

# TRANSFORMING YOUR NETWORK:

STRATEGIES FOR A SUCCESSFUL SUBSCRIBER  
MIGRATION TO A NEXT-GENERATION ARCHITECTURE



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## EXECUTIVE SUMMARY

SERVICE PROVIDERS STAND TO GAIN SIGNIFICANTLY FROM MIGRATING SUBSCRIBERS FROM LEGACY TDM SWITCHING EQUIPMENT TO NEXT-GENERATION ARCHITECTURE. KEY BENEFITS INCLUDE THE ABILITY TO QUICKLY AND EASILY OFFER CUTTING EDGE CONVERGED SERVICES OVER A STREAMLINED AND FLEXIBLE NETWORK, DRAMATICALLY REDUCED OPERATING EXPENSES AND GREATLY SIMPLIFIED OPERATIONS. HOWEVER, MIGRATION PROJECTS HAVE A REPUTATION FOR BEING COMPLICATED, EXPENSIVE AND DIFFICULT TO MANAGE. THIS PAPER ADDRESSES THE REASONS BEHIND THIS REPUTATION AND SERVES AS A HIGH-LEVEL GUIDE IN PLANNING, COORDINATING AND EXECUTING A SUCCESSFUL, ON TIME, AND ON BUDGET MIGRATION TO A NEXT-GENERATION NETWORK, ALL WITH NEGLIGIBLE IMPACT TO YOUR CUSTOMER BASE. IT EXPLAINS IN PRACTICAL TERMS WHAT YOU CAN DO TO MAKE A MIGRATION PROJECT LESS COMPLICATED AND MORE MANAGEABLE.

## ABOUT THE AUTHOR



Maya Henderson works as a Program Manager in the Metaswitch Professional Services team. She joined Metaswitch in 2008, bringing 11 years of service provider experience and a comprehensive understanding of telecommunications infrastructure, network planning and engineering. Before joining Metaswitch Maya worked at One Communications, the largest privately-held regional provider of telecommunications services in the United States with \$800M in annual revenue. As lead project manager for their network-wide switch consolidation and subscriber migration projects, Maya was responsible for developing project scope and budget, managing team consensus, attending to client relationships, and navigating all aspects of these complex projects. In addition to this deep experience, she brings to her current projects a clear vision and an intense focus on project and process improvement leading to manageable, repeatable and streamlined procedures for future deployments and migrations.

## INTRODUCTION

THIS PAPER COVERS THREE GENERAL AREAS OF INTEREST RELATED TO MIGRATION PLANNING AND EXECUTION:

- Making the Case for Migration
- Architecting a Network Migration
- Implementing a Successful Migration

We begin the first section by building a compelling argument for why considering a migration is timely and appropriate given the current state of typical legacy TDM networks. We then discuss the key benefits of a softswitch based network, help you envision what this new network might look like and guide you in navigating through initial challenges and implementation hurdles. Finally, we provide the first steps toward building a solid financial business case in support of a network wide consolidation and migration effort.

In the second section we delve into the details of architecting this new network. We talk about the process of getting a migration off to a strong start by organizing your company around the project and clearly defining roles and responsibilities. We help you build a strong migration plan that cares for your subscribers.

In the third section, we focus our attention on planning and scheduling a migration. It is important to understand how to compile and accurately maintain subscriber records throughout the migration process, how to leverage automation for more accurate and seamless transitions, and how to care for last minute changes. These tasks are key to making this phase of a migration a success. We will also give you tips on how to effectively communicate these changes to your subscribers, and review detailed migration event tasks in order for you to gain familiarity with the actual process.

Finally, we provide some example case studies.

Appendix sections A through C describe some of the services offered by Metaswitch to support migration to next-generation architectures, and give examples of migration resource plans and typical tasks associated with a migration event MOP.

## MAKING THE CASE FOR MIGRATION

### 3.1 What Does a Typical Network Look Like Today?

It is quite common for service providers to struggle with increasingly diverse, complicated and antiquated Class 4 / 5 switching equipment. This equipment is often so old that it no longer qualifies for coverage under a support contract which puts a service provider and ultimately the subscribers at risk in the event of a hardware or software failure. Lack of vendor investment in development, new features and products is common. In addition to these complications a typical service provider's network often contains older access devices that are incapable of supporting new converged services.

