Wanhive

TOPOLOGY AND FEATURES

Wanhive

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Wanhive

Introduction

Wanhive is

Wanhive is a real-time multimedia messaging infrastructure for telemetry and IOT applications. Unique components include an authentication server, an overlay network and a software framework.

Wanhive is for

Wanhive is a multi-tenant platform for enthusiasts and experts alike to easily build, deploy and run secure, robust and highly mobile automation solutions over public IP networks.

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Benefits

- **Cost effective**
  - Total cost of ownership as low as 50% of the nearest competition.
- **Easy to adopt**
  - Easy to learn, build, test and deploy for the application developers and IT professionals.
- **Scalable**
  - Start with a small setup and scale out on demand.
- **Secure**
  - Prevents intrusion and identity theft through a unique authentication process.
  - Protects your data with SSL/TLS support.
- **Robust**
  - Isolates rough and compromised devices and programs.
  - Automatically recovers from application and network errors.
- **Small footprint**
  - Occupies $1/4^{th}$ physical and computational space of the nearest competition.
  - Low power consumption.
- **Supports mobility**
  - Simple network configuration.
  - Works on all IP networks.

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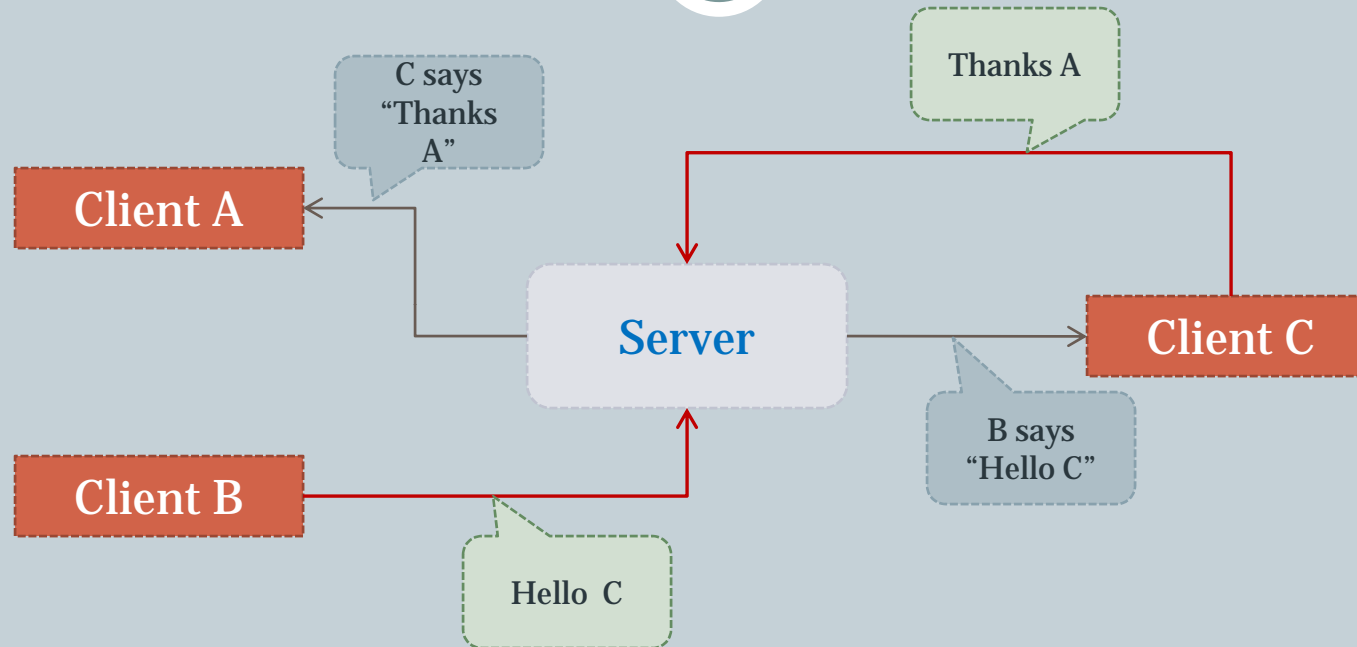
Server topology

- End-to-End communication between clients
- Server acts as an intermediary between the end-points
- Each message is delivered to a single destination
- Messages are delivered in-order
- Server is the single point of failure

