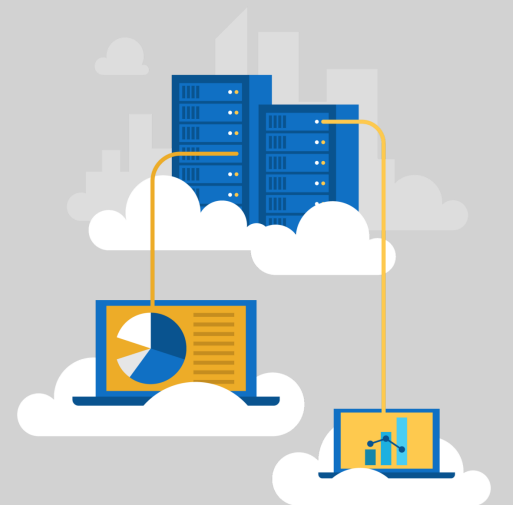


Configure a message-based integration architecture -Event Grid



Configure an event publish/subscribe model



How to choose messages or events

Consider the following question:

Does the sending component expect the communication to be processed in a particular way by the destination component?

If the answer is *yes*, choose to use a message. If the answer is *no*, you may be able to use events.

Events

- Events are light weight than messages, and are most often used for broadcast communications.
- The components sending the event are known as publishers, and receivers are known as subscribers.
- With events, receiving components will generally decide in which communications they are interested, and will "subscribe" to those.
- The subscription is usually managed by an intermediary, like Azure Event Grid or Azure Event Hubs.
- When publishers send an event, the intermediary will route that event to interested subscribers. This is known as a "publish-subscribe architecture."