Legacy switching equipment consumes a massive amount of real estate, and requires a significant amount of energy to operate and cool sufficiently. Due to mergers and acquisitions service providers often find themselves with multiple switching systems inefficiently supporting similar geographic regions. These diverse physical locations are often difficult and expensive to support and staff adequately.

**Typical legacy switching networks are very expensive. The main recurring components of this cost are:**

- **Maintenance of switch and peripheral equipment. Typically this comes in the form of a contract with your vendor.**
- **Required switch and peripheral equipment growth to support your subscriber base. This will vary based on the amount of growth taking place in your network. Often this growth is seen in subscriber PRIs and trunks, not necessarily POTS lines.**
- **Recurring charges for network trunking**
- **Feature and port licenses, usually assessed by your vendor**
- **Leased circuits for transport and backhaul**
- **Environmental cost – Power, HVAC, etc**
- **Rent**
- **Utilities**
- **Staffing costs.**

### 3.2 What Would Compel Me to Change My Network Now?

There are two immediate and compelling reasons for service providers to consider making changes in their network. First and foremost is that by upgrading their network equipment, they broaden their service offering, allowing them to address new market verticals and respond to subscriber demand for new features, functionality and integration. To remain competitive, service providers need to respond to customer demand for triple and quad play services. They require the ability to offer services

such as flexible T1, hosted business VoIP, SIP phones, and Unified Communications. What is more, today's network equipment solutions are designed to accelerate the deployment of new products and services, allowing service providers to more quickly and efficiently respond to the evolving market. This means that service evolution becomes more cost-effective. By contrast, legacy equipment relegates service providers to the status quo, as many vendors are not investing the time and effort required to further develop capabilities for antiquated systems.

Reducing costs is the other compelling driver. A tremendous amount of overhead results from maintaining the physical network and facilities. Service providers are eager for ways to simplify and consolidate multiple and often redundant switching platforms. A model that incorporates larger regional switching centers is simply more efficient and makes better financial sense.

Building upon these two immediate factors, many service providers realize that now is an opportune time to initiate a strategic shift toward a flexible, next-generation IP based network, more consistent with a plan for growth and long-term business prospects.

### 3.3 What Are the Key Benefits to You and Your Subscribers?

A next-generation platform provides revenue generating voice services and switching functionality for both broadband and narrowband networks in a compact, fault tolerant chassis. Softswitches are designed for deployment in Central Offices and Regional Switching Centers and offer service providers a flexible and cost-effective way to:

- **augment or replace legacy Class 4 or Class 5 switching systems**
- **deploy Voice over Broadband services without requiring a legacy Class 5 switch**
- **migrate their networks incrementally to a next-generation VoIP/softswitch infrastructure**
- **readily create and deliver revenue-generating converged voice and data services**
- **more easily diversify their product offerings to include new applications with cross-platform subscriber interfaces.**

Service providers can rest assured knowing that modern softswitches provide improved redundancy and resiliency allowing them to offer their subscribers greater service uptime and survivability in the event of an outage. This is accomplished through Emergency Stand-Alone, improved hardware platforms and greater software fault tolerance. In addition, a next-generation platform provides more flexibility to deliver new converged products and applications, and the ability to more easily interconnect with IP providers and, ultimately, to rapidly develop and deploy all-new applications. As a result, subscribers are

now able to more easily explore and sign up for exciting new features and services without costly installation or upgrade lead-times.

Cost savings through consolidation and migration – literally resulting in less physical network to manage – is another key benefit of moving to a consolidated next-generation network. The resulting network is simpler and easier to maintain. Making changes to a network is also a great time to modernize antiquated access methods and move subscriber lines off of proprietary line bays.

### 3.4 What Might This New Network Look Like?

It is important at this stage of the discussion to begin to build a network design based on a careful analysis of your current architecture. Start by considering the following questions:

- **Where are your subscribers?** Perhaps it makes more sense to consider consolidating smaller, less-utilized switches first.
- **Where are you being pushed to offer integrated features and additional functionality?**
- **Where are your switches physically located?**
- **What type of switch do you have in each market? Are some switches more antiquated than others, necessitating a change more quickly?**
- **What is the overall complexity of the market?** Think about things like number of colocations, rate centers, fiber assets, and entrance arrangements.

Overlay this analysis with an assessment of your transport network and real estate opportunities. Decide where it might be easy and inexpensive to procure transport. Look carefully at where you might be paying a premium for leased circuits that you may not need if you consolidate the network. Identify particularly expensive sites by looking at real estate, environmental, equipment and maintenance costs. Consider carefully leases that are near expiration or that might be renegotiated due to mergers and acquisitions.

