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Migrating Millions to IP: A Mission Impossible?
Not with a Migration Control Center

One of the highest risk areas for service providers involved in transforming their existing networks to IP is the migration of customer lines from the legacy infrastructure to a next generation environment. The solution is to put in place airtight processes and procedures that protect against cost overruns and customer churn caused by services outages. This is where a Migration Control Center (MCC) comes into play. The MCC functions as a "NASA-like" command and control center at the heart of IP transformation migration programs.

This paper describes the key business drivers for the creation and operation of the MCC, the critical functions of the MCC, and the basic principles for establishing an effective MCC organization.

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Introduction

A Migration Control Center (MCC) program provides a systematic approach to scale and automate a service provider's transformation of its legacy infrastructure to an IP structure. This methodical approach is required due to the scale and scope involved in the migration of millions of subscribers. In the face of this mass migration, traditional project planning and management disciplines are too costly and cumbersome.

From a historical point of view, most providers would consider a large change program–say for system deployment– to be one that would involve around 50 sites. A deployment of this size can generally be handled by five project managers.

However, for a migration program supporting IP transformation, it may be necessary to migrate 5,000 sites. Using managers accustomed to traditional processes, the migration would require 500 project managers for the three to five year program duration! And these project managers do not represent all the resources that would be required – for example, resources needed to manage internal and external stakeholders, perform the "night-of" migration management, and fallback management.

Transformation also reaches beyond the network operations organization to many functions within the company, such as sales, marketing, customer service management, and legal and supplier management, to name just a few. Each of these disciplines may want to use their own project management approach to the transition. However, this is untenable for a large-scale transformation program and can only lead to cost overruns, slipped schedules, and unhappy end-users.

These demands, coupled with the need to maintain customer service levels and the "time is money" reality of any project, drive the need for adopting the MCC approach. A centralized MCC assists the service provider in selecting methodologies and tools early in the project and can be used across disciplines to help the service provider reach its goal of consistency of method throughout a complex change program.

The Migration Control Center – Critical Functions

To effectively scale the operator's IP transformation, the MCC defines processes for these key areas:
• Pre-migration management
• Migration control management
• Fault management (support)
• Fallback management
• Schedule change management
• Measurement and management information

Discipline in these six areas can reduce the risk associated with large scale migrations and continuous business change.

Pre-Migration Management

Pre-migration management is the discipline required to manage all the activities involved in planning, preparing, and uplifting a site in preparation for migration. In this phase, all the tasks to be accomplished at each migration site need to be defined. These tasks include:

• Site audit and data validation

• Frame grooming and data cleansing

• Data management

• Equipment installation and integration

Normally there are at least 200 tasks to be done per site, and each site can be defined as a project. Because the role of the MCC is to scale and automate the process, pre-migration requires that automated tools with workflow management capability be developed and used, allowing each site to be managed more efficiently. The results are reduced manpower requirements, a proactive and reactive management capability, increased reporting efficiency, and accurate, consistent methods and approaches.

Historically in large projects it was not uncommon to separate the deployment and migration efforts into different teams – i.e. getting the new network to function correctly was considered a task that was separate from moving subscribers to the network.

However, due to the tight timeframes of most IP transformation programs, it is critical that these teams work in in tandem using common processes, tools, and in many cases, similar resources. For example, it is common to have one set of field technicians who are responsible for installing the equipment, grooming the circuits on the MDF, and executing the physical wiring changes during the migration window. These technicians should use similar workflow tools and processes for each of these activities. For this reason, along with the need to perform overall dynamic resource planning and schedule management, we recommend combining these activities under the umbrella of a single project team.

Fault Management

Efficient fault management processes are a critical part of the MCC approach to migration.

In a legacy operator environment, there are often dozens of service desks – and there may even be hundreds if operator customer service desks are included in the service model. Changing this model is both time consuming, costly and, in the case of operators service interfaces, often impossible. The MCC's fundamental principle of fault management is that it does not change the service model, but interfaces to, and uses what is available.

In fault management, the MCC does not field any first line incident calls. The rationale is twofold. First, this has a negative impact on the operator because it entails making changes in procedure to these dozens (or hundreds) of customer service desks. The second is that it is confusing to the customer. The practical result of changing level one support would be the necessity to communicate to every client that, if they have a problem on that one night of migration, they need to call a different number than the one they would normally use. Obviously, this is not the most reasonable approach.

The MCC fault management approach is to determine where the faults reported by clients, network alarms, and site technician converge, and create a separate queue for migration related faults at that point. The goal of this strategy is that all faults during the migration are still resolved within agreed SLA's. The business-as-usual fault management processes are left intact, and the process is seamless to the operators. In addition, the number and type of faults introduced after migration can be calculated and analyzed, increasing the efficiency of the ongoing migration process.

Migration Control Management

Migration control management (MCM) has three main functions within the overarching objective of managing the physical and logical migration of the legacy equipment.

The first role of the MCM is to establish quality gateways across the end-to-end migration timeline. A pre-agreed set of quality gateways is determined for migration preparation, the "night of migration," and post migration. Also defined is how accountability changes hands and the criteria for starting the decision to fallback. A quality checklist is developed per gateway –the goal being that all migrations have a level of consistent management and quality that is monitored as they progress.

