

Orientation and Development of Telecom Resource Management System in China

Ye Yun, Li Xiaojin

(Network Division of ZTE Corporation, Nanjing 210012, China)

The resource management system is a concept established in the special development phase of Chinese telecom industry. What the concept involves has been keeping enriched and developed through further communication between telecom operators and service providers.

1 Orientation of the Telecom RMS

The contents of telecom resource management system are based on the basic attribute of resources.

The telecom network resource system bears three basic attributes: existent, usable and dynamic. The existent attribute is the most common attribute of the telecom resource system, symbolizing whether resources exist. Usable is the second basic attribute of telecom resources, showing whether the resources are in use and the use status of resources.

The existent attribute of resources is dynamic in that the adding and dropping of resources are dynamically shown in the resource management system. The usable attribute of resources is also dynamic in that the occupancy and release of resources are dynamically shown in the resource management system.

The establishment of a unified management platform for telecommunication network resources should center on the three basic attributes as follows:

(1)The management functions require a particular focus on the administration and statistical inquiry of network data, drawings and logic topologies. This is a solution to the management of the existent attribute of resources, in-

Abstract:

In consideration of the present conditions of telecom service providers in China, the objectives and possible processes of constructing telecom resource management systems (RMS) in China are analyzed. The system boundary with other network management systems and the interface protocols are discussed. It is suggested that the telecom resource management system should be constructed in a proper sequence and developed in different stages.

volving physical resources, logic resources, intelligent and non-intelligent resources. In this case, each kind of resource must follow the actual attribute of each kind of telecom resources to establish its own data module, setting up a complete and accurate resource mapping system. A unified inputting, numbering and naming format must be required for the resource construction.

After all resources are mapped, multiple resource information based applications such as inquiry, statistics, resource allocation, resource configuration, routing analysis and network optimization can all be realized. By emphasizing the existent attribute of resource management and solving the critical problem of resource status ambiguity and the laggard telecom resource management, the resource usability is improved; at the same time, the economical revenues for enterprises grow via the management of standby products. This helps gain the maximum yield.

(2)In the management functions, the management of resource usability is executed by

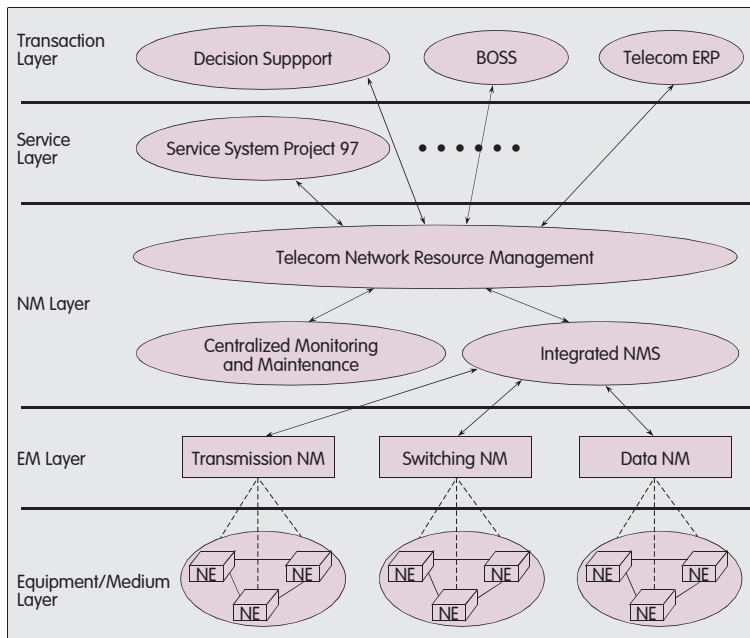


Figure 1. Location of resource management system in TMN.

the system via the resource configuration management and allocation management.

(3) At present, the close combination of telecom resource management system with service allocation flow solves the dynamic problem of the system. In the system construction, by interfacing and integrating with network management and monitoring system, the dynamic management and flowing of data are realized. An integrated operational support system (OSS) platform is hereby established. The resource management system follows the TMN hierarchy, principally located in the application system of the network management layer and constructed as a network management specified operation system function (OSF) as shown in Figure 1.

The resource management system solves problems related to the physical and logic resource management status ambiguity and the laggard management of outdoor facilities such as pipes, fiber cables, electric cables, and professional equipment related to transmission, switching and data.

It also provides bottom layer support for the construction of the service layer and transaction layer, including BOSS and the ERP system. By interfacing with each on-the-spot NM system and monitoring system, the resource management system can realize an integrated telecom management operation support plat-

form in the end.

