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Oracle Communications Unified Topology for Inventory and Automation

Oracle Communications Unified Topology for Inventory and Automation (UTIA) is an open, standards-based, cloud-native component that provides powerful topology capabilities within Oracle's Unified Inventory and Topology solution. It provides a "live network and service topology" by overlaying near real time assurance data through integration with assurance sources such as Oracle Unified Assurance. It delivers a visually appealing and highly responsive user experience and improves the algorithms such as network path analysis to act on a live representation of networks and services.

UTIA context within Oracle's Unified Inventory and Topology solution

UTIA is a key component within Oracle's Unified Inventory and Topology solution, shown below. This solution provides holistic service, network and resource visibility across diverse network technologies, generations, and domains. Such accurate, real-time views support automated orchestration and assurance.

Image 1. UTIA context within Oracle's Unified Inventory and Topology solution.

Key benefits

- Provides intuitive user experience across a unified topology that is
    - Visually appealing
    - Highly responsive esp. for larger networks
- Enables live topology with assurance data overlay for unified perspective across inventory, assurance, and orchestration
- Supports real time path analysis on live topology across different vendors, domains, and technologies
- Increases operational accuracy and automation in
    - Network plan & build
    - Service design and orchestration
    - Network capacity management
    - Closed loop automation
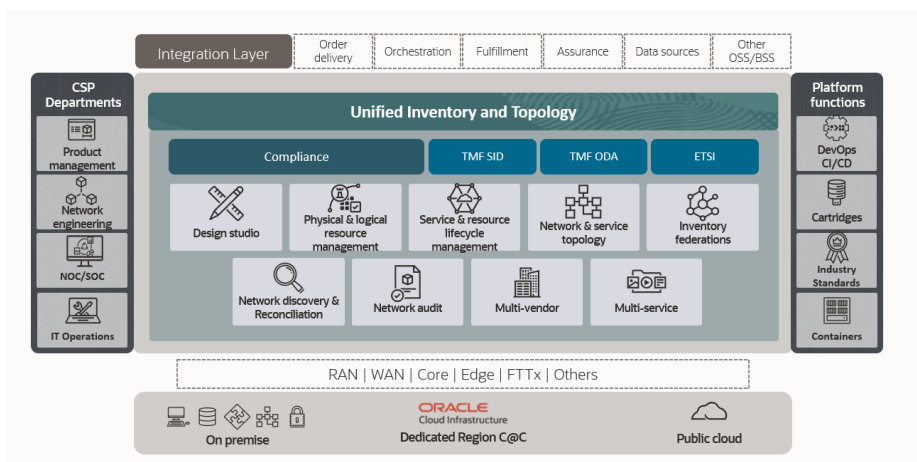- Cloud native microservice component provides a modern, scalable architecture

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Introduction to UTIA

UTIA provides a highly responsive and visually attractive representation of service and network topologies, including full geo-coding. Illustrated below are some examples of map views, support for working with large networks, the ability to generate clustered network views and finally service topology views.
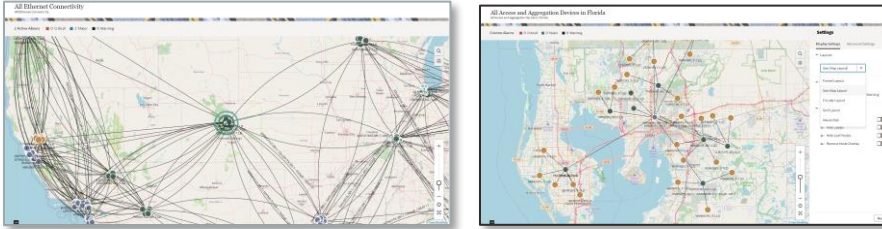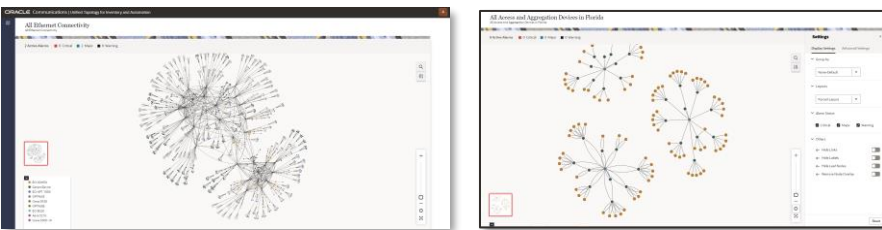

Image 2. UTIA map views.

Image 3. UTIA large network and clustered network views.

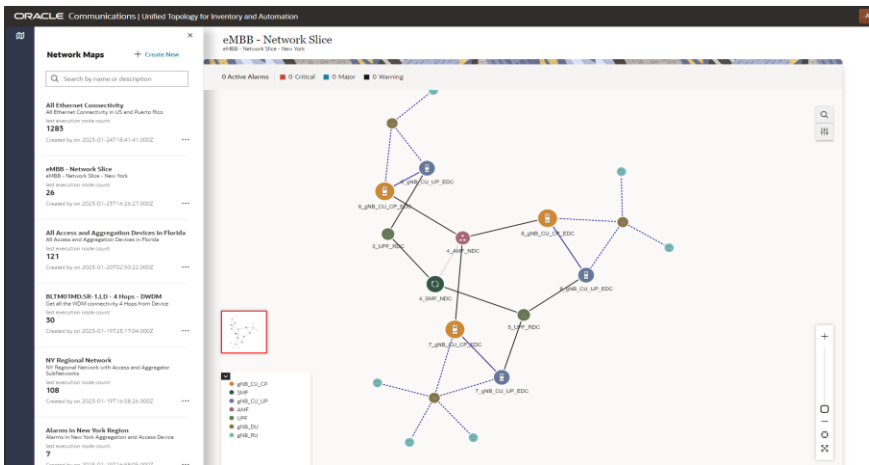UTIA also provides topology views of services, illustrated below with a 5G example.

