

NetACE TONAS™

Cloud-native Telecom Operations & Network Automation



Products and Solutions

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Atrinet in a Nutshell



50+ Customers and Partners



50+ Out-o-the-box Vendors & Technology Packs



100% Successful Project Delivery



FOCUS Telecom Operations and Network Automation Solutions



Product Lines TONAS™, iNMS, vVAS



TONAS™ Customers and Partner



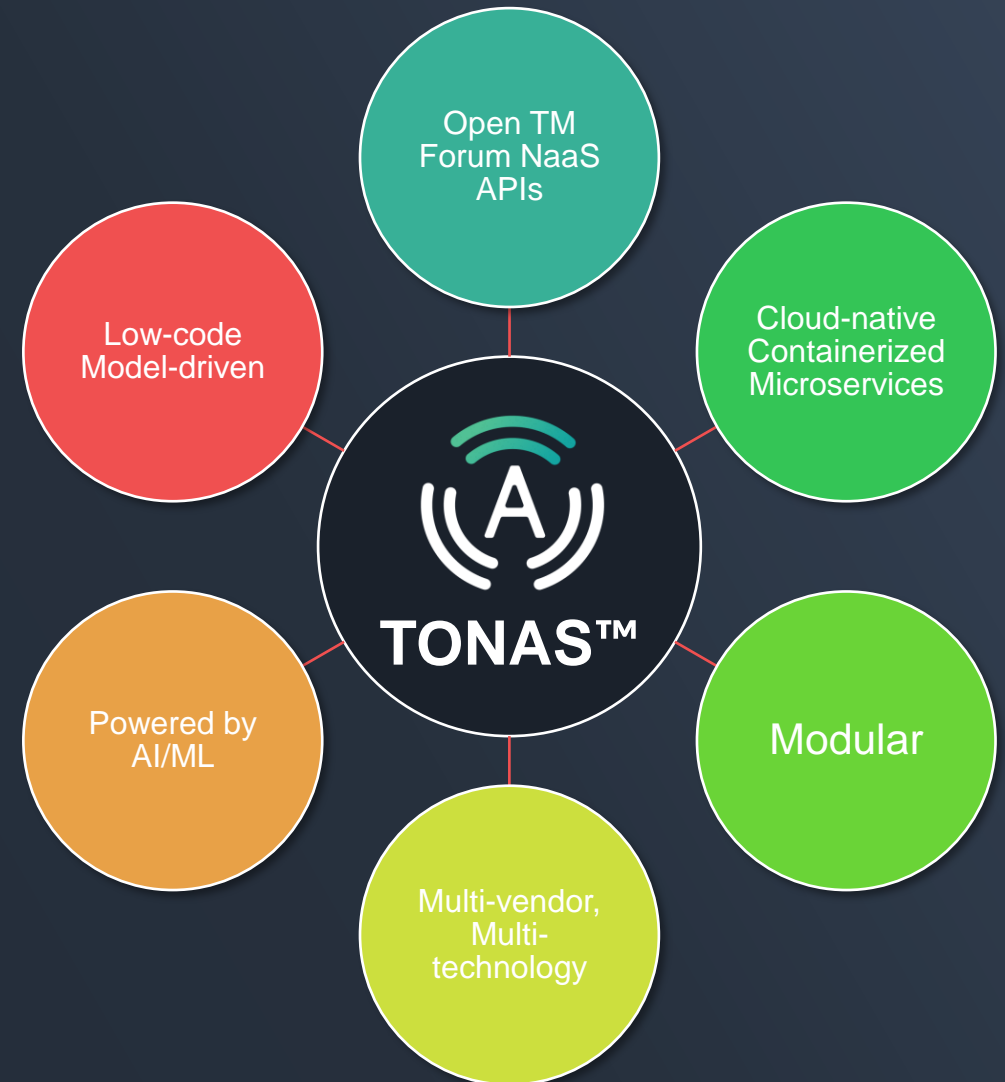
TONAS™

Introducing Modular Cloud-native OSS Suite



TONAS™ Cloud-native OSS Solution Concepts

- **Modular solution:** A flexible solution that allows customers to start with one module and grow easily.
- **Low-code approach:** Simplified customization, reduced development costs and shortened time-to-market.
- **Cloud-native:** A design approach that leverages cloud computing technology and architecture to enable scalability, fault tolerance, and rapid deployment and maintenance.
- **Compliance to Industry Standards:** The solution adheres to industry standards set by TM Forum, 3GPP, ETSI, and IETF ensuring compliance and interoperability with other vendor platforms.
- **Broad OSS and Network Automation Functionality:** The solution can be employed with a diverse set of OSS and network automation capabilities, or with a specific OSS module, as per the customer's requirements.
- **TM Forum Open APIs:** Standardized network-as-a-service (NaaS) application programming interfaces (APIs) that enable integration with third-party systems and services.
- **Flexible business model:** A straightforward and easy-to-understand pricing and licensing model that allows customers to easily access and use the solution.
- **Flexible Data Access Options:** Supports Python/GO SDK, NATS.io, File access (CSV, XML) and more.
- **Open-source libraries:** Software components and tools that are developed by a community of developers and made freely available to the public.
- **Multitenancy:** A solution that can support multiple tenants or customers within a single instance of the platform or module, providing isolated and secure environments for each tenant.
- **Deployment on private or public clouds:** A deployment model that allows the solution to run on either a private or public cloud infrastructure.
- **Artificial intelligence and machine learning algorithms:** Advanced technologies that enable the solution to learn from data, recognize patterns, and make intelligent decisions to help operators solve problems more efficiently and effectively.



TONAS™ Telecom Solutions and Products

Inventory Management



Lightweight Active Network Inventory - **LwNI**

Real-time Reconciliation - **DIA**

Federated Auto-Discovery - **DIA**

Network Configuration Management - **NCM**

Assurance



AI/ML Analytics - **NI&A AIOps**

Performance Monitoring - **NI&A FM**

Fault Management - **NI&A FM**

Fulfillment



Service Fulfillment - **USAF**

Service Activation & Configuration - **USAF**

Service Inventory - **USAF**

Acronyms for TONAS™ Products:

• **DIA** - Inventory Data Integrity Assurance

• **LwNI** - Lightweight Active Network Inventory

• **NCM** - Network Configuration Management

• **NI&A** - Network Insights & Assurance

• **AIOps** - AI-driven Operations

• **USAF** - Unified Service Activation & Fulfillment



TONAS™ Supported Technologies and Integrations

Typical LoBs & Network Targets



Mobile - subscriber activation 3G/4G/5G Core; Voice, Voice mail, RAN configuration



