

Data Consolidation

Achieving data consolidation in
telecoms inventory management

White Paper

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Introduction

The importance of consolidated data

Consolidation is a key term that is widely used in the communications industry. That's because many telecoms networks have grown incrementally or by mergers and acquisitions through time.

The result is that most have multiple systems, often fulfilling broadly similar tasks and with key data scattered across the resource estate. This duplicates information, makes data retrieval complicated and, ultimately, creates significant inefficiencies, increasing costs. This also often results in poor and unreliable data, so people simply stop using such systems.

This problem is particularly acute in the domain of telecoms network inventory. Telecoms networks consist of assets (inventory) that support service delivery. These span physical assets, logical resources, and, increasingly, virtual resources, as well as the services themselves.

Understanding the available inventory assets is of fundamental importance for delivering services to customers.

That's because services depend on resources for their delivery. These need to be allocated, at the time of order, connected in the appropriate manner with the correct capacity, managed during the service lifecycle, and potentially recycled in due time if the service is no longer required. It's often a complex chain, in which resources may be dedicated or shared.

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What do we mean by consolidation?

Defining our terms

Today's communications industry is faced with mounting challenges, not least of which is a desire to reduce or constrain operational expenditure. To meet these challenges, consolidating and combining systems has become a clear goal.

The pressure to achieve this is growing, as many telecoms providers are now investing in new 5G networks. Most are trying to do so within existing CAPEX budgets, so they must also make savings from operational budgets to ensure flat overall expenditure.

It is expected that increased automation, enhanced efficiency and consolidation of disparate or duplicate resources will help achieve these goals. The problem is that consolidation as a term is also just as often misused. There are many different interpretations, so we need to reach and adopt a common understanding of what this means, so that consolidation projects can be defined accurately, ensuring clear goals and, ultimately, increasing the benefits they can deliver.

What do we mean by 'consolidation'?

At CROSS Network Intelligence (CNI), we believe that there is a correct and appropriate definition of consolidation in relation to network inventory – and that other approaches do not deliver the benefits of true consolidation. So, what do we mean by consolidation?

1. www.oed.com

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Towards a unified view

Approaches to network inventory data consolidation

According to the Oxford English Dictionary¹, consolidate means “to combine into a single unit”. Of course, that’s a general definition. In our domain, this means bringing network inventory data together, from disparate silos to unlock a unified view.

Such a unified view also requires the integration and connection of assets, from different domains, into a single database, with a common data model, to create a truly integrated data repository.

In the context of CNI, this means an integrated inventory stack, which exists as a completely new entity, with a single database, within the operational infrastructure – and which allows data to be maintained, accurately and independently of legacy systems – which can thus be retired, generating significant reductions in operational costs.

If consolidation as defined above is the goal, and a unified view, accessible to multiple users (such as network engineers, OSS architects, NOC specialists, sales staff and more) and applications (such as order management, workflows, service assurance, and so on) is the desired outcome, there are several approaches that can be considered.

It is at this point that we must also consider another term: data federation. Again, there are several definitions available. Techopedia² offers a useful and broad explanation:

2. www.techopedia.com/definition/13789/data-federation-technology

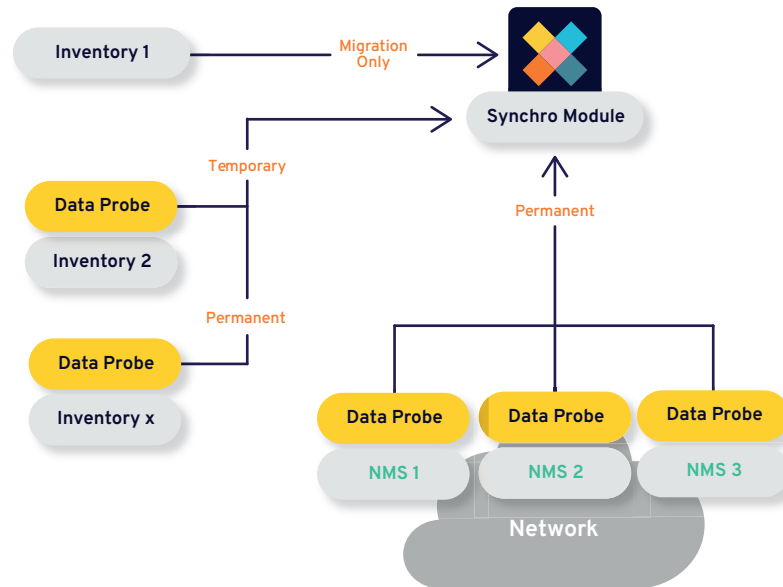
“Data federation technology represents an alternative model for the storage, collection and use of enterprise data. The term refers to software resources that help users create a virtual database through building the acquisition of remote data into middleware that may be used to present data, which is stored throughout a diverse architecture, to users.”

