



ATOLL SOLUTIONS

Kinesis for Location Tracking

Kinesis

Location lies at the heart of all intelligent systems. Workplaces have a requirement to monitor the location of people to meet their physical security goals. They also need to track critical assets to monitor utilisation and compliance. Smart Factories need to track the location of their machines, tool/dies and other assets as they move around the factory floor. Smart Hospitals need to track the location of care-givers, equipment and patients for improved operation.

Kinesis is a complete location tracking platform that can be adapted to any of these applications and several other use cases. In most of these use cases, the end goal is to locate people or assets in predefined 'zones'. These zones are areas of interest that identify a room, or a delineated area of a building or campus.

Kinesis is designed to work both indoors as well as outdoors and can be deployed in either controlled environments as well as in rugged environments. It consists of the following components:

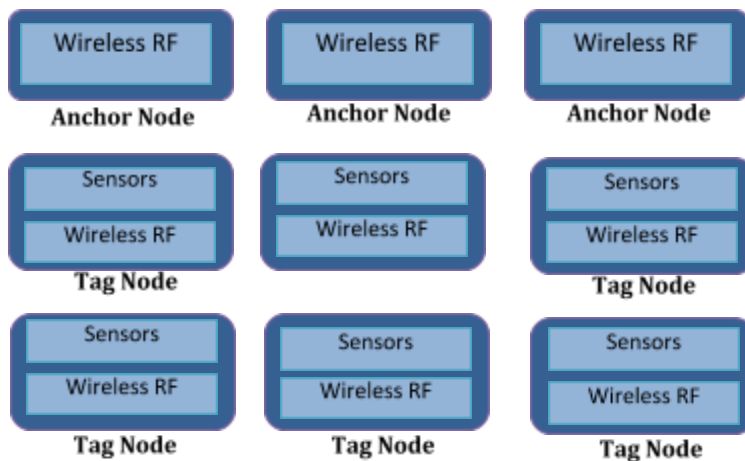
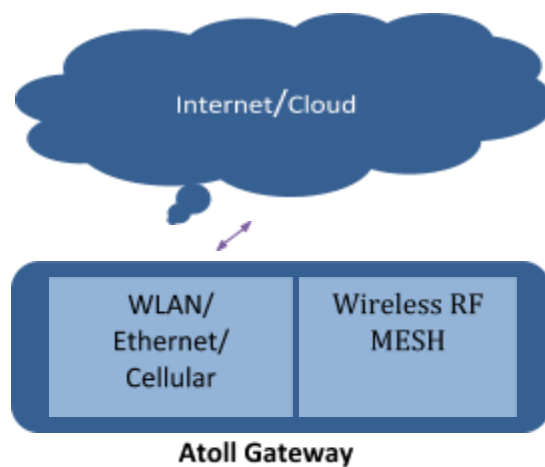
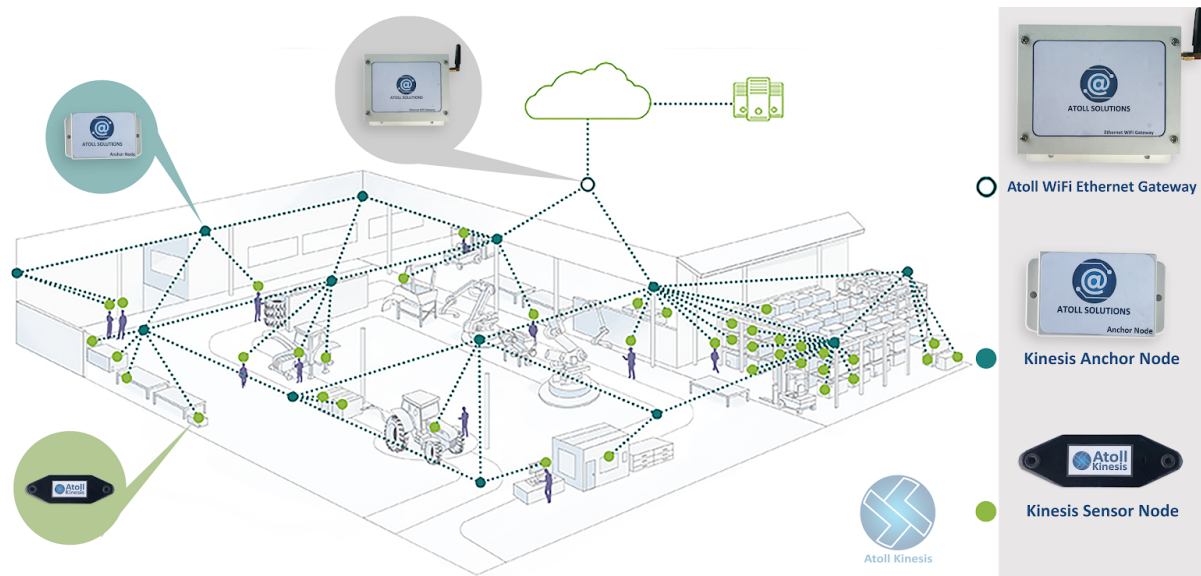
1. Low-power tags in various form factors, that can be carried by a mobile workforce, or attached to mobile assets.
2. Fixed anchors that are positioned at key points of interest. The system will track and log the movement of people and assets as they approach and leave the proximity zone around each of these anchors.
3. Gateway devices with built in edge intelligence for data processing, aggregation and transportation to a cloud service.
4. Kinesis Cloud service gathers and processes the data received from the device network. The cloud service provides APIs to build custom applications using the location data received from the network. Kinesis cloud service also provides control centre for easy set up and management of Kinesis components.