Wireline - simple fixed PON, DSL; complex fixed Ethernet/MEF; MPLS VPNs, OTN, SDH/SONET; Controllers, EMS/NMSs



NFV, SDN, IoT - Network Virtualization and SDN e.g., Cloud Operating Systems, VNFs, CNFs, Controllers, VNFMs, etc



Converged - VoIP, IMS, Pay TV, games, storage i.e., network-independent services across domains e.g., Multi-Play: single service across multiple LOBs



Cable - cable broadband, TV and VoIP e.g., IT-oriented servers, CPE, DHCP / DOCSIS and Packet Cable devices, CAS (TV), softswitch (VoIP), provisioning gateway (IMS)

Northbound APIs

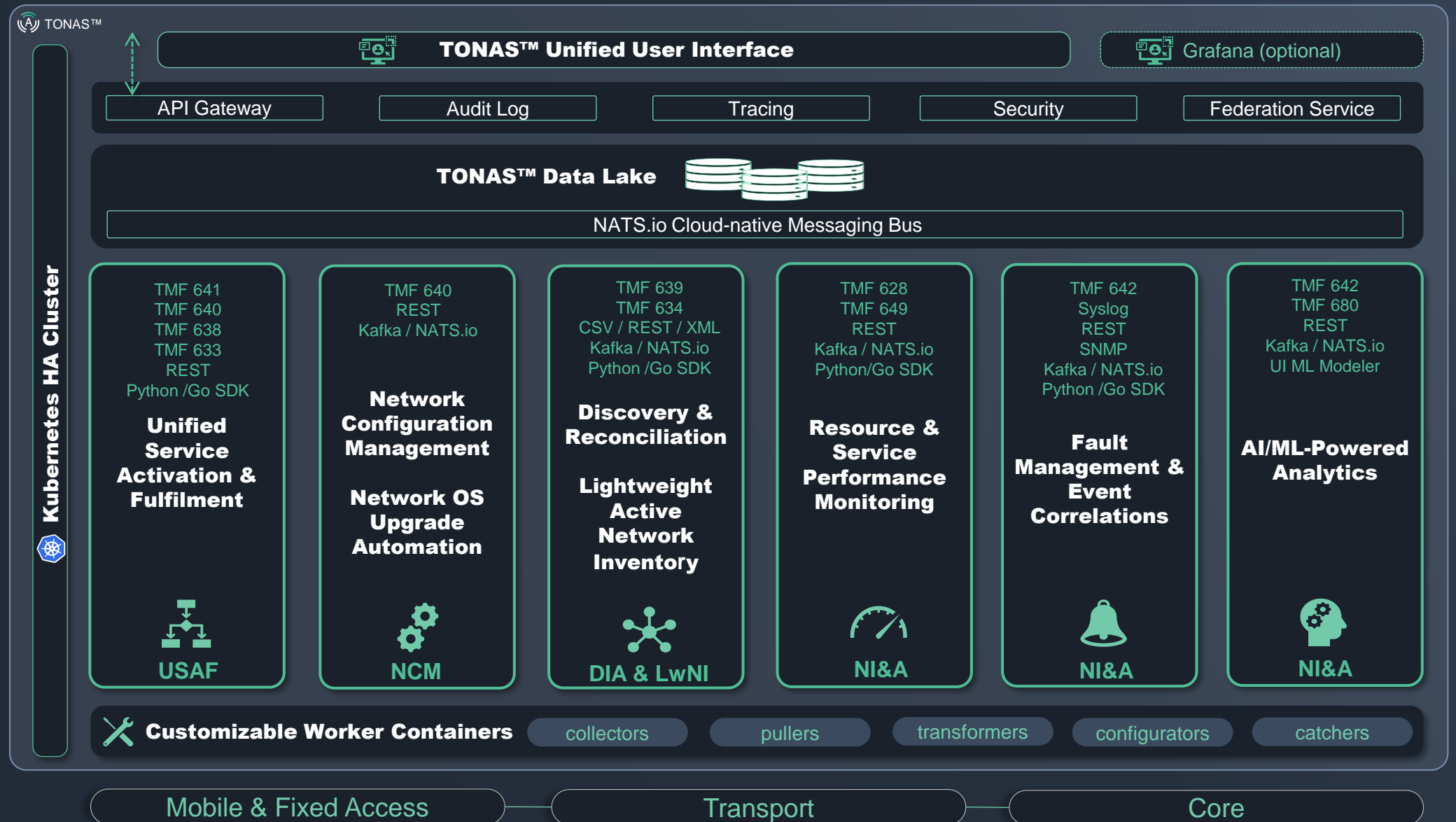
- REST
- TMF640
- TMF641
- TMF633
- TMF639
- TMF638
- TMF628
- TMF642
- Kafka/NATS.io
- Python/Go SDK
- CSV / XML
- SNMP
- Syslog
- Grafana

Southbound APIs

- REST / TMF
- SOAP / XML
- CLI over SSH/Telnet
- NetConf/YANG
- SNMP
- S/FTP
- DB connectivity (sql...)
- Corba/3GPP/MTOSI
- Java RMI
- TCP Socket
- TL1
- TMF 640 / TMF 664
- Kafka/NATS.io
- ETSI SOL003



TONAS™ Modular Cloud-native Solution Architecture



- Shared Infra
- Cloud-native
- Low Code
- Customizable
- CI/CD
- Model-driven
- NaaS Open APIs
- Python/Go SDK
- High Availability
- Pre-integrated
- Closed-loop





Multivendor Libraries

- More than 50+ Vendors supported
- 1000+ NE types & dozens of EMS/NMS supported
- Weeks to onboard a completely new device/NMS model

TONAS™

Lightweight Active Network Inventory - LwNI & DIA



TONAS™ Lightweight Active Network Inventory - LwNI & DIA

Lightweight Network Inventory (LwNI)

TONAS™ Lightweight Network Inventory (LwNI) is an active network inventory that is constantly updated in real-time by TONAS™ DIA. As part of the TONAS™ Platform, it smoothly integrates with TONAS™ DIA, NI&A, USAF and NCM solution modules.

- **Improved accuracy and completeness:** With real-time reconciliation and automated discovery, the solution provides a more accurate and complete view of the network inventory, enabling a comprehensive and up-to-date view of the network inventory, making it the ideal baseline for assurance use cases.
- **Multi-Vendor Support:** The solution supports a wide range of network vendors and technologies, allowing for comprehensive inventory coverage across the network.
- **Data Enrichment:** The solution provides data enrichment capabilities, enhancing inventory data with additional information such as location, configuration data and service dependencies (with integration to service inventory).
- **Inventory Reporting:** The solution includes comprehensive reporting capabilities, providing visibility into network topology and inventory data, and enabling better decision-making.
- **Integration:** The solution integrates with other OSS and BSS systems, enabling seamless data exchange and end-to-end process automation.
- **Open Architecture:** The solution features an open cloud-native architecture and supports Open TM forum APIs, enabling CSPs to customize and extend the solution to meet their specific requirements.

