



Breakthrough Cloud Service for **REAL-TIME STREAMING ANALYTICS**

Introducing a breakthrough cloud service that simultaneously tracks telemetry from millions of data sources with “real-time” digital twins — enabling immediate, deep introspection and highly targeted, real-time feedback. A powerful UI simplifies deployment and displays aggregate analytics in real time to maximize situational awareness.

MANY APPLICATIONS

Real-time digital twins can enhance the ability of any stream-processing application to analyze the dynamic behavior of its data sources and respond fast. Here are just a few examples:



Intelligent Monitoring

Ex: Fleet tracking, emergency response, disaster recovery



Financial Services

Ex: Portfolio tracking, wire-fraud detection, stock back-testing



Healthcare

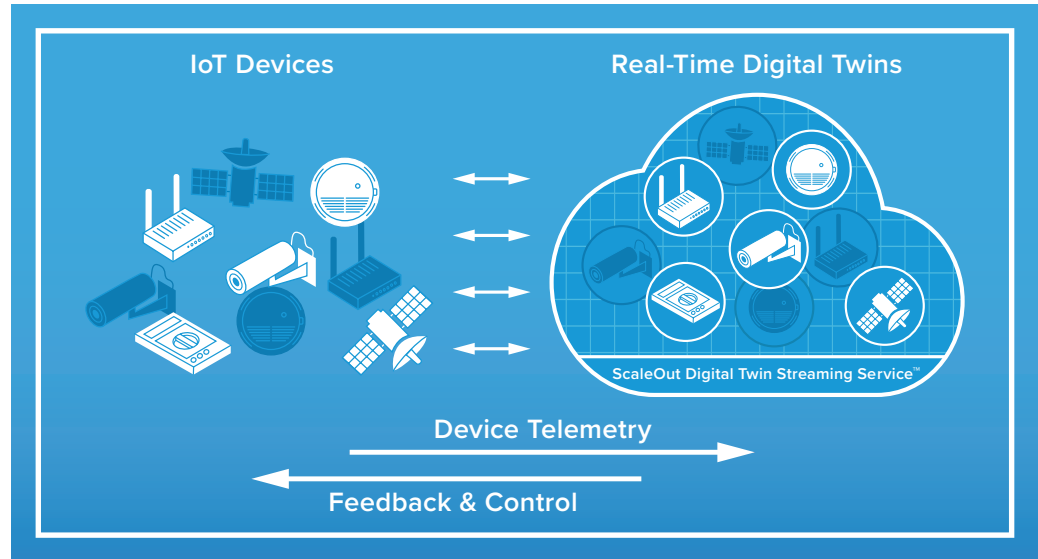
Ex: Real-time patient monitoring and alerting, health device tracking



Internet of Things

Ex: Device tracking for manufacturing, vehicles, mobile devices

...and much more



THE POWER OF REAL-TIME DIGITAL TWINS

Traditional stream-processing and complex event-processing systems focus on extracting patterns from incoming telemetry, but they can't track dynamic information about individual data sources. This makes it much more difficult to fully analyze what incoming telemetry is saying. For example, an IoT predictive analytics application attempting to avoid an impending failure of medical freezers must look at more than just trends in temperature readings. It needs to evaluate these readings in the context of each freezer's operational history to get a complete picture of the freezer's actual condition.

That's where the power of real-time digital twins comes in. While digital twin models have been used for several years in product life cycle management, their application to stateful stream-processing has only now been made possible by advances in scalable, in-memory

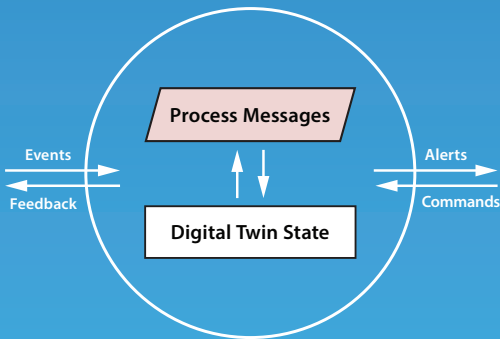
computing. Real-time digital twins provide a simple, intuitive technique for organizing important, dynamically evolving, state information about each individual data source and using that information to enhance the real-time analysis of incoming telemetry. This enables deeper introspection than previously possible and leads to significantly more effective feedback — all within milliseconds.

The ScaleOut Digital Twin Streaming Service dramatically simplifies the hosting of real-time digital twins developed using the ScaleOut Digital Twin Builder™ software toolkit. It connects to data sources using popular event hubs, such as Microsoft Azure, Amazon AWS, and Kafka, and its powerful UI enables continuous real-time aggregate analytics across thousands of twins with graphical updates every few seconds to maximize situational awareness. The cloud service offers transparent, cost-effective scaling to track millions of data sources.



