atlas

Apache Atlas

Apache Atlas

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1. intg (atlas-intg) - /

Maven : `org.apache.atlas:atlas-intg`

:

- : Atlas (Entity Classification Relationship)
- : (`AtlasTypeRegistry` , `AtlasEntityType` , `AtlasClassificationType`)
- : `ApplicationProperties` , `AtlasConfiguration`
- : `AtlasErrorCode` , `AtlasException`
- :

:

```
org.apache.atlas
├── ApplicationProperties.java      #
├── AtlasErrorCode.java             #
├── model/                          #
│   ├── instance/                   #
│   ├── typedef/                    #
│   ├── glossary/                   #
│   └── discovery/                  #
├── type/                           #
│   ├── AtlasTypeRegistry.java      #
│   ├── AtlasEntityType.java        #
│   └── AtlasStructType.java        #
└── utils/                          #
```

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-
- (Jackson, Hadoop-common, Spring-context)

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2. graphdb -

Maven : `org.apache.atlas:atlas-graphdb` (POM)

:

```
graphdb/
├── api/            # atlas-graphdb-api    -
├── common/         # atlas-graphdb-common -
├── graphdb-impls/  #
├── janus/          # atlas-graphdb-janus  - JanusGraph
└── janusgraph-rdbms/ # janusgraph-rdbms   - RDBMS
```

2.1 graphdb-api (API)

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-

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`AtlasGraph<V,E>`	(/ CRUD)
`GraphDatabase<V,E>`	
`AtlasVertex<V,E>`	
`AtlasEdge<V,E>`	
`AtlasGraphQuery<V,E>`	
`AtlasGraphManagement`	/Schema
`AtlasGraphIndexClient`	

: `atlas-intg` , `gremlin-core`

2.2 graphdb-common ( )

:

- TinkerPop
-

: `atlas-graphdb-api`

2.3 graphdb-janus (JanusGraph)

:

- JanusGraph
- (BerkeleyDB, Cassandra, HBase, CQL)
- (Elasticsearch, Solr, Lucene)

:

`AtlasJanusGraph`	AtlasGraph JanusGraph
`AtlasJanusGraphDatabase`	GraphDatabase
`AtlasJanusVertex`	
`AtlasJanusEdge`	
`AtlasJanusGraphManagement`	Schema

: `atlas-graphdb-common`, `atlas-graphdb-api` (provided), `janusgraph-*`

2.4 janusgraph-rdbms (RDBMS)

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- JanusGraph
- PostgreSQL RDBMS

: `janusgraph-core`, `HikariCP`, `EclipseLink`

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3. repository ( )

Maven : `org.apache.atlas:atlas-repository`

:

- : (`AtlasEntityStore`)

- : (`AtlasTypeDefGraphStore`)
- : (`GraphHelper`)
- : (`GraphBackedSearchIndexer`)
- : (`discovery/`)
- : (`impexp/`)
- : (`audit/`)
- : (`patches/`)