Pay special attention to markets that might be close to capacity, potentially requiring a switch expansion in the near-term. By migrating these markets now, you stand to gain capital avoidance as well as reap all the benefits of a new architecture.

As you complete this exercise of network analysis, you should begin to sketch a high-level network design keeping in mind where you might want local call control versus centralized call control. Think about where it makes sense to consolidate switches, where a regional switching center would fit, and where a streamlined remote office might be sufficient. Finally, consider where it makes sense to converge your voice and data services. The section titled How Do I Create a Strategy for Migration? ex-

plores in more detail various deployment and configuration options such as switch consolidation, migration, and cap and grow.

### 3.5 How Do I Prove a Migration Project Makes Financial Sense?

Before you begin a switch migration project you need to prove that it makes financial sense. Both the engineering and marketing groups have an interest in the financial benefits of a migration project. Marketing is primarily focused on new features, functionality, and incremental revenue. Engineering drives these projects from the perspective of maintenance, support, network economics, and management costs.

A consolidated softswitch network has the potential to be considerably less expensive to operate and maintain than a legacy switching network. Below are several key benefits of a softswitch network that can easily be worked into your financial payback analysis to further prove that a migration project makes sense.

- Revenue generation from new features and services
- Modernized access equipment in support of triple play
- Reduced operational expenses – site and environmentals
- Larger, more efficient (thus less expensive) trunk groups
- Least Cost Routing – Class 4 and Class 5 services
- Reduced capital expenditures

Softswitches can easily replace legacy switches by offering a seamless match of existing features and functionality both for Class 4 and Class 5 TDM switching. Softswitches do far more than simply replace legacy functionality; they enable you to provide new voice services and generate fresh streams of revenue. Softswitches support IP trunking for Class 4 and IP PBXs, SIP business phones, Hosted Business VoIP, SIP phone provisioning, and Flexible T1 access to bring voice and data to subscribers over a single efficient T1, with cutting edge SIP application servers. Offering these services to your subscribers enhances their loyalty and drives strong incremental revenue.

Reducing operating expenses is straightforward. The less network you have to manage the less expensive it will be.

A model of compact regional switching centers and small remote sites with traffic backhauled via TDM or SIP is efficient and simple. From these regional switching centers you can create larger, more cost-effective trunk groups and manage least cost routing projects more efficiently.

As part of your financial analysis you need to consider the one time capital investment required to upgrade and consolidate your network. Softswitching equipment, supporting network equipment, IP switches and routers, and transport costs will all need to be considered.

Once each of these elements is identified and budget costs are determined you can put this analysis together with the cost savings and new revenue projections from above to determine project payback. The Financial Analysis Worksheet, provided with this white paper, shows examples of these different components and how they fit together. Various analyses can be done then to calculate total operating cost, costs to rearrange the network, network savings, etc., based on the fundamental premise of your business case.

### 3.6 Can I See a Way to Make this Migration Happen?

Migration projects have a reputation for being complicated, expensive and difficult to manage. Understanding how to navigate through these challenges and overcome implementation hurdles can be overwhelming at first. In this section we will share some practical advice for making this phase easier, which includes partnering with the right vendor, creating a business plan, managing your resources, and pitching the project successfully to your company

Finding a partner who can help you assemble a technical solution that works is typically the first area of concern for most service providers. In a world of quickly changing technology, knowing that your switching equipment is flexible and robust, with fault tolerant hardware and software, is a prerequisite. Selecting a company with a long history of stable growth and a high priority placed on future investment in product and development is the foundation of a strong partnership.

Depending on your architecture and design plans, your softswitch partner must be capable of supporting full migration or cap and grow strategies. In addition to this, it is essential that they have a dedicated professional services team with a broad base of experience in successfully completing switch migration projects. Ideally, your partner should offer network planning assistance and project management resources that can augment where you might not have the necessary internal staff. Because a softswitching network is heavily dependant on a robust, fault tolerant IP infrastructure, it is also important that your vendor provide IP consultation and network design guidance.

Managing your internal and external resources, and understanding how to fit the work required for a migration project into already

busy schedules, is the second challenge most service providers face. The key to navigating through this effectively is to carefully plot out required tasks and internal resources, and to clearly communicate this information early on in the planning phase. A thorough understanding of what you can and cannot handle with your existing internal resources is very important. Having a softswitch partner you can rely on to fill the gaps with efficient and expert experience in the hands-on business of a migration project is critical to your success. You need to plan and budget for the necessary capital to cover any significant gaps you identify in your internal resource availability.