Image 4. Example 5G eMBB service topology view.

Key features

- Microservice based topology component

- Simple to deploy and orchestrate various components using common cloud native tool kit

- Built using

  o Spatial and Graph features of Oracle Database

  o Oracle Access Manager for common authentication / sign-on

  o Helidon, VBS

  o Kafka message bus for integration

- May be deployed with UIM as well as other inventory systems inc. MetaSolv Solution, etc.

- Integrates with Oracle Unified Assurance to overlay assurance data on topology for

  o Topology visualization

  o Inventory algorithms such as path analysis, etc.

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Enabling Live Topology with UTIA

UTIA integrates with both the core inventory component (in this case, Oracle Unified Inventory) and assurance sources (in this case, Oracle Unified Assurance) via a Kafka message bus, illustrated below. This message bus facilitates integration with other core inventory and assurance components – both Oracle and non-Oracle.
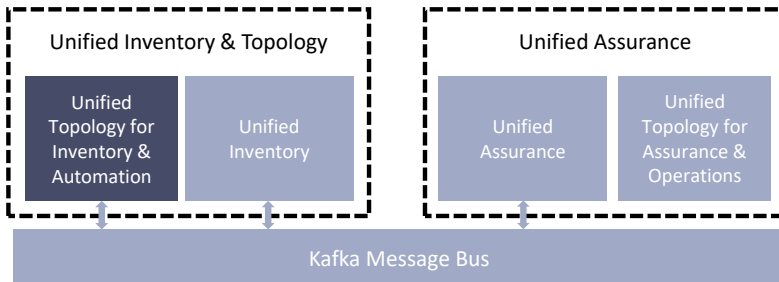

Image 5. UTIA integration context with core inventory and assurance components.

Once real time assurance data is received by UTIA, it is overlaid on the topology view and is used in computational analysis by network engineering and operations teams.
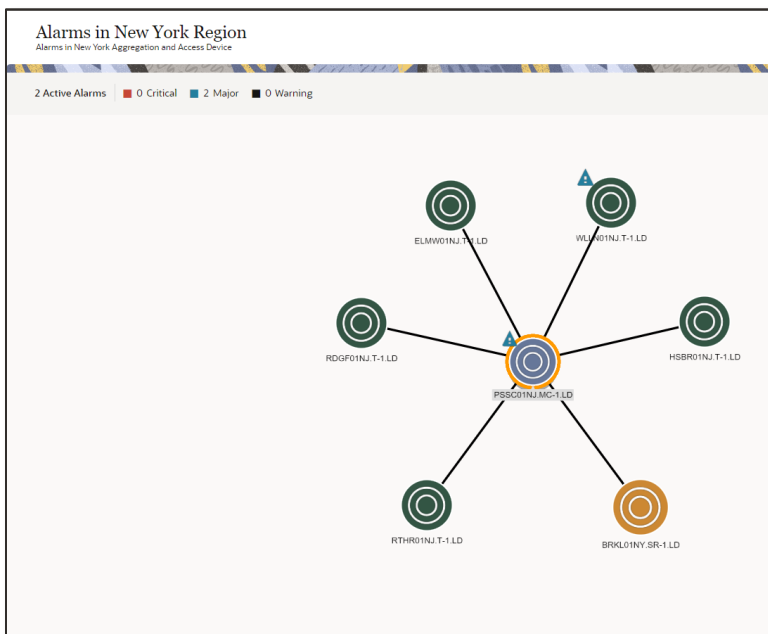
Image 6. Reflecting real time assurance data on the live topology.

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UTIA Architecture

The UTIA architecture, portrayed below, outlines the key components including those built on the Spatial and Graph features of Oracle Database that power the topology service.
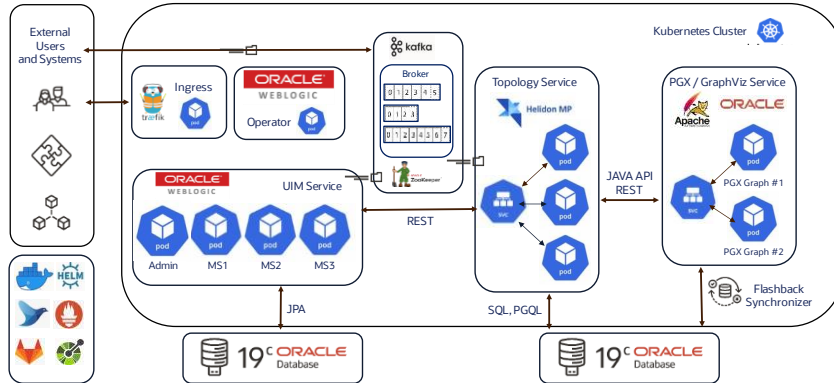

Image 7: UTIA architecture.

Summary

UTIA provides powerful live topology capabilities within Oracle's Unified Inventory and Topology solution by overlaying near real time assurance data through integration with assurance sources such as Oracle Unified Assurance. It delivers a visually appealing and highly responsive user experience and improves the algorithms such as network path analysis to act on a live representation of networks and services – a key foundational step towards closed loop automation.

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