Prodapt powering global telecom

Cure data pollution at source with data intelligence engine

Leveraging data-driven network inventory wizard to arrest 90% of errors

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The Ever-Increasing Data Pollution in OSS Inventory – A Major Concern For DSPs

Inventory of assets and services is the cornerstone for a Digital Service Provider's (DSP's) efficient operation. These assets grow every day making it more difficult to manage. Almost all the DSPs manually register their inventories once their capacity management team forecasts and decides to expand the network. It doesn't really matter how much the technology evolves from now, the registration would still remain a manual procedure. Hence, an efficient inventory management system with an intelligent User Interface should be built to guide the users in manual registration process. Lack of such intelligent registration tools will hinder the ability to plan optimized networks resulting in delayed service, poor customer satisfaction and loss of revenue.

Factors That Lead to Inventory Data Issues

Assets and services are **manually registered** in the OSS inventory

Duplication of records due to lack of **efficient validation tools**

Multiple siloed inventories

The errors arising out of manual registration increases the operational costs of DSPs as service provisioning is affected/delayed due to the data pollution in inventory and involves rework.

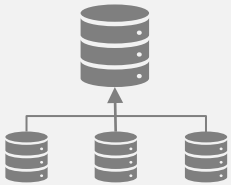
DSPs Generally opt for Existing Approaches to Improve their Inventory Data Integrity, But with the Rate Data is Growing Everyday, a Data Driven Approach is the Need Of The Hour

Existing Approaches

1 Creating a single central integrated inventory

Siloed inventories hold the inventory attributes data in most of the DSPs and there is no proper integration between them. This adds to a lot of data inaccuracy issues. The objective here is to move to a single central integrated inventory.

Central Integrated Inventory



Siloed inventories

Provides a unified view of all the resources, assets and information

2 Automated inventory reconciliation technique

Data quality is improved by synchronizing the data between OSS inventory and network using an inventory reconciliation module. It loads the data from network, compares it with OSS inventory data, audits, reconciles and gives the summary with a discrepancy report.

Network Inventory Reconciliation

Reconciles the OSS inventory and maintains data integrity

Data Driven Approach

3 Inventory wizard

Building an inventory wizard which acts as an interface between the users and the OSS inventory. This contains a set of business rules that allows users to select/enter only valid registrations based on logical combinations. **This ensures that the errors are reduced at source.**

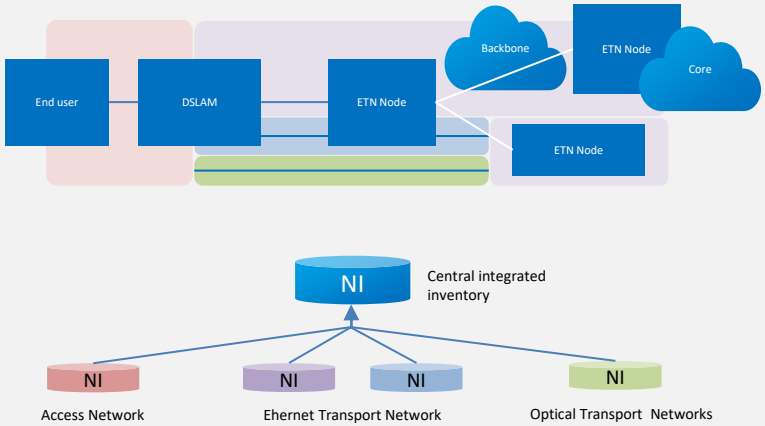
Reduces errors at the source

Regardless of the tools or technologies used by DSPs to tackle data integrity issues discrepancies still happen, as data is registered manually. This issue must be fixed during the manual registration process to have a high-quality inventory data.

