C112] Verify listings and data exchanges use authorized emails.	For a listing or data exchange, use an unauthorized email; it should be detected.	Medium	Bigquery.FC9	-	Medium

Enforce access to sensitive data via data clean rooms [Bigquery.CO28]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C92] Define the requirements to configure a data exchange as a data clean room (e.g., sharing sensitive data with 3rd parties).	Request the requirements to configure a data exchange as a data clean room, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C93, depends on Bigquery.C92, assured by Bigquery.C94] Ensure required data exchanges are configured as data clean rooms (i.e., sharingEnvironmentConfig.dcrExchangeConfig).	Request 1) the mechanism ensuring required data exchanges are configured as data clean rooms, 2) its records of execution for all new data exchanges, and 3) the plan to move any older data exchanges.	Medium	Bigquery.FC9	Bigquery.T28 (High) Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C94] Verify all required data exchanges are configured as data clean rooms.	Configure a data exchange required to be a data clean room as a non-data clean room; it should be detected.	Low	Bigquery.FC9	-	Medium

Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO29]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C103, depends on Bigquery.C22] Maintain the list of authorized subscriptions for each listing and data exchange.	Request the list of authorized subscriptions for each listing and/or data exchange, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T29 (Very Low) Bigquery.T32 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C104, depends on Bigquery.C103, assured by Bigquery.C105] Ensure only authorized subscriptions for listings and data exchanges are configured.	Request 1) the mechanism ensuring only authorized subscriptions for listings and data exchanges are configured, 2) its records of execution for all new listings	Medium	Bigquery.FC9	Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T32 (Medium)	Medium

		and/or data exchanges, and 3) the plan to move any older listings and/or data exchanges.				
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C105] Verify listings and data exchanges have only authorized subscriptions.	1) Add an unauthorized subscription, or 2) remove the authorized subscription from a listing and/or data exchange; it should be detected.	Medium	Bigquery.FC9	-	Medium

Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO30]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C107] Maintain the list of listings and/or data exchanges authorized to be subscribed to, and by whom.	Request the list of listings and data exchanges authorized to be subscribed to and by whom, their review process, and their review records.	Low	Bigquery.FC10	Bigquery.T33 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C108, depends on Bigquery.C107, assured by Bigquery.C109] Ensure only authorized entities you control are subscribed to the authorized listings and data exchanges.	Request 1) the mechanism ensuring only authorized entities you control are subscribed to authorized listings and data exchanges, 2) its records of execution for all new subscriptions on listings or data exchanges, and 3) the plan to move any older subscriptions on listings or data exchanges.	Medium	Bigquery.FC10	Bigquery.T33 (High)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C109] Verify only authorized entities you control are subscribed to authorized listings and data exchanges.	1) Subscribe to an unauthorized listing and/or data exchange with an entity you control, or 2) subscribe with an unauthorized entity you control to a listing or exchange authorized for other entities you control; it should be detected.	Medium	Bigquery.FC10	-	Low

Restrict the export of data by enabling restricted export [Bigquery.CO31]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C113, depends on Bigquery.C22] Define the requirements for enabling restricted export for listings.	Request the requirements for enabling restricted export for listings, their review process, and their review records.	Low	Bigquery.FC9	Bigquery.T30 (Very Low)	Very Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C114, depends on Bigquery.C92, assured by Bigquery.C115] Ensure the restricted export for listings is enabled according to the requirements.	Request 1) the mechanism ensuring only restricted export is configured, 2) its records of execution for all new listings, and 3) the plan to move any older listings.	Medium	Bigquery.FC9	Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C115] Verify the restricted export for listings is enabled according to the requirements.	Enable the restricted export for listings outside the requirements; it should be detected.	High	Bigquery.FC9	-	Medium

Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO32]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C116] Maintain the list of authorized access entities (i.e., role, userByEmail, groupByEmail, domain, specialGroup,	Request the list of authorized access entities of each dataset, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T21 (Very Low)	Medium

	iamMember, view, routine, or dataset) for each dataset.					
Directive (COSO) Protect (NIST CSF)	[Bigquery.C117, depends on Bigquery.C116, assured by Bigquery.C118] Ensure only authorized access entities of each dataset are configured.	Request 1) the mechanism ensuring only authorized access entities of each dataset are configured, 2) its records of execution for all new datasets, and 3) the plan to move any older datasets.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C118] Verify all datasets use their authorized access entity.	1) Allow an unauthorized access entity on a dataset, or 2) remove an authorized access entity on a dataset; it should be detected.	Medium	Bigquery.FC1	-	Medium

Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO33]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Identify (NIST CSF)	[Bigquery.C123] Maintain the list of authorized configuration settings (e.g., default_batch_query_queue_timeout_ms, default_interactive_query_queue_timeout_ms, default_query_job_timeout_ms, enable_fine_grained_dataset_acls_option) for each organization or project.	Request the list of authorized configuration settings for each organization or project, its review process, and its review records.	Low	Bigquery.FC1 Bigquery.FC4	Bigquery.T9 (Very Low) Bigquery.T13 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C124, depends on Bigquery.C123, assured by Bigquery.C125] Ensure only authorized configuration settings for each organization or project are configured.	Request 1) the mechanism ensuring only authorized configuration settings for each organization or project are configured, 2) its records of execution for all new organizations or projects, and 3) the plan to move any older organizations or projects.	Medium	Bigquery.FC1 Bigquery.FC4	Bigquery.T9 (Medium) Bigquery.T13 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C125] Verify all organizations or projects use their authorized configuration settings.	1) Deploy unauthorized configuration settings on an organization or project, or 2) remove authorized configuration settings on an organization or project; it should be detected.	Medium	Bigquery.FC1 Bigquery.FC4	-	Medium

Restrict and manage Gemini in BigQuery projects [Bigquery.CO34]

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C126, depends on Bigquery.C127] Ensure the Cloud AI Companion API is enabled/disabled for the BigQuery project following the Service Usage ThreatModel and is protected using Cloud AI Companion ThreatModel.	Request how the Service Usage ThreatModel and Cloud AI Companion ThreatModel are applied to the Cloud AI Companion API in the BigQuery project.	Medium	Bigquery.FC1	Bigquery.T35 (High)	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C127] Maintain the list of authorized BigQuery projects allowed to use Gemini.	Request the list of authorized BigQuery projects allowed to use Gemini, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T35 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C128, depends on Bigquery.C127, assured by Bigquery.C129] Ensure only authorized BigQuery projects are allowed to use Gemini.	Request 1) the mechanism ensuring only authorized BigQuery projects are allowed to use Gemini, 2) its records of execution for all new BigQuery projects, and 3) the plan to move any older BigQuery projects.	Medium	Bigquery.FC1	Bigquery.T35 (Medium)	Very Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C129] Verify all authorized BigQuery projects are allowed to	1) Enable Gemini in an unauthorized BigQuery project, or 2) disable Gemini from an authorized BigQuery	Medium	Bigquery.FC1	-	Very Low

	use Gemini.	project; it should be detected.				

Compliance Mapping

PCI DSS v4

PCI DSS v4	Control Objectives	Controls				
		Very High	High	Medium	Low	Very Low
1.1	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
1.2	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
1.2.1	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
1.2.3 1.2.4 1.2.5	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100	Bigquery.C113 Bigquery.C128 Bigquery.C129

	[Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects			Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C73 Bigquery.C126 Bigquery.C127	
1.2.6	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
1.2.7	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO7] Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO27] Ensure sensitive data is not added in the listing fields [Bigquery.CO29] Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO30] Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C26 Bigquery.C27 Bigquery.C29 Bigquery.C36 Bigquery.C37 Bigquery.C85 Bigquery.C86 Bigquery.C134 Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49	Bigquery.C28 Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C107 Bigquery.C108 Bigquery.C109 Bigquery.C126 Bigquery.C127	Bigquery.C101 Bigquery.C102 Bigquery.C113 Bigquery.C128 Bigquery.C129

				Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C110 Bigquery.C111 Bigquery.C112 Bigquery.C103 Bigquery.C104 Bigquery.C105 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125		
1.2.8	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
1.2.10	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73	-

				Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C123 Bigquery.C124 Bigquery.C125		
1.3	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
1.3.1 1.3.2 1.3.3 1.4 1.4.1 1.4.2 1.4.3 1.4.5	[Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
1.5 1.5.1 2.2.1	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
2.3	[Bigquery.CO7] Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys	-	-	Bigquery.C26 Bigquery.C27 Bigquery.C29 Bigquery.C36 Bigquery.C37 Bigquery.C85 Bigquery.C86 Bigquery.C134	Bigquery.C28	-
2.3.2	[Bigquery.CO18] Limit the amount of cloned data	-	-	Bigquery.C92	Bigquery.C50	-

3.3.2	[Bigquery.CO28] Enforce access to sensitive data via data clean rooms			Bigquery.C93 Bigquery.C94	Bigquery.C51 Bigquery.C52	
3.4.1	[Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO9] De-identify sensitive data using Cloud DLP [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO27] Ensure sensitive data is not added in the listing fields [Bigquery.CO28] Enforce access to sensitive data via data clean rooms	-	Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C20 Bigquery.C21 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C110 Bigquery.C111 Bigquery.C112 Bigquery.C92 Bigquery.C93 Bigquery.C94	-	Bigquery.C101 Bigquery.C102
3.5.1	[Bigquery.CO7] Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys	-	-	Bigquery.C26 Bigquery.C27 Bigquery.C29 Bigquery.C36 Bigquery.C37 Bigquery.C85 Bigquery.C86 Bigquery.C134	Bigquery.C28	-
3.5.1.1 3.5.1.2 3.5.1.3 3.6.1 3.6.1.1 3.6.1.2 3.6.1.3 3.6.1.4 3.7.1 3.7.2 3.7.3 3.7.4 3.7.5 3.7.6 3.7.7 3.7.9 4.2.1.1	[Bigquery.CO24] Enforce secure SDLC processes on routines and queries	-	Bigquery.C122	Bigquery.C74	-	-
6.2 6.2.1 6.2.2 6.2.3 6.2.4	[Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97	Bigquery.C113 Bigquery.C128 Bigquery.C129

6.5.5	[Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects		Bigquery.C40 Bigquery.C122	Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	
6.5.6	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73	-

				Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C123 Bigquery.C124 Bigquery.C125		
7.1 7.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO29] Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO30] Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C103 Bigquery.C104 Bigquery.C105 Bigquery.C114 Bigquery.C115 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C107 Bigquery.C108 Bigquery.C109	Bigquery.C113
7.2.1 7.2.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations,	Bigquery.C15 Bigquery.C16	Bigquery.C1 Bigquery.C6	Bigquery.C18 Bigquery.C19	Bigquery.C76 Bigquery.C77	-

	assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C60	Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40	Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73	
7.2.3	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO17] Register BigQuery models as per the requirements	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	Bigquery.C47 Bigquery.C48 Bigquery.C49	-	-
7.2.4	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO29] Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO30] Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C2 Bigquery.C121	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C103 Bigquery.C104 Bigquery.C105 Bigquery.C114	Bigquery.C107 Bigquery.C108 Bigquery.C109	Bigquery.C113

				Bigquery.C115 Bigquery.C123 Bigquery.C124 Bigquery.C125		
7.2.5	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO29] Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO30] Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C2 Bigquery.C121	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C88 Bigquery.C103 Bigquery.C104 Bigquery.C105 Bigquery.C114 Bigquery.C115 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C41 Bigquery.C42 Bigquery.C65 Bigquery.C87 Bigquery.C107 Bigquery.C108 Bigquery.C109	Bigquery.C113
7.2.6	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73	-

				Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C123 Bigquery.C124 Bigquery.C125		
7.3 7.3.1 7.3.2 7.3.3	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46	-	-
8.1 8.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO17] Register BigQuery models as per the requirements	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C47 Bigquery.C48 Bigquery.C49	-	-
8.2.2	[Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46	-	-
8.2.3	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO17] Register BigQuery models as per the requirements	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C47 Bigquery.C48 Bigquery.C49	-	-
8.2.4 8.2.6	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46	-	-

8.3	[Bigquery.CO7] Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C26 Bigquery.C27 Bigquery.C29 Bigquery.C36 Bigquery.C37 Bigquery.C85 Bigquery.C86 Bigquery.C134 Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C28 Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
8.3.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46	-	-
8.3.3	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	-	-	-

8.3.8	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46	-	-
8.3.9	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO17] Register BigQuery models as per the requirements	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C47 Bigquery.C48 Bigquery.C49	-	-
8.3.10	[Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
8.5	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45	-	-

			Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C46		
8.5.1	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO17] Register BigQuery models as per the requirements [Bigquery.CO29] Restrict access to listings and data exchanges to authorized subscribers only [Bigquery.CO30] Restrict and manage subscriptions to authorized listings and data exchanges only [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels	Bigquery.C2 Bigquery.C121	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C103 Bigquery.C104 Bigquery.C105 Bigquery.C114 Bigquery.C115 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C107 Bigquery.C108 Bigquery.C109	Bigquery.C113
8.6 8.6.1	[Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO9] De-identify sensitive data using Cloud DLP [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO27] Ensure sensitive data is not added in the listing fields [Bigquery.CO28] Enforce access to sensitive data via data clean rooms	-	Bigquery.C9 Bigquery.C12 Bigquery.C13 Bigquery.C14	Bigquery.C10 Bigquery.C11 Bigquery.C44 Bigquery.C45 Bigquery.C46 Bigquery.C20 Bigquery.C21 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C110 Bigquery.C111 Bigquery.C112 Bigquery.C92 Bigquery.C93 Bigquery.C94	-	Bigquery.C101 Bigquery.C102
9.4 9.4.1	[Bigquery.CO3] Ensure backup, failover, and recovery capabilities for BigQuery resources (e.g., snapshots and exports for datasets and tables, failover procedures for reservations)	-	-	Bigquery.C3 Bigquery.C4 Bigquery.C5	Bigquery.C130 Bigquery.C131	Bigquery.C132
9.4.1.1 9.4.1.2	[Bigquery.CO5] Restrict access to columns and protect sensitive data [Bigquery.CO6] Restrict access to rows with BigQuery row-level security [Bigquery.CO18] Limit the amount of cloned data	-	Bigquery.C9 Bigquery.C12 Bigquery.C13	Bigquery.C10 Bigquery.C11 Bigquery.C44	Bigquery.C50 Bigquery.C51 Bigquery.C52	Bigquery.C101 Bigquery.C102

	[Bigquery.CO27] Ensure sensitive data is not added in the listing fields		Bigquery.C14	Bigquery.C45 Bigquery.C46 Bigquery.C110 Bigquery.C111 Bigquery.C112		
9.4.2	[Bigquery.CO12] Set the expiration time of BigQuery tables as per the requirements [Bigquery.CO25] Set an authorized expiration time for each ML model	-	-	Bigquery.C32 Bigquery.C33 Bigquery.C34 Bigquery.C136 Bigquery.C78 Bigquery.C79 Bigquery.C80	-	-
9.4.7	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C88 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C41 Bigquery.C42 Bigquery.C65 Bigquery.C87 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
10.2 10.2.1 10.2.1.1	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO10] Secure the authorized sources and destinations used for datasets, tables, models, connections, jobs, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO17] Register BigQuery models as per the requirements	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C41 Bigquery.C42	Bigquery.C113 Bigquery.C128 Bigquery.C129

	[Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects		Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C106 Bigquery.C133 Bigquery.C22 Bigquery.C23 Bigquery.C24 Bigquery.C25 Bigquery.C135 Bigquery.C88 Bigquery.C47 Bigquery.C48 Bigquery.C49 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C65 Bigquery.C87 Bigquery.C73 Bigquery.C126 Bigquery.C127	
10.2.1.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C88 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C41 Bigquery.C42 Bigquery.C65 Bigquery.C87 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129

				Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125		
10.2.1.3 10.2.1.4 10.2.1.5 10.2.1.6 10.2.1.7 10.2.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO15] Enable logs for BigQuery Data Transfer	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	Bigquery.C88	Bigquery.C41	-
10.3.3 10.4 10.4.1 10.4.1.1	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84 Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C88 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C41 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
10.6 10.6.1 10.6.2 10.6.3	[Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export	Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73	Bigquery.C113 Bigquery.C128 Bigquery.C129

	[Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects			Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C126 Bigquery.C127	
10.7 10.7.1 10.7.2 10.7.3	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls [Bigquery.CO8] Enforce authorized configurations on BigQuery datasets, tables, reservations, assignments, asynchronous query jobs, BigQuery sharing's data exchanges, and listings [Bigquery.CO14] Limit use of BigQuery Omni [Bigquery.CO19] Enforce authorized configurations on jobs [Bigquery.CO21] Use authorized metadata caching [Bigquery.CO23] Use authorized User-Defined Functions [Bigquery.CO24] Enforce secure SDLC processes on routines and queries [Bigquery.CO31] Restrict the export of data by enabling restricted export [Bigquery.CO32] Enforce authorized access entities only, change management, and secure decommissioning on datasets [Bigquery.CO33] Define and enforce BigQuery configuration baselines at the organization and project levels [Bigquery.CO34] Restrict and manage Gemini in BigQuery projects	Bigquery.C2 Bigquery.C121 Bigquery.C15 Bigquery.C16 Bigquery.C60	Bigquery.C17 Bigquery.C75 Bigquery.C81 Bigquery.C38 Bigquery.C39 Bigquery.C40 Bigquery.C122	Bigquery.C18 Bigquery.C19 Bigquery.C61 Bigquery.C62 Bigquery.C63 Bigquery.C64 Bigquery.C82 Bigquery.C83 Bigquery.C98 Bigquery.C106 Bigquery.C133 Bigquery.C53 Bigquery.C54 Bigquery.C55 Bigquery.C57 Bigquery.C58 Bigquery.C59 Bigquery.C70 Bigquery.C71 Bigquery.C72 Bigquery.C74 Bigquery.C114 Bigquery.C115 Bigquery.C116 Bigquery.C117 Bigquery.C118 Bigquery.C123 Bigquery.C124 Bigquery.C125	Bigquery.C76 Bigquery.C77 Bigquery.C95 Bigquery.C96 Bigquery.C97 Bigquery.C99 Bigquery.C100 Bigquery.C73 Bigquery.C126 Bigquery.C127	Bigquery.C113 Bigquery.C128 Bigquery.C129
11.2	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2	-	-	-	-

		Bigquery.C121				
11.2.1 11.2.2 11.4.5 11.4.6 11.5.1	[Bigquery.CO15] Enable logs for BigQuery Data Transfer [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO20] Monitor abnormal performance of queries	-	-	Bigquery.C88 Bigquery.C56	Bigquery.C41 Bigquery.C42 Bigquery.C65 Bigquery.C87	-
11.5.1.1	[Bigquery.CO7] Encrypt resources (e.g., datasets, models, data transfers) with customer-managed encryption keys and protect the keys	-	-	Bigquery.C26 Bigquery.C27 Bigquery.C29 Bigquery.C36 Bigquery.C37 Bigquery.C85 Bigquery.C86 Bigquery.C134	Bigquery.C28	-
12.3.3	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
12.5.2	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO15] Enable logs for BigQuery Data Transfer	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	Bigquery.C88	Bigquery.C41	-
12.10.5	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO20] Monitor abnormal performance of queries	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	Bigquery.C56	Bigquery.C42 Bigquery.C65 Bigquery.C87	-
15.1	[Bigquery.CO2] Enforce network-level restrictions leveraging VPC origin and VPC Service Controls	Bigquery.C2 Bigquery.C121	-	-	-	-
A1.1.4 A3.2.1 A3.2.4	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks [Bigquery.CO16] Monitor data protection, data ingestion, and data quality [Bigquery.CO20] Monitor abnormal performance of queries	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	Bigquery.C56	Bigquery.C42 Bigquery.C65 Bigquery.C87	-
A3.2.6.1	[Bigquery.CO1] Limit access to the IAM actions required to execute attacks	-	Bigquery.C1 Bigquery.C6 Bigquery.C7 Bigquery.C8 Bigquery.C84	-	-	-

Appendixes

Appendix 1 - Prioritized list for control implementation

Type	Control	Testing	Effort	Feature Class(es)	Threat(s) and Impact	CVSS-weighted Priority
Directive (COSO) Protect (NIST CSF)	[Bigquery.C2] Enforce VPC origin (e.g., using DNS redirection on a VPC-based proxy) following the Compute ThreatModel.	Request how the Compute ThreatModel is applied for enforcing VPC origin.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9	Bigquery.T1 (High) Bigquery.T3 (High) Bigquery.T4 (High) Bigquery.T5 (High) Bigquery.T6 (High) Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T10 (High) Bigquery.T11 (High) Bigquery.T12 (High) Bigquery.T13 (High) Bigquery.T14 (High) Bigquery.T17 (High) Bigquery.T18 (High) Bigquery.T19 (High) Bigquery.T20 (High) Bigquery.T21 (High) Bigquery.T22 (High) Bigquery.T24 (High) Bigquery.T26 (High) Bigquery.T27 (High) Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T30 (High) Bigquery.T31 (High) Bigquery.T32 (High) Bigquery.T34 (High) Bigquery.T36 (High)	Very High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C121] Enforce VPC Service Controls considering the environment's sensitivity (e.g., Prod vs. Non-Prod) using the Access Context Manager ThreatModel.	Request how the Access Context Manager ThreatModel is applied for enforcing VPC Service Controls.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9	Bigquery.T1 (High) Bigquery.T3 (High) Bigquery.T4 (High) Bigquery.T5 (High) Bigquery.T6 (High) Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T10 (High) Bigquery.T11 (High) Bigquery.T12 (High) Bigquery.T13 (High) Bigquery.T14 (High) Bigquery.T17 (High) Bigquery.T18 (High) Bigquery.T19 (High) Bigquery.T20 (High) Bigquery.T21 (High)	Very High

					Bigquery.T22 (High) Bigquery.T24 (High) Bigquery.T26 (High) Bigquery.T27 (High) Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T30 (High) Bigquery.T31 (High) Bigquery.T32 (High) Bigquery.T34 (High) Bigquery.T36 (High)	
Directive (COSO) Protect (NIST CSF)	[Bigquery.C15, assured by Bigquery.C16] Ensure no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", except if allowed.	Request 1) the mechanism ensuring no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers", 2) its records of execution for all datasets, and 3) the plan to move any older datasets.	Low	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (High) Bigquery.T9 (High)	Very High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C16] Verify no dataset is accessible to "AllUsers" or "AllAuthenticatedUsers" (e.g., using the Security Command Center finding PUBLIC_DATASET).	Modify a dataset to allow access to 1) "AllUsers", or 2) "AllAuthenticatedUsers"; it should be detected.	Very Low	Bigquery.FC1 Bigquery.FC2	-	Very High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C60] Define the authorized configuration for each reservation (i.e., maxSlots, edition, ignoreIdleSlots, autoscale, secondaryLocation) and its assignments (i.e., assignee, jobType).	Request the authorized configuration for each reservation and its assignments.	Low	Bigquery.FC1 Bigquery.FC5	Bigquery.T9 (Very Low) Bigquery.T12 (Very Low)	Very High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C1] Limit the access to the IAM actions required to perform attacks, following the IAM Operating Model and using the IAM ThreatModel.	Request the list of authorized IAM members that have the permissions required to launch attacks, its review process, and its review records.	High	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC4 Bigquery.FC5 Bigquery.FC6 Bigquery.FC7 Bigquery.FC8 Bigquery.FC9 Bigquery.FC10	Bigquery.T1 (Very High) Bigquery.T2 (Very High) Bigquery.T3 (Very High) Bigquery.T4 (Very High) Bigquery.T5 (Very High) Bigquery.T6 (Very High) Bigquery.T8 (Very High) Bigquery.T9 (Very High) Bigquery.T10 (Very High) Bigquery.T11 (Very High) Bigquery.T12 (Very High) Bigquery.T13 (Very High) Bigquery.T14 (Very High) Bigquery.T15 (Very High) Bigquery.T17 (Very High) Bigquery.T18 (Very High) Bigquery.T19 (Very High) Bigquery.T20 (Very High) Bigquery.T21 (Very High) Bigquery.T22 (Very High) Bigquery.T24 (Very High) Bigquery.T25 (Very High) Bigquery.T26 (Very High) Bigquery.T27 (Very High) Bigquery.T28 (Very High) Bigquery.T29 (Very High) Bigquery.T30 (Very High) Bigquery.T31 (Very High) Bigquery.T32 (Very High)	High

					Bigquery.T33 (Very High) Bigquery.T34 (Very High) Bigquery.T35 (Very High) Bigquery.T36 (Very High)	
Directive (COSO) Identify (NIST CSF)	[Bigquery.C6] Maintain a list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset (note: columns can be made case-sensitive, and a default value can be set for columns).	Request the list of authorized IAM entities allowed to access the tables, views, and table data in a specific dataset, its review process, and its review records.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	Bigquery.T2 (Very Low) Bigquery.T3 (Very Low) Bigquery.T5 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T11 (Very Low) Bigquery.T21 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C7, depends on Bigquery.C6, assured by Bigquery.C8] Ensure only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access the tables, views, and table data in a specific dataset, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T5 (High) Bigquery.T6 (High) Bigquery.T8 (High) Bigquery.T9 (High) Bigquery.T11 (High) Bigquery.T21 (Medium)	High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C8] Verify only authorized IAM entities are allowed to access the tables, views, and table data in each dataset.	Configure an unauthorized IAM entity to have access to 1) a table or 2) a view; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3	-	High
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C84, depends on Bigquery.C81,Bigquery.C75,Bigquery.C60,Bigquery.C17] Prevent the unauthorized access/creation/modification/deletion of BigQuery resources (e.g., datasets, tables) (e.g., by using an IAM policy with an allow/deny statement on "bigquery.tables.*" and/or "bigquery.datasets.*" with the tags and the authorized value for the conditions "resource.type" = "authorized type", "resource.name" = "authorized name").	Create/update/delete an unauthorized BigQuery resource; it should be denied.	Low	Bigquery.FC1 Bigquery.FC5	Bigquery.T1 (High) Bigquery.T5 (High) Bigquery.T12 (High) Bigquery.T21 (High)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C9] Define the criteria for the sensitivity of columns in each table and each view, and their requirements for data protection (e.g., using BigQuery column-level security, column-level data masking, custom masking routines, restriction analysis rules, list overlap analysis rules, aggregation threshold analysis rules, differential privacy clauses, or data clean rooms).	Request the criteria for the sensitivity of columns in a table and each view and their requirements for data protection.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T26 (Very Low) Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C12] Define the criteria for the sensitivity of rows in each table.	Request the criteria for the sensitivity of rows in a table.	Very Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T6 (Very Low) Bigquery.T8 (Very Low) Bigquery.T9 (Very Low) Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C13, depends on Bigquery.C12, assured by Bigquery.C14] Ensure only authorized IAM entities are allowed to access sensitive rows of a table (e.g., using BigQuery row-level security).	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive rows of a table, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (Medium) Bigquery.T6 (High) Bigquery.T8 (Medium) Bigquery.T9 (High) Bigquery.T28 (Medium)	High

