INTUITION

DEMONSTRATING A TRANSFORMATIVE NETWORK MANAGEMENT SYSTEM

With the advent of non-geostationary satellite orbit (NGSO) constellations, multi-orbit operations, software-defined satellites, and the adoption of 5G and cloud-based architectures, next-generation ground systems are evolving to embrace the dynamic space segment and technology innovations. ST Engineering iDirect introduces Intuition, an advanced satellite networking ground system based on a virtualized, cloud-based, multi-orbit architecture that capitalizes on the latest standards-based technologies and unifies iDirect's industry-best capabilities.

To manage Intuition, the Intuition Network Management System (NMS) is designed to maximize every opportunity. The Intuition NMS is a comprehensive microservice cloud-based network management system designed for optimal network performance, resource allocation, and service delivery. The NMS has been built from the ground up to leverage the latest technologies and standards, reach higher network scale, adopt strict security standards, provide comprehensive APIs, and improve user experience.

ST Engineering iDirect successfully demonstrated the Intuition NMS running in an AWS public cloud environment. The demo showcased an overview of the Intuition NMS user interface and capabilities while highlighting key innovations across the system.

KEY FEATURES

Streamlined monitoring and control across all network elements

High availability and adaptability through web-scale design

Significant scale to 100s of 1000s of terminals

Standards-based API-driven architecture

NIST and OWASP security compliance

Cloud, on-premises, or hybrid deployments

Map view provides a visual outlook of assets and key information in one place

The Intuition NMS is the single, cohesive application to manage your satellite network from building, monitoring, troubleshooting, and beyond. How a user navigates their networks is a key part of the user experience. The Intuition NMS offers two options for viewing your network – a map and a tree view.

The map provides a holistic view of the entire network globally correlated with the current element status, location, and events mapped alongside beam boundaries, service area boundaries, and even current weather. When an element is selected on the map, a summary view, which contains vital configuration, status, and performance data for the element, is displayed. For mobile terminals, a user can turn on historical tracking to troubleshoot issues with the terminal's performance during a specific period.

The tree, or logical, view allows a user to traverse the network through the element relationships. As the user steps further down the tree-based view, users see the full inventory of elements at that level, search and filter on specific elements based on status or attribute values, and view detailed at-a-glance views of each element. From there, an element can be accessed directly to view or modify configuration, view statistical data, and troubleshoot with logs and real-time commands.

ACTIONABLE DASHBOARDS

Custom dashboards provide performance data and trends for actionable intelligence

With Intuition NMS, a user can create custom dashboards to share with other users. They'll have the flexibility to manage their networks based on their own business practices. Intuition NMS dashboards enable real-time monitoring and troubleshooting. A user can create widgets to display stats and alarms for one or more elements. A dashboard with other users or set as their home page. Navigation between dashboards just takes a few clicks.

COMPREHENSIVE TERMINAL MANAGEMENT

Easily add, configure, and monitor terminals from one screen

Creating and modifying network terminals is a key aspect of the NMS. A user can easily access all element data from a single place, so work is quick and efficient. The elements all have a common pattern. Each has a summary view, which is visible from the map, the logical view, and the element view. This provides vital information and data without the need for special reports.

Terminal configuration is separated into sections for quick access. Edit mode provides configuration version control by storing changes in transactions known as changesets. Here a user can edit all aspects of the terminal, and if necessary, easily jump to other element configuration, such as modem, to create a new one or edit an existing one without ever leaving their place. A user can generate reports for stats, alarms, and events for monitoring purposes or retrieve device logs.

INNOVATIVE VERSION CONTROL (CHANGESET)

Workflows clearly show the status of each step in a changeset

One of key innovations with Intuition NMS is the introduction of version control via changesets. Each changeset separates changes from the in-production configuration. Users can organize configuration changes as transactions that can be applied together. Changesets also allow for detailed configuration auditing.

A user can view all changes at any point. This includes elements changes, types of changes, and changes compared to the in-production configuration. A user can also view any validation warnings and errors that need to be reviewed and potentially addressed prior to committing the transaction. Some changes impact others without a user specifically making them. Impact view shows all objects impacted, and which object impacted them.

Once a user feels confident with their changes, they can commit them. The user can follow the process of the changes being sent to the baseband processing units and watch as the steps are processed. This way a user knows exactly when and where problems arise. If there is an issue with that process, the user can initiate a rollback of those changes to revert the configuration to the last state for all the objects.