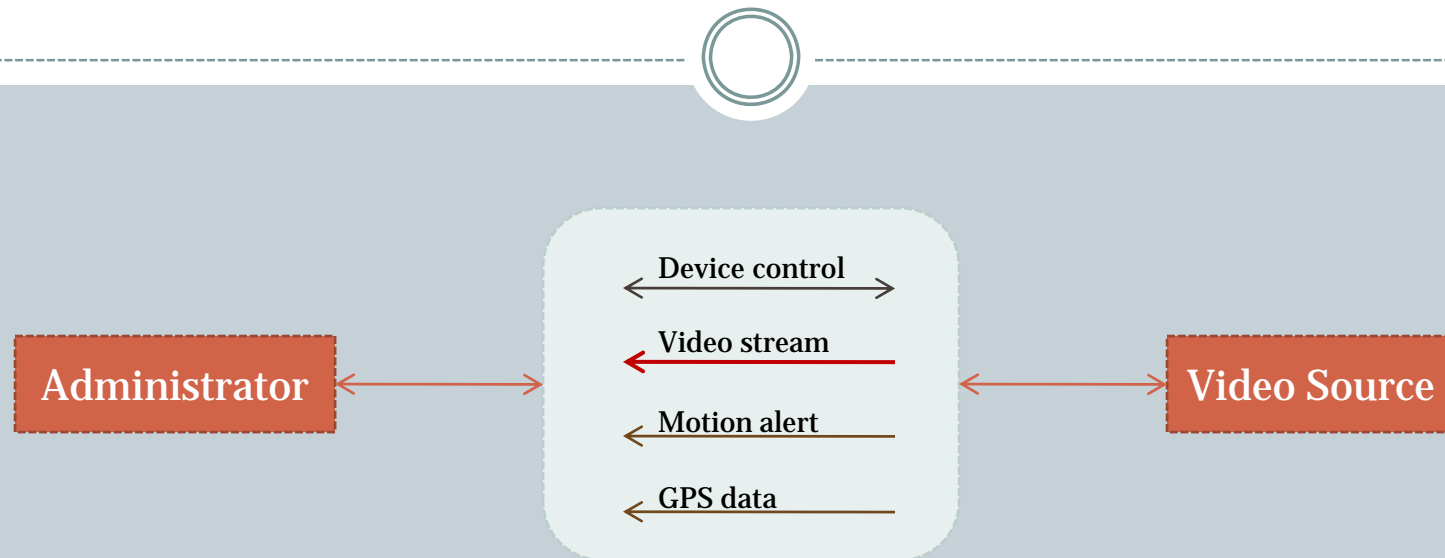Wanhive

Overlay topology
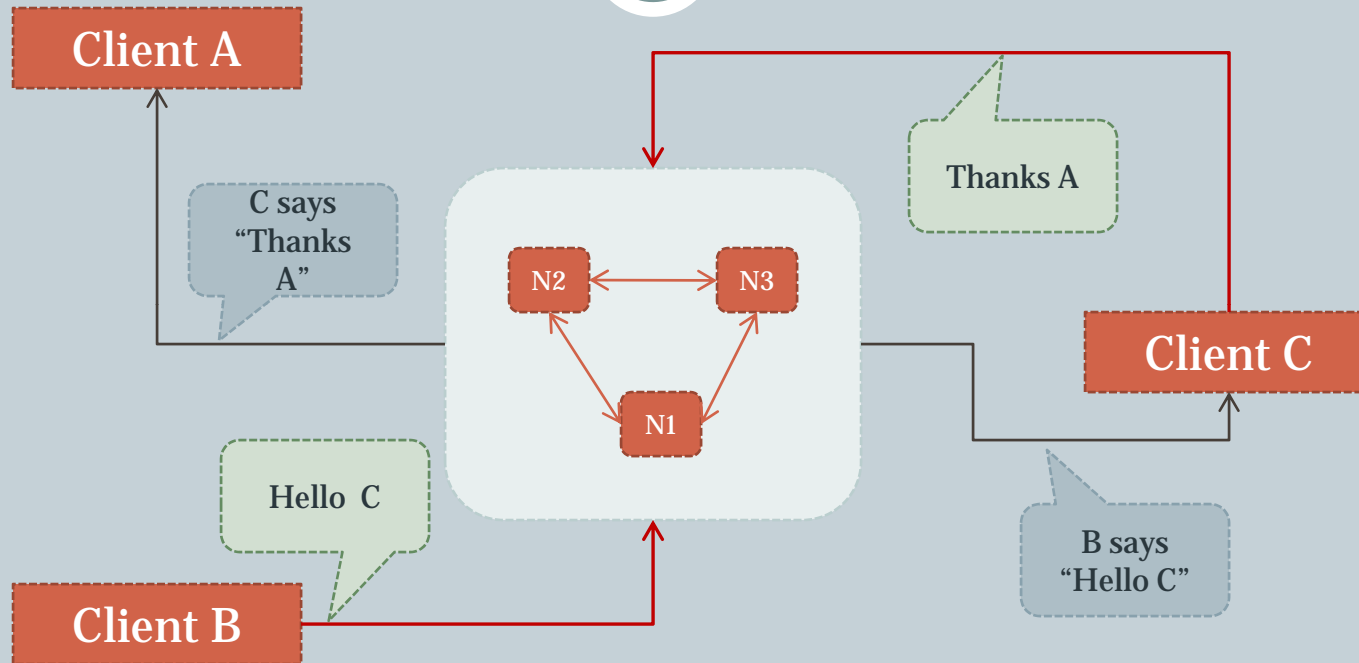
- End-to-End communication between clients
- Overlay network routes messages between the end-points
- Each message is delivered to a single destination
- Messages are delivered in-order
- Can be scaled-out on demand
- No single point of failure