					Bigquery.T30 (Medium)	
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C14] Verify only authorized IAM entities are allowed to access sensitive rows of a table.	Configure an unauthorized IAM entity with access to a sensitive row; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	-	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C17] Define the authorized configuration (i.e., defaultTableExpirationMs, defaultPartitionExpirationMs, defaultEncryptionConfiguration, linkedDatasetSource, externalDatasetReference, defaultCollation, defaultRoundingMode, maxTimeTravelHours, storageBillingModel, and defaultEncryptionConfiguration) for each BigQuery dataset.	Request the authorized configuration for each BigQuery dataset, its review process, and its review records.	Low	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (Very Low) Bigquery.T11 (Very Low) Bigquery.T21 (Very Low) Bigquery.T25 (Very Low)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C75] Define the authorized configuration (e.g., createDisposition, writeDisposition, schemaUpdateOptions) for each asynchronous query job.	Request the authorized configuration for each asynchronous query job, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T20 (Very Low)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C81] Define the authorized configuration (i.e., schema, clustering, expirationTime, view, materializedView, externalDataConfiguration, encryptionConfiguration, defaultCollation, defaultRoundingMode, and tableConstraints) for each BigQuery table.	Request the authorized configuration for each BigQuery table, its review process, and its review records.	Medium	Bigquery.FC1	Bigquery.T1 (Very Low) Bigquery.T5 (Very Low) Bigquery.T25 (Very Low)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C38] Define the requirements for using BigQuery Omni (AWS and/or Azure).	Request the requirements for the use of BigQuery Omni.	Low	Bigquery.FC3 Bigquery.FC5	Bigquery.T15 (Very Low) Bigquery.T36 (Very Low)	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C39, depends on Bigquery.C38, assured by Bigquery.C40] Ensure the use of BigQuery Omni as per the requirements (e.g., using organizational constraints constraints/bigquery.disableBQOmniAWS and constraints/bigquery.disableBQOmniAzure).	Request the implementation to ensure the use of BigQuery Omni as per the requirements and its records of execution.	Medium	Bigquery.FC3 Bigquery.FC5	Bigquery.T15 (Very High) Bigquery.T36 (Very Low)	High
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C40] Verify the use of BigQuery Omni as per the requirements.	Use BigQuery Omni outside the requirements; it should be detected.	Low	Bigquery.FC3 Bigquery.FC5	-	High
Directive (COSO) Protect (NIST CSF)	[Bigquery.C122] Enforce secure SDLC processes on queries (e.g., using source control, static analysis, dynamic analysis, and peer review).	Request 1) the processes and records of enforcing a secure SDLC on queries, 2) the records of execution for all new queries, and 3) the plan to move any older queries.	Medium	Bigquery.FC1	Bigquery.T9 (High)	High
Directive (COSO) Identify (NIST CSF)	[Bigquery.C3] Define the requirements for the backup of each BigQuery dataset, table, and model.	Request the backup requirements for each BigQuery dataset, table, and model.	Low	Bigquery.FC1 Bigquery.FC6 Bigquery.FC7	Bigquery.T1 (Very Low) Bigquery.T14 (Very Low) Bigquery.T21 (Very Low) Bigquery.T22 (Very Low) Bigquery.T27 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C4, depends on Bigquery.C3, assured by Bigquery.C5] Ensure each BigQuery dataset, table, and model is backed up (e.g., by creating snapshots or exports) according to the requirements and is restorable.	Request the mechanism ensuring BigQuery datasets, tables, and models are backed up (e.g., by creating snapshots or exports) according to their requirements, the evidence of their execution, and their regular testing of restoration.	High	Bigquery.FC1 Bigquery.FC6 Bigquery.FC7	Bigquery.T1 (High) Bigquery.T14 (High) Bigquery.T21 (High) Bigquery.T22 (High) Bigquery.T27 (High)	Medium
Assurance (COSO)	[Bigquery.C5]	Change the backup mechanism to be outside the	High	Bigquery.FC1	-	Medium

Detect (NIST CSF)	Verify all BigQuery datasets, tables, and models are backed up according to the requirements.	requirements; it should be detected.		Bigquery.FC6 Bigquery.FC7		
Directive (COSO) Protect (NIST CSF)	[Bigquery.C10, depends on Bigquery.C9, assured by Bigquery.C11] Ensure only authorized IAM entities are allowed to access sensitive columns of tables and views.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive columns of tables and views, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T6 (High) Bigquery.T8 (Medium) Bigquery.T9 (Medium) Bigquery.T26 (Medium) Bigquery.T28 (Medium) Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C11] Verify only authorized IAM entities are allowed to access sensitive columns of each table and each view.	Configure an unauthorized IAM entity with access to a sensitive column; it should be detected.	Low	Bigquery.FC1 Bigquery.FC2 Bigquery.FC3 Bigquery.FC9	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C44] Define the criteria to use authorized data policies for each column in each table.	Request the criteria for using data policies for each column in each table.	Very Low	Bigquery.FC3 Bigquery.FC8	Bigquery.T2 (Very Low) Bigquery.T17 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C45, depends on Bigquery.C44, assured by Bigquery.C46] Ensure only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	Request 1) the mechanism ensuring only authorized IAM entities are allowed to access sensitive columns of a table with data policies, 2) its records of execution for all new IAM entities, and 3) the plan to move any older IAM entities.	Medium	Bigquery.FC3 Bigquery.FC8	Bigquery.T2 (Medium) Bigquery.T17 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C46] Verify only authorized IAM entities are allowed to access sensitive columns of a table by using data policies.	Configure an unauthorized IAM entity with access to a sensitive column in a data policy; it should be detected.	Low	Bigquery.FC3 Bigquery.FC8	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C26] Maintain a list of authorized CMEKs to be used with each BigQuery resource (e.g., dataset, DLP function, model, data transfer), ideally dedicated (e.g., using Autokey on bigquery.googleapis.com/Dataset), and of the default CMEK at the project or organization level, and define the requirement to rotate key versions for tables.	Request the list of authorized CMEKs and their versions to be used by the BigQuery resource and the default CMEK per project or at the organization level, and the requirement to rotate key versions for tables, their review process, and their review records.	Very Low	Bigquery.FC1	Bigquery.T11 (Very Low) Bigquery.T20 (Very Low) Bigquery.T21 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C27, depends on Bigquery.C26, assured by Bigquery.C29] Ensure only authorized CMEKs and their versions are used with the BigQuery resource.	Request 1) the mechanism ensuring only authorized CMEKs are configured, 2) its records of execution for all new BigQuery resources, and 3) the plan to move any older BigQuery resources.	Medium	Bigquery.FC1	Bigquery.T11 (Medium) Bigquery.T20 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C29] Verify each BigQuery resource is encrypted using an authorized CMEK and its version.	Use an unauthorized 1) CMEK or a 2) version with a BigQuery resource; it should be detected.	Low	Bigquery.FC1	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C36, depends on Bigquery.C26, assured by Bigquery.C37] Ensure AEAD encryption functions are used to encrypt data at the column level.	Request the mechanism ensuring AEAD encryption functions are used to encrypt data at the column level.	Medium	Bigquery.FC1	Bigquery.T11 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C37] Verify AEAD encryption functions are used to encrypt data at the column level.	Do not encrypt the data at the column level; it should be detected.	Low	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C85, depends on Bigquery.C26] Define the requirements for generating, storing, accessing, distributing, rotating, backing up, and destroying encryption keys for applications (e.g., by using a dedicated secret management tool such as HashiCorp Vault or GCP Secret Manager) as per the	Request the requirements for generating, storing, accessing, distributing, using, rotating, backing up, and destroying keys for applications, their review process, and its review records.	Medium	Bigquery.FC1	Bigquery.T20 (Very Low)	Medium

	security standards.					
Directive (COSO) Protect (NIST CSF)	[Bigquery.C86, depends on Bigquery.C85,Bigquery.C26] Ensure the keys for applications are generated, stored, accessed, distributed, rotated, backed up, and destroyed as per the security standards.	Request 1) the mechanism ensuring the keys for applications are generated, stored, accessed, distributed, rotated, backed up, and destroyed as per the security standards, 2) its records of execution for all new keys, and 3) the plan to move any older keys.	Medium	Bigquery.FC1	Bigquery.T20 (High)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C134, depends on Bigquery.C26] Prevent the creation of a dataset without an authorized key (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultEncryptionConfiguration.kmsKeyName != an authorized encryption key, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a dataset with unauthorized key; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C18, depends on Bigquery.C17, assured by Bigquery.C19] Ensure the configuration of each BigQuery dataset is authorized.	Request the mechanism ensuring the configuration of each BigQuery dataset is authorized, and the evidence of its execution.	High	Bigquery.FC1 Bigquery.FC2	Bigquery.T8 (High) Bigquery.T11 (High) Bigquery.T21 (High) Bigquery.T25 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C19] Verify all BigQuery datasets have authorized configurations.	Create a dataset with an unauthorized configuration; it should be detected.	High	Bigquery.FC1 Bigquery.FC2	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C61, depends on Bigquery.C60, assured by Bigquery.C62] Ensure each reservation and its assignments use an authorized configuration.	Request the mechanism ensuring the reservation and its assignments use an authorized configuration, and the evidence of its execution.	High	Bigquery.FC5	Bigquery.T12 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C62] Verify all reservations and their assignments use an authorized configuration.	Use an unauthorized configuration with 1) a reservation, or 2) an assignment; it should be detected.	High	Bigquery.FC5	-	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C63, depends on Bigquery.C60] Monitor the creation/modification of unauthorized reservations (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateReservation" and "google.cloud.bigquery.reservation.v1.ReservationService.UpdateReservation", and their fields request.reservation.autoscale.maxSlots and request.reservation.edition).	Create/update the reservation with unauthorized values; it should be detected.	Medium	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C64, depends on Bigquery.C60] Monitor the creation/modification of unauthorized assignments (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.CreateAssignment" and its fields request.assignment.assignee, request.assignment.jobType, and request.parent, and event "google.cloud.bigquery.reservation.v1.ReservationService.UpdateAssignment" and its fields request.assignment.assignee and request.assignment.jobType).	Create/update the assignment with unauthorized values; it should be detected.	Medium	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C82, depends on Bigquery.C81, assured by Bigquery.C83] Ensure the configuration of each BigQuery table is authorized.	Request the mechanism ensuring the configuration of each BigQuery table is authorized, and the evidence of its execution.	High	Bigquery.FC1	Bigquery.T1 (Low) Bigquery.T5 (Medium) Bigquery.T25 (High)	Medium