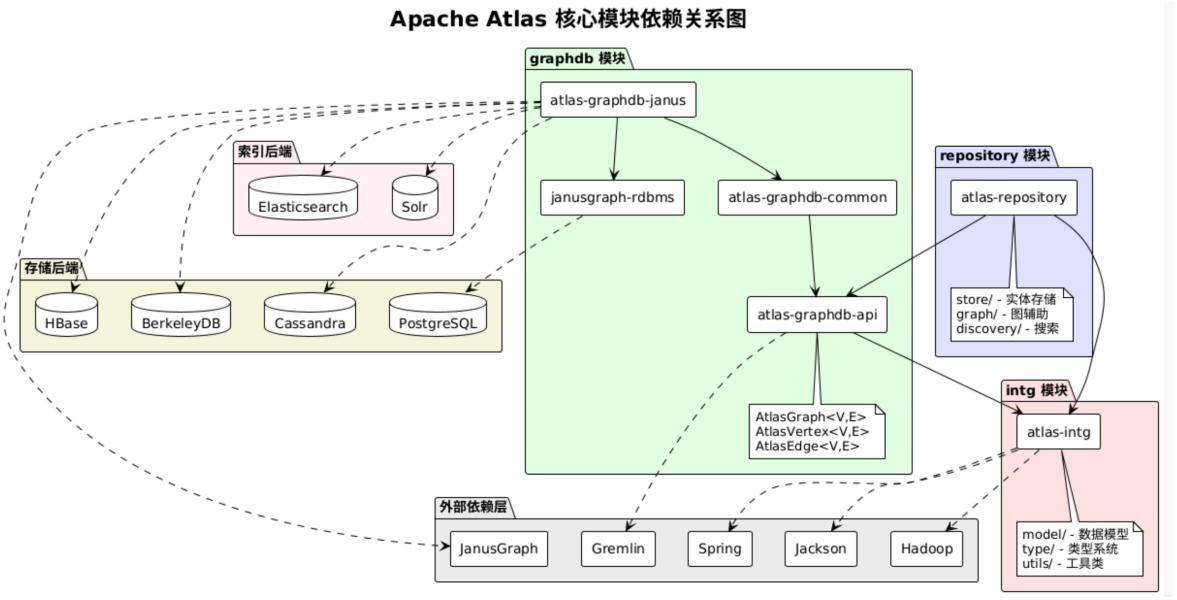
:

```
org.apache.atlas.repository/
├── graph/
│   ├── AtlasGraphProvider.java       #
│   ├── GraphHelper.java              #
│   └── GraphBackedSearchIndexer.java #
├── store/
│   └── graph/
│       ├── AtlasEntityStore.java     #