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Multicast topology
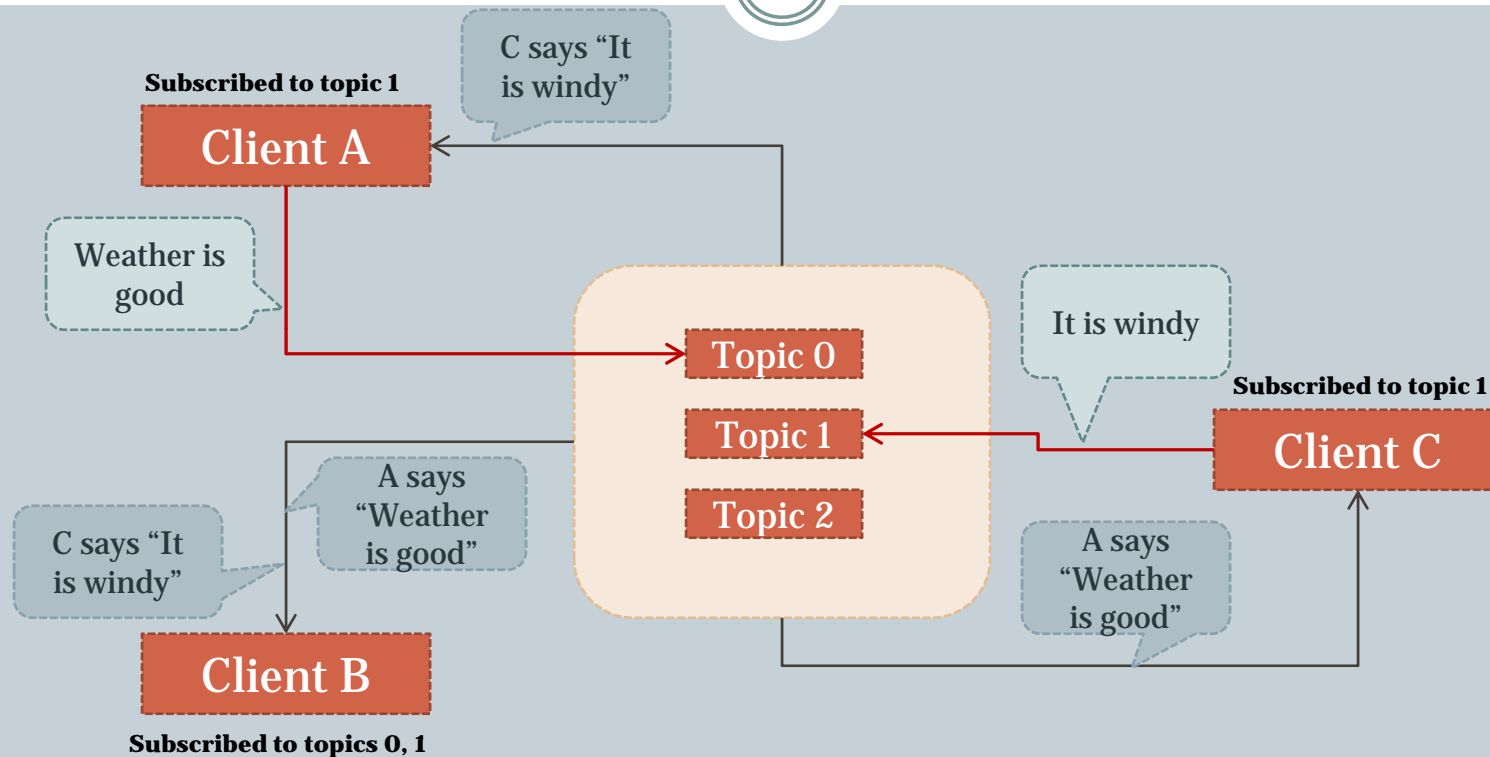
- Publish-Subscribe mechanism
- Broker multicasts the published messages
- Message published to a topic is delivered to all subscribers
- Messages from each publisher are delivered in-order
- Broker is the single point of failure
- Can be load balanced in share-nothing fashion