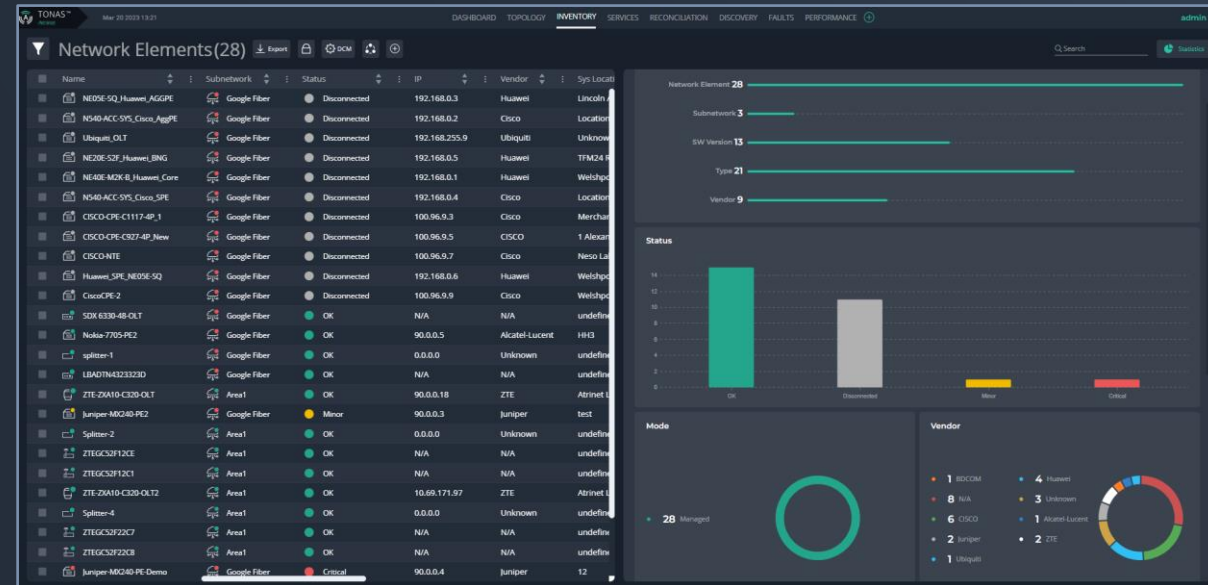
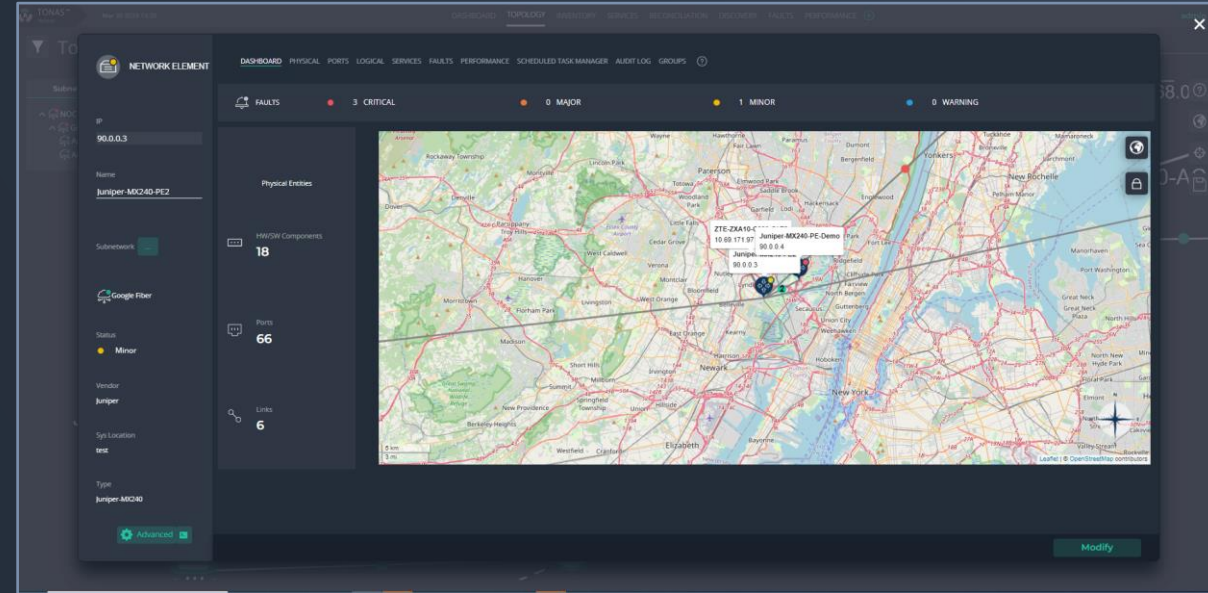
Inventory Data Integrity Assurance (DIA)

Real-time Reconciliation & Sync

- **Real-time Reconciliation & Sync:** TONAS™ DIA provides real-time reconciliation of inventory data, ensuring that the inventory is always accurate and up-to-date.

Federated Auto-Discovery

- **Federated Auto-Discovery:** TONAS™ DIA enables federated automated discovery across multiple network domains end-to-end, allowing for seamless network inventory updates across the entire network.



