

The Challenge -

A Complex Transmission Model

The Customer required a solution for the automated data synchronisation of transmission circuit data from their Cramer Inventory System to their Service Management System, TeMIP Service Monitor (TSM). This data consisted of,

- Circuit data
- Circuit relationships based on hierarchy and protection
- TSM Alarm monitors
- TSM Site to Service Groupings

Using this information TSM could then identify,

- failed circuits
- root causes of failures
- network services affected by failures

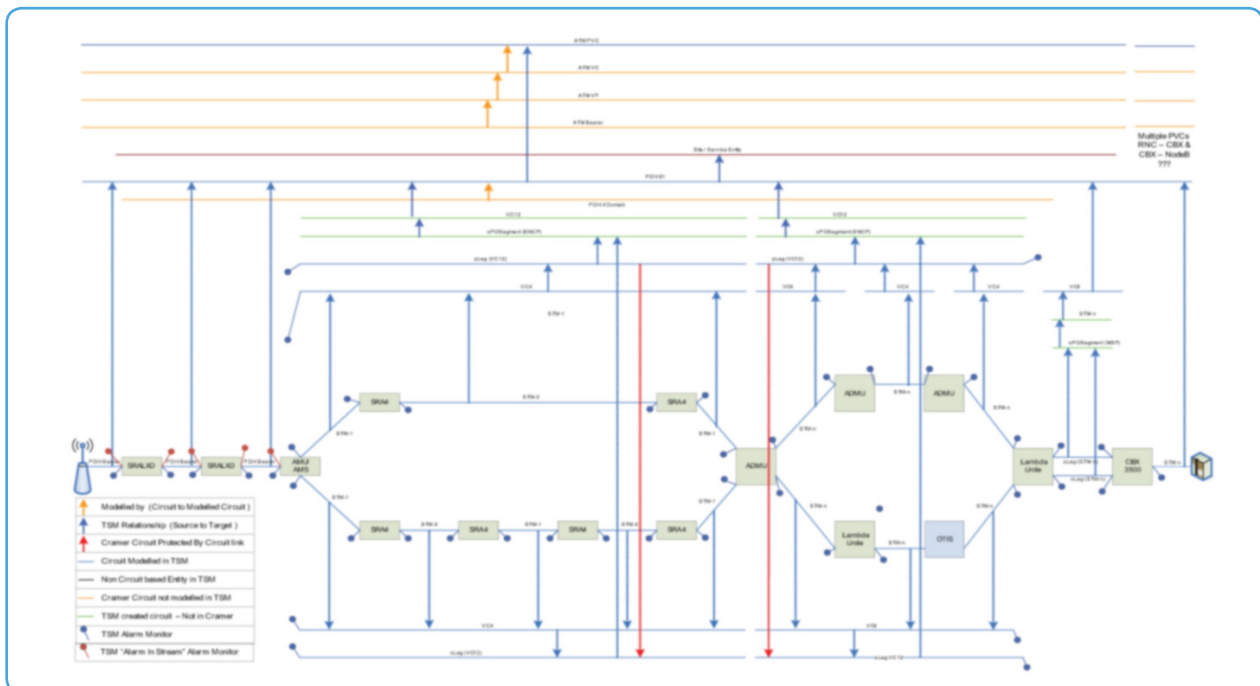
The Customer also required the automatic population in TeMIP of the equipment information models from,

- Lucent
- Siemens

Network Inventory Data

The network inventory data required to generate the dataload was obtained from Cramer as a set of XML files generated daily. The following information was contained in individual files,

- Circuits – details of all circuits traversing the Access Network
- Circuit Hierarchy – the relationships between overlying circuits and underlying circuits
- Circuit Protection - the relationships between protected circuits and protecting circuits using either SNCP or MSP+1 protection
- Nodes – All Lucent and Siemens nodes
- Locations – the geographic and logical locations of the nodes
- Ports – the ports configured on each node
- Services – the service types carried on each circuit: 3G, GSM, Paging, Customer Private Wire and mixed 64K clients
- Fibres – links used by nodes
- Fibre Circuits – the relationships between fibres and circuits



The Solution –

Dataduct Concert Model transformation

The Cramer export was persisted in an SQL database within Concert. Each daily set of SDH files was reconciled against the corresponding table in the database and updated as necessary. The volume of data being processed was considerable, 600Mb of XML containing over half a million circuits. Processing, reconciliation of this data with the locally stored version in the Concert database and export to TSM was completed within 10 minutes on a low end Sun server.

The circuit types that were processed for export to TSM were,

- ATM Bearer, PVC, VC, VP
- PDH Bearer
- PDH Circuit (usually E1s)
- PDH IMA Parallel Circuit
- PSH/SDH Cross Domain
- SDH HO Path
- SDH HO Trail (VC4)
- SDH LO Trail (VC12)
- SDH Multiplexer Section

A daily dataload was performed towards TSM using the TSM dataload utility. The volume of data being dataloaded was large, so the solution was configured to export a delta of the changes since the most recent export. An entire snapshot could be generated when synchronisation was required. A typical snapshot contained up to half a million circuit and relationships. The circuit and relationship data was used by TSM to populate its own model of the network.

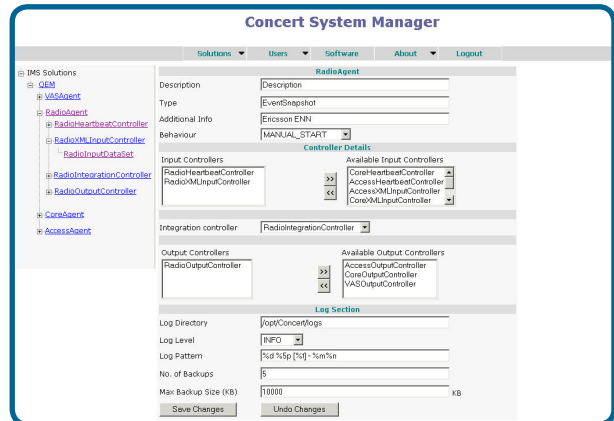
The relationships and alarm monitors were used to perform event correlation and root cause analysis. The dataload generation to TSM was enhanced with domain specific knowledge to improve the quality of data being delivered to TSM, specifically in the areas of,

- verifying conformance of logical and physical network infrastructure naming with policies
- identifying inconsistencies between exported entities from Cramer. eg. non existent protecting circuits, incorrectly configured ports
- mapping of physical equipment location to logical management domain

The SDH inventory data hub and gateways operate autonomously and independently of each other. This results in a loosely coupled service oriented deployment.

Maintenance and updates can be applied to individual gateways without affecting any other integrations or taking down the system. System availability meets the five 9s availability required by Telecom Operators.

As with all carrier class solutions, the mediation function must be monitored and managed. If the mediation solution degrades or fails, relevant alarms must be raised. A central administration console is provided for the graphical monitoring and management of all data mediation solutions on the platform. Warnings and alarms are routed to system managers.



Further integrations can be added seamlessly without any modification to the underlying platform. In addition, the transmission data extracted is now available to all other NMS applications from the internal data hub at a fraction of the cost of doing a traditional point-to-point integration. This flexibility and economy of re-use is why the industry is moving away from custom point-to-point solutions and moving towards data hub and product based architectures.

The Benefits

Customer Service Management system is populated with real-time configuration data which enables,

- A managed and quality assured data synchronisation engine
- Reduced Fault Resolution Times
- Ability to meet SLA's
- Reduced operational customer & network support costs.



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