Finally, you need to think carefully about how to sell this project internally. It is imperative that you start by creating a solid and comprehensive business case to support your project. This business case will serve as a high-level roadmap for all who will be executing the project, and should include an overview of the key drivers from both the marketing and engineering perspectives. Further, it should review the current network design and statistics, and discuss in detail how each of these elements will change with regard to the migration project. Timelines, internal and external resource plans, an overview of risks and dependencies, and immediate next steps should be included as well. A review of the capital and operating expense requirements, and the payback analysis, is the final necessary component of this business case. Presenting your business case and acquiring the necessary executive approval and sponsorship is typically required before you can move forward.

Once this approval is attained, pitching this project clearly and building enthusiasm and cohesion between the many diverse departments involved in the work is an important next step. Demonstrating new features and functionality and talking openly about the project is a great way to get people excited. Designating a strong leader with a thorough understanding of the technology involved in the project and a clear sense of direction is integral to your success. This person will ultimately be responsible for building and managing the appropriate level of momentum throughout the project as well as comprehending and organizing the multitude of tasks that must be accomplished in the months leading up to the migration event. Understanding these details and identifying the dependencies between tasks is crucial – key to this is facilitating open and frequent communication between groups. Finally, it is important to determine the pace of the project, which involves delicate decisions about internal and

## ARCHITECTING A NETWORK MIGRATION

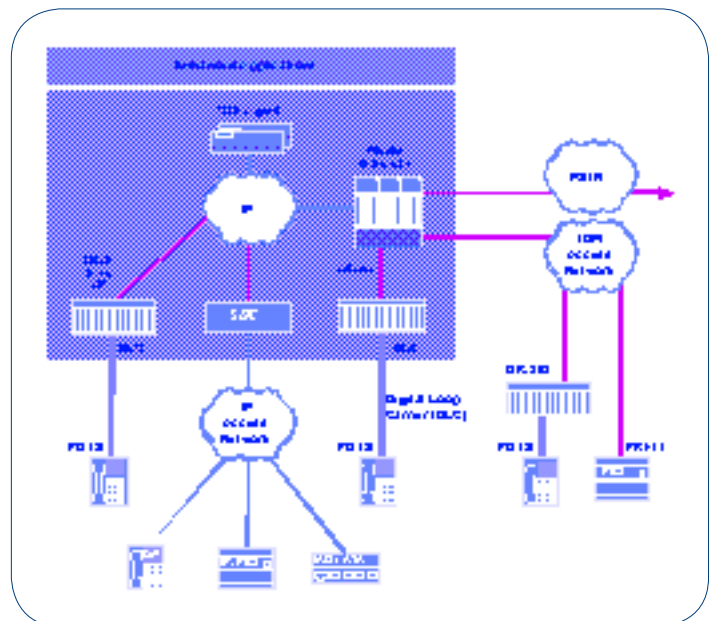
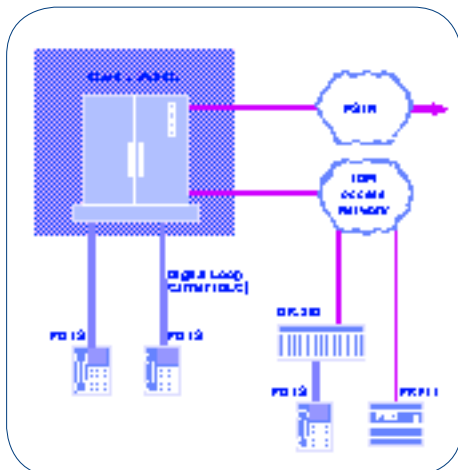
### 4.1 How Do I Create a Strategy for Migration?

While maintaining focus on the goal of quickly and easily offering converged services over a streamlined and flexible network, reducing expenses and simplifying operations, the next step is to explore in more detail migration options and approaches.

Next-generation switching equipment is a viable replacement for legacy TDM for two primary reasons. Existing TDM traffic and subscribers can be migrated quickly and easily due to seamless feature parity, and once the network is in place you can immediately begin selling converged next-generation services to both new and existing customers.