Creating a Central Integrated Inventory and Having an Automated Inventory Reconciliation Process is Crucial, But they are Not Enough to Maintain a Consistently Clean Inventory

1 2

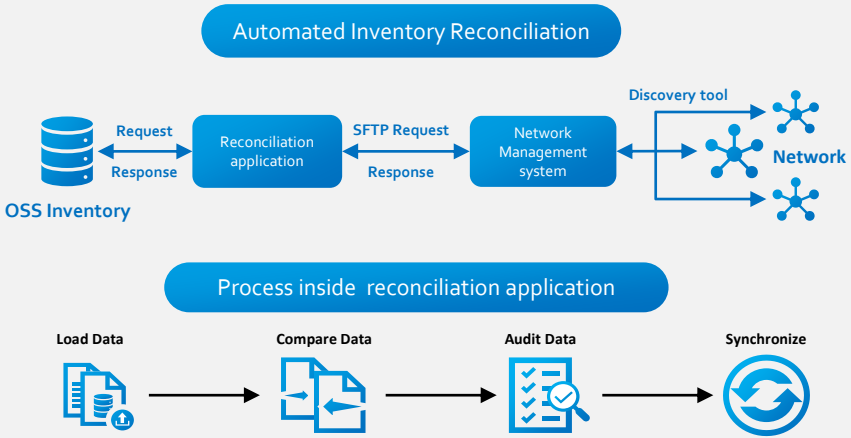
Creating Central Integrated Inventory



- Siloed inventory systems leads to data pollution- Duplicate data, Outdated data, multiple manual registrations. A central integrated inventory will provide a unified view and a single source of truth.
- It is recommended to setup a data migration factory as it will accelerate the implementation of central integrated inventory transformation program.
- Initiate migration from the siloed inventory with least data to central inventory. On completion, compare the data with Network Management System (NMS) and other old inventories.
- Once the quality of data is good, users are familiar with the system and all the processes work without any problem, migrate the remaining systems one by one.

DSPs are in different phases of their central integrated inventory migration program. Most of them are not able to succeed in this journey. A proven data migration factory approach could accelerate and help in succeeding.

Creating a Central Integrated Inventory and Having an Automated Inventory Reconciliation Process is Crucial, But they are Not Enough to Maintain a Consistently Clean Inventory



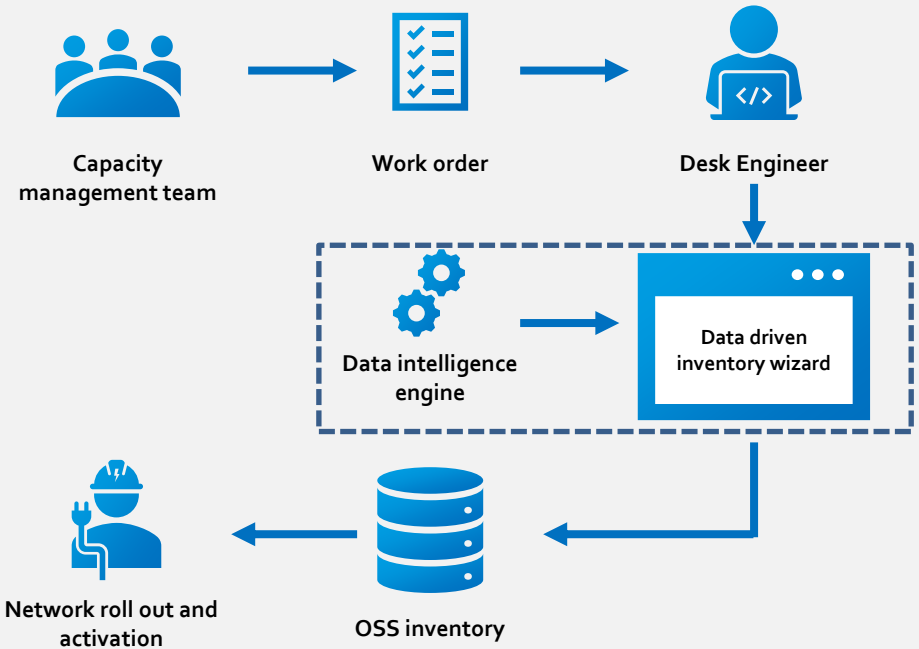
- Use domain experts to choose the right network discovery and reconciliation tools and to Implement automated workflow.
- Stringent business rules needs to be framed, revised and set inside the reconciliation tool.
- The Reconciliation application needs to give two reports once the synchronization process is over 1) Summary report (Reconciled data report) 2) Fallout report (Report of configurable items that were not reconciled along with reason for not reconciling)
- **Benefits**: Reconciliation process enhances accuracy of data, provides consistency and avoids superfluous and redundant data entries.