│       ├── AtlasTypeDefGraphStore.java #
│       └── v2/                       # V2
├── discovery/                        #
├── converters/                       #
├── audit/                            #
└── impexp/                           #
```

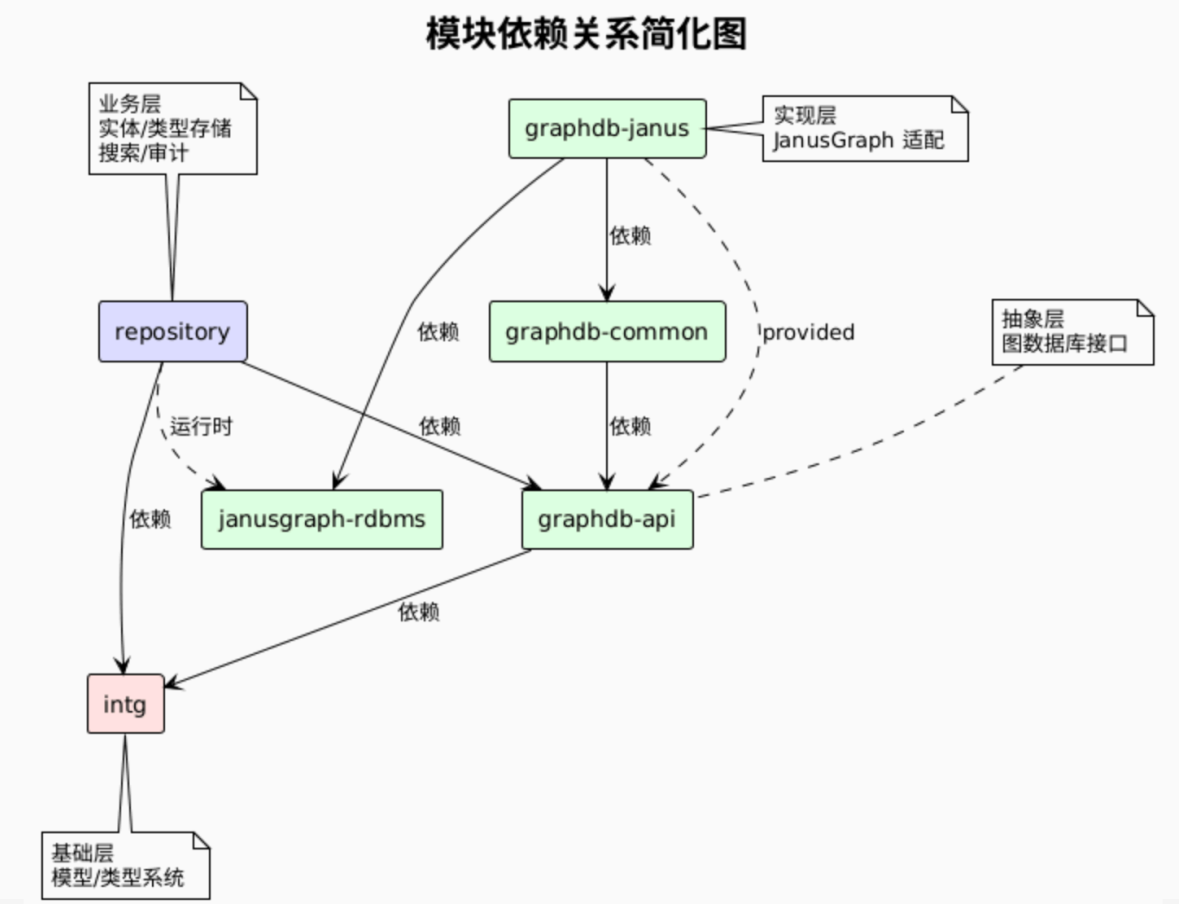
:

- `atlas-intg` -
- `atlas-graphdb-api` -
- `atlas-authorization` -
- `atlas-notification` -
- `atlas-server-api` - API
- `janusgraph-rdbms` - RDBMS ( )

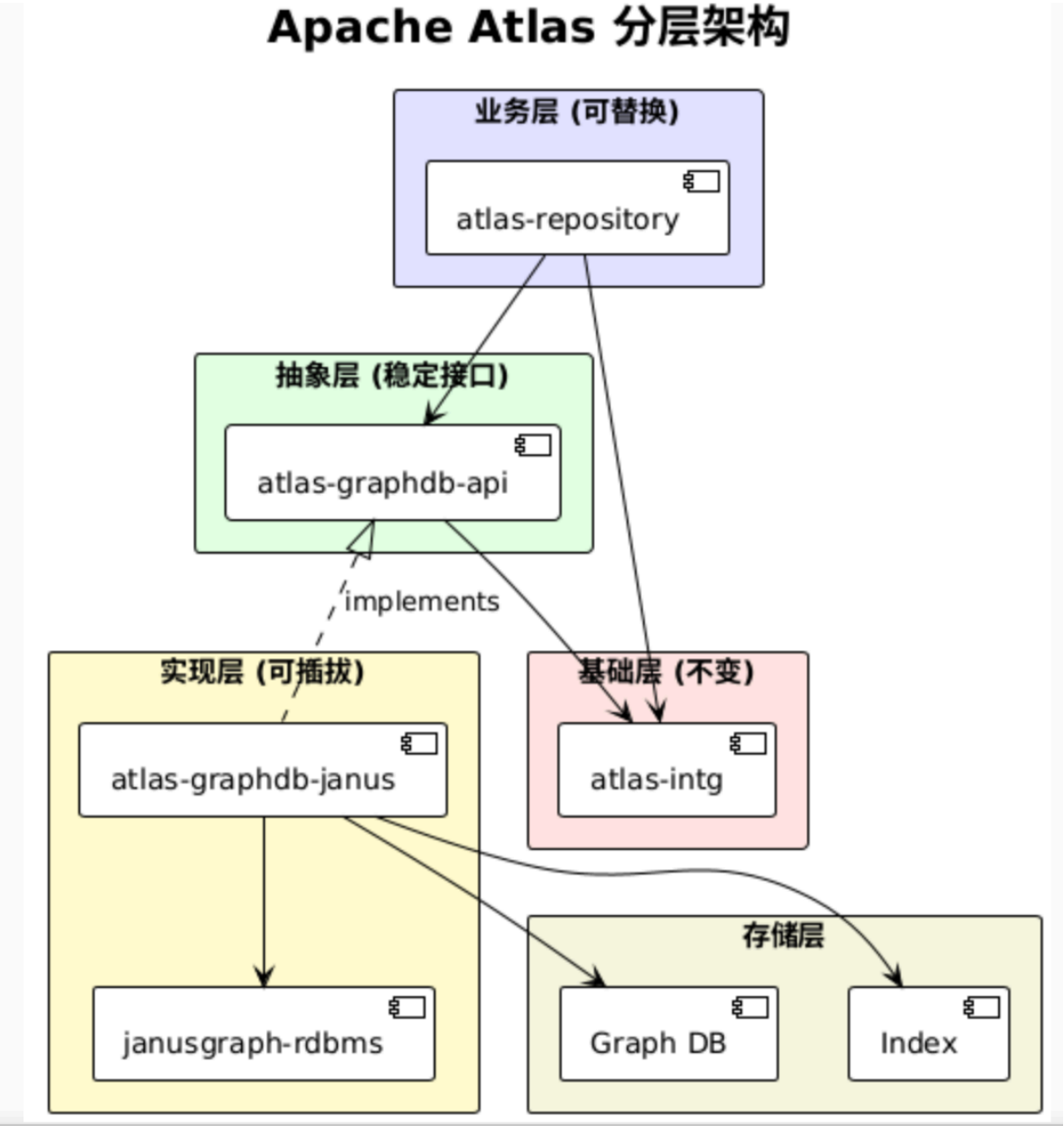
2.1


Apache Atlas 核心模块依赖关系图
graphdb 模块
atlas-graphdb-janus
janusgraph-rdbms
atlas-graphdb-common
atlas-graphdb-api
AtlasGraph<V,E>
AtlasVertex<V,E>
AtlasEdge<V,E>
索引后端
Elasticsearch
Solr
存储后端
HBase
BerkeleyDB
Cassandra
PostgreSQL
repository 模块
atlas-repository
store/ - 实体存储
graph/ - 图辅助
discovery/ - 搜索
intg 模块
atlas-intg
model/ - 数据模型
type/ - 类型系统
utils/ - 工具类
外部依赖层
JanusGraph
Gremlin
Spring
Jackson
Hadoop