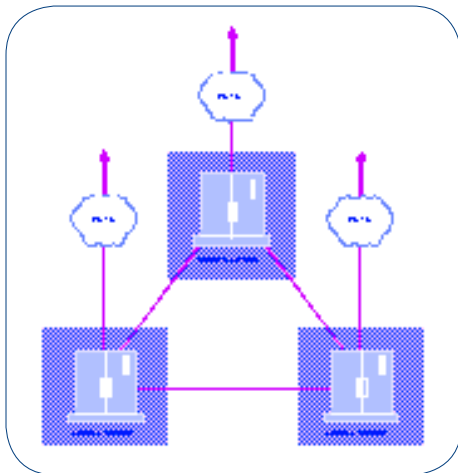
Softswitching equipment allows you to be flexible in your approach to migration and network consolidation. Equally valid arguments can be made for each of the three general methods of migration:

- Cap and Grow – place next-generation equipment next to existing TDM equipment. Subscribers are moved gradually over to the new softswitch platform.
- Full Migration – decommission of legacy equipment to reduce footprint and save cash.
- Network consolidation – migrating and collapsing your network to larger, regionally located switching centers

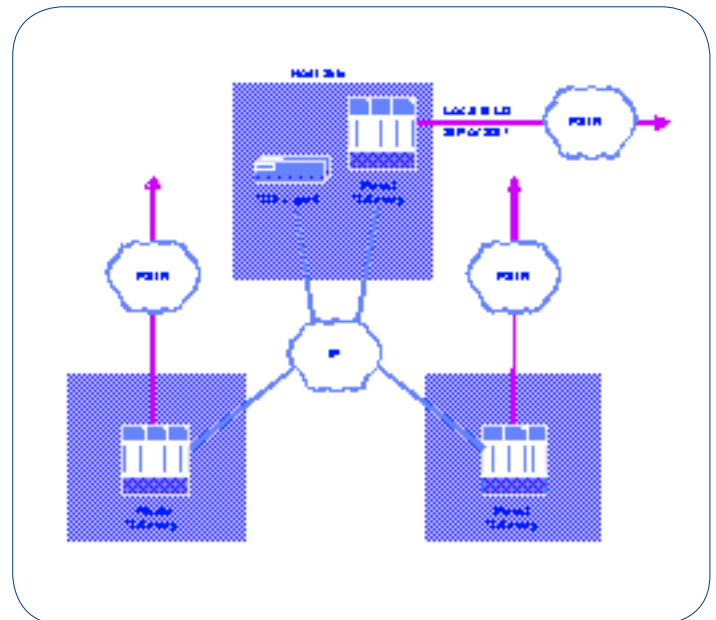


The diagrams below compare a traditional legacy Class 5 switch and a standard VoIP softswitch. The diagram on the left shows a traditional switch with connections to the PSTN, subscriber lines terminated directly on the switch, and others being delivered across the access network via GR303 / V5.2 or PRI / T1 / E1. A standard VoIP or softswitch solution is shown on the right. Here the access side of the network is simply terminated to the softswitch gateway. POTS loops into the central office are now terminated onto either a broadband loop carrier or a digital loop carrier. With this sort of network, you now have the ability to terminate SIP and IP IADs and subscribers. All subscribers now have access to enhanced applications and services.

Traditional legacy Class 5 switching networks and standard VoIP softswitch networks are shown in this set of diagrams. In the diagram on the left you see a traditional switching network. Each switch is managed independently and has its own connections to the PSTN for network trunking. VoIP Softswitching components can be split apart such that the entire network looks like one large switch offering local service



and long distance access. Emergency Stand-Alone protects the Media Gateways against loss of IP connectivity. For this network, there is one simple point of management and call control. In addition, Long Distance traffic can be collected on the host office and then handed via large, efficient SIP or DM trunks to the PSTN. These trunks provide the perfect opportunity for least cost routing.



