aws

Architecture Diagrams

Secure HTAP Data Architecture Using TiDB Cloud

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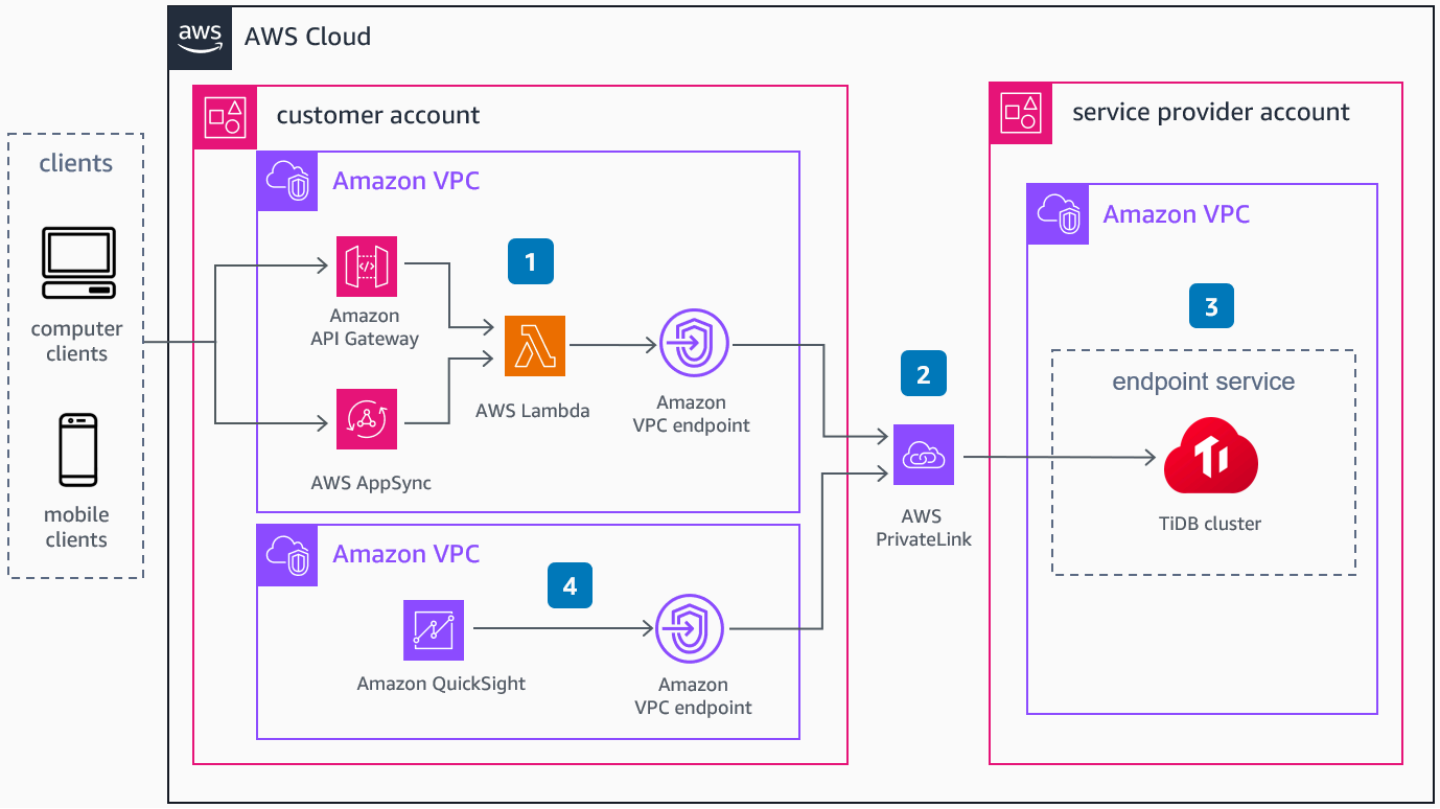
This reference architecture outlines a modern hybrid transactional/analytical processing (HTAP) data stack on AWS. It uses TiDB, an advanced, open-source, distributed SQL database that powers REST and GraphQL APIs, and near real-time analytics.

Secure HTAP Data Architecture Using TiDB Cloud Diagram



1. Create RESTful microservices using **Amazon API Gateway** or **AWS AppSync** and **AWS Lambda**. It can use TiDB Cloud as the online transactional processing (OLTP) database. **Lambda** receives all requests and sends them to the TiDB Server using an **Amazon Virtual Private Cloud** (Amazon VPC) endpoint.
2. Powered by **AWS PrivateLink**, the endpoint connection is secure and private and does not expose your data to the public internet. The **AWS PrivateLink** connection also supports a secure connection between VPCs with overlapping Classless Inter-Domain Routing (CIDR).
3. Equipped with a massively parallel processing (MPP) engine, TiDB can efficiently handle both OLTP and online analytical processing (OLAP) workloads. TiDB uses row-based storage

(TiKV) for OLTP workloads and column-based storage (TiFlash) for OLAP workloads. Data is asynchronously replicated to TiFlash using an extended Raft consensus algorithm for strong consistency. TiFlash is a separate set of nodes that isolates workloads and performance impact on the OLTP system.

4. Build business intelligence (BI) reports using **Amazon QuickSight**. Queries on TiDB are internally routed to TiFlash and optimized to handle analytical workloads. TiDB provides unified architecture and zero-ETL integration between OLTP and OLAP workloads.

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Further reading

For additional information, refer to

- AWS Architecture Icons
- AWS Architecture Center
- AWS Well-Architected

Contributors

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Diagram history

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