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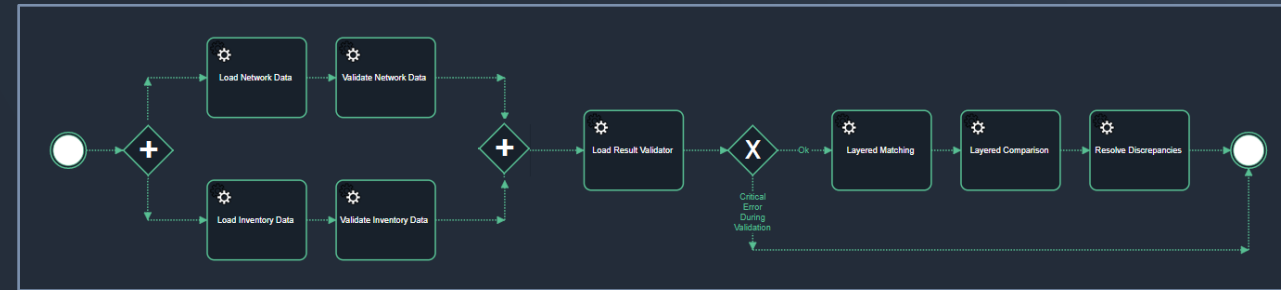
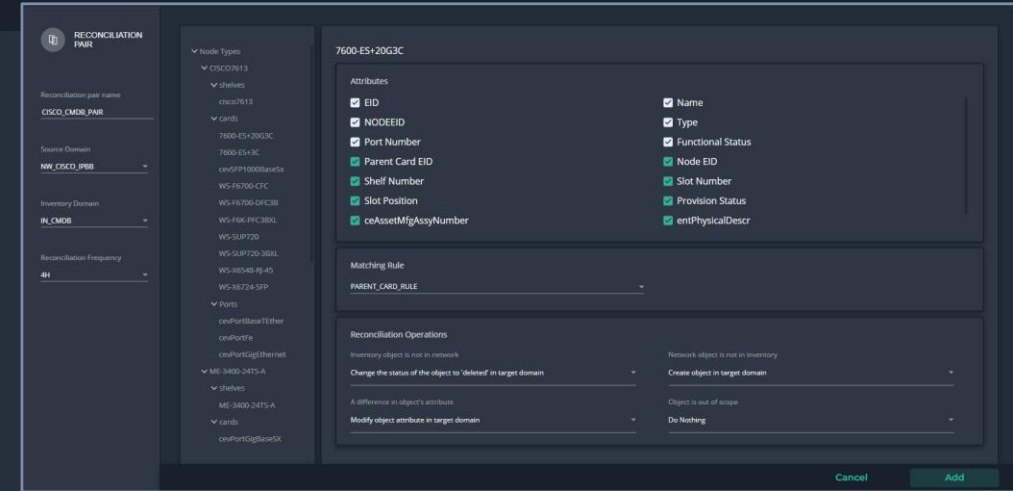
Inventory Data Integrity Assurance - DIA



TONAS™ Inventory Data Integrity Assurance - DIA

NetACE TONAS™ Inventory Data Integrity Assurance (DIA) comprised of Federated Network Auto-Discovery & Real-time Reconciliation modules, ensures the accuracy and completeness of network inventory data and supports the automated and manual resolutions of data inconsistencies. The DIA can be easily integrated with one or more 3rd party Network and Service Inventories, fully automating the network discovery, synchronization and discrepancy resolution tasks.

- **Federated Auto-Discovery:** Technology that automates the discovery and metadata capture of new resources in cloud-native and hybrid environments, reducing manual effort and improving efficiency.
- **Real-time Reconciliation:** Automated and manual real-time reconciliation of discovered resources against expected inventory, critical for accurate network inventory data in dynamic cloud-native environments.
- **100% Accurate Inventory Data:** TONAS™ DIA provides a single source of truth for network inventory data, ensuring accuracy, consistency, and up-to-date information across the entire infrastructure.
- **Comprehensive Visibility:** TONAS™ DIA offers real-time monitoring and a single source of truth for network and service inventory data, allowing proactive issue resolution and efficient management of the infrastructure.
- **No-Code Design of Reconciliation Rules and Models:** Users can design and configure reconciliation models without coding skills, increasing flexibility, agility, and reducing implementation and maintenance time and resources.
- **Multi-Inventory Integration:** TONAS™ DIA supports multiple network resource inventories, providing a complete view of the network infrastructure and improving efficiency and accuracy.
- **Seamless Integration with Network and Cloud Technologies:** TONAS™ DIA integrates with both cloud-native and legacy systems, ensuring consistency and accuracy of data across the entire network and cloud environments.
- **Continuous Integration/Continuous Deployment (CI/CD):** The CI/CD pipeline automates the deployment process, reducing time and effort required to deploy TONAS™ DIA and enabling quick response to changes in the network environment.



Name	Subnetwork	Status	IP	Vendor	Sys Location	SW Version	Uptime	Type
NE05E-SQ_Huawei_AGGPE	Google Fiber	Disconnected	192.168.0.3	Huawei	Lincoln ATE, Broadgate...	Version 8.190 RELEASE ...	N/A	NE05E-SQ
NS40-ACC-SYS_Cisco_AggPE	Google Fiber	Disconnected	192.168.0.2	Cisco	Location Missing, Pleas...	7.2.2	N/A	NS40-ACC-SYS
Ubiquiti_OLT	Google Fiber	Disconnected	192.168.255.9	Ubiquiti	Unknown	UF-OLTER-e600-v4.3.1...	N/A	UbntEdgeMax
NE20E-S2F_Huawei_LING	Google Fiber	Disconnected	192.168.0.5	Huawei	TFM24 Rack G15 , Tele...	VRP (R) software, Vers...	N/A	NE20E-S2F
NE40E-M2K-B_Huawei_Core	Google Fiber	Disconnected	192.168.0.1	Huawei	Webhook Lab	VRP (R) software, Vers...	N/A	NE40E-M2K-B_Huawei...
NS40-ACC-SYS_Cisco_SPE	Google Fiber	Disconnected	192.168.0.4	Cisco	Location Missing, Pleas...	7.2.2	N/A	NS40-ACC-SYS
CISCO-CPE-C1117-4P-1	Google Fiber	Disconnected	100.96.9.3	Cisco	Merchants House, Brnt...	17.03.04a	N/A	C1117-4P
CISCO-CPE-C927-4P_New	Google Fiber	Disconnected	100.96.9.5	CISCO	1 Alexandra House, Tig...	System Bootstrap, Vers...	N/A	CISCO-CPE-C927-4P
CISCO-NTE	Google Fiber	Disconnected	100.96.9.7	Cisco	Nico Lab, Webhook	17.03.04	N/A	NS20-4G42-A_NTE
Huawei_SPE_NE05E-SQ	Google Fiber	Disconnected	192.168.0.6	Huawei	Webhook Lab	Version 8.190 RELEASE ...	N/A	NE05E-SQ
CiscoCPE-2	Google Fiber	Disconnected	100.96.9.9	Cisco	Webhook Lab	17.03.04a	N/A	C1117-4P
SIX-6330-48-OLT	Google Fiber	OK	N/A	N/A	undefined	undefined	N/A	Adtran_OLT
Nokia-7705-PE2	Google Fiber	OK	90.0.0.5	Alcatel-Lucent	HR13	notsuchObject	N/A	ALU-7705-SAR-8
splitter-1	Google Fiber	OK	0.0.0.0	Unknown	undefined	undefined	N/A	Splitter
LBADTIN4323320	Google Fiber	OK	N/A	N/A	undefined	undefined	N/A	ONT-1
ZTE-ZXA10-C320-OLT	Area1	OK	90.0.0.18	ZTE	Atrinet LAB	V1.2.5P2	N/A	ZXA10-C320_OLT
Juniper-MX240-PE2	Google Fiber	Minor	90.0.0.3	Juniper	test	JUNOS Base OS Softwa...	248 days, 13:13:56.47	Juniper-MX240
splitter-2	Area1	OK	0.0.0.0	Unknown	undefined	undefined	N/A	Splitter
ZTEGS2912C1	Area1	OK	N/A	N/A	undefined	undefined	N/A	ZTEGS2912C1
ZTEGS2912C1	Area1	OK	N/A	N/A	undefined	undefined	N/A	ZTEGS2912C1
ZTE-ZXA10-C320-OLT2	Area1	OK	10.69.171.97	ZTE	Atrinet LAB	V1.2.5P2	N/A	ZXA10-C320_OLT
splitter-4	Area1	OK	0.0.0.0	Unknown	undefined	undefined	N/A	Splitter