INSIGHTFUL REPORTS

A network overview report is one example of specialized reports available that can be shared across users

Beyond dashboards, Intuition NMS also gives you specialized reports, for a high-level view of your network. These help you understand network data consumption, network conditions, historical growth, and post-event conditions. Intuition also allows users to build customized reports tailored to their specific use cases. Some of these include statistical trend reports and snapshots of the network at a moment in time, or streaming in real time, that combine configuration metrics and statistical metrics into one report.

Any custom-built, generated report can be saved and loaded the next time a user wishes to run the same report again. Once saved, a user can share the report with other users to access, saving time in the future.

Protect your network by defining distinct user permissions with different resource roles

With the Intuition NMS, security and data permissions are a key focus. The NMS includes an improved role-based access control system that adds increased security while also simplifying the overall experience for users. Beginning with integrated LDAP and SAML support to individual element permissions, customers can create unique and individualized access for each user.

After creating a user account, it is simple to add and remove user groups without leaving the page. The user groups define what permissions users have access to for specific elements or element types. While viewing the user groups, details about a particular group can also be seen in the at-a-glance view. Within this at-a-glance view, the list of assigned users, resource roles and element groups can be quickly accessed via the provided links.

A user can view the resource roles and element groups defined for that user group. Resource roles define the permissions for a user group, essentially what actions a user can perform, and element groups define the specific elements for which a user can perform those actions.
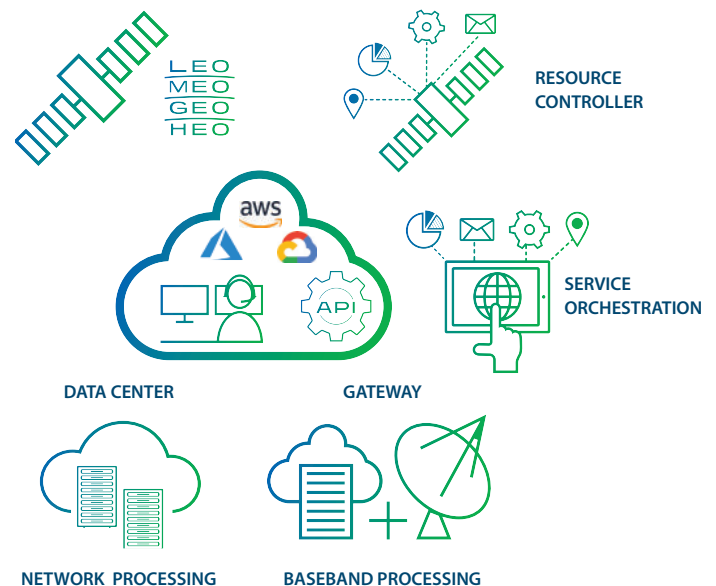
BUSINESS ASSURANCE WITH INTUITION NMS

The ST Engineering iDirect Intuition NMS is an advanced cloud-based network management system designed to leverage the latest technology innovations to reduce operational complexity and gain intelligent network insights.

With its microservice-based architecture, the Intuition NMS can manage satellite networks of today while being scalable for the networks of tomorrow and beyond without compromising the needs of smaller networks. This also allows for fast system validation as requirements change as well as high network availability and geo-redundancy.

Intuition NMS also allows for extensive interoperability. The NMS has a full API suite that covers all aspects of network configuration, monitoring, and troubleshooting so that the NMS can be orchestrated by external OSS/BSS systems and become part of the larger telecommunications ecosystem.

To meet dynamic customer demands, networking and orchestration technologies work in unison across multi-orbit satellite, terrestrial and mobile networks to enable a truly seamless service offering. Resource and end-to-end service orchestration achieve this by matching software-defined satellite constellations with software-defined networks.

Using user-centered design principles and practices, Intuition NMS was designed to build upon the extensive knowledge collected about the existing ST Engineering iDirect NMS systems. Combining the best features from

LEO
MEO
GEO
HEO

RESOURCE CONTROLLER

aws

SERVICE ORCHESTRATION

DATA CENTER   GATEWAY

NETWORK PROCESSING   BASEBAND PROCESSING

each with user experience research, the system was designed to simplify the steps required to complete a task and streamline the process from start to finish. Installation and upgrades are automated to make the process repeatable and less error prone.

With Intuition NMS, operators will gain the confidence that their network is operating at peak performance through real-time monitoring and troubleshooting, automated operations, and streamlined navigation across the system resulting in exceptional customer service. Its virtualized infrastructure allows operators to easily grow their network to capitalize on new revenue opportunities as they arise.

Contact your ST Engineering iDirect Account Team to schedule an Intuition NMS demo!