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Multistreaming

Administrator ↔ [Device control → / Video stream ← / Motion alert ← / GPS data ←] ↔ Video Source

•End-to-end message based real time multi streaming over a single connection at each end-point
•Messages in each stream are delivered in-order
•Supported by all end-to-end topologies
•Can be scaled-out on demand

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Value creation

Feature	Benefit	Value
Structured overlay network.	Small footprint and straightforward setup can be deployed quickly and be scaled-out on demand.	Simplified backend infrastructure.
High throughput.	Each node can serve around 400,000 messages per second in real life conditions that is a **20x** improvement over the nearest competition.	Low total cost of ownership and accelerated ROI.
Simple protocol and interface.	Requires less time and effort to learn, adopt, test and deploy for the developers and end users.	Increased end user productivity.
"Trusted third party" based distributed authentication.	"Zero knowledge password proof" for secure mutual authentication while keeping the passwords and secrets private to the devices and programs at all time.	Reduced risk of intrusion and impersonation while operating on insecure public networks .
Automated traffic shaping and system stabilization.	Automatically handle and recover from node failures and unexpected network traffic spikes.	Reduced risk of denial of service attacks and catastrophic system failures.
Simple bandwidth-efficient protocol and small code footprint software framework.	Build portable, power efficient end points which are able to withstand harsh on-site conditions (environment, geography, connectivity).	Reduced time, cost and risk associated with deployment.
"Domain" based logical access control.	Host multiple user and application groups in mutually exclusive isolated environments. Isolate rough or compromised devices or programs from rest of the network.	Wanhive is multi tenant and can be offered in PaS configuration.

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Application Areas

- **Smart home**
  - Intrusion resistant
  - Protects privacy
  - Low maintenance
  - Approachable
  - Affordable
- **Industrial IoT**
  - Robust
  - Scalable
  - Secure
  - Mobile
  - High ROI
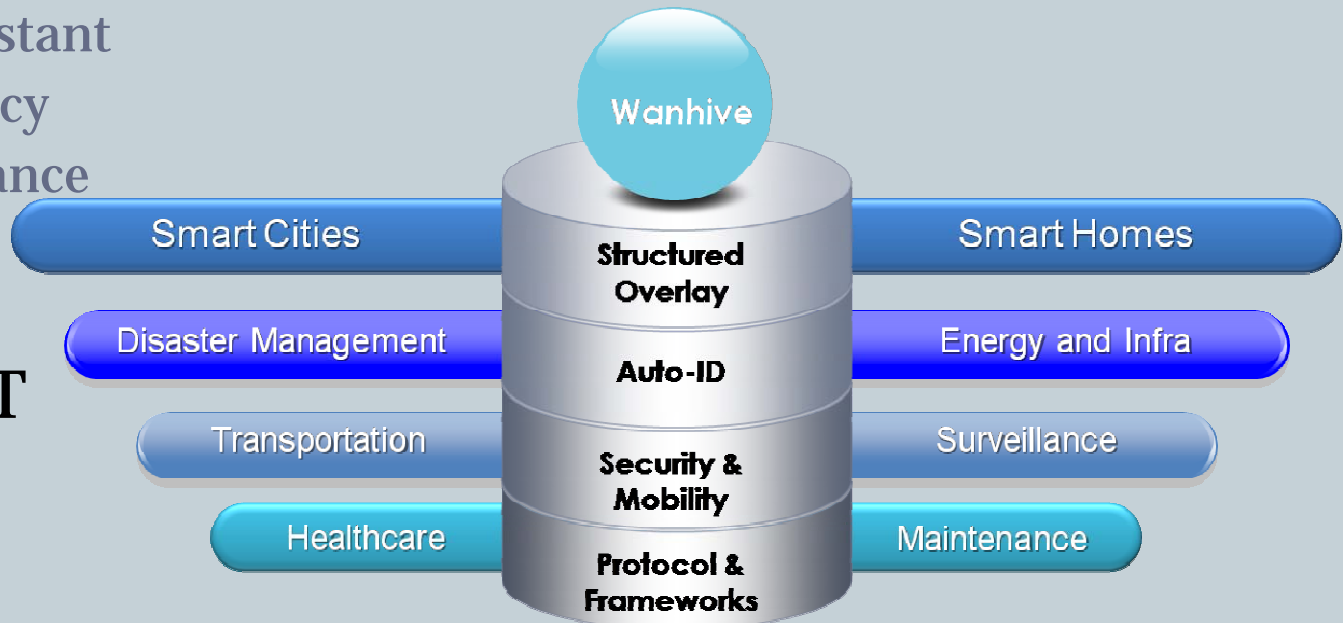
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