

CROSS and PNI

How to add Business Operational
Intelligence to Physical Network Inventory

White Paper

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01

Introduction

GE Digital's Physical Network Inventory

GE Digital's Physical Network Inventory (PNI) is the world's leading solution for inventory planning, documentation and maintenance of civil networks, network assets, service addresses and landbases.

CROSS is a next generation operational inventory solution that provides high-performance support for key processes, such as: Service Impact Analysis, Revenue Assurance and Root Cause Analysis. Its synchronization engine allows CROSS to integrate with other key OSS and BSS systems, and as a result, consolidate physical, logical, virtual and service data from across a network.

This document explores how CROSS and PNI complement one another and, as a result, realize benefits from the integration of Business Operational Intelligence with Physical Network Inventory Excellence.

02

Operational Inventory

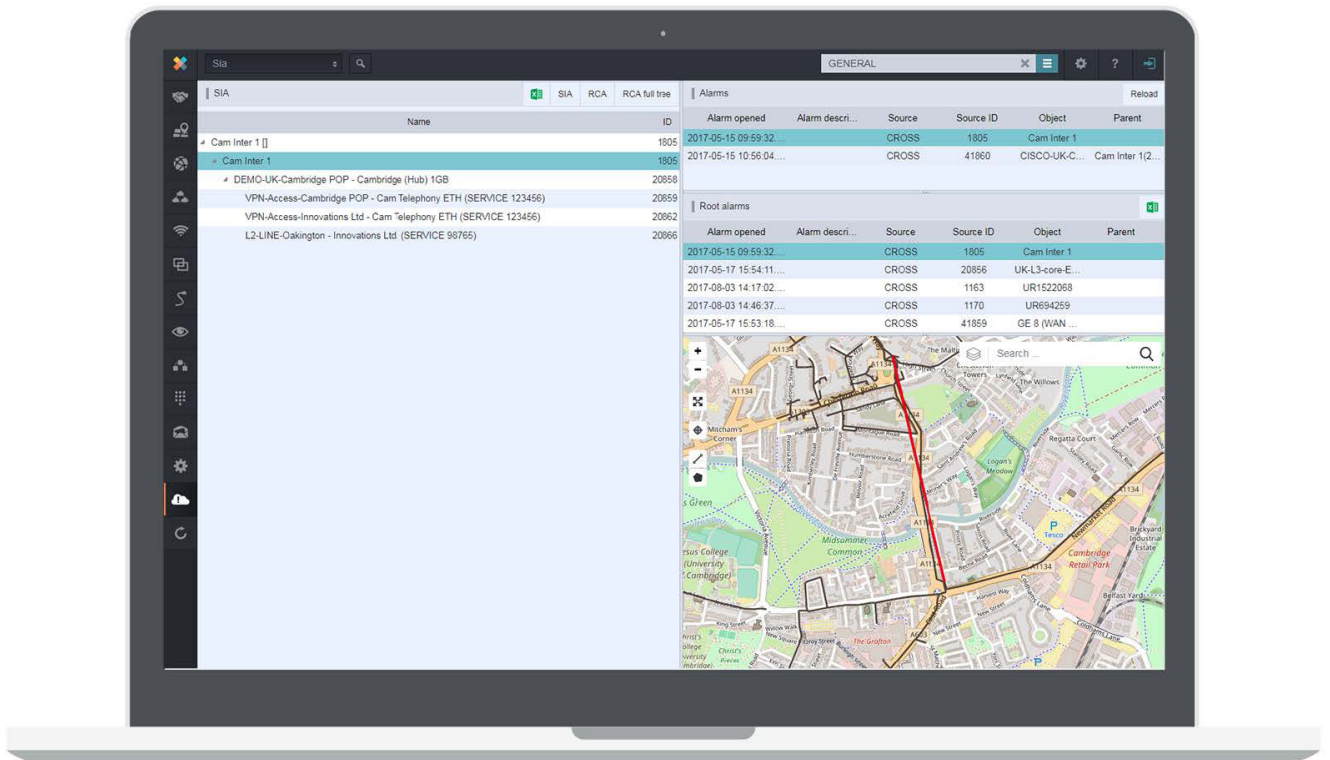
Dealing with multiple network systems

PNI is used by hundreds of Telecoms and Cable TV operators around the world, many of which use one or more logical network inventory solutions to store their service and logical network records. More recently, solutions are being implemented to model new virtual networks and the services that run on them as well.