Assurance (COSO) Detect (NIST CSF)	[Bigquery.C83] Verify all BigQuery tables have authorized configurations.	Create a table with an unauthorized configuration; it should be detected.	High	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C98] Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, RestrictedExportConfig, logLinkedDatasetQueryUserEmail = true) for each listing and identify the requirements for deploying a public listing.	Request the authorized configuration for each listing and requirement for its discovery type, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T30 (Very Low) Bigquery.T31 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C106, depends on Bigquery.C98] Protect the Pub/Sub topic used by a listing, using the Pub/Sub ThreatModel.	Request how the Pub/Sub ThreatModel is applied to topics used by a listing.	High	Bigquery.FC9	Bigquery.T30 (High)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C133, depends on Bigquery.C17] Prevent the creation/update of a dataset without an authorized configuration (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultCollation != an authorized collation, resource.defaultRoundingMode != an authorized rounding mode, resource.maxTimeTravelHours != an authorized time travel window, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create or update a dataset with unauthorized configuration; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C20, assured by Bigquery.C21] Ensure sensitive data is identified and redacted (e.g., using Cloud DLP).	Request the mechanism to identify and redact sensitive data.	High	Bigquery.FC1	Bigquery.T6 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C21] Verify sensitive data is identified and redacted (e.g., using Cloud DLP).	Add non-redacted sensitive data; it should be detected.	High	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C22] Maintain a list of authorized sources and destinations (e.g., Cloud Storage, BigQuery, Vertex AI (for LLM, via BigQuery connection only)) to be used with each dataset, table, model, connection, job, and listing.	Request the list of all authorized sources and destinations to be used with each dataset, table, model, connection, job, and listing, its review process, and its review records.	High	Bigquery.FC1 Bigquery.FC3 Bigquery.FC6 Bigquery.FC9	Bigquery.T2 (Very Low) Bigquery.T3 (Very Low) Bigquery.T6 (Very Low) Bigquery.T15 (Very Low) Bigquery.T18 (Very Low) Bigquery.T20 (Very Low) Bigquery.T21 (Very Low) Bigquery.T24 (Very Low) Bigquery.T28 (Very Low) Bigquery.T29 (Very Low) Bigquery.T30 (Very Low) Bigquery.T32 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C23, depends on Bigquery.C22, assured by Bigquery.C24] Ensure each dataset, table, model, connection, job, and listing uses authorized sources and destinations.	Request 1) the mechanism ensuring only authorized sources and destinations are configured, 2) its records of execution for all new sources and destinations, and 3) the plan to move any older sources and destinations.	Medium	Bigquery.FC1 Bigquery.FC3 Bigquery.FC6 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T6 (High) Bigquery.T15 (High) Bigquery.T18 (High) Bigquery.T20 (High) Bigquery.T24 (High) Bigquery.T29 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C24] Verify each dataset, table, model, connection, job, and	For a BigQuery dataset, table, model, connection, job, or listing, use an unauthorized 1) source or 2)	Medium	Bigquery.FC1 Bigquery.FC3	-	Medium

	listing uses authorized sources and destinations.	destination; it should be detected.		Bigquery.FC6 Bigquery.FC9		
Directive (COSO) Protect (NIST CSF)	[Bigquery.C25, depends on Bigquery.C22] Protect the sources and destinations used by each table, model, connection, job, and listing, using their respective services' ThreatModels.	Request how the respective source and destination ThreatModels are applied to BigQuery.	High	Bigquery.FC1 Bigquery.FC3 Bigquery.FC9	Bigquery.T2 (High) Bigquery.T3 (High) Bigquery.T6 (High) Bigquery.T15 (High) Bigquery.T29 (Medium)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C135, depends on Bigquery.C22] Prevent the creation of a dataset without an authorized source (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.linkedDatasetSource.sourceDataset.datasetId != an authorized linked data source, resource.externalDatasetReference != an authorized external dataset reference, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a dataset with an unauthorized source; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C32] Define the requirements for the expiration time of each BigQuery table.	Request the requirements for the expiration time of each BigQuery table.	Low	Bigquery.FC1	Bigquery.T11 (Very Low) Bigquery.T21 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C33, depends on Bigquery.C32, assured by Bigquery.C34] Ensure the expiration time of each BigQuery table is set according to the requirements.	Request the mechanism ensuring the expiration time of each BigQuery table is set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T11 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C34] Verify the expiration time of each BigQuery table is set to its requirements.	Set the expiration time of a BigQuery table to be outside its requirements; it should be detected.	High	Bigquery.FC1	-	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C136, depends on Bigquery.C32] Prevent the creation or update of a dataset without an authorized expiration time (e.g., using a custom constraint resourceType:bigquery.googleapis.com/Dataset, resource(s): resource.defaultTableExpirationMs != an authorized expiration time, resource.defaultPartitionExpirationMs != an authorized partition expiration time, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create or update a dataset with an unauthorized expiration time; it should be denied.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C35] Monitor slot consumption (e.g., using slot recommender), job concurrency, job execution time, job errors, and bytes processed across the entire organization (e.g., using BigQuery Admin Resource Charts).	Create a job and use slots in an abnormal way; it should be detected.	Low	Bigquery.FC5	Bigquery.T12 (Medium)	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C88, depends on Bigquery.C66] Monitor the creation/modification of unauthorized data transfers (e.g., by using Cloud Logging events "google.cloud.bigquery.datatransfer.v1.DataTransferService.CreateTransferConfig" and "google.cloud.bigquery.datatransfer.v1.DataTransferService.UpdateTransferConfig" and their fields request.serviceAccountName, request.transferConfig.dataSourceId, request.transferConfig.destinationDatasetId,	Create/update an unauthorized data transfer; it should be detected.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium

	request.transferConfig.emailPreferences, request.transferConfig.notificationPubsubTopic, and request.transferConfig.schedule).					
Directive (COSO) Identify (NIST CSF)	[Bigquery.C47] Define the requirements to register the BigQuery models with the Vertex AI Model Registry for each BigQuery model.	Request the registration requirements for each BigQuery model.	Low	Bigquery.FC6	Bigquery.T18 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C48, depends on Bigquery.C47, assured by Bigquery.C49] Ensure each BigQuery model is registered with the Vertex AI Model Registry according to its requirements.	Request the mechanism ensuring the BigQuery model is registered according to its requirements, and its records of execution.	High	Bigquery.FC6	Bigquery.T18 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C49] Verify all BigQuery models are registered with the Vertex AI Model Registry according to their requirements.	Register a model with a Vertex AI Model Registry outside the requirements; it should be detected.	High	Bigquery.FC6	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C53] Define the authorized configuration for each job.	Request the authorized configuration for each job, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T19 (Very Low) Bigquery.T26 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C54, depends on Bigquery.C53, assured by Bigquery.C55] Ensure each job uses an authorized configuration.	Request the mechanism ensuring the job uses an authorized configuration and its records of execution.	High	Bigquery.FC1	Bigquery.T19 (High) Bigquery.T26 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C55] Verify all jobs use an authorized configuration.	Use an unauthorized configuration with a job; it should be detected.	High	Bigquery.FC1	-	Medium
Detective (COSO) Detect (NIST CSF)	[Bigquery.C56] Monitor the abnormal behavior, such as unexpected increases in execution time or unusual resource utilization, of a query (e.g., by using the query execution graph or administrative jobs explorer).	Run a query with abnormal behavior; it should be detected.	Low	Bigquery.FC1	Bigquery.T9 (Medium)	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C57] Define the requirements for metadata cache mode and staleness (30 minutes to 7 days) for each external table.	Request the requirements for enabling metadata cache and setting its staleness (30 minutes to 7 days) for each external table.	Low	Bigquery.FC1	Bigquery.T9 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C58, depends on Bigquery.C57, assured by Bigquery.C59] Ensure the metadata cache mode and staleness of each external table are set according to its requirements.	Request the mechanism ensuring the metadata cache mode and staleness of each external table are set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T9 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C59] Verify the metadata cache mode and staleness of each external table are set to their requirements.	Set the metadata cache mode and staleness of an external table outside the requirements; it should be detected.	Medium	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C66] Maintain a list of authorized sources (e.g., Cloud Storage, Amazon S3, Oracle, Salesforce) and their respective authorized configurations (i.e., destination dataset, schedule, config status, encryption key, parameters) to be used with each transfer.	Request the list of all authorized sources and their respective authorized configurations to be used with each transfer, its review process, and its review records.	Low	Bigquery.FC4	Bigquery.T13 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C67, depends on Bigquery.C66, assured by Bigquery.C68] Ensure each transfer uses an authorized source and its authorized configuration.	Request 1) the mechanism ensuring only an authorized source and its authorized configuration are configured, 2) its records of execution for all new sources, and 3) the plan to move any older sources.	Medium	Bigquery.FC4	Bigquery.T13 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C68] Verify each transfer uses an authorized source and its authorized configuration.	For a transfer, 1) use an unauthorized source, 2) remove an authorized source, or 3) use an unauthorized configuration for a source; it should be detected.	Medium	Bigquery.FC4	-	Medium

Preventative (COSO) Protect (NIST CSF)	[Bigquery.C119, depends on Bigquery.C66] Prevent the creation/update of a transfer without an authorized source and/or destination (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataSourceId != an authorized data source, resource.destinationDatasetId != an authorized dataset, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a transfer with an unauthorized 1) data source or create/update with an unauthorized 2) destination dataset; it should be denied.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium
Preventative (COSO) Protect (NIST CSF)	[Bigquery.C120, depends on Bigquery.C66] Prevent the create/update of a transfer without an authorized ingestion (i.e., schedule, refresh window, and status of transfer configuration) (e.g., using a custom constraint resourceType:bigquerydatatransfer.googleapis.com/TransferConfig, resource(s): resource.dataRefreshWindowDays != authorized data refresh window, resource.disabled != authorized config status, resource.emailPreferences.enableFailureEmail != authorized failure email status, resource.encryptionConfiguration.kmsKeyName != authorized KMS key, resource.schedule != authorized schedule, resource.scheduleOptions.disableAutoScheduling != authorized autoscheduling status, resource.scheduleOptions.endTime != authorized end time, resource.scheduleOptions.startTime != authorized start time, resource.scheduleOptionsV2.timeBasedSchedule.endTime != authorized end time, resource.scheduleOptionsV2.timeBasedSchedule.schedule != authorized schedule, resource.scheduleOptionsV2.timeBasedSchedule.startTime != authorized start time, resource.scheduleOptionsV2.eventDrivenSchedule.pubsubSubscription != authorized Pub/Sub subscription, resource.notificationPubsubTopic != authorized Pub/Sub topic, methodTypes="UPDATE" and "CREATE", and actionType="DENY").	Create a transfer with an unauthorized key or create/update a transfer with an unauthorized schedule; it should be denied.	Medium	Bigquery.FC4	Bigquery.T13 (Medium)	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C70] Maintain a list of authorized Cloud Storage buckets to be used with query jobs for User-Defined Functions (UDFs).	Request the list of Cloud Storage buckets used with query jobs for User-Defined Functions (UDFs).	High	Bigquery.FC2	Bigquery.T8 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C71, depends on Bigquery.C70, assured by Bigquery.C72] Ensure each query uses an authorized Cloud Storage bucket for a UDF.	Request 1) the mechanism ensuring queries use an authorized Cloud Storage bucket for UDFs, 2) its records of execution for all new UDFs, and 3) the plan to move any older UDFs.	Medium	Bigquery.FC2	Bigquery.T8 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C72] Verify each query uses an authorized Cloud Storage bucket for its UDF.	For a UDF, use an unauthorized bucket; it should be detected.	Medium	Bigquery.FC2	-	Medium

Directive (COSO) Protect (NIST CSF)	[Bigquery.C74] Enforce secure SDLC processes on routines (e.g., using source control, static analysis, dynamic analysis, peer review).	Request the process and records of enforcing the SDLC process on routines to ensure the review of their code.	Medium	Bigquery.FC2	Bigquery.T8 (High)	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C78] Define the authorized expiration time for each ML model.	Request the authorized expiration time for each ML model.	Low	Bigquery.FC6	Bigquery.T22 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C79, depends on Bigquery.C78, assured by Bigquery.C80] Ensure the expiration time for each ML model is authorized.	Request the mechanism ensuring the expiration time for each ML model is authorized, and the evidence of its execution.	High	Bigquery.FC6	Bigquery.T22 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C80] Verify all ML models have an authorized expiration time.	Create an ML model with an unauthorized expiration time; it should be detected.	High	Bigquery.FC6	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C89] Define the requirements for generating, embedding, storing, accessing, updating, revoking, and destroying fingerprints for ML models as per the security requirements.	Request the requirements for generating, embedding, storing, accessing, updating, revoking, and destroying fingerprints for ML models, their review process, and its review records.	Medium	Bigquery.FC6	Bigquery.T4 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C90, depends on Bigquery.C89, assured by Bigquery.C91] Ensure the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements.	Request 1) the mechanism ensuring the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements, 2) their records of execution for all new keys, and 3) the plan to move any older keys.	Medium	Bigquery.FC6	Bigquery.T4 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C91] Verify the fingerprints for ML models are generated, embedded, stored, accessed, updated, revoked, and destroyed as per the security requirements.	1) Generate, 2) embed, 3) store, 4) access, 5) update, 6) revoke, or 7) destroy a fingerprint outside the security requirements; it should be detected.	High	Bigquery.FC6	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C110, depends on Bigquery.C22] Maintain a list of authorized emails or URLs (i.e., primaryContact, requestAccess, dataProvider, or publisher) to be used by listings and data exchanges.	Request the list of all authorized emails to be used by listings and data exchanges, its review process, and its review records.	High	Bigquery.FC9	Bigquery.T30 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C111, depends on Bigquery.C110, assured by Bigquery.C112] Ensure listings and data exchanges use authorized emails.	Request 1) the mechanism ensuring only authorized emails are configured, 2) its records of execution for all new emails, and 3) the plan to move any older emails.	Medium	Bigquery.FC9	Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C112] Verify listings and data exchanges use authorized emails.	For a listing or data exchange, use an unauthorized email; it should be detected.	Medium	Bigquery.FC9	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C92] Define the requirements to configure a data exchange as a data clean room (e.g., sharing sensitive data with 3rd parties).	Request the requirements to configure a data exchange as a data clean room, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T30 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C93, depends on Bigquery.C92, assured by Bigquery.C94] Ensure required data exchanges are configured as data clean rooms (i.e., sharingEnvironmentConfig.dcrExchangeConfig).	Request 1) the mechanism ensuring required data exchanges are configured as data clean rooms, 2) its records of execution for all new data exchanges, and 3) the plan to move any older data exchanges.	Medium	Bigquery.FC9	Bigquery.T28 (High) Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C94] Verify all required data exchanges are configured as data clean rooms.	Configure a data exchange required to be a data clean room as a non-data clean room; it should be detected.	Low	Bigquery.FC9	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C103, depends on Bigquery.C22] Maintain the list of authorized subscriptions for each	Request the list of authorized subscriptions for each listing and/or data exchange, its review process, and	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T29 (Very Low)	Medium