DSPs are in their journey of implementing an automated inventory reconciliation process. However, the success rate is very low. Having domain experts in place could help in succeeding.

Most DSPs are implementing a central inventory system and automated reconciliation process. However to arrest the inventory registration errors at the source, it is highly recommended to implement an intelligent inventory wizard.

Building a Data Driven Inventory Wizard with Pre-built Custom Business Rule Set to Arrest Errors at the Source

Most of the errors in inventory originates due to manual registration. Also, it is not possible to completely automate this step. Hence, DSPs need to Introduce a data driven wizard with business rules to improve the registration quality and arrest the errors at the source thereby maintaining a high quality of data in OSS inventory.



1. Capacity management team forecasts the demand and plans the network expansion
2. Based on the forecast, the capacity management team creates work order
3. The desk engineers pick up the work order from the data-driven inventory wizard and start the registration process
4. The wizard contains a data intelligence engine which comprises of custom-built business rule set, configuration tables and data from external sources. It aids in manual registration and guides the users in end to end registration process .
5. Registration data is submitted into the OSS inventory.
6. Execution of network roll out and activation based on OSS inventory data.

Key Capabilities to be Built On Data-driven Inventory Wizard

Auto-populate

The data driven inventory wizard should be able to auto-populate specific data based on logical combinations, business rules and external sources

Drop down menu

It should provide drop down options when there are two or more logical possible combinations and filter illogical ones

Manual data validation

The data driven wizard should have a validation check (logical check and syntax check) for manual data entries, that ensures wrong manual entries don't go into the inventory

Considerations While Building A Data Driven Inventory Wizard

- **Pre-built business rule set:** Business rules and validations should be in-built with the data validation tool and it should be customizable on demand.
- **Blocking illogical attributes**: The data driven inventory wizard must block and grey out the irrelevant fields based on selections. For example, certain fields in the wizard might not be applicable for a fiber connection. In that case the wizard needs to block those fields and ensure the users have no access to those fields.

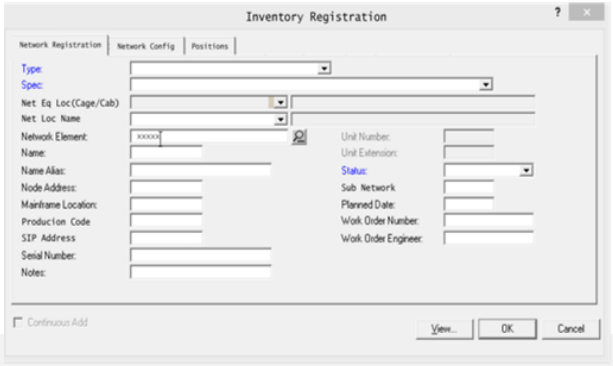
Robust data driven wizard built with above capabilities can arrest data pollution by 27% Percentage

Data Driven Inventory Wizard Should Auto-populate Data Based on Logical Combinations and Business Rules

- Based on the logical combinations, business rules and data from external sources, the inventory wizard should auto-fill in all the possible data in the UI as the user navigates through different screens
- Based on the user's selection in the current navigation panel, the wizard should instantly block illogical attribute boxes as per the business rule set
- **For example:** While adding a network equipment (DSLAM,MSAN,FTTX), when the users select a site name and select corresponding chassis template, the network equipment model and its production code should directly appear in the wizard. Also, the cage number, cabinet number, cabinet name, and its area should also be auto-filled based on logical combinations. This feature will ensure that users enter/select only relevant data, thereby reducing error at the source.