Network migration or consolidation scenarios vary considerably based upon the specifics of your network. The general theme of this approach is to consolidate smaller sites into larger, regional hubs. Significant cost savings can be realized through this approach, as well as synergies in network management, operational costs and staffing. In this approach, existing subscribers are migrated to the Class 4/5 Softswitch in an organized and methodical fashion. Migrations typically start small with several hundred subscribers, then ramp up to several thousands as you gain confidence. Different techniques can be utilized during the migration phase to ease the transition of subscribers to the new switching platform. The most common methods of transition are:

Point Code Sharing with STP emulation is the most common option when only a single point code exists or in-depth operational knowledge of the legacy switch is not available. Point code sharing allows the softswitch to sit in front of the

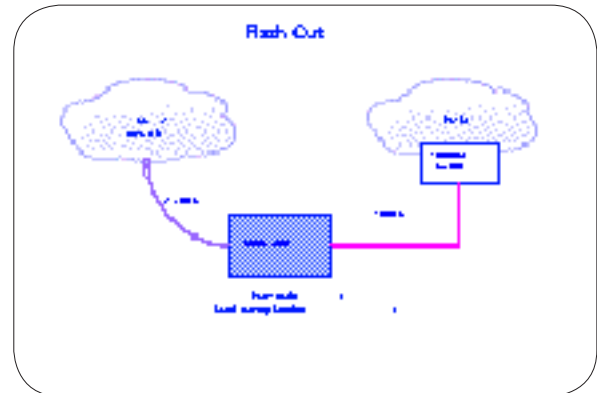
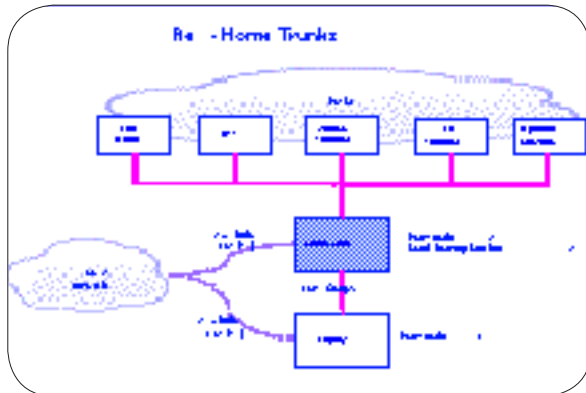
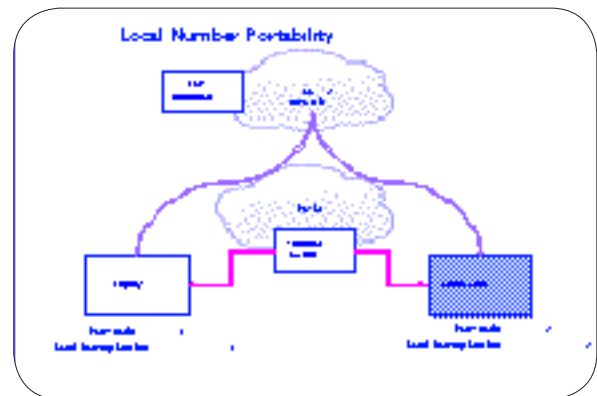
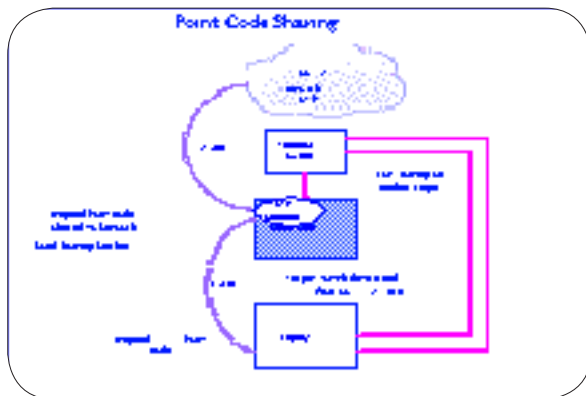
legacy switch, exposing the same point code as the legacy switch and allowing for seamless migration of ISUP facilities from the legacy switch to the softswitch.

Local Number Portability involves using LNP to move subscriber lines individually to the new softswitch. This option requires that the softswitch has its own point code and LRN.

Flash cut is an option that is usually only considered if the market is very small in size (a few thousand subscribers, say). While possible, typically this is not a recommended approach for larger sites, with tens of thousands of subscribers, due to the time required for the complex cut-over operation.

Network trunking can be moved over to the new softswitch platform in a flash cut method as well. More typically, this trunking is either rehomed or new trunking is built prior to the start of a migration project.

