

Panther - Inventory tracking and reservation management system

Core flow – executing commands, producing events

```
graph LR; Commands[Commands] --> Exec[Exec command]; Exec --> EventStreams[Event streams]; EventStreams --> Events[Events]; Events --> Snapshot[Snapshot event stream]; Events --> Snapshot;
```

1. Ingest message
2. Deserialize strongly typed command
3. Retrieve current state from database
4. Execute command
5. Commit output event

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Strongly typed commands

```
type ReserveInventory
{
    id : CommandId
    orderId : OrderId
    skuId : SkuId
    fulfillmentNodeId : FulfillmentNodeId
    quantity: Quantity
    by : Username
    at : DateTimeOffset
}
```

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Set of commands or messages that express intent to change state are named with imperative verbs followed by a direct object.



Press Esc to exit full screen

Commands as discriminated union

```
type Command
| Update of UpdateInventory
| Reserve of ReserveInventory
| Cancel of CancelReservation
| Ship of ShipOrder
```

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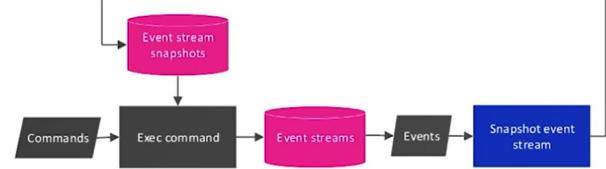
Events as discriminated union

```
type DomainEvent
| Updated of InventoryUpdated
| Reserved of InventoryReserved
| Cancelled of ReservationCancelled
| Shipped of LineItemShipped
```

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Core flow – building state from events



How do we build state from events?

- “Zero” state
- Apply function
- Fold function

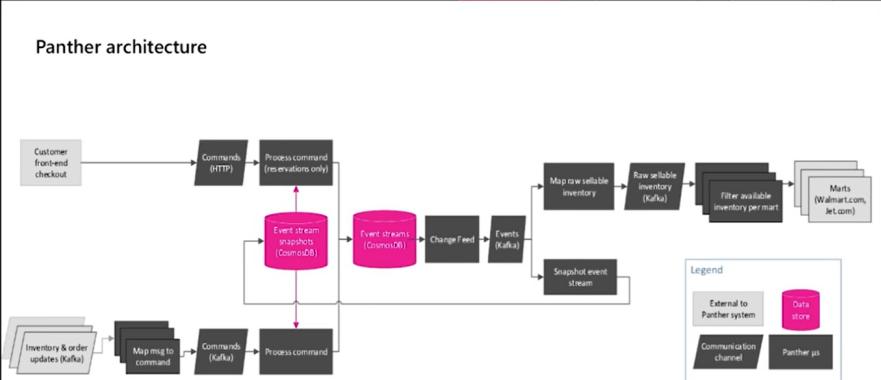
Designing your event stream

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Panther architecture



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Azure Cosmos DB

Event stream storage
Snapshot storage
Change Feed
But wait, there's more!

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TTL can be assigned to the documents
Can be deleted from the event store.

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Easy to add features

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Deletes the snapshot when there are not appropriate.