TONAS™

AI/ML-Powered Network Insights & Assurance - NI&A



TONAS™ AI/ML-Powered Network Insights & Assurance - NI&A

A cloud-native, web-scaled, containerized function, decomposed into scalable & resilient microservices with High Availability (HA) that designed to process enormous volumes of data in real time. Unified WebUI with domain and functional role-based access for Engineering, NOC and SOC users, 3rd party applications and external customers. Supports physical, virtual and cloud-native network functions and IT applications over the same platform. As part of the TONAS™ Platform, it smoothly integrates with TONAS™ LwNI/DIA, USAF and NCM solution modules.

Embedded Artificial Intelligence and Machine Learning (AI/ML)

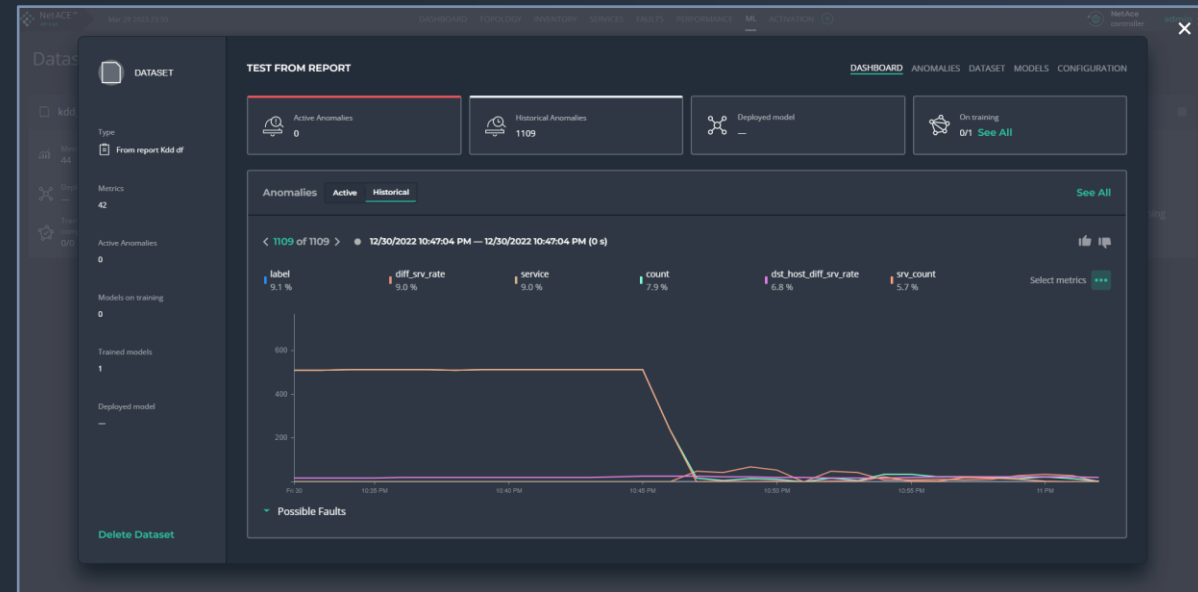
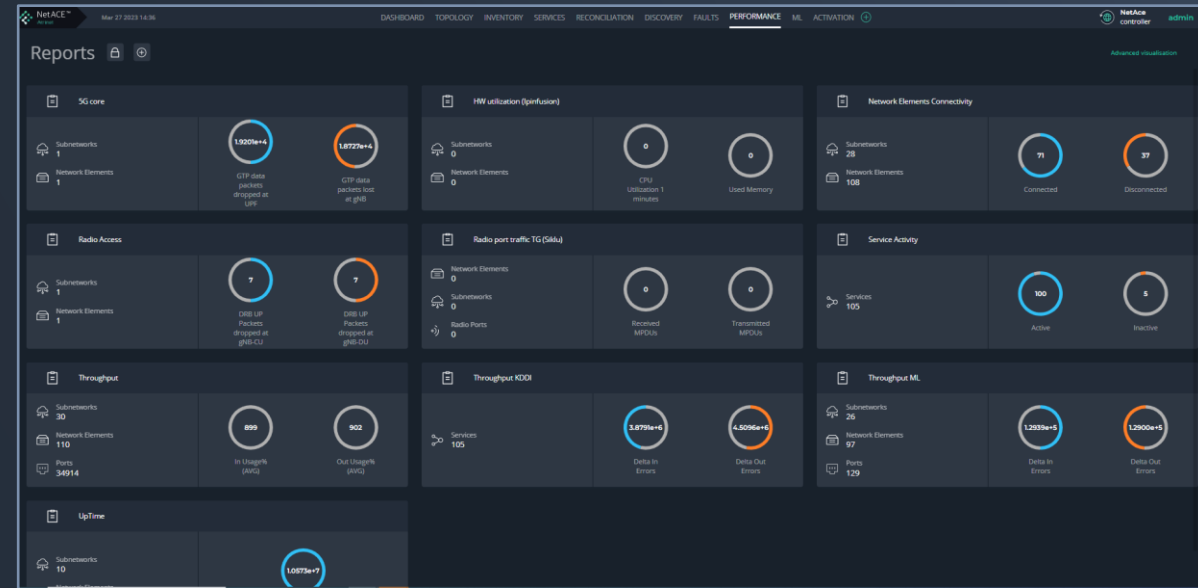
- Anomaly detection, alarms reduction & prediction
- Traffic and utilization forecasting, PM Threshold prediction and adaptation (time-series data)
- Predictive network functions placing
- Root cause analyses

Performance Management

- Near real-time and historical KPIs and KQIs and traffic-analysis calculations (TS 28.554, TS 28.552, proprietary)
- Generation of threshold crossing alarms (TCAs) based on a wide variety of conditions, with support for multiple severity levels
- Open northbound APIs - REST TMF628, Grafana, NATS.io/Kafka, Python/Go SDK

Fault Management

- Rule-based event correlation (configurable)
- Supports Open northbound APIs - REST TMF642, Syslog, NATS.io/Kafka, Python / Go SDK
- Customizable automation/actions rules, synthetic alarms / TCA, alarms enrichment, suppression, escalation and more.
- Integration with trouble ticketing.