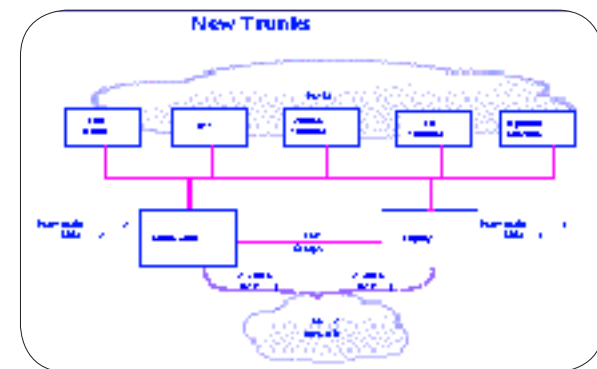
The diagrams below give more detail for each of the above scenarios.



While exploring these approaches and deciding which one fits best with your current network architecture you need to consider the number of subscribers and their distribution, real estate options, backhaul / transport opportunities, and expenses. It is important to remember that one approach might not be the best for all markets and your plan should be flexible enough to include these variations.

Understanding the technical requirements of your equipment is very important. Regardless of the decisions you make regarding architecture, the switching services that you currently offer to your subscribers must fundamentally be replicated. You need a clear understanding of what you require the softswitching equipment to do:

- Features and Services – line and trunk
- Access – GR303 / V5.2, ISDN PRI, T1 CAS/E1, SIP, MGCP/NCS
- Switch capacity
- Redundancy and resiliency
- IMS compliance
- Point code proxy / point code sharing



## 4.2 What are the Integral Components of a Formal Migration Plan?

Once you have developed a strategy for transforming your network the next step is to explain in detail the process and procedure you will follow to complete the transition to this new architecture. The key to ensuring that your project stays organized, on schedule and within budget is the amount of effort put into developing this initial plan. Be prepared to spend a significant amount of time early in the process developing a clear, well thought out and documented project plan, determining all potential dependencies and roadblocks, and identifying all hidden costs. This effort will give you the strong foundation you need to stay on track.

A formal migration plan proposal is the cornerstone of a successful migration project. As the culmination of a careful network analysis, detailed architecture planning and migration strategy planning, it serves as a high-level roadmap for all who will be executing the project. It is important to use this document to gain agreement and approval on design and approach as well as capital and operating expenses from development, systems and deployment engineering, senior engineering management, and all other impacted internal organizations. This approval and concurrence is integral to ensuring that the appropriate priority is given to this project and that resources are made available. Finally, this plan will foster continuity and consistency, and the development of a highly repeatable, documented process useful for multiple migration projects.

Some of the key components of a migration plan are:

### Current Deployment Statistics and Architecture

- Number of lines – voice, data
- Colocation sites
- LATAs served
- Real Estate Information
- Network Diagrams
- Trunking
- Transport
- Switching
- Gateways / DLCs
- Voicemail
- SS7 Architecture
- TDM aggregation devices (DACs, etc)
- Echo cancellation
- Data aggregation
- Core Routing
- Large subscribers
- Billing platform
- Inventory / OSS system

### Proposed Deployment Architecture

- Transport
- Switching
- Trunking
- Real Estate

### Proposed Migration Plan / Architecture

- Client number migration approach
  - Porting
  - Exception routing
- Data migration approach
- Migration pace and dependencies
  - Transport changes
  - Physical DACS changes
  - Customer impact
  - Trouble ticket response time
  - Support staff
  - Start small, work up to larger cuts
- Large and/or colocated customer migrations
- Number management / ownership plan
- Point Code – new or stay intact?
- CLLI Code changes
- Do NXXs need to be re-terminated to new interconnection point?
- Back up plan for interoperability issues
- Cutover backout plan – if things should go wrong
- Inventory migration – Updates to accurately reflect changes to circuit transport
- Space for central office technicians
- Client communication needs
- Equipment disposal proposal – collect rack by rack inventory and equipage. Can equipment be sold on grey market?

### Align and train resources – internal and external

### Identify key risks and dependencies

### Capital and Operational Expenses

### Proposed timeline

Building a strong and thorough migration plan up front is fundamental to ensuring that your project stays successful, on schedule, and within budget. Appendix B shows an example of a solid business case that addresses each of the items above.

### 4.3 What Does a Typical Migration Timeline Look Like?

Migration timelines vary significantly depending on the proposed architecture and the complexity of the market. Work can be organized into three phases; Market Design and Analysis, Execute, and Decommission. Some general tasks associated with each are detailed below, followed by a Gantt chart that shows which items can be run in parallel.