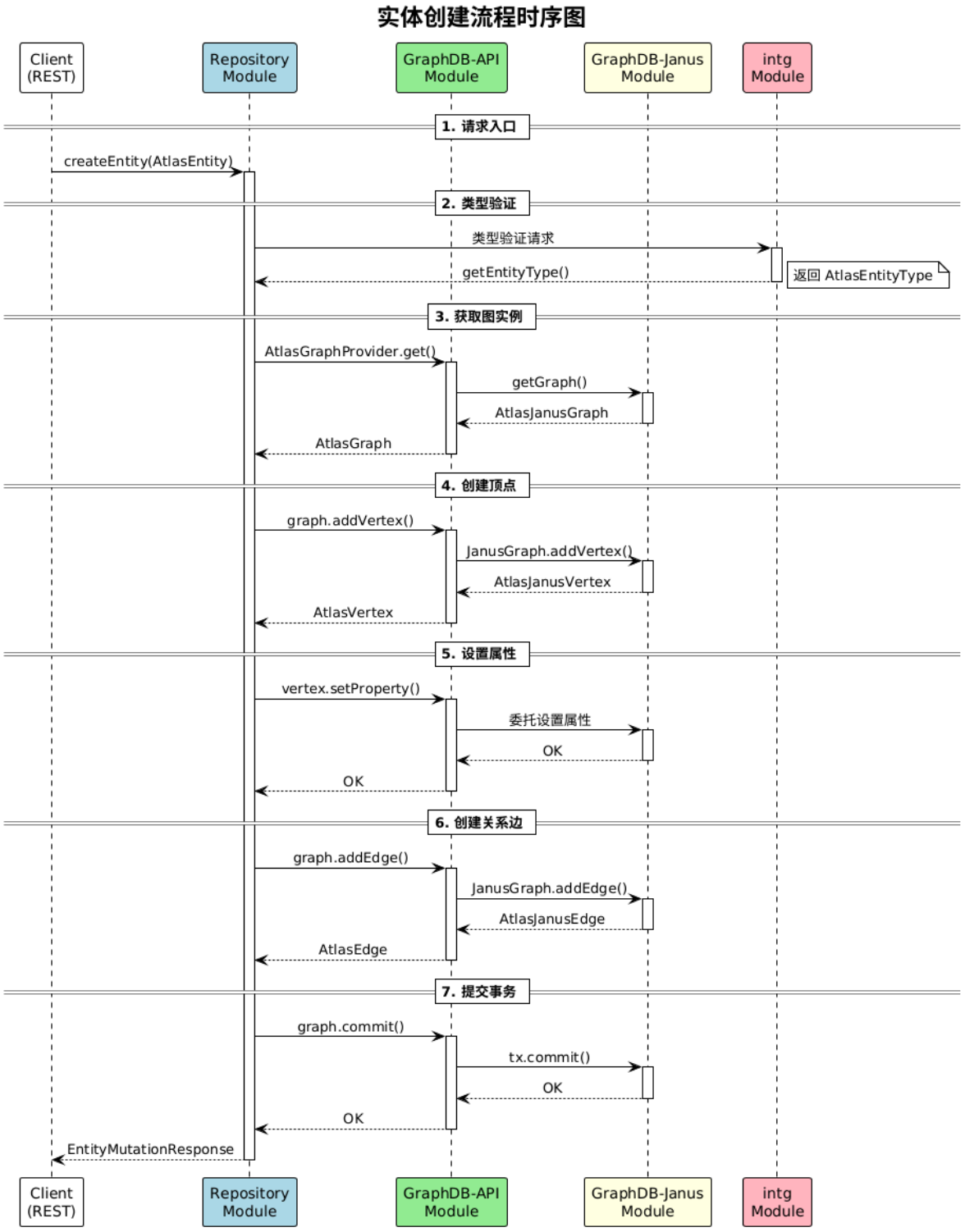
2.2


模块依赖关系简化图
业务层
实体/类型存储
搜索/审计
graphdb-janus
实现层
JanusGraph 适配
依赖
repository
依赖
graphdb-common
provided
抽象层
图数据库接口
运行时
依赖
依赖
依赖
janusgraph-rdbms
graphdb-api
依赖
intg
基础层
模型/类型系统