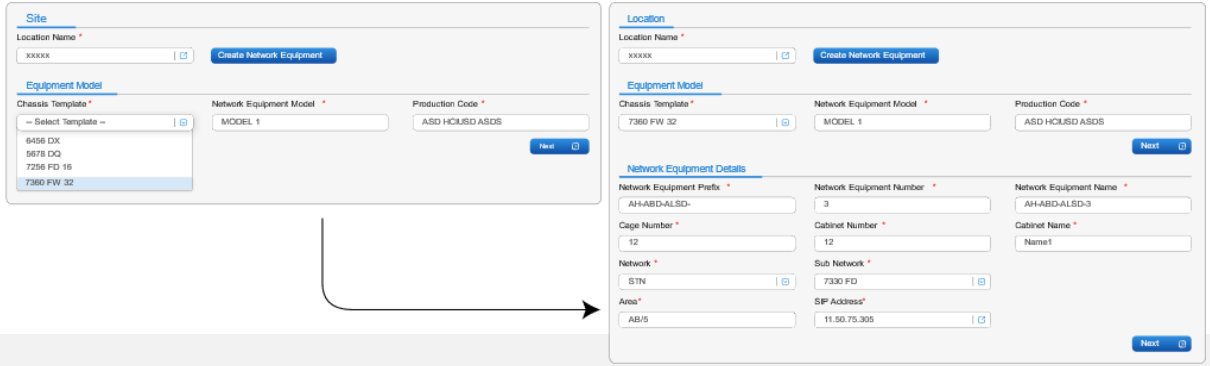
Before Implementation

Manual entry of registration data



After Implementation

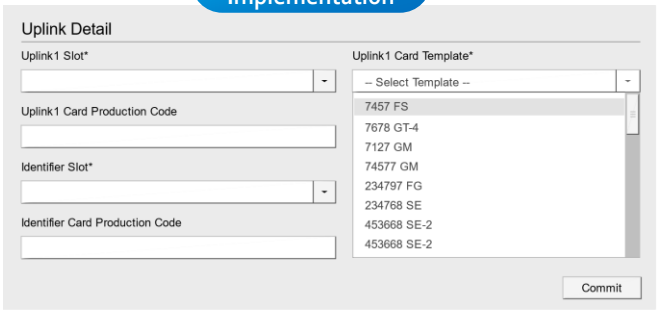
On selecting chassis template, the wizard auto populates all the relevant fields



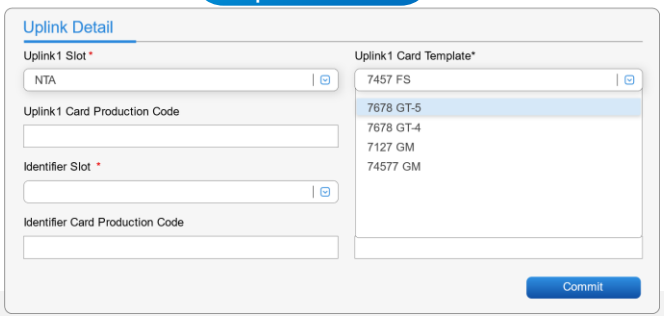
This feature of auto-populating the data on logical combinations will reduce 60-70% manual entries.

Inventory Wizard Should Provide Drop Down Options When There are Two or More Logical Possible Combinations and Filter Illogical Ones