With multiple systems across a network, the absence of a unified physical, logical and service inventory record makes it increasingly difficult, if not impossible, to perform business-critical tasks and answer key operational questions, such as:

- Root Cause Analysis / Service Impact Analysis
- Service Fulfillment across different networks
- Opex – Revenue Assurance
- Regulatory Reporting / Asset Revenue Mapping – Feed information on the total services routed through network elements both passive and active.
- Capacity Analysis / Availability Checks supporting wholesale requests.
- Virtual Network Model and sales over new technology.

Figure 1: Underground route shows alarms with all impacted cables



By providing an integrated and consolidated record of all owned and leased assets across a network, CROSS can quickly and efficiently answer these questions.

This can be achieved without replacing existing inventory systems, such as PNI, but instead, by working alongside them. The PNI (and other) databases represent a significant investment: CROSS can help extend the lifespan of such systems, increasing usability, while increasing ROI. CROSS pulls information on service routing, network health and more directly from the network and alarm correlation systems.

The implementation of CROSS as a complementary solution to existing network systems has already been completed by a number of operators, who have realized real, quantifiable benefits.

Moreover, these benefits were secured quickly, due to the short implementation timeframe and robust architecture offered by CROSS.

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The PNI Probe

Topological intelligence

CROSS uses a synchronization module consisting of a library of probes called Synchro to pull information from other systems, data files, and the network itself. In doing so, CROSS is able to build bottom-up and top-down links across the data and create a consolidated, topological view of the network. This topological intelligence is the foundation of the system's high performance and is made possible by bridging the OSS and BSS.

PNI remains the master of the physical data following the integration of PNI with CROSS. The CROSS PNI Probe reads and incrementally updates its physical inventory information based on the PNI data and maintains the available PNI data while maintaining the links to the logical and service data.

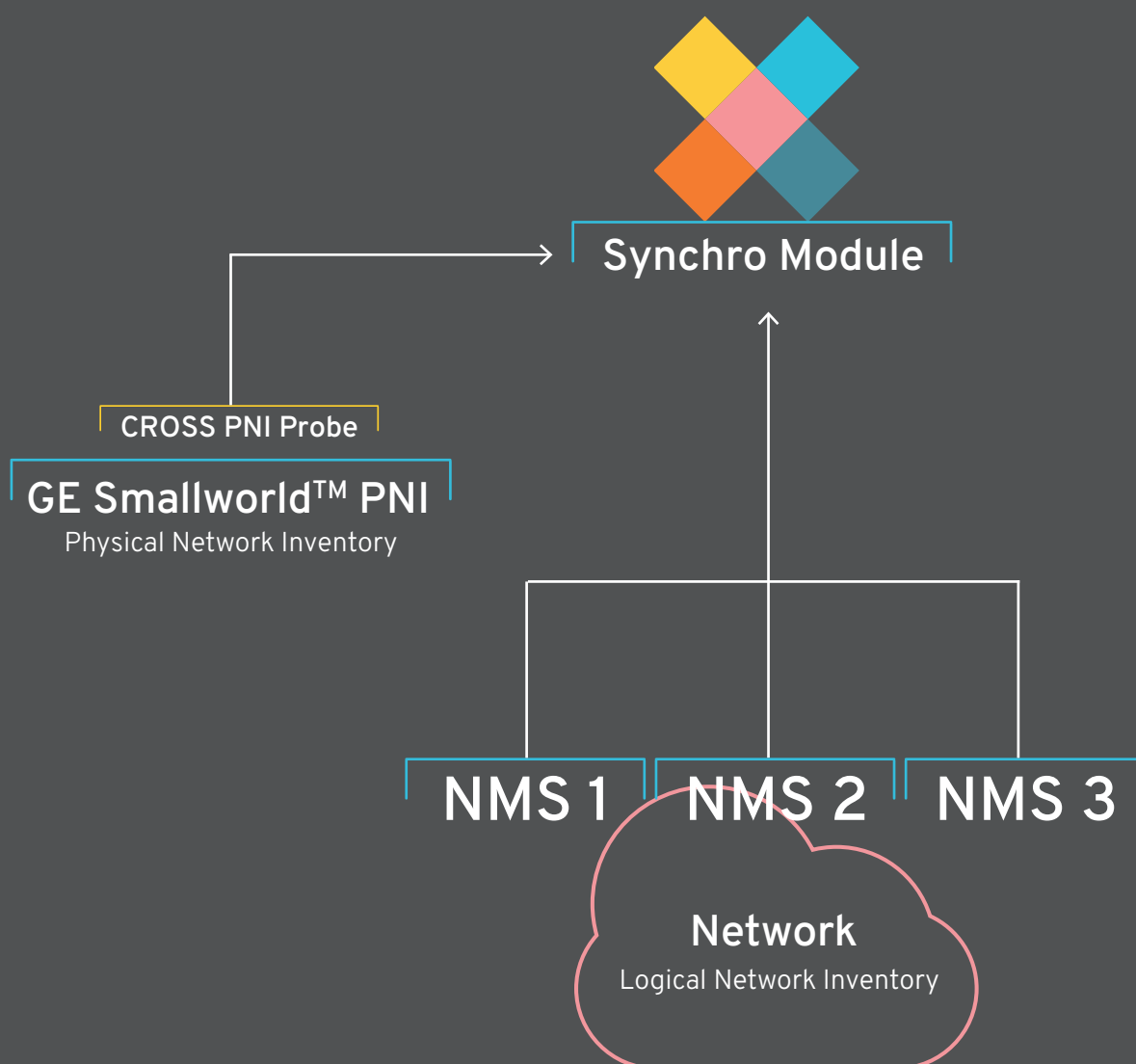
The PNI integration consists of two components:

- **CROSS PNI Probe** extracts data from GE Smallworld™ PNI database, while supporting all standard PNI objects.
- **CROSS Synchro** updates CROSS database from external sources. It is an umbrella tool for integrating data from any source into CROSS.

CROSS currently supports dozens of different probes from vendors such as Alcatel Lucent, Cisco, Huawei, Marconi, Sagem etc, for a variety of technologies (DSL, DWDM, SDH, IP, PTP and PTMP Radio, Mobile 2G, 3G, 4G etc).



Figure 2: Integration with PNI



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New functionality provided by CROSS

The benefits of working with CROSS

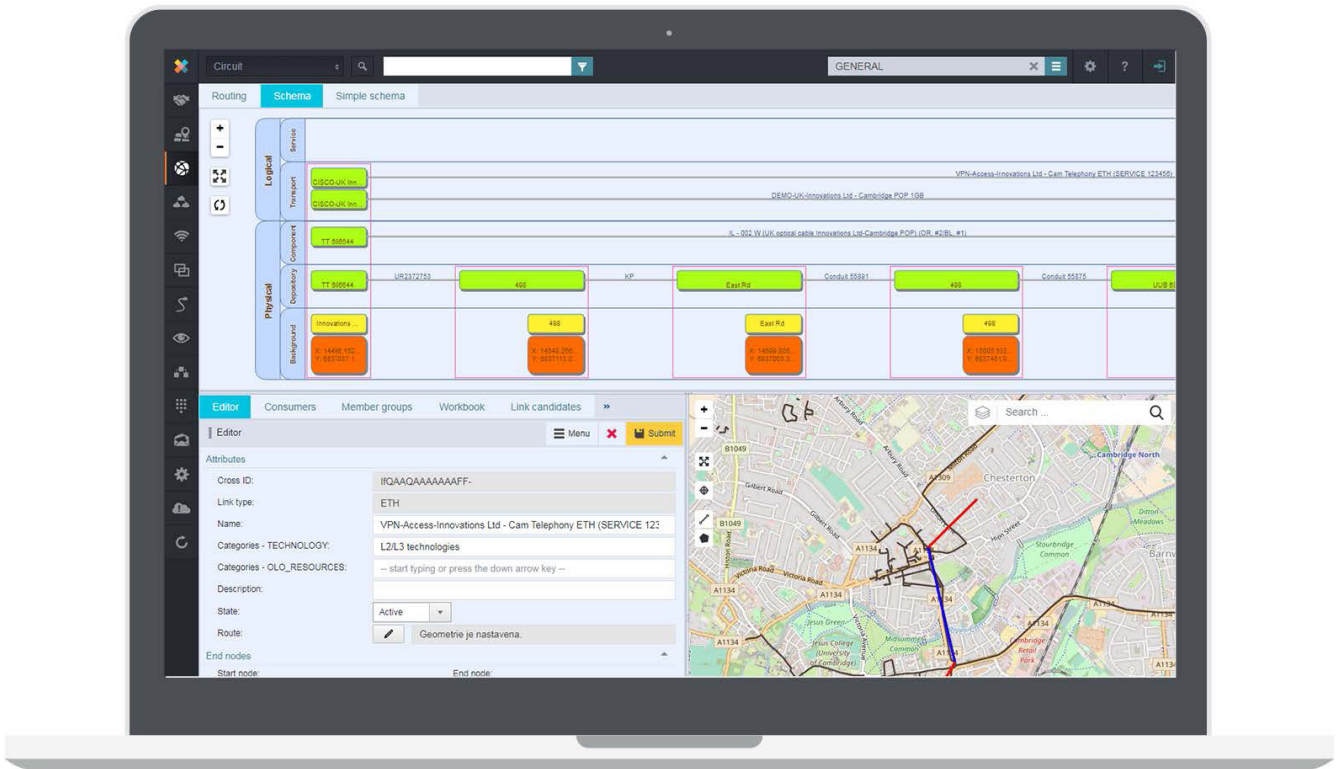
CROSS combines a geographical view of physical network assets with a fully connected topological model of all network layers supporting all query, view, design and documentation functions in a web client.