2 Construction Stages of RMS

With the development of resource management system, the general NM frame for Chinese telecom operators will be a three-center management system (resource management center, integrated NM center, and centralized monitoring and maintenance center). Between them, the RMS construction is expected to undergo three stages as follows:

(1) First stage: Static data input and management, resource allocation based on the database.

(2) Second stage: Accomplish the configuration/quality-management data interfaces with monitoring systems and network management systems to receive dynamic monitoring and NM data; accomplish the application interface (API) with the service layer and transaction layer.

(3) Third stage: After the dynamic interface is realized, the NMS, monitoring system and resource management system are gradually integrated into an OSS bottom layer platform. And the NMS becomes a subsystem of the platform.

At present, the telecom RMS construction in China is generally in the first stage. Because of the large data volume and relatively longer fine-tuning time, the first phase will last a longer time for China Telecom and China Netcom. However, other telecom operators may start to take into partial account the construction contents in the second phase but with general energy still focusing on the trimming of basic data and the specification establishment of the resource allocation flow.

In the resource management system, outdoor pipelines are still a problem due to their poor management modes resulting from large basic data, long accumulation time, and data incompleteness. This problem has become more serious to China Telecom and China Netcom. However, a uniform management system for multi-transmission equipment vendors, multiple modes and multi-transmission NM systems could quickly improve the resource management level and the response speed. It will play a crucial role in the resource management system construction.

Since the resource management system construction is oriented to services, the product design and application must be closely in line with the actual management process of the telecom operation industry, and customized so as to substantially solve actual problems.

3 System Boundary Division and Interface Specifications

Since the system boundary is not clear and its construction tends to be in a large scale and too elaborate, it becomes a very serious topic how to clarify the boundary of the system and how to gradually establish the functional specifications of crucial interfaces. This is particularly important for the control of construction cycle, capital and time schedule.

(1) The Boundary and Interface with NM System

Via the NM configuration /quality interface, the resource management system collects data of the element configuration, faults and performance, then imports the data and makes comparison. After that, the resource management system locates the fault, analyzes how the fault/performance is going on, and finally sends the result in the form of an electronic worksheet to the NM personnel for execution.

Preferably choose an interface mode featuring small R&D volume and short available time, such as XML and database mean table, to develop the interface specifications and information mode. Before the NM interfacing is handled, data can be copied or transferred so as to input the onsite element equipment performance and fault information into the telecom NM system.

(2) The Boundary and Interface with Electronic Document and Drawing Management System

In the resource management construction, the telecom operation industry also faces the construction of the electronic document and drawing management system. As the management of the documents has already experienced a long development time and there already sells mature commercial software, the construction of the electronic documents and drawing management system has actually become a trimming and archiving process. This differs greatly from the R&D work demanded

in the construction of RMS.

So, under the resource management system, the electronic document and drawing management system should be constructed as a relatively independent project and be interfaced with the document system. As a result, relevant drawings can be extracted from the resource management system to satisfy users.

(3) The Boundary and Interface with MIS

The resource management system belongs to the application system of the NM layer, and is oriented to the telecom resources. As to its relationship with other layers of TMN, the telecom resource management system provides the interface with the service layer via resource allocation and flow management including order management and electronic worksheet management, in order to realize API with the service layer's MIS system.

The resource management system construction goes in proper sequence and in phases as well. It is advisable to invest less but try to solve the actual problems that concern users, aiming at the rapid growth of enterprise management level and economical profits. In the system construction, boundaries between resource management system and its related systems should be clarified so as to concentrate the resource management system on solving the most pressing problems of users. **ZTE**

References:

- [1] Ye Yun, Li Xiaojin. Construction of a Unified Telecom Network Resource Management Platform. Heilongjiang Communications Technologies, 2001, (3).
- [2] China Telecom Corp Ltd. Technical Specifications for China Telecom's Local Network Resource Management System, 2001.
- [3] China Unicom Corp Ltd. Technical Specifications for China Unicom's Network Resource Management System, 2001.
- [4] China Mobile Corp Ltd. China Mobile's Transfer Network Management Specifications, 2001.

Manuscript received: 2002-10-26

Biographies

Ye Yun received his master's degree in precision instrument from Tsinghua University in 1995. He is a senior engineer with ZTE Corporation, working on telecom operational support products. He has published nearly 10 scientific papers and his research interests include Telecom BOSS and Network Inventory.

Li Xiaojin graduated from Tsinghua University with a master's degree. He works as the deputy director of BOSS Department of Network Division, ZTE Corporation. He is engaged in market analysis and system design for the NM system and BOSS, and in charge of the resource management programs.