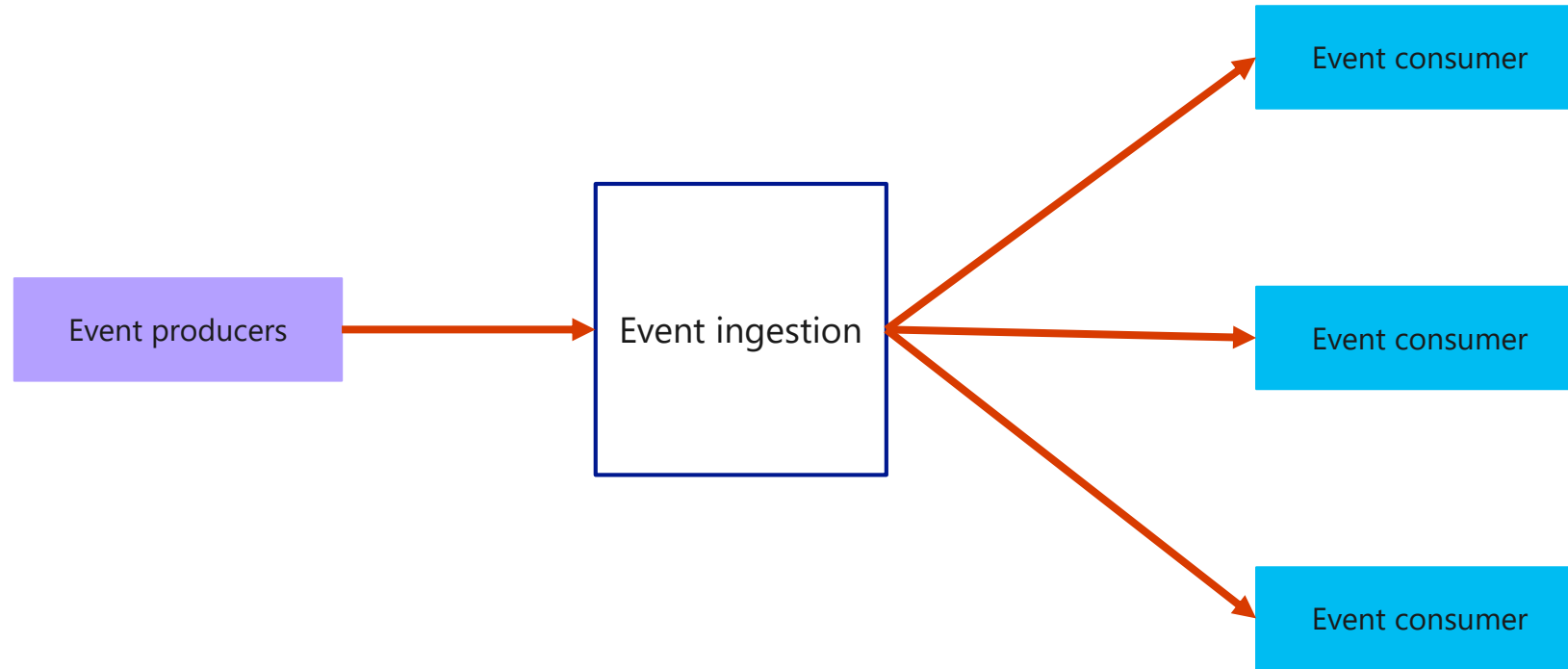
Events

- Events have the following characteristics:
 - An event is a lightweight notification that indicates that something happened.
 - The event may be sent to multiple receivers, or to none at all.
 - Events are often intended to "fan out," or have a large number of subscribers for each publisher.
 - The publisher of the event has no expectation about the action a receiving component takes.
 - Some events are discrete units and unrelated to other events.

Event-driven architecture

- Consists of event producers that generate a stream of events, and event consumers that listen for the events
- Events are delivered in nearly real time, so consumers can respond immediately to events as they occur
- Common implementations include:
 - Single event processing
 - Complex event processing
 - Event stream processing

Event-driven architecture



Event Grid

- Azure Event Grid is a fully-managed event routing service running on top of Azure Service Fabric.
- Event Grid distributes events from different sources, such as Azure Blob storage accounts or Azure Media Services, to different handlers, such as Azure Functions or Webhooks.
- Event Grid was created to make it easier to build event-based and serverless applications on Azure.