	listing and data exchange.	its review records.			Bigquery.T32 (Very Low)	
Directive (COSO) Protect (NIST CSF)	[Bigquery.C104, depends on Bigquery.C103, assured by Bigquery.C105] Ensure only authorized subscriptions for listings and data exchanges are configured.	Request 1) the mechanism ensuring only authorized subscriptions for listings and data exchanges are configured, 2) its records of execution for all new listings and/or data exchanges, and 3) the plan to move any older listings and/or data exchanges.	Medium	Bigquery.FC9	Bigquery.T28 (High) Bigquery.T29 (High) Bigquery.T32 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C105] Verify listings and data exchanges have only authorized subscriptions.	1) Add an unauthorized subscription, or 2) remove the authorized subscription from a listing and/or data exchange; it should be detected.	Medium	Bigquery.FC9	-	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C114, depends on Bigquery.C92, assured by Bigquery.C115] Ensure the restricted export for listings is enabled according to the requirements.	Request 1) the mechanism ensuring only restricted export is configured, 2) its records of execution for all new listings, and 3) the plan to move any older listings.	Medium	Bigquery.FC9	Bigquery.T30 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C115] Verify the restricted export for listings is enabled according to the requirements.	Enable the restricted export for listings outside the requirements; it should be detected.	High	Bigquery.FC9	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C116] Maintain the list of authorized access entities (i.e., role, userByEmail, groupByEmail, domain, specialGroup, iamMember, view, routine, or dataset) for each dataset.	Request the list of authorized access entities of each dataset, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T21 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C117, depends on Bigquery.C116, assured by Bigquery.C118] Ensure only authorized access entities of each dataset are configured.	Request 1) the mechanism ensuring only authorized access entities of each dataset are configured, 2) its records of execution for all new datasets, and 3) the plan to move any older datasets.	Medium	Bigquery.FC1	Bigquery.T21 (High)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C118] Verify all datasets use their authorized access entity.	1) Allow an unauthorized access entity on a dataset, or 2) remove an authorized access entity on a dataset; it should be detected.	Medium	Bigquery.FC1	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C123] Maintain the list of authorized configuration settings (e.g., default_batch_query_queue_timeout_ms, default_interactive_query_queue_timeout_ms, default_query_job_timeout_ms, enable_fine_grained_dataset_acls_option) for each organization or project.	Request the list of authorized configuration settings for each organization or project, its review process, and its review records.	Low	Bigquery.FC1 Bigquery.FC4	Bigquery.T9 (Very Low) Bigquery.T13 (Very Low)	Medium
Directive (COSO) Protect (NIST CSF)	[Bigquery.C124, depends on Bigquery.C123, assured by Bigquery.C125] Ensure only authorized configuration settings for each organization or project are configured.	Request 1) the mechanism ensuring only authorized configuration settings for each organization or project are configured, 2) its records of execution for all new organizations or projects, and 3) the plan to move any older organizations or projects.	Medium	Bigquery.FC1 Bigquery.FC4	Bigquery.T9 (Medium) Bigquery.T13 (Medium)	Medium
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C125] Verify all organizations or projects use their authorized configuration settings.	1) Deploy unauthorized configuration settings on an organization or project, or 2) remove authorized configuration settings on an organization or project; it should be detected.	Medium	Bigquery.FC1 Bigquery.FC4	-	Medium
Directive (COSO) Identify (NIST CSF)	[Bigquery.C130] Define the failover process (e.g., use soft failover mode by default, document the justification for any hard failover, require approval for exceptions, record the chosen failover mode in the change process, validate replication status) for reservations.	Request the failover process for reservations, its review process, and its review records.	Low	Bigquery.FC5	Bigquery.T36 (Very Low)	Low

Directive (COSO) Protect (NIST CSF)	[Bigquery.C131, depends on Bigquery.C130] Ensure a reservation is failed over according to the process.	Request the mechanism ensuring that the reservation is failed over according to the process.	Medium	Bigquery.FC5	Bigquery.T36 (High)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C28, depends on Bigquery.C26] Protect the CMEKs used by each BigQuery resource using the Cloud KMS ThreatModel (including enforcing CMEK protection using organization policy constraints/gcp.restrictCmekCryptoKeyProjects and constraints/gcp.restrictNonCmekServices as per Cloudkms.C32 and Cloudkms.C34).	Request how the Cloud KMS ThreatModel is applied to BigQuery resources.	High	Bigquery.FC1	Bigquery.T11 (Medium) Bigquery.T20 (Medium)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C76, depends on Bigquery.C75, assured by Bigquery.C77] Ensure the configuration of each asynchronous query job is authorized.	Request the mechanism ensuring the configuration of each asynchronous query job is authorized, and the evidence of its execution.	High	Bigquery.FC1	Bigquery.T20 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C77] Verify all asynchronous query jobs have authorized configurations.	Create an asynchronous query job with unauthorized configurations; it should be detected.	High	Bigquery.FC1	-	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C95] Define the authorized configuration (i.e., displayName, description, documentation, icon, discoveryType, logLinkedDatasetQueryUserEmail = true) for each data exchange and identify the requirements for deploying the public data exchange.	Request the authorized configuration for each data exchange and the criteria for its discovery type, its review process, and its review records.	Low	Bigquery.FC9	Bigquery.T28 (Very Low) Bigquery.T31 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C96, depends on Bigquery.C95, assured by Bigquery.C97] Ensure the configuration of each data exchange is authorized, and discoveryType is public only if required.	Request 1) the mechanism ensuring authorized configurations are used, 2) its records of execution for all new data exchanges, and 3) the plan to move any older data exchanges.	High	Bigquery.FC9	Bigquery.T28 (Medium) Bigquery.T31 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C97] Verify all data exchanges have authorized configurations.	Create a data exchange with an unauthorized configuration; it should be detected.	High	Bigquery.FC9	-	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C99, depends on Bigquery.C98, assured by Bigquery.C100] Ensure the configuration of each listing is authorized, and discoveryType is public only if required.	Request 1) the mechanism ensuring that authorized configurations are used, 2) its records of execution for all new listings, and 3) the plan to move any older listings.	High	Bigquery.FC9	Bigquery.T28 (Medium) Bigquery.T30 (Medium) Bigquery.T31 (Medium)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C100] Verify all listings have authorized configurations.	Create a listing with an unauthorized configuration; it should be detected.	High	Bigquery.FC9	-	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C43] Monitor slot capacity (e.g., using the slot estimator) to estimate the correct number of slots for the BigQuery workload.	Increase or decrease slot capacity widely; it should be detected.	Low	Bigquery.FC5	Bigquery.T12 (Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C41] Ensure Cloud Audit Logs for BigQuery Data Transfer are enabled (ref).	Request the implementation for enabling the Cloud Audit Logs for BigQuery Data Transfer and its records for execution.	Medium	Bigquery.FC4	Bigquery.T13 (Low)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C42] Monitor the abnormal number of concurrent connections and throughput for the BigQuery table (e.g., by using the Monitoring metric CONSUMER QUOTA - QUOTA LIMIT).	Create 1) an abnormal number of concurrent connections and 2) abnormal throughput for a BigQuery table; it should be detected.	Low	Bigquery.FC1 Bigquery.FC6	Bigquery.T4 (Low) Bigquery.T5 (Very Low)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C65] Monitor the quality of data used with the ML models (e.g., by data profiling).	Ingest bogus data in a table; it should be detected.	Low	Bigquery.FC6	Bigquery.T4 (Low)	Low
Directive (COSO)	[Bigquery.C87] Establish, document, and train on procedures for	Request the plan for key compromised events, and the	High	Bigquery.FC1	Bigquery.T20 (Medium)	Low

Respond (NIST CSF)	responding to key compromise events, including key leaks and unapproved access. Implement a key revocation process to invalidate compromised keys and replace them with new, secure keys.	records and results of the last Incident Response simulation.				
Directive (COSO) Identify (NIST CSF)	[Bigquery.C50] Define the requirements for setting the time travel of each BigQuery dataset.	Request the requirements for setting time travel for each BigQuery dataset.	Low	Bigquery.FC1	Bigquery.T19 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C51, depends on Bigquery.C50, assured by Bigquery.C52] Ensure the time travel of each BigQuery dataset is set according to its requirements.	Request the mechanism ensuring the time travel of each BigQuery dataset is set according to its requirements.	Medium	Bigquery.FC1	Bigquery.T19 (Low)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C52] Verify the time travel of each BigQuery dataset is set to its requirements.	Set the time travel of a BigQuery dataset to an unauthorized value; it should be detected.	High	Bigquery.FC1	-	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C69, depends on Bigquery.C66] Protect the sources used with each transfer, using the respective service's ThreatModel.	Request how the respective service ThreatModel is applied to protect each BigQuery Data Transfer source.	High	Bigquery.FC4	Bigquery.T13 (Medium)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C137, depends on Bigquery.C66] Protect the network attachments used with private database sources, using the Compute Engine ThreatModel.	Request how the Compute Engine ThreatModel is applied to protect network attachments used with private database sources.	High	Bigquery.FC4	Bigquery.T13 (Medium)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C73, depends on Bigquery.C70] Protect the Cloud Storage buckets used for storing UDFs using Cloud Storage ThreatModel.	Request how the Cloud Storage ThreatModel is applied to buckets used for storing UDFs.	High	Bigquery.FC2	Bigquery.T8 (Medium)	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C107] Maintain the list of listings and/or data exchanges authorized to be subscribed to, and by whom.	Request the list of listings and data exchanges authorized to be subscribed to and by whom, their review process, and their review records.	Low	Bigquery.FC10	Bigquery.T33 (Very Low)	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C108, depends on Bigquery.C107, assured by Bigquery.C109] Ensure only authorized entities you control are subscribed to the authorized listings and data exchanges.	Request 1) the mechanism ensuring only authorized entities you control are subscribed to authorized listings and data exchanges, 2) its records of execution for all new subscriptions on listings or data exchanges, and 3) the plan to move any older subscriptions on listings or data exchanges.	Medium	Bigquery.FC10	Bigquery.T33 (High)	Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C109] Verify only authorized entities you control are subscribed to authorized listings and data exchanges.	1) Subscribe to an unauthorized listing and/or data exchange with an entity you control, or 2) subscribe with an unauthorized entity you control to a listing or exchange authorized for other entities you control; it should be detected.	Medium	Bigquery.FC10	-	Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C126, depends on Bigquery.C127] Ensure the Cloud AI Companion API is enabled/disabled for the BigQuery project following the Service Usage ThreatModel and is protected using Cloud AI Companion ThreatModel.	Request how the Service Usage ThreatModel and Cloud AI Companion ThreatModel are applied to the Cloud AI Companion API in the BigQuery project.	Medium	Bigquery.FC1	Bigquery.T35 (High)	Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C127] Maintain the list of authorized BigQuery projects allowed to use Gemini.	Request the list of authorized BigQuery projects allowed to use Gemini, its review process, and its review records.	Low	Bigquery.FC1	Bigquery.T35 (Very Low)	Low
Detective (COSO) Detect (NIST CSF)	[Bigquery.C132, depends on Bigquery.C130] Monitor the failover mode of a reservation (e.g., by using Cloud Logging event "google.cloud.bigquery.reservation.v1.ReservationService.FailoverReservation" and its field request.failoverMode).	Fail over a reservation in hard mode; it should be detected.	Medium	Bigquery.FC5	Bigquery.T36 (Medium)	Very Low