Before Implementation



After Implementation



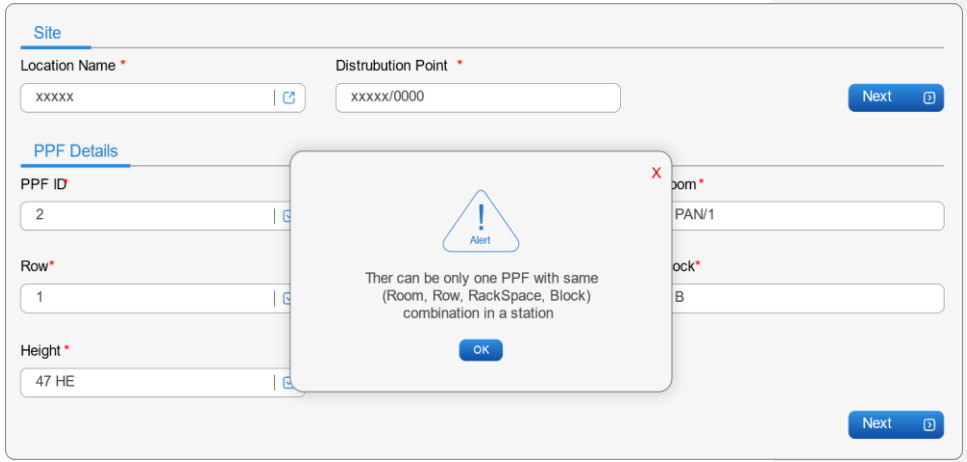
Whenever there are 2 or more possible logical combinations available for a selection, the wizard should provide a drop-down menu in which the user can select the exact entry. It should also filter all the illogical combinations based on business rules and give only minimal logical options for the user.

For example: Once the user selects the uplink slot, the wizard should provide the list of logically possible uplink templates through a drop-down menu rather than providing the entire list of templates. When a user selects an uplink slot that can logically go with five uplink card templates, the wizard must provide the user with just those five options to select from instead of all the available templates.

With 15-25% data coming from drop down selection boxes, significant error reduction happens here as users are given minimal possible logical combinations to select from.

Inventory Wizard Should Have a Validation Check (Logical & Syntax) for Manual Data Entries, To Ensure No Wrong Entries Go Into the Inventory

After implementation



- With auto-filling data based on logical combinations and a drop-down menu in wizard, the total manual entries that the user needs to make reduces drastically thereby reducing the probability of an error occurrence. But there will be entries where the user needs to manually enter specific values/data.
- The manual entries needs to be subjected to validation check on both syntax as well as logical combinations to ensure no duplicate registration happens.
- The wizard needs to protect the data from unacceptable values and wrong format by throwing an error whenever the users deviate from acceptable formats and values.
- For example: If the user is entering anything that is illogical based on business rules, it throws an error with an explanation of what is the logical error, so that the user can modify his selection based on it.

This feature addresses the major pain point of manual entries , verifies the manual entries on both syntax and logical fronts thereby maintaining the data integrity of the OSS inventory

Results Achieved by a Leading DSP in Europe by Leveraging the Data-driven Inventory Wizard

Key Benefits

Implementing the solution approach for a robust inventory management system resulted in the following benefits.

Manual data entry by desk engineers reduced to 65%

Time taken for manual registration reduced by 87.5%

Inventory wizard incorporated with business rules leads to 27.5% less rework

Data-driven Inventory Wizard

	Before solution implementation	After solution implementation
Average time taken for manual registration	240 Min	**30 Min**
Average registration accuracy	70.5%	**98%**
Rework to be done due to errors during manual registration	29.5%	**2%**

Further, operational costs are reduced, as DSPs have a clear view on the hardware in the field and will place the new hardware's only when needed. Also, the cost of rework that was incurred till now due to errors will be reduced.

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Synopsis

Inventory of assets and services is the cornerstone for a Digital Service Provider's (DSP's) efficient operation. However, inventory systems with high levels of **data pollution** might disrupt even their basic operations and result in poor customer satisfaction and loss of revenue. DSPs on an average possess data pollution anywhere from 35-40% in their inventory. This is mainly due to factors such as:

- *Manual administration*
- *Lack of efficient validation tools while registering the data*
- *Multiple siloed inventories*

Most DSPs address this challenge using the ongoing inventory consolidation strategy (Creating a central integrated inventory) and inventory reconciliation procedures. These steps are critical, however it doesn't arrest further pollution in day to day operations. This insight unveils a unique **data-driven inventory wizard with pre-built business rule set to arrest data pollution at source.**