Another important role for the MCM is to establish a playbook to automate the night of migration activity. This playbook details these activities on a synchronous timeline. As with the pre-migration tools, a generic method is configured for the unique elements at each site. For example, a switch site may use a method based on the type of switch, the connectors available, and the data migration method. The site audit conducted during pre-migration determines which generic migration method will be used at the site.

The playbook also details how resources move within or among sites, so the geography of sites becomes important. Islands and large rural areas have different requirements than urban centers. Generally, sites will have an 80% fit with the generic tool. At that point it is only the exceptions that require custom documentation, using a mass customization approach with the automated playbook.

MCM is also responsible for the "night of" migration management. The migration control manager defines and sets up the communication standards, provides rules of engagement, identifies key participants (generally the migration manager, jeopardy manager, the fault manager, field personnel, and migration execution engineers). The role of the migration control manager is to manage the process of migrating a site to completion in the allotted time and to an agreed upon quality standard. The jeopardy manager handles any exceptions to the migration process and resolves them. The benefit of this approach is that it ensures that the team's focus remains on success, and exceptions are managed in a controlled and efficient manner.

Fallback Management

Fallback management refers to the management of the decision process that determines when fallback is required. Prior to migration, the quality criteria to monitor are identified and breach levels are determined. Common quality categories include fault levels, QoS, jitter, lag, voice quality, process fall-out, and the like. The fallback manager monitors their performance against the agreed breach levels. If a breach occurs, the fallback manager manages the decision making process for fallback.

If the migration process goes into fallback (either during the migration or post migration), part of the MCC shifts from a migration-focused organization to a fallback organization. Fallback procedures are defined for every migration procedure. It is important to note that managers determine when to fallback, not processes and procedures. Managers must weigh customer service concerns, cost concerns, time lines, and other specific variables in order to make their decision.

Communication is a critical fallback management function. The person to contact before, during, and after fallback is predefined and communications are documented in advance. This helps ensure timely, efficient, appropriate communication throughout the high pressure fallback process.

Managing fallback as a separate function brings multiple benefits, including lowering the risk associated with migration, the ability to restore service efficiently, and, as necessary, management of a comprehensive communications approach to reduce customer and operator impact, and a full audit trail to capture learning and avoid the same problems in the future.

Schedule Change Control

Schedule change control is used in conjunction with the migration schedule in order to:
• Create a consistent format that is acceptable to the business and the operators
• Communicate in a consistent manner
• Manage for change against a set of agreed criteria
• Report consistently using defined channels

Because migration can span years and thousands of sites, a well-defined and managed schedule change control and management discipline will optimize the required resources.

Schedule change control is also needed to provide operators and consumer reporting that is requested or required by regulators (i.e. how many subscribers have been moved and when each individual's service will be migrated).

Measurement and Management Information

The measurement and management information function is designed to capture key reporting metrics, such as number of customers migrated, first time right percentage, time to repair error, and average outage times. This information can provide valuable data on vendor performance, as well as metrics that can be used to inform important business decisions and optimize value for the migration program and the business.

Principles for Developing the MCC Organization

There are several important principles to consider when developing an MCC organization to support an IP transformation:

- **Engage stakeholders** - Migration will reach across the company, moving beyond the organization's operations and migration function. It is important to identify and engage key stakeholders upfront, and to interface with all the necessary support functions (such as marketing, legal, IT, operations, media communications, and special services). Thus, when program timelines and goals are established, they will be more realistic, and the program is less likely to face obstacles from within the company. A consequence of having such a wide stakeholder base is that requirements control is mandatory. Without strict governance and policy relating to requirements control, the scope and boundaries of design could quickly escalate out of control.

- **Integrate business as usual functions** - Integrate existing business as usual (BAU) functions wherever possible – leveraging existing resources is more efficient than replication. Furthermore, reinventing existing processes can uncover many BAU problems, and you may find your program becoming the vehicle for fixing these problems, which is not the goal of the program. Due to the wide ranging nature of the requirements, the large stakeholder base, and the tendency for scope creep, it is advisable to freeze the scope at phased intervals, deliver a baseline, and then accommodate change – this helps the service provider to meet its goals of tighter control of project resources, and closer adherence to budgets, timescales, and scope.

- **Anticipate IT support requirements** - Never underestimate the scale, cost and time required to develop supporting IT systems. IT is one delivery area that is known to slip in time and expand in scope. In order to avoid that outcome, as early as possible in design, it is essential to determine IT system development paths and methods, the reliance of the transformed infrastructure on IT, and the use of commercial off-the-shelf (COTS) vs. proprietary systems.

Conclusion

Based on Alcatel-Lucent's experience with the early adopters of IP transformation programs, migration presents a significant logistical challenge. A service provider's general business as usual project management approaches are bound to falter in such a transformation project. The MCC approach has emerged as the best practice for optimizing the risk and investment needed for a successful migration.

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Mike Cook is responsible for the Network Integration Division's Global IP Transformation practice with local accountability for the European center located in Antwerp, Belgium. Cook has over 17 years experience within the telecoms industry and has held a number of executive positions, most recently at British Telecom (BT). At BT he was instrumental in leading the 21st Century NGN migration program from inception, through trials to the successful launch of Pathfinder. Prior to joining BT, Cook held various operational positions, including director of Business Operations for the UK cable operator, Telewest. At Telewest he launched the start-up and integration of seven additional businesses.

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