Directive (COSO) Protect (NIST CSF)	[Bigquery.C101, assured by Bigquery.C102] Ensure no sensitive data is included in the fields of the listings (i.e., displayName, description, documentation, icon).	Request the mechanism ensuring sensitive data is not included in the fields of listings, and the evidence of its execution.	Medium	Bigquery.FC9	Bigquery.T31 (Medium)	Very Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C102] Verify no sensitive data is included in the fields of listings.	Add sensitive data to a field of a listing; it should be detected.	High	Bigquery.FC9	-	Very Low
Directive (COSO) Identify (NIST CSF)	[Bigquery.C113, depends on Bigquery.C22] Define the requirements for enabling restricted export for listings.	Request the requirements for enabling restricted export for listings, their review process, and their review records.	Low	Bigquery.FC9	Bigquery.T30 (Very Low)	Very Low
Directive (COSO) Protect (NIST CSF)	[Bigquery.C128, depends on Bigquery.C127, assured by Bigquery.C129] Ensure only authorized BigQuery projects are allowed to use Gemini.	Request 1) the mechanism ensuring only authorized BigQuery projects are allowed to use Gemini, 2) its records of execution for all new BigQuery projects, and 3) the plan to move any older BigQuery projects.	Medium	Bigquery.FC1	Bigquery.T35 (Medium)	Very Low
Assurance (COSO) Detect (NIST CSF)	[Bigquery.C129] Verify all authorized BigQuery projects are allowed to use Gemini.	1) Enable Gemini in an unauthorized BigQuery project, or 2) disable Gemini from an authorized BigQuery project; it should be detected.	Medium	Bigquery.FC1	-	Very Low

Appendix 2 - List of all Actions and their details

Id	Description	Feature Class ID	IAM Permission	Event	API
Bigquery.A1	Gets the access control policy for a resource. Returns an empty policy if the resource exists and does not have a policy set.	Bigquery.FC1	bigquery.tables.getIamPolicy	-	bigquery.tables.getIamPolicy
Bigquery.A2	Updates information in an existing table. The update method replaces the entire table resource, whereas the patch method only replaces fields that are provided in the submitted table resource. This method supports patch semantics.	Bigquery.FC1	bigquery.tables.update	google.cloud.bigquery.v2.TableService.PatchTable	bigquery.tables.patch
Bigquery.A3	Returns permissions that a caller has on the specified resource. If the resource does not exist, this will return an empty set of permissions, not a not_found error.	Bigquery.FC1	-	-	bigquery.tables.testIamPermissions
Bigquery.A4	Updates information in an existing table. The update method replaces the entire table resource, whereas the patch method only replaces fields that are provided in the submitted table resource.	Bigquery.FC1	bigquery.tables.update	jobservice.insert,tableservice.update	bigquery.tables.update
Bigquery.A5	Creates a new, empty table in the dataset.	Bigquery.FC1	bigquery.tables.create	jobservice.insert,tableservice.insert,google.cloud.bigquery.v2.TableService.InsertTable	bigquery.tables.insert
Bigquery.A6	Gets the specified table resource by table ID. This method does not return the data in the table, it only returns the table resource, which describes the structure of this table.	Bigquery.FC1	bigquery.tables.get	-	bigquery.tables.get
Bigquery.A7	Sets the access control policy on the specified resource. Replaces any existing policy.	Bigquery.FC1	bigquery.tables.setIamPolicy	jobservice.insert,google.iam.v1.IAMPolicy.SetIamPolicy	bigquery.tables.setIamPolicy
Bigquery.A8	Lists all tables in the specified dataset.	Bigquery.FC1	bigquery.tables.list	-	bigquery.tables.list
Bigquery.A9	Deletes the table specified by tableid from the dataset. If the table contains data, all the data will be deleted.	Bigquery.FC1	bigquery.tables.delete	datasetservice.delete,tableservice.delete,google.cloud.bigquery.v2.TableService.DeleteTable	bigquery.tables.delete
Bigquery.A10	Create new table snapshots.	Bigquery.FC7	bigquery.tables.createSnapshot	google.cloud.bigquery.v2.JobService.InsertJob	bigquery.jobs.insert
Bigquery.A11	Delete table snapshots.	Bigquery.FC7	bigquery.tables.deleteSnapshot	google.cloud.bigquery.v2.TableService.DeleteTable,tableservice.delete	-
Bigquery.A12	Export table data out of BigQuery.	Bigquery.FC1	bigquery.tables.export	google.cloud.bigquery.v2.JobService.InsertJob,jobservice.insert,jobservice.jobcompleted	-
Bigquery.A13	Restore table snapshots.	Bigquery.FC7	bigquery.tables.restoreSnapshot	google.cloud.bigquery.v2.JobService.InsertJob,jobservice.jobcompleted	bigquery.jobs.insert
Bigquery.A14	Set policy tags in table schema.	Bigquery.FC1	bigquery.tables.setCategory	-	-
Bigquery.A15	Update tags for a table.	Bigquery.FC1	bigquery.tables.updateTag	-	-
Bigquery.A16	Streams data into BigQuery one record at a time without needing to run a load job.	Bigquery.FC1	bigquery.tables.updateData	-	bigquery.tabledata.insertAll
Bigquery.A17	Retrieves table data from a specified set of rows.	Bigquery.FC1	bigquery.tables.getData	tabledataservice.list,google.cloud.bigquery.v2.TableDataService.List	bigquery.tabledata.list

Bigquery.A18	Returns information about a specific job. Job information is available for a six-month period after creation.	Bigquery.FC1	bigquery.jobs.get	-	bigquery.jobs.get
Bigquery.A19	Starts a new asynchronous job.	Bigquery.FC1	bigquery.jobs.create	jobservice.insert,google.cloud.bigquery.v2.JobService.InsertJob	bigquery.jobs.insert
Bigquery.A20	Lists all jobs that you started in the specified project. Job information is available for a six-month period after creation. The job list is sorted in reverse chronological order, by job creation time.	Bigquery.FC1	bigquery.jobs.list	-	bigquery.jobs.list
Bigquery.A21	List all jobs and retrieve metadata on any job submitted by any user.	Bigquery.FC1	bigquery.jobs.listAll	-	bigquery.jobs.listAll
Bigquery.A22	Requests that a job be cancelled. This call will return immediately, and the client will need to poll for the job status to see if the cancel completed successfully.	Bigquery.FC1	bigquery.jobs.update	jobservice.cancel	bigquery.jobs.cancel
Bigquery.A23	Requests that a job is deleted. This call will return when the job is deleted. This method is available in limited preview.	Bigquery.FC1	bigquery.jobs.delete	google.cloud.bigquery.v2.JobService.DeleteJob	bigquery.jobs.delete
Bigquery.A24	Runs a BigQuery SQL query synchronously and returns query results if the query completes within a specified timeout.	Bigquery.FC1	bigquery.jobs.create	google.cloud.bigquery.v2.JobService.Query,jobservice.query	bigquery.jobs.query
Bigquery.A25	Retrieves the results of a query job.	Bigquery.FC1	bigquery.tables.getData	jobservice.getqueryresults	bigquery.jobs.getQueryResults
Bigquery.A26	Lists all routines in the specified dataset.	Bigquery.FC2	bigquery.routines.list	-	bigquery.routines.list
Bigquery.A27	Gets the specified routine resource by routine ID.	Bigquery.FC2	bigquery.routines.get	-	bigquery.routines.get
Bigquery.A28	Creates a new routine in the dataset.	Bigquery.FC2	bigquery.routines.create	google.cloud.bigquery.v2.RoutineService.InsertRoutine	bigquery.routines.insert
Bigquery.A29	Deletes the routine specified by routineid from the dataset.	Bigquery.FC2	bigquery.routines.delete	google.cloud.bigquery.v2.RoutineService.DeleteRoutine	bigquery.routines.delete
Bigquery.A30	Updates information in an existing routine. The update method replaces the entire routine resource.	Bigquery.FC2	bigquery.routines.update	google.cloud.bigquery.v2.RoutineService.UpdateRoutine	bigquery.routines.update
Bigquery.A31	Returns the dataset specified by datasetid.	Bigquery.FC1	bigquery.datasets.get	-	bigquery.datasets.get
Bigquery.A32	Updates information in an existing dataset. The update method replaces the entire dataset resource, whereas the patch method only replaces fields that are provided in the submitted dataset resource. This method supports patch semantics.	Bigquery.FC1	bigquery.datasets.update	datasetservice.update,google.cloud.bigquery.v2.DatasetService.PatchDataset	bigquery.datasets.patch
Bigquery.A33	Lists all datasets in the specified project.	Bigquery.FC1	bigquery.datasets.get	-	bigquery.datasets.list
Bigquery.A34	Deletes the dataset specified by the datasetid value. Before you can delete a dataset, you must delete all its tables, either manually or by specifying deleteContents. Immediately after deletion, you can create another dataset with the same name.	Bigquery.FC1	bigquery.datasets.delete	datasetservice.delete,google.cloud.bigquery.v2.DatasetService.DeleteDataset	bigquery.datasets.delete
Bigquery.A35	Creates a new empty dataset.	Bigquery.FC1	bigquery.datasets.create	google.cloud.bigquery.v2.DatasetService.InsertDataset,datasetservice.insert	bigquery.datasets.insert
Bigquery.A36	Updates information in an existing dataset. The update method replaces the entire dataset resource, whereas the patch method only replaces fields that are provided in the submitted dataset resource.	Bigquery.FC1	bigquery.datasets.update	datasetservice.update,google.cloud.bigquery.v2.DatasetService.UpdateDataset	bigquery.datasets.update
Bigquery.A37	Read a dataset's IAM permissions (via the console).	Bigquery.FC1	bigquery.datasets.getIamPolicy	-	-
Bigquery.A38	Change a dataset's IAM permissions (via the console).	Bigquery.FC1	bigquery.datasets.setIamPolicy	-	-

Bigquery.A39	Update tags for a dataset.	Bigquery.FC1	bigquery.datasets.updateTag	-	-
Bigquery.A40	Create a new row-level access policy on a table.	Bigquery.FC1	bigquery.rowAccessPolicies.create	jobservice.insert,google.cloud.bigquery.v2.JobService.InsertJob	-
Bigquery.A41	Delete a row-level access policy from a table.	Bigquery.FC1	bigquery.rowAccessPolicies.delete	jobservice.insert,google.cloud.bigquery.v2.JobService.InsertJob	-
Bigquery.A42	Gets data in a table that you want to be visible only to the members of a row-level access policy's grantee list. We recommend this permission only be granted on a row-level access policy resource.	Bigquery.FC1	bigquery.rowAccessPolicies.getFilteredData	-	-
Bigquery.A43	Re-create a row-level access policy.	Bigquery.FC1	bigquery.rowAccessPolicies.update	jobservice.insert,google.cloud.bigquery.v2.JobService.InsertJob	-
Bigquery.A44	Returns permissions that a caller has on the specified resource. If the resource does not exist, this will return an empty set of permissions, not a not_found error.	Bigquery.FC1	-	-	bigquery.rowAccessPolicies.testIamPermissions
Bigquery.A45	Gets the access control policy for a resource. Returns an empty policy if the resource exists and does not have a policy set.	Bigquery.FC1	bigquery.rowAccessPolicies.getIamPolicy	-	bigquery.rowAccessPolicies.getIamPolicy
Bigquery.A46	Lists all row access policies on the specified table.	Bigquery.FC1	bigquery.rowAccessPolicies.list	-	bigquery.rowAccessPolicies.list
Bigquery.A47	Sets the access control policy on the specified resource. Replaces any existing policy.	Bigquery.FC1	bigquery.rowAccessPolicies.setIamPolicy	-	-
Bigquery.A48	Returns the email address of the service account for your project used for interactions with Google Cloud KMS.	Bigquery.FC1	-	-	bigquery.projects.getServiceAccount
Bigquery.A49	Lists all projects to which you have been granted any project role.	Bigquery.FC1	-	-	bigquery.projects.list
Bigquery.A50	Create new models.	Bigquery.FC6	bigquery.models.create	jobservice.insert,jobservice.jobcompleted,google.cloud.bigquery.v2.JobService.InsertJob	-
Bigquery.A51	Get model data.	Bigquery.FC6	bigquery.models.getData	-	bigquery.models.get
Bigquery.A52	Get model metadata.	Bigquery.FC6	bigquery.models.getMetadata	-	bigquery.models.get
Bigquery.A53	Update model data.	Bigquery.FC6	bigquery.models.updateData	google.cloud.bigquery.v2.ModelService.PatchModel	bigquery.models.patch
Bigquery.A54	Update model metadata.	Bigquery.FC6	bigquery.models.updateMetadata	-	bigquery.models.patch
Bigquery.A55	Deletes the model specified by modelid from the dataset.	Bigquery.FC6	bigquery.models.delete	google.cloud.bigquery.v2.ModelService.DeleteModel	bigquery.models.delete
Bigquery.A56	Lists all models in the specified dataset.	Bigquery.FC6	bigquery.models.list	-	bigquery.models.list
Bigquery.A57	Export a model.	Bigquery.FC6	bigquery.models.export	jobservice.insert,jobservice.jobcompleted,google.cloud.bigquery.v2.JobService.InsertJob	-
Bigquery.A58	Create saved queries (console only).	Bigquery.FC1	bigquery.savedqueries.create	-	-
Bigquery.A59	Delete saved queries (console only).	Bigquery.FC1	bigquery.savedqueries.delete	-	-
Bigquery.A60	Get metadata on saved queries (console only).	Bigquery.FC1	bigquery.savedqueries.get	-	-
Bigquery.A61	List saved queries (console only).	Bigquery.FC1	bigquery.savedqueries.list	-	-
Bigquery.A62	Update saved queries (console only).	Bigquery.FC1	bigquery.savedqueries.update	-	-
Bigquery.A63	Use a connection configuration to connect to a remote data source.	Bigquery.FC3	bigquery.connections.use	-	-