TONAS™ NI&A Optional Solution Components - Grafana

Why Grafana?



Unify your data, not your database

Grafana doesn't require you to ingest data to a backend store or vendor database. Instead, Grafana takes a unique approach to providing a "single-pane-of-glass" by unifying your existing data, wherever it lives.

With Grafana, you can take any of your existing data- be it from your Kubernetes cluster, raspberry pi, different cloud services, or even Google Sheets- and visualize it however you want, all from a single dashboard.

Come together... right now... over me (sing it).



Dashboards that anyone can use

Not only do Grafana dashboards give insightful meaning to data collected from numerous sources, but you can also share the dashboards you create with other team members, allowing you to explore the data together.

With Grafana, anyone can create and share dynamic dashboards to foster collaboration and transparency.

We don't really mean anyone, especially that guy that talks about how much better it was when we had fax machines.



Data everyone can see

Grafana was built on the principle that data should be accessible to everyone in your organization, not just the single Ops person.

By democratizing data, Grafana helps to facilitate a culture where data can easily be used and accessed by the people that need it, helping to break down data silos and empower teams.

Of course, sometimes you don't want Eric in Accounting to see everything, Grafana Cloud and Enterprise editions offer extensive security options.



Flexibility and versatility

Translate and transform any of your data into flexible and versatile dashboards. Unlike other tools, Grafana allows you to build dashboards specifically for you and your team.

With advanced querying and transformation capabilities, you can customize your panels to create visualizations that are actually helpful for you.

We think you're great the way you are, but who couldn't be a bit more flexible?



TONAS™

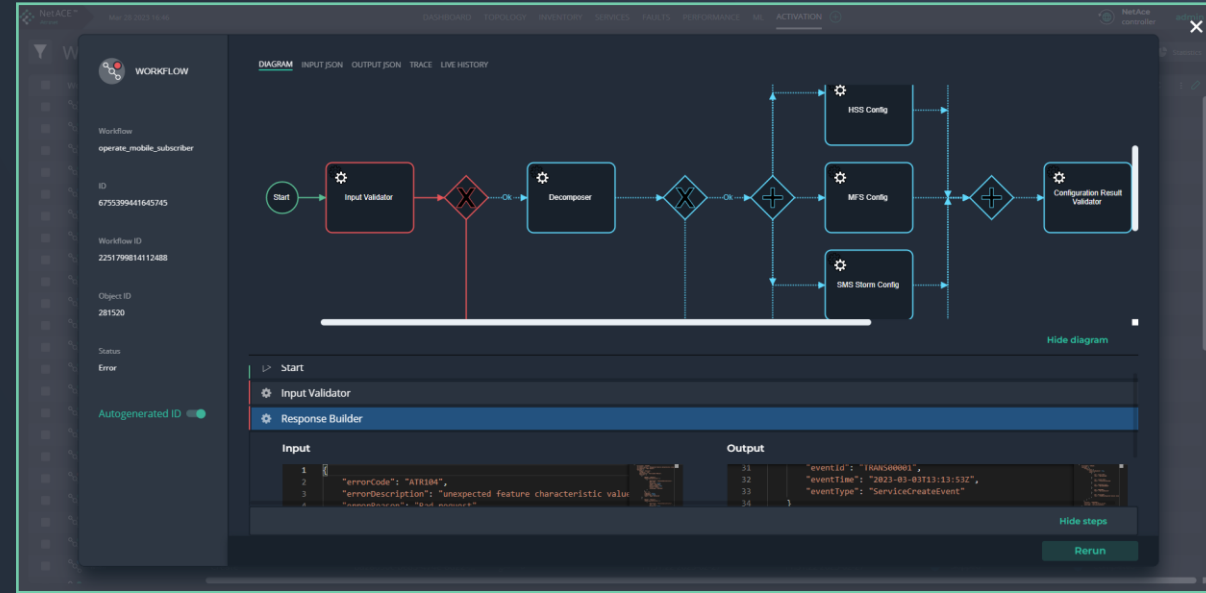
Unified Service Activation & Fulfillment - USAF



TONAS™ Unified Service Activation & Fulfillment - USAF

TONAS™ USAF is a comprehensive solution for service order management and resource activation that supports both fixed and mobile services. It integrates with various OSS/BSS systems using Open TM Forum APIs like TMF640, TMF641, TMF639, and TMF633, as well as vendor-proprietary interfaces. As part of the NetACE TONAS™ Platform, it smoothly integrates with TONAS™ LwNI/DIA, NI&A, and NCM solution modules.

- **Cloud-Native Architecture with Kubernetes (K8s):** TONAS™ USAF leverages cloud-native technologies and deploys on Kubernetes high-availability clusters, offering flexibility, scalability, high availability, and cost-effective deployment, whether on-premises or in public cloud environments.
- **Low-Code Platform:** TONAS™ USAF's low-code nature enables rapid development and deployment of service activation and fulfillment processes, allowing DevOps teams to quickly build, test, and deploy new services, reducing time-to-market and enhancing customer experience.
- **Workflow Orchestration and Service Decomposition:** Utilizing Camunda Zeebe, TONAS™ USAF provides advanced workflow orchestration and service decomposition capabilities, efficiently decomposing service orders into resource orders and automating end-to-end service provisioning.
- **Multi-Technology, Multi-Vendor Support:** TONAS™ USAF supports diverse network domains and technologies, including 3G, 4G, 5G RAN, Mobile Core, Voice, IP, MPLS, Ethernet, Microwave, Optical Packet, PON, DSL, Cable, Satellite, and Cloud services, ensuring seamless activation and fulfillment across the entire network.
- **Service Inventory Management:** TONAS™ USAF offers a comprehensive service inventory management system, centralizing service inventory data, streamlining the tracking, updating, and managing network resources.
- **Zero-Touch Configuration:** TONAS™ USAF enables Zero-touch network & Service Management (ZSM), automating the configuration of network resources, reducing manual intervention, and minimizing the risk of human errors.
- **Co-Creation and Customization:** TONAS™ USAF fosters a collaborative environment where partners and customers can actively participate in the development of new fulfillment workflows, service models, and adapters.



