

# Event grid / hub

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Azure Event Grid is a highly scalable, fully managed Pub Sub message distribution service that offers flexible message consumption patterns using the Hypertext Transfer Protocol (HTTP) and Message Queuing Telemetry Transport (MQTT) protocols. With Azure Event Grid, you can build data pipelines with device data, integrate applications, and build event-driven serverless architectures. Event Grid enables clients to publish and subscribe to messages over the MQTT v3.1.1 and v5.0 protocols to support Internet of Things (IoT) solutions. Through HTTP, Event Grid enables you to build event-driven solutions where a publisher service announces its system state changes (events) to subscriber applications. Event Grid can be configured to send events to subscribers (push delivery) or subscribers can connect to Event Grid to read events (pull delivery). Event Grid supports CloudEvents 1.0 specification to provide interoperability across systems.

Azure Event Hubs is a native data-streaming service in the cloud that can stream millions of events per second, with low latency, from any source to any destination. Event Hubs is compatible with Apache Kafka. It enables you to run existing Kafka workloads without any code changes. With Event Hubs, you can ingest, buffer, store, and process your stream in real time to get actionable insights. Event Hubs uses a partitioned consumer model. It enables multiple applications to process the stream concurrently and lets you control the speed of processing. Event Hubs also integrates with Azure Functions for serverless architectures. A broad ecosystem is available for the industry-standard AMQP 1.0 protocol. SDKs are available in languages like .NET, Java, Python, and JavaScript, so you can start processing your streams from Event Hubs. All supported client languages provide low-level integration.

### Event Grid vs Event Hubs vs Service Bus

Event Grid, Event Hub and Service Bus all are event driven services for **application integration** and **use an event bus** as means to work with event data.

Azure Event Grid	Azure Event Hubs	Azure Service Bus
<ul style="list-style-type: none"><li>• <b>Serverless Event Bus</b><ul style="list-style-type: none"><li>• Azure service-to-service communication</li></ul></li><li>• Dynamically scalable</li><li>• <b>Low cost</b></li><li>• At least once delivery of an</li></ul>	<ul style="list-style-type: none"><li>• <b>Streaming data</b></li><li>• <b>Low latency</b></li><li>• Can receive and process millions of events per second</li><li>• At least once delivery of an event</li></ul>	<ul style="list-style-type: none"><li>• <b>Queue or Pub/Sub</b> for web applications</li><li>• Reliable asynchronous message delivery that requires polling</li><li>• Advanced messaging features like:<ul style="list-style-type: none"><li>• <b>first-in and first-out (FIFO)</b></li><li>• <b>batching/sessions</b></li><li>• <b>Transactions</b></li><li>• <b>dead-lettering</b></li><li>• <b>temporal control</b></li><li>• <b>routing and filtering</b></li><li>• <b>duplicate detection</b></li></ul></li><li>• At least once delivery of a message</li><li>• <b>Optional</b> ordered delivery of messages</li></ul>

- **Event Grid:** Best for event-based architectures where you need to route, filter, and handle high-level events with low latency. It is ideal for scenarios where you want to react to specific events from various sources.
- **Event Hubs:** Best for large-scale data streaming and real-time analytics where you need to ingest and process large volumes of data. It is ideal for telemetry data and scenarios requiring high throughput and data retention.
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