The integrated inventory data is illustrated in the screenshot below which shows an optical link, the logical and physical layers it is routed over, as well as the location of the physical assets on the map.

CROSS has been designed to provide very high performance services to support key operational processes including:

- **Service Assurance** – Identifying common points of failure and performing Root Cause Analysis and Service Impact Analysis.
- **Service Fulfillment** - Designing new service routes and linking all other related technologies e.g. IP addresses or data streaming services.
- **Revenue Assurance** – Identifying the services routed through leased and owned assets enabling optimization of network costs.

Figure 3: The view of physical and logical layers



The modern architecture on which CROSS was created ensures that the system is easy, time and cost-efficient to deploy, and maintain once live. This is made possible through:

- APIs that allow CROSS to seamlessly integrate with other enterprise systems.
- Configuration, rather than customization, as a means to extend the data model or add new network layers.

Not only does this greatly reduce the time and cost of rolling out the solution compared to existing inventory systems, but it also shortens the time to market when adding new services and network extensions.

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The benefits of CROSS

Standards-based data management and planning

Additional benefits of CROSS include:

- **Data Management & Flexibility** – Data cleansing or augmentation is not required before go-live. That is, the system can work with existing inventory data in its current state. However, built-in data quality and consistency tools enable operators to identify, prioritize, and correct gaps and inconsistencies in the inventory records once the system is live.
- **Planning and Documentation** – From buildings, routes, and manholes, to the cables and equipment housed in them, CROSS supports the planning and documentation of a network, including the logical, virtual, and application layers that run across it.
- **Standards-Based** – CROSS adheres to the Business Process Framework (eTOM) and is built using industry-standard technologies and processes.
- **Capacity Consumption Tracking** – Capacity consumption can be tracked between the layers, allowing operators to easily query and report on resources that are overutilized and require expansion or underutilized and can be reallocated. This can take place across all physical and logical layers.

The Umbrella Management Systems (UMS) received hundreds of alarms from all types of equipment. It was able to correlate the alarms by time, type and importance, and reduce their number by a factor of ten. CROSS, by knowing the network topology, then was able to identify the one alarm that caused the outage. Instead of hundreds of alarms we ended up with one – the root cause of the problem.

P. Wilham, GTS

CROSS enabled us to identify whether leased lines are currently being used for paid services and if so whether they are still financially viable or not. We have been able to find unused or unprofitable leased lines, cancel their contracts and save about 5% of annual Opex, and reduce service assurance times.

V.Dolinek, T-Mobile