Name	ID	External ID	Model Name	Mode	Model Version	Creation Time	Current Activity	Last Action Report	Conf
ONT-ZTEGCS2F12C1	22016	N/A	GFiber-test1	ACTIVE	1.0.0	13:39:54 2023-03-21	N/A	Health Check - Success	Cc
ONT-ZTEGCS2F12CE	22015	N/A	GFiber-test1	ACTIVE	1.0.0	13:39:18 2023-03-21	N/A	Health Check - Success	Cc
ONT-ZTEGCS2F22CB	22014	N/A	GFiber-test1	ACTIVE	1.0.0	13:38:24 2023-03-21	N/A	Health Check - Success	N/A
ONT-ZTEGCS2F22C7	22013	N/A	GFiber-test1	ACTIVE	1.0.0	13:32:48 2023-03-21	N/A	Health Check - Success	N/A
BB_Fault_API_S989	21989	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	17:16:41 2022-10-20	N/A	Health Check - Success	Cc
BB_Fault_API_S14	21971	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	16:48:43 2022-10-17	N/A	Health Check - Success	Cc
BB_Fault_API_S13	21970	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	16:38:56 2022-10-17	N/A	Health Check - Success	Cc
BB_Fault_API_S11	21965	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	15:57:40 2022-10-17	N/A	Health Check - Success	Cc
test4399	21956	N/A	Demo_SERVICE_MODE...	ACTIVE	1.0.0	13:23:53 2022-10-17	N/A	Creation - Failure (R...	AF
BB_Fault_API_S10	21964	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	17:00:19 2022-10-14	N/A	Health Check - Success	Cc
BB_Fault_API_S09	21963	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	16:51:01 2022-10-14	N/A	Health Check - Success	Cc
BB_Fault_API_S08	21962	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	19:47:55 2022-10-13	N/A	Health Check - Success	Cc
BB_Fault_API_S06	21960	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	19:42:06 2022-10-13	N/A	Health Check - Success	Cc
BB_Fault_API_S01	21954	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	15:59:57 2022-10-13	N/A	Creation - Success	Cc
fault_API	21953	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	15:55:37 2022-10-13	N/A	Creation - Success	Cc
BB_Today_Copy	21949	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	15:15:42 2022-10-13	N/A	Creation - Success	Cc
NextAvailable_S02	21948	N/A	Demo_SERVICE_MODE...	ACTIVE	1.0.0	12:34:55 2022-10-12	N/A	Creation - Success	Cc
NextAvailable	21942	N/A	Demo_SERVICE_MODE...	ACTIVE	1.0.0	18:45:47 2022-10-10	N/A	Creation - Success	Cc
test_aut01	21934	N/A	Demo_SERVICE_MODE...	ACTIVE	1.0.0	17:39:59 2022-10-06	N/A	Creation - Success	Cc
BB_Service_No_Con...	3033	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	14:03:03 2022-10-06	N/A	Creation - Failure (R...	AF
BB_sample_Service	303	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	13:49:34 2022-10-06	N/A	Health Check - Success	Cc
sample	21933	N/A	ITS_BB_ServiceModel_...	ACTIVE	1.0.0	13:07:24 2022-10-06	N/A	Creation - Success	Cc



TONAS™

Network Configuration Management - NCM



TONAS™ Network Configuration Management - NCM

TONAS™ Network Configuration Management (NCM) is a comprehensive solution for managing network configuration changes and ensuring network stability and security. It is integrated with TONAS™ Lightweight Active Network Inventory (LwNI/DIA) for real-time inventory data updates. It is also integrated with NI&A (Assurance).

- **Configuration Automation:** TONAS™ NCM solution provides automation for network configuration tasks, such as deploying configuration changes across multiple devices simultaneously, scheduling changes, and auditing configuration changes.
- **Automated Device OS Upgrades:** The Device OS Upgrade Automation solution streamlines the process of upgrading the operating systems of network devices, reducing the time and effort required to complete this critical task.
- **Multi-Vendor Support:** Since most organizations use network devices from multiple vendors, TONAS™ NCM solution supports a wide range of network vendors and technologies.
- **Real-time Inventory Updates:** TONAS™ NCM solution seamlessly integrates with TONAS™ Lightweight Active Network Inventory, providing real-time inventory updates that enhance decision-making and minimize configuration errors, ultimately improving network performance and reliability for Telecom Operators.
- **Compliance and Security:** TONAS™ NCM solution provides compliance and security features, such as configuration compliance checks, compliance, and assessments of network configuration.
- **Reporting and Analytics:** TONAS™ NCM solution offers comprehensive reporting and analytics capabilities, enabling network administrators to gain insights into network performance, identify configuration issues, and make data-driven decisions.
- **Open Architecture:** The solution features an open cloud-native architecture and supports open TM forum APIs, enabling CSPs to customize and extend the solution to meet their specific requirements.

Name	Last Status	Last Execution	Next Execution	Operation Type
Software Upgrade	Successfully Completed	17:37:05 2021-08-25	Never	Software Upgrade
MX-Config-backup	Completed with Error	15:46:44 2021-10-25	Never	Upload device configuration file
Roel-test	Completed with Error	00:00:00 2021-11-16	Never	Upload device configuration file
cumulus-run-config-backup	Completed with Error	14:54:54 2023-03-21	14:54:54 2023-03-22	Configuration Backup
Cumulus-upload-device-configuration-file	Completed with Error	14:55:29 2023-03-21	14:55:29 2023-03-22	Upload device configuration file
Cumulus-Download-configuration-file	Successfully Completed	14:56:02 2023-03-21	14:56:02 2023-03-22	Download device configuration file
cumulus-restore-backup-file	Successfully Completed	14:56:02 2023-03-21	14:56:02 2023-03-22	Load (execute) device configuration file
Shimi-test1	Successfully Completed	16:33:08 2022-01-03	Never	Upload device configuration file