WHAT IS A REAL-TIME DIGITAL TWIN?

Unlike traditional digital twin models, real-time digital twins focus on analyzing incoming event messages to provide immediate feedback to their data sources (e.g., devices) within a live system. Each twin comprises a state object holding dynamic information about the data source and a message-processing method that analyzes incoming events and generates outgoing messages.

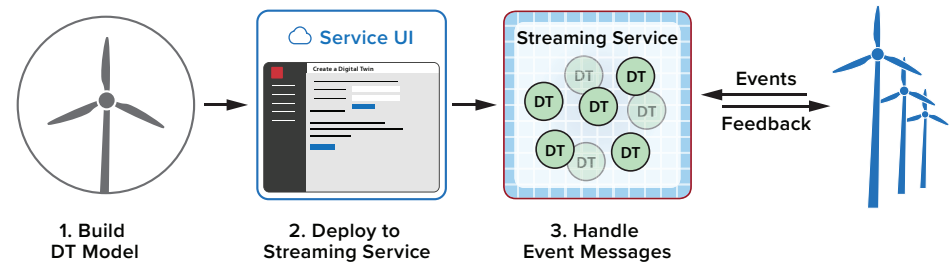


BUILD AND DEPLOY REAL-TIME DIGITAL TWINS

The ScaleOut Digital Twin Builder™ software toolkit enables developers to define object-oriented state information and analytics code for tracking telemetry from each type of data source (for example, a wind turbine or a fire alarm). This toolkit provides APIs in Java, C#, and JavaScript for constructing real-time digital twin “models,” which are then deployed to the ScaleOut Digital Twin Streaming Service with just a few clicks. Once deployed, the cloud service uses these models to automatically create unique “instances” of

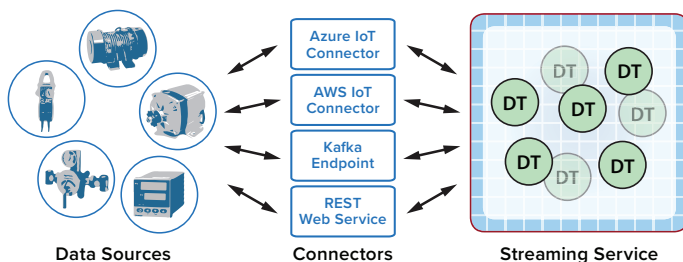
real-time digital twins for all data sources as it processes incoming event messages.

Real-time digital twin models encapsulate dynamically evolving state information for each data source (for example, an IoT device) and the associated, user-defined analytics code needed to process incoming telemetry. This enhanced context enables deeper introspection and feedback to a live system within milliseconds. Analytics code can send messages back to data sources or to higher level digital twin instances organized in a hierarchy. Also, applications can send commands to digital twin instances to manage their corresponding data sources.



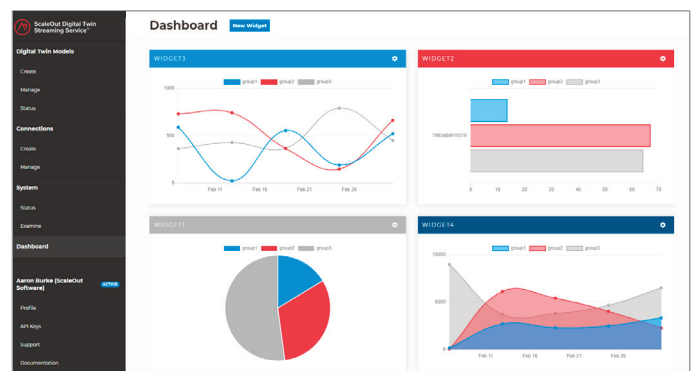
CONNECT TO DATA SOURCES

The ScaleOut Digital Twin Streaming Service’s UI lets the user easily connect the cloud service to numerous popular event sources, including Microsoft Azure IoT Hub, Amazon AWS IoT Core, Kafka, and a REST web service, with more connectors to be released soon. Once connected and authenticated, the cloud service delivers incoming event messages to their corresponding real-time digital twins, and it sends outgoing messages from twins back to their corresponding data sources. The cloud service automatically creates digital-twin instances as needed when new data sources are identified. Connections to event hubs employ transparent scalability to maximize stream-processing throughput.






CREATE AGGREGATE ANALYTICS

The cloud service’s UI enables fast, easy creation of real-time, aggregate analytics that combine the state of all real-time digital twins of a given type and provide immediate, graphical feedback. Each analytics “widget” displays as a bar, pie, or line chart and updates every few seconds with continuous, real-time results. The ScaleOut Digital Twin Streaming Service combines the power of real-time digital twins with scalable, in-memory computing to maximize situational awareness for live systems.



LEARN MORE

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