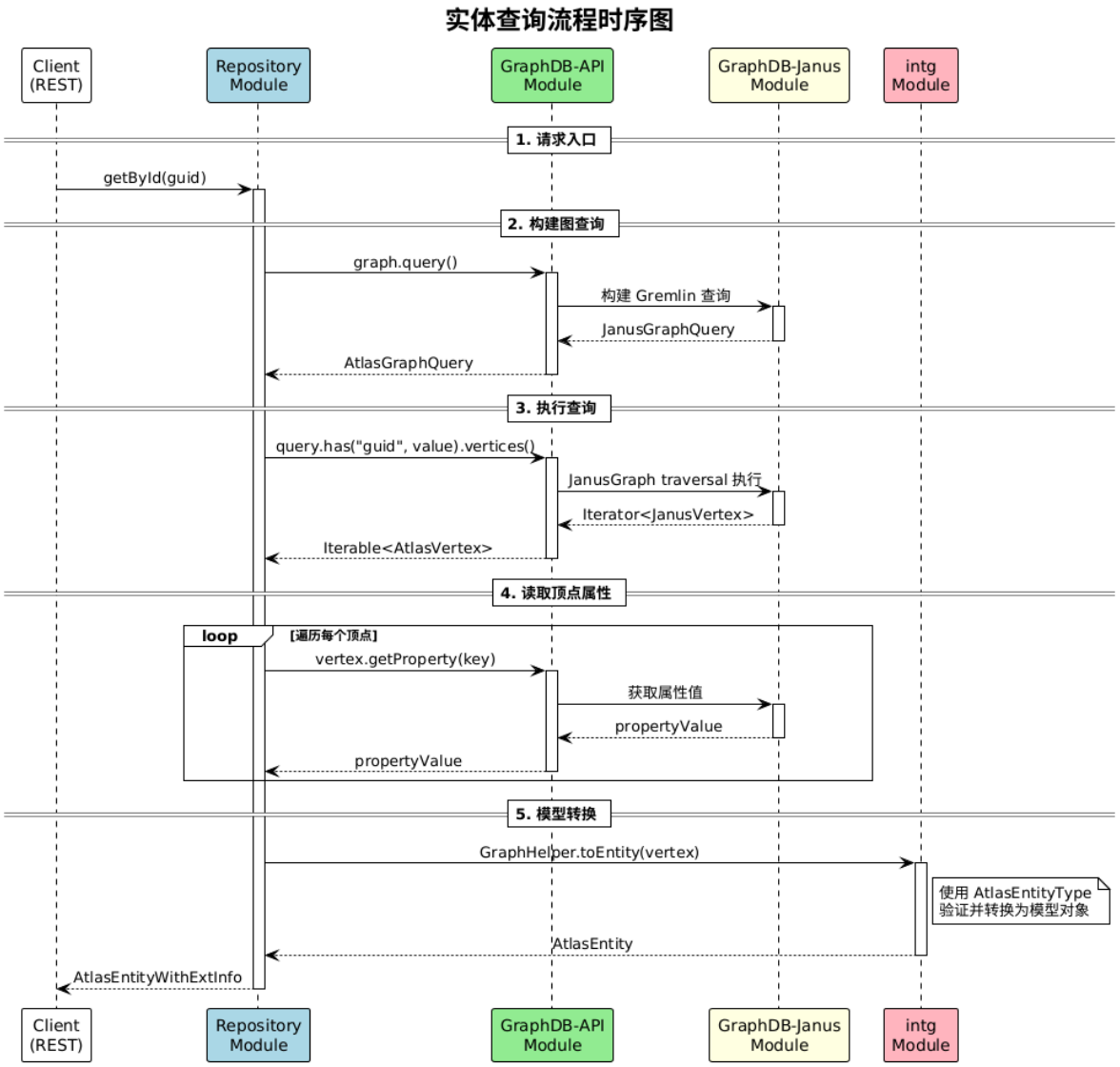
2.3


Apache Atlas 分层架构
业务层 (可替换)
atlas-repository
抽象层 (稳定接口)
atlas-graphdb-api
implements
实现层 (可插拔)
atlas-graphdb-janus
基础层 (不变)
atlas-intg
存储层
janusgraph-rdbms
Graph DB
Index