Name	Details	Name	Details
132	COS queues : 0 supported, 0 maximum usable queues	132	COS queues : 0 supported, 0 maximum usable queues
133	Current address : 00:26:88:25:4b:3a, Hardware address :	133	Current address : 00:26:88:25:4b:3a, Hardware address :
134	Last flapped : 2021-09-13 23:23:28 IST (8w1d 23:06)	134	Last flapped : 2021-09-13 23:23:28 IST (8w1d 23:06)
135	Input rate : 36232 bps (29 pps)	135	Input rate : 45448 bps (36 pps)
136	Output rate : 7688 bps (6 pps)	136	Output rate : 20744 bps (19 pps)
137	Active alarms : None	137	Active alarms : None
138	Active defects : None	138	Active defects : None
139	PCS statistics Seconds	139	PCS statistics Seconds
140	Bit errors 0	140	Bit errors 0
141	Errored blocks 0	141	Errored blocks 0
142	Interface transmit statistics: Disabled	142	Interface transmit statistics: Disabled
143		143	
144	Logical interface xe-1/1/0.0 (Index 391) (SNMP ifIndex)	144	Logical interface xe-1/1/0.0 (Index 391) (SNMP ifIndex)
145	Flags: Up SNMP-Traps 0x4004000 Encapsulation: ENET2	145	Flags: Up SNMP-Traps 0x4004000 Encapsulation: ENET2
146	Input packets : 65373971	146	Input packets : 65373765
147	Output packets : 44242488	147	Output packets : 44242337
148	Protocol inet, MTU: 1500	148	Protocol inet, MTU: 1500
149	Flags: Sendbcst-pkt-to-re	149	Flags: Sendbcst-pkt-to-re
150	Addresses, Flags: Is-Preferred Is-Primary	150	Addresses, Flags: Is-Preferred Is-Primary
151	Destination: 40.40.40.0/30, Local: 40.40.40.2,	151	Destination: 40.40.40.0/30, Local: 40.40.40.2,
152	Protocol mpls, MTU: 1488, Maximum labels: 3	152	Protocol mpls, MTU: 1488, Maximum labels: 3



TONAS™

Reference Use Cases



TONAS™ Reference Use Case

The Partner logo consists of the word "Partner" in a bold, black, sans-serif font, positioned to the right of a vertical black line that extends from the top of the logo area.

Customer

Partner Communications Israel, one of Israel's leading telecommunications providers.

Solution

- TONAS™ Network Insights & Assurance (NI&A) providing real-time monitoring, performance analysis, and fault management for Partner's network and services. The deployment included the integration of TONAS™ with Partner's existing systems, including their OSS and BSS platforms, as well as their network infrastructure.

Results

- With TONAS™ Assurance, Partner was able to improve its service quality and reduce downtime by identifying and resolving issues faster. The solution's analytics capabilities also provided valuable insights into network and service performance, enabling Partner to optimize its resources and plan for future capacity needs.
- By deploying TONAS™ on Kubernetes, Partner was able to take advantage of the benefits of containerization, including increased scalability, portability, and resource utilization.



TONAS™ Reference Use Case



Customer

DQE Communications US, leading provider of fiber-optic network services.

Solution

- TONAS™ Federated Network Auto-Discovery (DIA)
- TONAS™ Lightweight Active Network Inventory (LwNI)
- TONAS™ Network Insights & Assurance (NI&A) with Performance Monitoring (PM) and Fault Management (FM) capabilities.

Results

- Optimization of resources allocation
- Improved service delivery
- Streamlined network management processes (particularly performance and fault management)
- Improved inventory accuracy



TONAS™ Reference Use Case

Customer

A multinational Teir-2 telecommunications company in Europe

Solution

- Atrinet's TONAS™ Unified Service Activation & Fulfillment (USAF), a cloud-native, low-code, model-driven platform for service activation, fulfillment, and network automation.

Results

- By deploying TONAS™ USAF, the Teir-2 Customer was able to streamline its service activation and fulfillment processes, resulting in faster service delivery times and improved customer experience. The platform's advanced features, such as workflow orchestration, service decomposition, and service inventory management, allowed the Teir-2 Customer to optimize its network operations, enhance resource utilization, and minimize the risk of service disruptions. TONAS™ USAF's multi-technology, multi-vendor support enabled the Teir-2 Customer to effectively manage its diverse network infrastructure, ensuring consistent performance and customer experience. Overall, TONAS™ USAF provided the Teir-2 Customer with a unified platform that simplified network management, allowed for efficient resource allocation, and facilitated future growth opportunities.



TONAS™

Tier-1 Customer Deployment Examples



TONAS™ Teir-1 Deployment Example



- Inventory migration and network consolidation

- 80,000 NEs managed


- x5 reduced time-to-market

- x10 reduced order fallouts

 Amdocs Network Resource Inventory (ARM)

Normalized CSV / REST 

 TONAS™ DIA

REST, MTOSI, CORBA, SOAP/XML, S/FTP, File export 

Direct to NE via SNMP, CLI, TL1, NETCONF 

NMSs

Devices

											
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Mobile & Fixed Access — Transport — Core

Why NetACE TONAS™

TONAS™ provides a unique combination of cloud-native design principles, DevOps culture, TM Forum Open APIs, and multivendor multi-technology support.

- **Modular:** NetACE TONAS™ is a uniquely modular platform with separate or comprehensive deployment options, enabling Telecom Operators to choose the right set of capabilities that align with their specific business needs and requirements.
- **Cloud-native :** NetACE TONAS™ offers numerous benefits compared to traditional OSS solutions with legacy elements, positioning it as a highly cost-efficient, scalable, and operationally adaptable solution for telecom operators.
- **Low-Code:** NetACE TONAS™ accelerates development and customization while reducing the need for extensive coding expertise, thanks to its low-code approach. This empowers Telecom Operators to rapidly implement and adapt their solutions, streamline processes, and achieve operational efficiency with less dependency on highly specialized resources.
- **Open Digital Architecture (ODA) compliant:** NetACE TONAS™ utilizes cutting-edge technology and industry standards, leveraging TM Forum's Open Digital Architecture (ODA), to deliver a data-driven and flexible approach, enabling telecom operators to achieve growth and profitability.
- **Open:** NetACE TONAS™ supports Open TMF REST APIs and pre-built integrations with industry-leading vendors, ensuring seamless integration with third-party OSS/BSS systems and reducing integration challenges.
- **Out-of-the-Box Integration Adapters:** NetACE TONAS™ pre-built integrations with industry-leading vendors eliminate the need for custom integrations, reducing the implementation time and saving cost and resources.
- **Deployment Flexibility:** NetACE TONAS™ provides support for a wide range of deployment models, including SaaS, private or public cloud, and on-premises, enabling operators to choose the model that best meets their specific requirements.
- **DevOps:** NetACE TONAS™ is fully aligned with DevOps methodologies, enabling development and operations teams to work closely together and apply small, incremental changes to systems on a regular basis.
- **Multitenancy:** NetACE TONAS™ supports multiple tenants or customers within a single instance of the platform or module, providing isolated and secure environments for each tenant, and enabling operators to maintain regulatory compliance and keep customer data separate.
- **UI & Federated View:** NetACE TONAS™ provides a single, integrated view across the various OSS functions and network domains, helping to streamline operations, improve visibility, and reduce operational complexity, ultimately leading to more efficient network management and cost savings.
- **Significant OpEx Reduction:** NetACE TONAS™ drives operational efficiencies and cost savings, freeing up valuable resources that can be redirected to developing and launching new revenue-generating services.





Thank you