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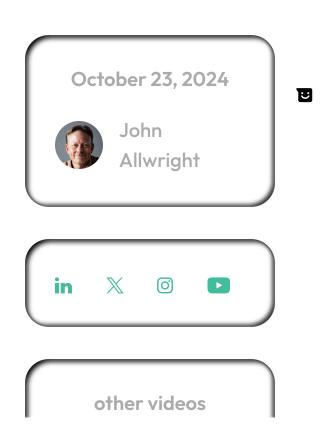
Siri Varma Vegiraju, Software Engineer at Microsoft talks about his experiences processing massive data throughput at Azure scale working on production workloads for both Microsoft and cloud customers around the globe.

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Scaling Cloud Data Processing with Dapr Workflows: A Real-World Implementation

At Dapr Day 2024, we get an inside look at how a team transformed their cloud data processing pipeline using Dapr workflows. Let's dive into their journey and key learnings.



Understanding Dapr Workflows [11:53]

The presentation begins with a clear breakdown of Dapr workflow components:

- Workflow SDK for application integration
- Dapr sidecar for communication
- State store for workflow persistence

"Each workflow is divided into workflows and activities," our presenter explains, introducing us to Dapr's event sourcing approach to state management.

The Power of Event Sourcing [12:32]

Instead of traditional snapshots, Dapr maintains an append-only history log. The magic happens at each 'await':

- State gets offloaded to the store
- History rebuilds the world state
- Processing resumes seamlessly

Real-World Implementation [14:04]

The team's aggregation workflow showcases practical application:

Parent Workflow:

- Processes partition data
- Handles file counting
- Manages previous state retrieval



Catalyst Deep Dive, Including Outbox Pattern Demo



Dapr Day - 5 Year Celebration

Harnessing Crossplane and Dapr for DevOps: FICO's Platform Engineering Journey to Increase Velocity

Hugo Smitter, FICO

Harnessing
Crossplane and
Dapr for DevOps:
FICO's Platform
Engineering Journey
to Increase Velocity

Child Workflows:

- Handle VM-level aggregation
- Process 4,000-5,000 VMs independently
- Maintain clean state histories

Code Deep Dive [18:29]

The implementation reveals elegant simplicity:

Parent workflow handles partition processing# Child workflows manage VM-specific operations# State management happens automatically

Infrastructure Evolution [20:53]

Moving to Dapr brought significant changes:

- AKS integration via extensions
- Sidecar deployment automation
- Prometheus and Grafana monitoring
- Managed identity authentication

Key Learnings [21:43]

Three critical insights emerged:

- 1. "Smaller workflows are better"
 - o Event sourcing overhead considerations

- Easier state reconstruction
- Better manageability
- 2. "Understanding state store limitations"
 - Cosmos DB 5MB request limit discovery
 - Easy migration paths thanks to Dapr's abstraction
 - Flexible state store switching
- 3. Activity Design Principles [23:05]
 - Service invocations through activities
 - Input-based optimization
 - Automatic state management

Looking Forward [23:43]

The team's roadmap includes:

- Pub/sub building block integration
- Service invocation API adoption
- Enhanced retry mechanisms
- Access policy improvements

The Bottom Line [25:06]

"With all the state store management capabilities, we saved months of effort," the presenter concludes. By leveraging Dapr's workflow capabilities, they achieved:



- Reduced development time
- Built-in observability
- Greater focus on business value
- Simplified state management

Implementing cloud-scale data processing? Consider how Dapr workflows might streamline your architecture. Share your experiences or questions in the comments below.

What challenges in your distributed systems could Dapr workflows solve? Let's discuss!

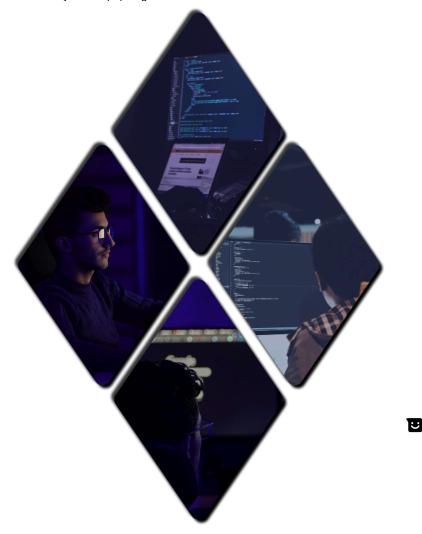
[Note: The presentation includes detailed technical implementation details and real-world lessons learned from production use.]

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