Bigquery.A64	Returns specified connection.	Bigquery.FC3	bigquery.connections.get	google.cloud.bigquery.connection.v1.ConnectionService.GetConnection	bigqueryconnection.projects.locations.connections.get
Bigquery.A65	Deletes connection and associated credential.	Bigquery.FC3	bigquery.connections.delete	google.cloud.bigquery.connection.v1.ConnectionService.DeleteConnection	bigqueryconnection.projects.locations.connections.delete
Bigquery.A66	Updates the specified connection. For security reasons, also resets credential if connection properties are in the update field mask.	Bigquery.FC3	bigquery.connections.update	google.cloud.bigquery.connection.v1.ConnectionService.UpdateConnection	bigqueryconnection.projects.locations.connections.patch
Bigquery.A67	Returns a list of connections in the given project.	Bigquery.FC3	bigquery.connections.list	google.cloud.bigquery.connection.v1.ConnectionService.ListConnections	bigqueryconnection.projects.locations.connections.list
Bigquery.A68	Gets the access control policy for a resource. Returns an empty policy if the resource exists and does not have a policy set.	Bigquery.FC3	bigquery.connections.getIamPolicy	google.cloud.bigquery.connection.v1.ConnectionService.GetIamPolicy	bigqueryconnection.projects.locations.connections.getIamPolicy
Bigquery.A69	Creates a new connection.	Bigquery.FC3	bigquery.connections.create	google.cloud.bigquery.connection.v1.ConnectionService.CreateConnection	bigqueryconnection.projects.locations.connections.create
Bigquery.A70	Returns permissions that a caller has on the specified resource. If the resource does not exist, this will return an empty set of permissions, not a not_found error.	Bigquery.FC3	-	-	bigqueryconnection.projects.locations.connections.testIamPermissions
Bigquery.A71	Sets the access control policy on the specified resource. Replaces any existing policy.	Bigquery.FC3	bigquery.connections.setIamPolicy	google.cloud.bigquery.connection.v1.ConnectionService.SetIamPolicy	bigqueryconnection.projects.locations.connections.setIamPolicy
Bigquery.A72	Lists information about the supported locations for this service.	Bigquery.FC4	bigquery.transfers.get	google.cloud.location.Locations.ListLocations	bigquerydatatransfer.projects.locations.list
Bigquery.A73	Gets information about a location.	Bigquery.FC4	bigquery.transfers.get	google.cloud.location.Locations.GetLocation	bigquerydatatransfer.projects.locations.get
Bigquery.A74	Deletes the specified transfer run.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.DeleteTransferRun	bigquerydatatransfer.projects.locations.transferConfigs.runs.delete
Bigquery.A75	Returns information about the particular transfer run.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.GetTransferRun	bigquerydatatransfer.projects.locations.transferConfigs.runs.get
Bigquery.A76	Returns information about running and completed jobs.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferRuns	bigquerydatatransfer.projects.locations.transferConfigs.runs.list
Bigquery.A77	Returns user facing log messages for the data transfer run.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferLogs	bigquerydatatransfer.projects.locations.transferConfigs.runs.transferLogs.list
Bigquery.A78	(Deprecated) Creates transfer runs for a time range [start_time, end_time]. For each date - or whatever granularity the data source supports - in the range, one transfer run is created. Note that runs are created per utc time in the time range. Deprecated: use startmanualtransferruns instead.	Bigquery.FC4	bigquery.transfers.update	-	bigquerydatatransfer.projects.locations.transferConfigs.scheduleRuns
Bigquery.A79	Returns information about a data transfer config.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.GetTransferConfig	bigquerydatatransfer.projects.locations.transferConfigs.get

Bigquery.A80	Start manual transfer runs to be executed now with schedule_time equal to current time. The transfer runs can be created for a time range where the run_time is between start_time (inclusive) and end_time (exclusive), or for a specific run_time.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.StartManualTransferRuns	bigquerydatatransfer.projects.locations.transferConfigs.startManualRuns
Bigquery.A81	Returns information about all data transfers in the project.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferConfigs	bigquerydatatransfer.projects.locations.transferConfigs.list
Bigquery.A82	Creates a new data transfer configuration.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.CreateTransferConfig,google.cloud.bigquery.datatransfer.v1.DataTransferService.IsDataTransferServiceEnabled	bigquerydatatransfer.projects.locations.transferConfigs.create
Bigquery.A83	Deletes a data transfer configuration, including any associated transfer runs and logs.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.DeleteTransferConfig	bigquerydatatransfer.projects.locations.transferConfigs.delete
Bigquery.A84	Updates a data transfer configuration. All fields must be set, even if they are not updated.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.UpdateTransferConfig	bigquerydatatransfer.projects.locations.transferConfigs.patch
Bigquery.A85	Retrieves a supported data source and returns its settings, which can be used for ui rendering.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.GetDataSource	bigquerydatatransfer.projects.locations.dataSources.get
Bigquery.A86	Returns true if valid credentials exist for the given data source and requesting user. Some data sources doesn't support service account, so we need to talk to them on behalf of the end user. This API just checks whether we have OAuth token for the particular user, which is a pre-requisite before user can create a transfer config.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.CheckValidCreds	bigquerydatatransfer.projects.locations.dataSources.checkValidCreds
Bigquery.A87	Lists supported data sources and returns their settings, which can be used for ui rendering.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListDataSources	bigquerydatatransfer.projects.locations.dataSources.list
Bigquery.A88	Retrieves a supported data source and returns its settings, which can be used for ui rendering.	Bigquery.FC4	bigquery.transfers.get	-	bigquerydatatransfer.projects.dataSources.get
Bigquery.A89	Lists supported data sources and returns their settings, which can be used for ui rendering.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListDataSources	bigquerydatatransfer.projects.dataSources.list
Bigquery.A90	Returns true if valid credentials exist for the given data source and requesting user. Some data sources doesn't support service account, so we need to talk to them on behalf of the end user. This API just checks whether we have OAuth token for the particular user, which is a pre-requisite before user can create a transfer config.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.CheckValidCreds	bigquerydatatransfer.projects.dataSources.checkValidCreds
Bigquery.A91	Returns information about running and completed jobs.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferRuns	bigquerydatatransfer.projects.transferConfigs.runs.list
Bigquery.A92	Deletes the specified transfer run.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.DeleteTransferRun	bigquerydatatransfer.projects.transferConfigs.runs.delete

Bigquery.A93	Returns information about the particular transfer run.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.GetTransferRun	bigquerydatatransfer.projects.transferConfigs.runs.get
Bigquery.A94	Returns user facing log messages for the data transfer run.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferLogs	bigquerydatatransfer.projects.transferConfigs.runs.transferLogs.list
Bigquery.A95	Returns information about a data transfer config.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.GetTransferConfig	bigquerydatatransfer.projects.transferConfigs.get
Bigquery.A96	Returns information about all data transfers in the project.	Bigquery.FC4	bigquery.transfers.get	google.cloud.bigquery.datatransfer.v1.DataTransferService.ListTransferConfigs	bigquerydatatransfer.projects.transferConfigs.list
Bigquery.A97	Updates a data transfer configuration. All fields must be set, even if they are not updated.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.UpdateTransferConfig	bigquerydatatransfer.projects.transferConfigs.patch
Bigquery.A98	(Deprecated) Creates transfer runs for a time range [start_time, end_time]. For each date - or whatever granularity the data source supports - in the range, one transfer run is created. Note that runs are created per utc time in the time range. Deprecated: use startmanualtransferruns instead.	Bigquery.FC4	bigquery.transfers.update	-	bigquerydatatransfer.projects.transferConfigs.scheduleRuns
Bigquery.A99	Start manual transfer runs to be executed now with schedule_time equal to current time. The transfer runs can be created for a time range where the run_time is between start_time (inclusive) and end_time (exclusive), or for a specific run_time.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.StartManualTransferRuns	bigquerydatatransfer.projects.transferConfigs.startManualRuns
Bigquery.A100	Creates a new data transfer configuration.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.CreateTransferConfig,google.cloud.bigquery.datatransfer.v1.DataTransferService.IsDataTransferServiceEnabled	bigquerydatatransfer.projects.transferConfigs.create
Bigquery.A101	Deletes a data transfer configuration, including any associated transfer runs and logs.	Bigquery.FC4	bigquery.transfers.update	google.cloud.bigquery.datatransfer.v1.DataTransferService.DeleteTransferConfig	bigquerydatatransfer.projects.transferConfigs.delete
Bigquery.A102	Returns information about the capacity commitment.	Bigquery.FC5	bigquery.capacityCommitments.get	-	bigqueryreservation.projects.locations.capacityCommitments.get
Bigquery.A103	Merges capacity commitments of the same plan into a single commitment. The resulting capacity commitment has the greater commitment_end_time out of the to-be-merged capacity commitments. Attempting to merge capacity commitments of different plan will fail with the error code google. Rpc. Code. Failed_precondition.	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.capacityCommitments.merge
Bigquery.A104	Lists all the capacity commitments for the admin project.	Bigquery.FC5	bigquery.capacityCommitments.list	-	bigqueryreservation.projects.locations.capacityCommitments.list
Bigquery.A105	Creates a new capacity commitment resource.	Bigquery.FC5	bigquery.capacityCommitments.create	-	bigqueryreservation.projects.locations.capacityCommitments.create
Bigquery.A106	Splits capacity commitment to two commitments of the same plan and commitment_end_time. A common use case is to	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.capacityCommitments.split

	enable downgrading commitments. For example, in order to downgrade from 10000 slots to 8000, you might split a 10000 capacity commitment into commitments of 2000 and 8000. Then, you would change the plan of the first one to flex and then delete it.				
Bigquery.A107	Deletes a capacity commitment. Attempting to delete capacity commitment before its commitment_end_time will fail with the error code google. Rpc. Code. Failed_precondition.	Bigquery.FC5	bigquery.capacityCommitments.delete	-	bigqueryreservation.projects.locations.capacityCommitments.delete
Bigquery.A108	Updates an existing capacity commitment. Only plan and renewal_plan fields can be updated. Plan can only be changed to a plan of a longer commitment period. Attempting to change to a plan with shorter commitment period will fail with the error code google. Rpc. Code. Failed_precondition.	Bigquery.FC5	bigquery.capacityCommitments.update	-	bigqueryreservation.projects.locations.capacityCommitments.patch
Bigquery.A109	Creates an assignment object which allows the given project to submit jobs of a certain type using slots from the specified reservation.	Bigquery.FC5	bigquery.reservationAssignments.create	google.cloud.bigquery.reservation.v1.ReservationService.CreateAssignment	bigqueryreservation.projects.locations.reservations.assignments.create
Bigquery.A110	Deletes a assignment.	Bigquery.FC5	bigquery.reservationAssignments.delete	google.cloud.bigquery.reservation.v1.ReservationService.DeleteAssignment	bigqueryreservation.projects.locations.reservations.assignments.delete
Bigquery.A111	Lists assignments. Only explicitly created assignments will be returned.	Bigquery.FC5	bigquery.reservationAssignments.list	-	bigqueryreservation.projects.locations.reservations.assignments.list
Bigquery.A112	Moves an assignment under a new reservation. This differs from removing an existing assignment and recreating a new one by providing a transactional change that ensures an assignee always has an associated reservation.	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.reservations.assignments.move
Bigquery.A113	Lists all the reservations for the project in the specified location.	Bigquery.FC5	bigquery.reservations.list	-	bigqueryreservation.projects.locations.reservations.list
Bigquery.A114	Returns information about the reservation.	Bigquery.FC5	bigquery.reservations.get	-	bigqueryreservation.projects.locations.reservations.get
Bigquery.A115	Deletes a reservation. Returns google. Rpc. Code. Failed_precondition when reservation has assignments.	Bigquery.FC5	bigquery.reservations.delete	google.cloud.bigquery.reservation.v1.ReservationService.DeleteReservation	bigqueryreservation.projects.locations.reservations.delete
Bigquery.A116	Creates a new reservation resource.	Bigquery.FC5	bigquery.reservations.create	google.cloud.bigquery.reservation.v1.ReservationService.CreateAssignment	bigqueryreservation.projects.locations.reservations.create
Bigquery.A117	Updates an existing reservation resource.	Bigquery.FC5	bigquery.reservations.update	google.cloud.bigquery.reservation.v1.ReservationService.UpdateReservation	bigqueryreservation.projects.locations.reservations.patch
Bigquery.A118	Retrieves a BI reservation.	Bigquery.FC5	bigquery.bireservations.get	-	bigqueryreservation.projects.locations.getBiReservation
Bigquery.A119	Looks up assignments for a specified resource for a particular region. If the request is about a project: 1. Assignments created on the project will be returned if they exist. 2. Otherwise assignments created on the closest ancestor will be returned. 3. Assignments for different jobtypes will all be returned. The same logic applies if the request is about a folder. If the request is about an organization, then assignments created on the organization will be returned (organization doesn't have	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.searchAllAssignments