3.1

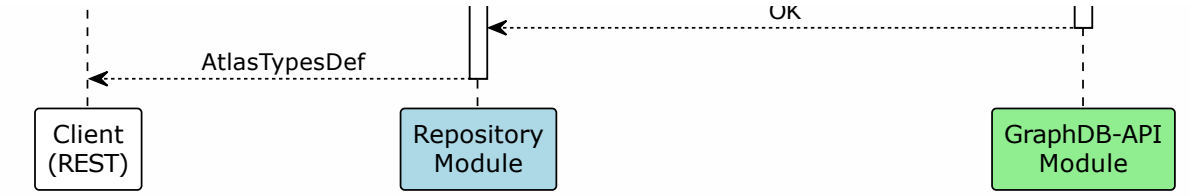

实体创建流程时序图
Client (REST)
Repository Module
GraphDB-API Module
GraphDB-Janus Module
intg Module
1. 请求入口
createEntity(AtlasEntity)
2. 类型验证
类型验证请求
getEntityType()
返回 AtlasEntityType
3. 获取图实例
AtlasGraphProvider.get()
getGraph()
AtlasJanusGraph
AtlasGraph
4. 创建顶点
graph.addVertex()
JanusGraph.addVertex()
AtlasJanusVertex
AtlasVertex
5. 设置属性
vertex.setProperty()
委托设置属性
OK
OK
6. 创建关系边
graph.addEdge()
JanusGraph.addEdge()
AtlasJanusEdge
AtlasEdge
7. 提交事务
graph.commit()
tx.commit()
OK
OK
EntityMutationResponse
Client (REST)
Repository Module
GraphDB-API Module
GraphDB-Janus Module
intg Module

3.2


实体查询流程时序图
Client (REST)
Repository Module
GraphDB-API Module
GraphDB-Janus Module
intg Module
1. 请求入口
getById(guid)
2. 构建图查询
graph.query()
构建 Gremlin 查询
JanusGraphQuery
AtlasGraphQuery
3. 执行查询
query.has("guid", value).vertices()
JanusGraph traversal 执行
Iterator<JanusVertex>
Iterable<AtlasVertex>
4. 读取顶点属性
loop
[遍历每个顶点]
vertex.getProperty(key)
获取属性值
propertyValue
propertyValue
5. 模型转换
GraphHelper.toEntity(vertex)
使用 AtlasEntityType 验证并转换为模型对象
AtlasEntity
AtlasEntityWithExtInfo

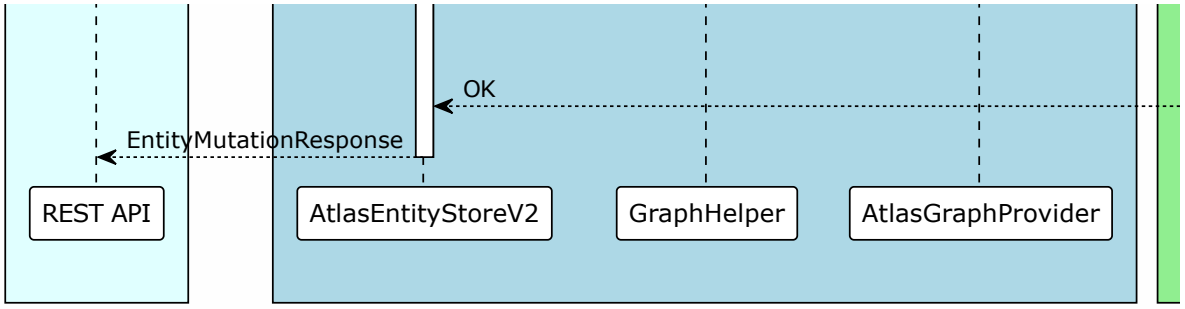
3.3

3.4 createTypeDef(AtlasEnti


OK
AtlasTypesDef
Client
(REST)
Repository
Module
GraphDB-API
Module

3.5

4.1 repository → graphdb-api
repository
graphdb-api
AtlasJanusGra
AtlasGraph
AtlasGraphProvider
GraphDatabase
getGraph() , getGraphBulkLoading()
GraphHelper
AtlasGraph
addVertex() , addEdge() , getVertex()
GraphHelper
createOrUpdate(entity)
AtlasVertex
setProperty() , getProperty() , getEdges()
GraphBackedSearchIndexer
AtlasGraphManagement
getTypeByName(typeName)
makePropertyKey() , buildIndex()
AtlasEntityStoreV2
AtlasGraphQuery
AtlasEntityType
has() , vertices() , edges()
Discovery classes
AtlasIndexQuery
validateValue(entity)
vertices() , vertexTotals()
validation result
4.2 repository → intg
createVertex(entity)
repository
intg
addVertex()
AtlasEntityStoreV2
AtlasTypeRegistry
AtlasTypeDefGraphStore
AtlasEntityType
GraphHelper
AtlasEntity
EntityGraphMapper
AtlasClassification
AtlasVertex
Store
AtlasErrorCode
setProperty()
4.3 graphdb-api → intg
graphdb-api
intg
OK
AtlasGraph
AtlasType
vertex
AtlasElement
AtlasException
commit()
AggregationContext
model classes