In other words, data federation provides a dashboard view into data held in multiple siloed systems – but it doesn’t necessarily involve any improvement to this data. As a result, flaws and deficiencies in existing data may persist, even with federation.

Data mapping

Data mapping is an essential part of this process. So, the first approach that we can consider is to maintain existing databases, but to add a new, overarching database that, via the intervention of middleware, requests and receives data for display, presentation and processing, when required. It will exist as a virtual window into different systems. This equates to a federated approach and will achieve some degree of consolidation, but it will not eliminate the existing infrastructure. Far from it – it must remain in place, adding to the OPEX burden. That’s because, while the telecoms provider will benefit from the single view it will not benefit from OPEX reduction, as the old systems will continue in operation and require ongoing maintenance and supervision. It gives the appearance of consolidation, as there will be a single view (visible data will be consolidated), but the legacy infrastructure remains in place.

Indeed, the federated view is essentially virtual – and temporary. Another method is to migrate data from a legacy platform to a new – but this is typically a ‘big bang’ approach, which can be



too daunting to tackle, leading to projects being deferred due to their perceived complexity. It can also overlook an important consideration. Data may be incorrect or imperfect – which is another reason why ‘big bang’ projects rarely deliver the expected benefits.

So, a further alternative is to use middleware on a temporary basis, essentially running the legacy database in parallel with the new, obtaining information as required. This could also be run permanently. The problem with this approach is that the legacy databases remain in service, so the resulting consolidation is actually somewhat superficial – or never achieved at all.

Finally, data probes can be used to directly obtain information from network resources and to direct this to the new database, so that all future updates are captured via feeds from live probes.

This results in true consolidation, as legacy systems can be retired, and a unified view is delivered. Data from legacy systems is pulled into CROSS via probes, either through a temporary or permanent feed, or a one-time migration. This ensures that legacy databases can, through time, be retired, while benefiting from the consolidated, single view. However, there is another issue to take into account - the problem of data quality.

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The importance of data quality

The CROSS Integration Method (CIM)

Data quality is an essential consideration because, as noted, data may be incorrect or imperfect. This is, in fact, an impediment to many consolidation projects.

Such an approach does exist, and it is applied in the CROSS Integration Method, or CIM. During the consolidation of legacy OSS and migration of their data into CROSS, data quality is assessed and ranked on a scale of 1-5 based on its completeness and reliability. This allows CROSS users to work with existing data in its current imperfect state, but then improve upon it over time by understanding where gaps and inconsistencies lie. By combining such an approach with middleware to capture information from probes, data can be obtained from legacy systems, used and over time cleansed, such that legacy platforms and the intervening middleware can be retired.

This requires a unique feature, that of data quality tagging and such a feature is native to CROSS. With CNI, a completely new inventory solution can be realized, providing a central repository for all data and accessible to other systems and processes. It is built on clean data, that can be iteratively improved, can easily be supported as the network and processes evolve, and is completely independent of legacy systems – which can be removed, delivering significant OPEX savings. The result is true consolidation.

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Data consolidation

For effective inventory management

In summary, data consolidation for advanced network inventory systems is a critical task for telecoms providers, particularly as they seek to reduce OPEX and migrate to next generation networks while constraining CAPEX.

Federation provides a stepping stone, but maintaining middleware for legacy databases, as well as the existing platforms simply generates additional OPEX. It preserves inefficiencies and means that there are yet more systems to manage and support. These databases must, ultimately, be retired to secure the full benefits of a network inventory data consolidation program.

CNI has defined a step-by-step approach for network inventory consolidation that:

- Delivers a single, unified view of data
- Allows data to be cleansed, gracefully
- Enables data quality tagging
- Provides clear migration path to a single database
- Eliminates legacy systems and redundant data siloes
- Reduces OPEX

To learn more about this approach and the benefits it delivers, please contact our team at info@cross-ni.com or visit us at www.cross-ni.com.