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Architecture



The system uses a 4-tier architecture, with the tag nodes at the lowest level. The next level is a network of fixed anchor nodes. The anchor and tags use low-power wireless communication to provide data for the upper layers to identify and locate each of the tags. The data gathered at the anchor nodes are collated and processed at the gateway, and then sent to the cloud for further processing.

This system can be deployed in a variety of proximity-based location tracking use cases. The cloud service can be used to build custom applications using the location and sensor data obtained from the device network.

The Atoll Kinesis system offers a 10m-10s advantage. The system can be deployed at a new facility within 10 minutes. In addition, with an intelligent gateway, Kinesis has a location refresh rate as low as 10s.

Low Power Tag Nodes

Atoll Kinesis offers a set of tag nodes that can be deployed in various form factors. E.g. nodes can be carried as ID cards by a mobile workforce, or they can be attached to mobile assets. Depending on the scale of the requirement, Atoll Solutions can also customize the tag node to fit customer applications. Depending on the application, these tags can provide battery life ranging from 1 year to 3 years based on the application.



Anchor Nodes

Atoll Kinesis comes with rugged wireless anchor nodes. The anchor nodes communicate over a wireless mesh network, allowing them to be easily deployed in any indoor or outdoor setting. The anchor nodes are powered with 5V power supply. With deployment scale, Atoll shall be able to customize anchor nodes to include environmental sensors etc. It may also be possible to integrate a soft-anchor or an anchor-plugin with existing infrastructure such as a lighting mesh or an access-point network, thus reducing the cost of deployment.



Atoll Kinesis Gateway

The Atoll Kinesis includes rugged gateways that will connect the device network to the Atoll Kinesis Cloud service. It collates the data received from the tags and anchors, performs a series of edge processing and transports data to the cloud service over a wired or wireless network as available. The cloud connectivity can be through an Ethernet, WiFi or Cellular network.



Kinesis Cloud

Atoll Kinesis Cloud offers a set of REST APIs for location information from device network and also provides a safe and secure control center devices configuration and management.

Kinesis APIs:

The Kinesis APIs are a set of secure interfaces that customers can access to build their cloud application dashboards and analytics.

Key Features:

- Register client applications, and manage access tokens
- Register Callback APIs to monitor specific events
- Interface with APIs to track live and historical location and sensor data



Kinesis Control Center:

Kinesis Control Center is a cloud application that gives customers a single portal to manage their device network.

Key Features:

- Secure and extensible access control
- Device console that shows current deployment statistics
- Ability to commission and decommission devices
- Ability to monitor and manage firmware revisions

Dashboard / Network

Network name
 Gateway Mac ID
 Email Id
 Phone

@ Please enter Email Address
 +91 Please enter Phone No

Save Clear

Search here...

Network name	Last Update	Action
Network 1	2019-08-08T16:02:26.163589	

 Network / POI

Network

MAC ID
 Name
 Zone

Save Clear

Search here...

MAC	name	Zone	Action
20		Room 1	
21	Room 2-1	Room 2	
23	Room 3-1	Room 3	

 Dashboard / Tag

Network ID

MAC ID
 Assignee Name
 Assignee ID

Save Clear

Search here...

MAC ID	Assignee Name	Assignee ID	Action
19996			
11817			
40396			

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