	ancestors).				
Bigquery.A120	Updates a BI reservation. Only fields specified in the field_mask are updated. A singleton BI reservation always exists with default size 0. In order to reserve BI capacity it needs to be updated to an amount greater than 0. In order to release BI Capacity Reservation size must be set to 0.	Bigquery.FC5	bigquery.bireservations.update	-	bigqueryreservation.projects.locations.updateBiReservation
Bigquery.A121	Looks up assignments for a specified resource for a particular region. If the request is about a project: 1. Assignments created on the project will be returned if they exist. 2. Otherwise assignments created on the closest ancestor will be returned. 3. Assignments for different jobtypes will all be returned. The same logic applies if the request is about a folder. If the request is about an organization, then assignments created on the organization will be returned (organization doesn't have ancestors).	Bigquery.FC5	bigquery.reservationAssignments.search	-	bigqueryreservation.projects.locations.searchAssignments
Bigquery.A122	Updates the tags for an existing connection.	Bigquery.FC3	bigquery.connections.updateTag	-	-
Bigquery.A123	Updates the tags for an existing model.	Bigquery.FC6	bigquery.models.updateTag	-	-
Bigquery.A124	Updates the tags for an existing routine.	Bigquery.FC2	bigquery.routines.updateTag	-	-
Bigquery.A125	Enroll data sources in a user project. This allows users to create transfer configurations for these data sources.	Bigquery.FC4	-	-	bigquerydatatransfer.projects.enrollDataSources
Bigquery.A126	Enroll data sources in a user project. This allows users to create transfer configurations for these data sources.	Bigquery.FC4	-	-	bigquerydatatransfer.projects.locations.enrollDataSources
Bigquery.A127	Access historical data for a table that has, or has previously had, row-level access policies.	Bigquery.FC1	bigquery.rowAccessPolicies.overrideTimeTravelRestrictions	-	-
Bigquery.A128	Delegate connection to create authorized external tables and remote functions.	Bigquery.FC3	bigquery.connections.delegate	-	-
Bigquery.A129	Retrieve execution metadata on any job.	Bigquery.FC1	bigquery.jobs.listExecutionMetadata	-	-
Bigquery.A130	Create index of a table.	Bigquery.FC1	bigquery.tables.createIndex	-	-
Bigquery.A131	Delete index of a table.	Bigquery.FC1	bigquery.tables.deleteIndex	-	-
Bigquery.A132	Creates a new data policy under a project with the given dataPolicyId (used as the display name), policy tag, and data policy type.	Bigquery.FC8	bigquery.dataPolicies.create	google.cloud.bigquery.datapolicies.v1.DataPolicyService.CreateDataPolicy	bigquerydatapolicy.projects.locations.dataPolicies.create
Bigquery.A133	Deletes the data policy specified by its resource name.	Bigquery.FC8	bigquery.dataPolicies.delete	google.cloud.bigquery.datapolicies.v1.DataPolicyService.DeleteDataPolicy	bigquerydatapolicy.projects.locations.dataPolicies.delete
Bigquery.A134	Gets the data policy specified by its resource name.	Bigquery.FC8	bigquery.dataPolicies.get	google.cloud.bigquery.datapolicies.v1.DataPolicyService.GetDataPolicy	bigquerydatapolicy.projects.locations.dataPolicies.get
Bigquery.A135	Gets the IAM policy for the specified data policy.	Bigquery.FC8	bigquery.dataPolicies.getIamPolicy	google.cloud.bigquery.datapolicies.v1.DataPolicyService.GetIamPolicy	bigquerydatapolicy.projects.locations.dataPolicies.getIamPolicy
Bigquery.A136	List all of the data policies in the specified parent project.	Bigquery.FC8	bigquery.dataPolicies.list	google.cloud.bigquery.datapolicies.v1.DataPolicyService.ListDataPolicies	bigquerydatapolicy.projects.locations.dataPolicies.list
Bigquery.A137	Masked read access to sub-resources tagged by the policy tag associated with a data policy, for example, BigQuery columns.	Bigquery.FC8	bigquery.dataPolicies.maskedGet	-	-

Bigquery.A138	Sets the IAM policy for the specified data policy.	Bigquery.FC8	bigquery.dataPolicies.setIamPolicy	google.cloud.bigquery.datapolicies.v1.DataPolicyService.SetIamPolicy	bigquerydatapolicy.projects.locations.dataPolicies.setIamPolicy
Bigquery.A139	Updates the metadata for an existing data policy. The target data policy can be specified by the resource name.	Bigquery.FC8	bigquery.dataPolicies.update	google.cloud.bigquery.datapolicies.v1.DataPolicyService.UpdateDataPolicy	bigquerydatapolicy.projects.locations.dataPolicies.patch
Bigquery.A140	Renames the ID (display name) of the specified data policy.	Bigquery.FC8	bigquery.dataPolicies.update	google.cloud.bigquery.datapolicies.v1.DataPolicyService.RenameDataPolicy	bigquerydatapolicy.projects.locations.dataPolicies.rename
Bigquery.A141	Returns the caller's permission on the specified data policy resource.	Bigquery.FC8	-	-	bigquerydatapolicy.projects.locations.dataPolicies.testIamPermissions
Bigquery.A142	Lists all data exchanges from projects in a given organization and location.	Bigquery.FC9	analyticshub.dataExchanges.list	-	analyticshub.organizations.locations.dataExchanges.list
Bigquery.A143	Creates a new data exchange.	Bigquery.FC9	analyticshub.dataExchanges.create	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.CreateDataExchange	analyticshub.projects.locations.dataExchanges.create
Bigquery.A144	Deletes an existing data exchange.	Bigquery.FC9	analyticshub.dataExchanges.delete	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.DeleteDataExchange	analyticshub.projects.locations.dataExchanges.delete
Bigquery.A145	Gets the details of a data exchange.	Bigquery.FC9	analyticshub.dataExchanges.get	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.GetDataExchange	analyticshub.projects.locations.dataExchanges.get
Bigquery.A146	Gets the IAM policy.	Bigquery.FC9	analyticshub.dataExchanges.getIamPolicy	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.GetIamPolicy	analyticshub.projects.locations.dataExchanges.getIamPolicy
Bigquery.A147	Lists all data exchanges in a given project and location.	Bigquery.FC9	analyticshub.dataExchanges.list	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.ListDataExchanges	analyticshub.projects.locations.dataExchanges.list
Bigquery.A148	Lists all subscriptions on a given data exchange or listing.	Bigquery.FC9	analyticshub.dataExchanges.viewSubscriptions	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.ListSharedResourceSubscriptions	analyticshub.projects.locations.dataExchanges.listSubscriptions
Bigquery.A149	Creates a new listing.	Bigquery.FC9	analyticshub.listings.create	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.CreateListing	analyticshub.projects.locations.dataExchanges.listings.create
Bigquery.A150	Deletes a listing.	Bigquery.FC9	analyticshub.listings.delete	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.DeleteListing	analyticshub.projects.locations.dataExchanges.listings.delete
Bigquery.A151	Gets the details of a listing.	Bigquery.FC9	analyticshub.listings.get	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.GetListing	analyticshub.projects.locations.dataExchanges.listings.get
Bigquery.A152	Gets the IAM policy.	Bigquery.FC9	analyticshub.listings.getIamPolicy	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.GetIamPolicy	analyticshub.projects.locations.dataExchanges.listings.getIamPolicy
Bigquery.A153	Lists all listings in a given project and location.	Bigquery.FC9	analyticshub.listings.list	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.ListListings	analyticshub.projects.locations.dataExchanges.listings.list

Bigquery.A154	Lists all subscriptions on a given data exchange or listing.	Bigquery.FC9	analyticshub.listings.viewSubscriptions	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.ListSharedResourceSubscriptions	analyticshub.projects.locations.dataExchanges.listings.listSubscriptions
Bigquery.A155	Updates an existing listing.	Bigquery.FC9	analyticshub.listings.update	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.UpdateListing	analyticshub.projects.locations.dataExchanges.listings.patch
Bigquery.A156	Sets the IAM policy.	Bigquery.FC9	analyticshub.listings.setIamPolicy	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.SetIamPolicy	analyticshub.projects.locations.dataExchanges.listings.setIamPolicy
Bigquery.A157	Subscribes to a listing. Currently, with BigQuery sharing, you can create listings that reference only BigQuery datasets. Upon subscription to a listing for a BigQuery dataset, BigQuery sharing creates a linked dataset in the subscriber's project.	Bigquery.FC10	analyticshub.listings.subscribe	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.SubscribeListing	analyticshub.projects.locations.dataExchanges.listings.subscribe
Bigquery.A158	Returns the permissions that a caller has.	Bigquery.FC9	-	-	analyticshub.projects.locations.dataExchanges.listings.testIamPermissions
Bigquery.A159	Updates an existing data exchange.	Bigquery.FC9	analyticshub.dataExchanges.update	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.UpdateDataExchange	analyticshub.projects.locations.dataExchanges.patch
Bigquery.A160	Sets the IAM policy.	Bigquery.FC9	analyticshub.dataExchanges.setIamPolicy	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.SetIamPolicy	analyticshub.projects.locations.dataExchanges.setIamPolicy
Bigquery.A161	Creates a subscription to a data clean room.	Bigquery.FC10	analyticshub.dataExchanges.subscribe	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.SubscribeDataExchange	analyticshub.projects.locations.dataExchanges.subscribe
Bigquery.A162	Returns the permissions that a caller has.	Bigquery.FC9	-	-	analyticshub.projects.locations.dataExchanges.testIamPermissions
Bigquery.A163	Deletes a subscription.	Bigquery.FC9	analyticshub.subscriptions.delete	-	analyticshub.projects.locations.subscriptions.delete
Bigquery.A164	Gets the details of a subscription.	Bigquery.FC9	analyticshub.subscriptions.get	-	analyticshub.projects.locations.subscriptions.get
Bigquery.A165	Gets the IAM policy.	Bigquery.FC9	analyticshub.dataExchanges.getIamPolicy analyticshub.listings.getIamPolicy analyticshub.subscriptions.getIamPolicy	-	analyticshub.projects.locations.subscriptions.getIamPolicy
Bigquery.A166	Lists all subscriptions in a given project and location.	Bigquery.FC9	analyticshub.subscriptions.list	-	analyticshub.projects.locations.subscriptions.list
Bigquery.A167	Refreshes a subscription to a data exchange. A data exchange can become stale when a publisher adds or removes data.	Bigquery.FC9	analyticshub.subscriptions.update	-	analyticshub.projects.locations.subscriptions.refresh
Bigquery.A168	Revokes a given subscription.	Bigquery.FC9	analyticshub.listings.update	google.cloud.bigquery.analyticshub.v1.AnalyticsHubService.RevokeSubscription	analyticshub.projects.locations.subscriptions.revoke
Bigquery.A171	Updates an existing assignment.	Bigquery.FC5	bigquery.reservationAssignments.update	google.cloud.bigquery.reservation.v1.ReservationService.UpdateAssignment	bigqueryreservation.projects.locations.reservations.assignments.patch
Bigquery.A172	Specify BigQuery configuration settings at an organization or	Bigquery.FC1	bigquery.config.update	-	-

	project level.				
Bigquery.A173	Retrieve BigQuery configuration settings at an organization or project level.	Bigquery.FC1	bigquery.config.get	-	-
Bigquery.A174	Fail over a reservation to the secondary location.	Bigquery.FC5	bigquery.reservations.update	-	bigqueryreservation.projects.locations.reservations.failoverReservation
Bigquery.A175	Gets the access control policy for a resource.	Bigquery.FC5	bigqueryreservation.reservations.getIamPolicy	google.cloud.bigquery.reservation.v1.ReservationService.GetIamPolicy	bigqueryreservation.projects.locations.reservations.getIamPolicy
Bigquery.A176	Sets an access control policy for a resource.	Bigquery.FC5	bigqueryreservation.reservations.setIamPolicy	google.cloud.bigquery.reservation.v1.ReservationService.SetIamPolicy	bigqueryreservation.projects.locations.reservations.setIamPolicy
Bigquery.A177	Gets your permissions on a resource.	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.reservations.testIamPermissions
Bigquery.A178	Gets the access control policy for a resource.	Bigquery.FC5	bigqueryreservation.reservations.getIamPolicy	google.cloud.bigquery.reservation.v1.ReservationService.GetIamPolicy	bigqueryreservation.projects.locations.reservations.assignments.getIamPolicy
Bigquery.A179	Sets an access control policy for a resource.	Bigquery.FC5	bigqueryreservation.reservations.setIamPolicy	google.cloud.bigquery.reservation.v1.ReservationService.SetIamPolicy	bigqueryreservation.projects.locations.reservations.assignments.setIamPolicy
Bigquery.A180	Gets your permissions on a resource.	Bigquery.FC5	-	-	bigqueryreservation.projects.locations.reservations.assignments.testIamPermissions