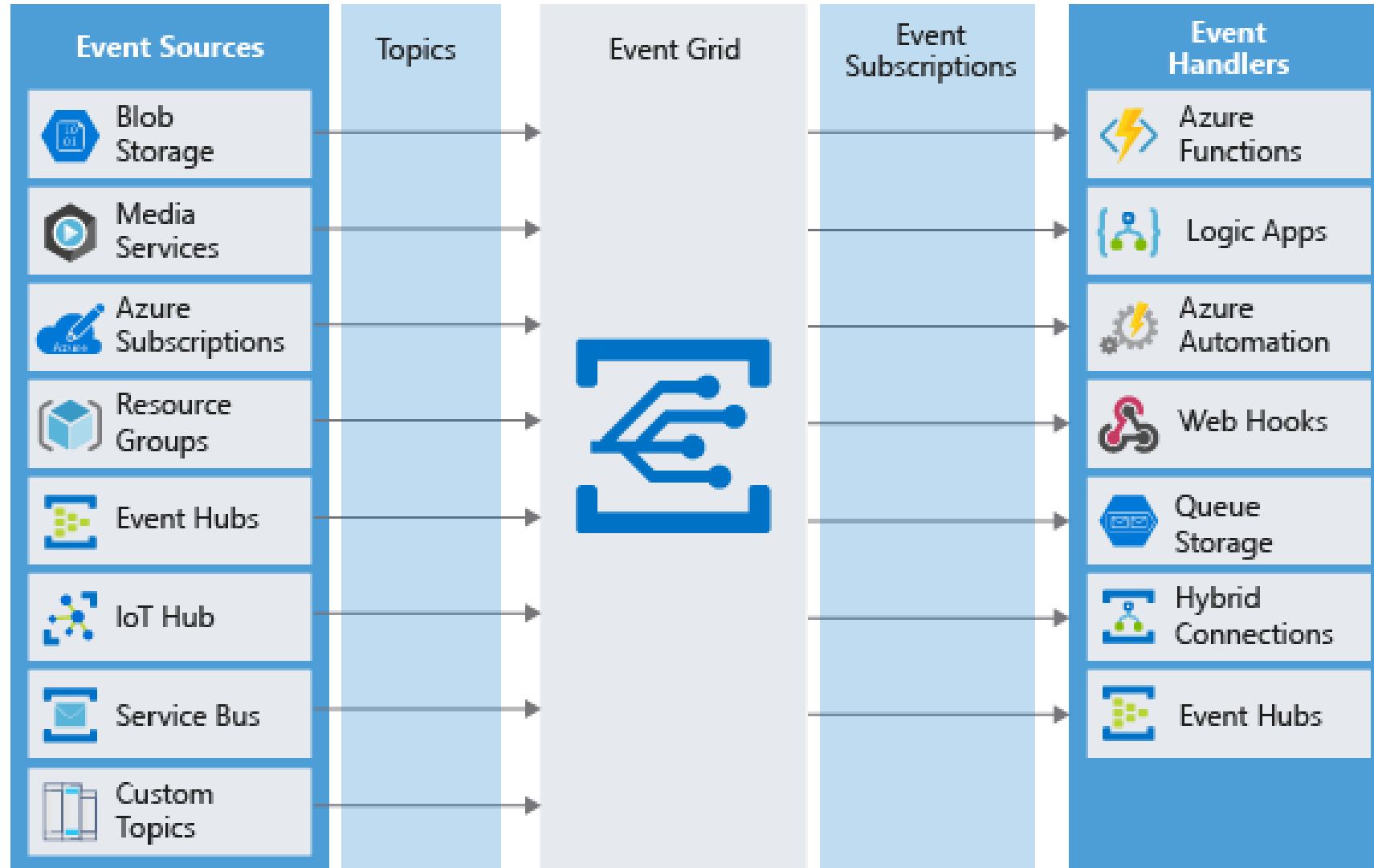
Event Grid

- A backplane for events that enables event-driven reactive programming
- Uses a publish-subscribe model
- Publishers emit events, but have no expectation about which events will be handled
- Subscribers, decide which events they want to handle
- Integrated within Azure services, can be integrated with third-party services
- Distributes events to registered subscriber endpoints

Event Grid concepts

- **Events:** What happened.
- **Event sources:** Where the event took place.
- **Topics:** The endpoint where publishers send events.
- **Event subscriptions:** The endpoint or built-in mechanism to route events, sometimes to multiple handlers. Subscriptions are also used by handlers to filter incoming events intelligently.
- **Event handlers:** The app or service reacting to the event.

Azure Event Grid



Event Grid source and topics

- An event source is where the event happens
- Each event source is related to one or more event types
- Event sources are responsible for sending events to the Event Grid
- The Event Grid topic provides an endpoint where the source sends events
- To respond to certain types of events, subscribers decide which topics to subscribe to

Event Grid topics

- System topics are built-in topics provided by Azure services
- Custom topics are application and third-party topics
- As long a user have access to the resource, they can subscribe to its events
- When designing an application, users have flexibility when deciding how many topics to create
- Event subscribers can filter for the event types they want.

Event Subscriptions

- A subscription tells Event Grid which events on a topic you are interested in receiving
- Subscription creation provides an endpoint for handling the event
- Subscribers can filter the events that are sent to the endpoint
- Can be filtered by event type or subject pattern

Azure Service event sources

- The following Azure services can send events to Event Grid:
 - Azure subscription management operations
 - Custom topics
 - Azure Event Hubs
 - IoT Hub
 - Azure Media Services
 - Resource group management operations
 - Service Bus
 - Azure Blob storage
 - General Purpose v2 storage

Events in Event Grid

- Events are the data messages passing through Event Grid that describe what has taken place.
- Each event is self-contained, can be up to 64 KB, and contains several pieces of information based on a schema defined by Event Grid

```
[ {  
    "topic": string,  
    "subject": string,  
    "id": string,  
    "eventType": string,  
    "eventTime": string,  
    "data":{ object-unique-to-each-publisher },  
    "dataVersion": string,  
    "metadataVersion": string  
} ]
```


Event Sources



Blob Storage



Resource Groups



Azure Subscriptions



Event Hubs



Azure Media Service



IoT Hub



Service Bus



Azure Maps



CloudEvents Sources



Custom Events (anything)

Event Grid



Event Handlers

Serverless Code



Functions

Serverless Workflow and Integration



Logic Apps

Buffering and Competing Consumers



Event Hubs



Storage Queues

Other Services and Applications



Hybrid Connections (WebSockets)



WebHooks (anything)



Azure Automation

Event Schema

Field	Description
topic	The full resource path to the event source. Event Grid provides this value.
subject	Publisher-defined path to the event subject.
id	The unique identifier for event.
eventType	One of the registered event types for this event source. This is a value you can create filters against, e.g. CustomerCreated, BlobDeleted, HttpRequestReceived, etc.
eventTime	The time the event was generated based on the provider's UTC time.
data	Specific information that is relevant to the type of event. For example, an event about a new file being created in Azure Storage has details about the file, such as the lastTimeModified value. Or, an Event Hubs event has the URL of the Capture file. This field is optional.
dataVersion	The schema version of the data object. The publisher defines the schema version.
metadataVersion	The schema version of the event metadata. Event Grid defines the schema of the top-level properties. Event Grid provides this value.

Event Grid Features

- **Simplicity:** It is straightforward to connect sources to subscribers in Event Grid.
- **Advanced filtering:** Subscriptions have close control over the events they receive from a topic.
- **Fan-out:** You can subscribe to an unlimited number of endpoints to the same events and topics.
- **Reliability:** Event Grid retries event delivery for up to 24 hours for each subscription.
- **Pay-per-event:** Pay only for the number of events that you transmit.