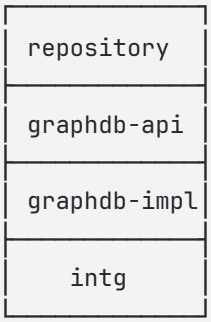

OK
EntityMutationResponse
REST API
AtlasEntityStoreV2
GraphHelper
AtlasGraphProvider

5.1

1. **intg** :
   - ✅ -
   -
2. **graphdb-api** :
   - ✅ - intg
   -
3. **repository** :
   - ⚠️ - intg + graphdb-api +
   -

5.2

( )



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- (JanusGraph → Neo4j → TigerGraph)
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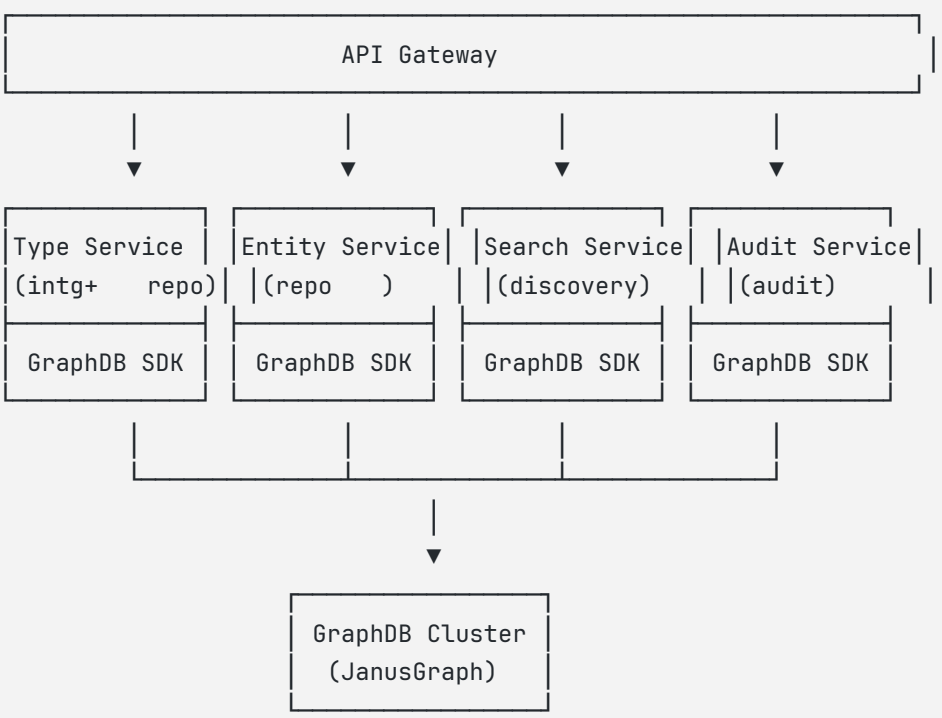
1. `repository`

2. `graphdb-api` SDK



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`atlas-model`	intg/model	
`atlas-type-system`	intg/type	
`atlas-graph-sdk`	graphdb-api + common	SDK
`atlas-store`	repository/store	

`atlas-discovery`	repository/discovery	

5.3

P0	graphdb-api	
P1	intg/model	Client SDK
P2	repository/discovery	
P3	GraphDB SPI	

6.1

intg			
graphdb-api			intg
graphdb-janus		JanusGraph	graphdb-api (provided)
repository			intg, graphdb-api

6.2

1. : → → →
2. : graphdb-api
3. : intg

6.3

1. **repository** :
2. **intg**: model + type-system
3. **SPI**: graphdb

: 2024
: Apache Atlas 3.0.0-SNAPSHOT