#### 4.3.1 Market Design and Analysis Phase

- Market Analysis – collect and compile line data, real estate, market architecture and equipment information. Detailed plans for transport, trunking, switching, aggregation and core routing.
- Construct High-Level Timeline and Market Design Proposal – first migration, last migration, equipment removal, vacate space.
- Capital / Operational Expense Analysis – expected financial impact of transport, switching, aggregation, data, labor, equipment resale.

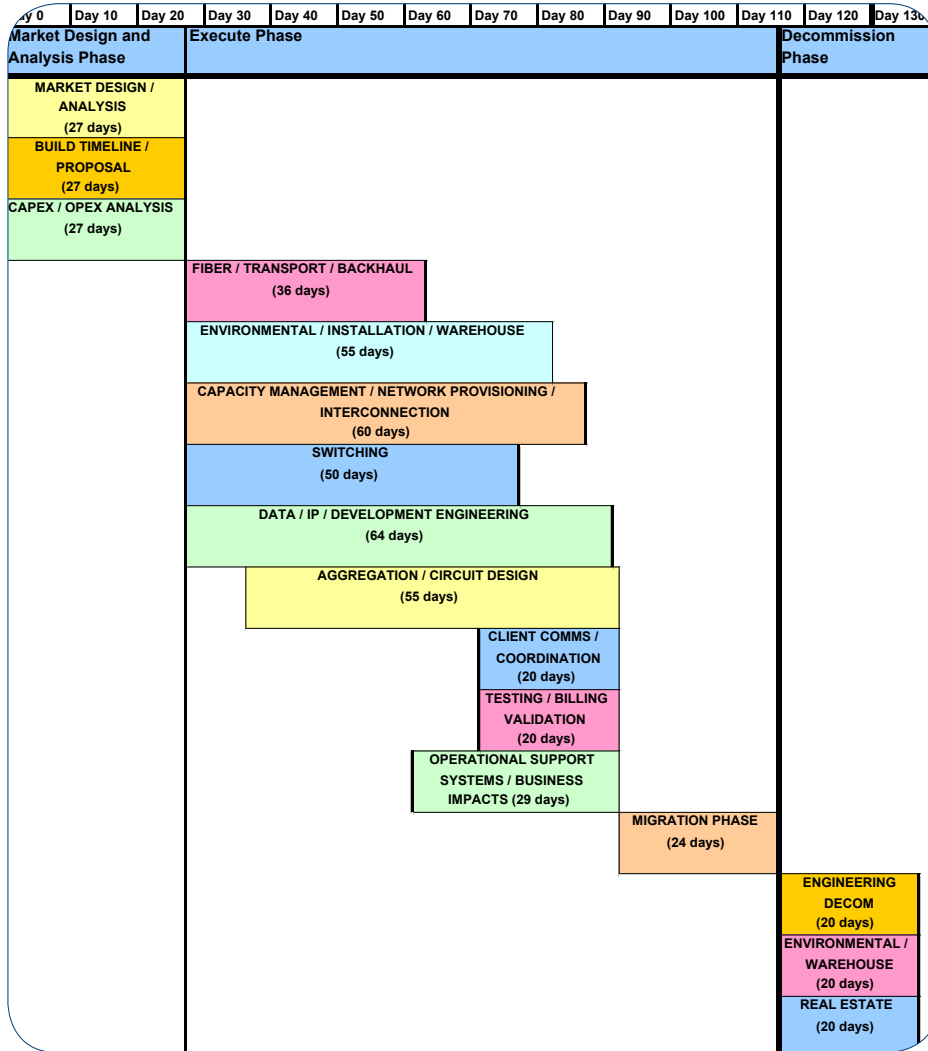
#### 4.3.2 Execute Phase

- Fiber / Transport / Backhaul – leased backhaul, core long haul, equipment installation / integration, fiber splicing.
- Environmentals / Installation / Warehouse – equipment lists, colocation build-out, cabling requirements.
- Capacity Management / Network Provisioning / Interconnection Arrangements – trunk usage forecasting, trunk ordering, colocation interoffice facilities, coordinate colocation work, interconnection readiness, optical interconnect, trunk orders, testing, translations changes.
- Switching – routing and translations, manage interconnect relationship and trunking orders, feature scrub.

- Data / IP Engineering / Development Engineering – equipment installation, assist with pre-builds, full interoperability testing, SS7 network implementation.
- Aggregation / Circuit Design – circuit scrub, data validation, groom sheets, pre-builds, record updates.
- Operations – assist with market design decisions, field validation, equipment turn-up, migration event work.
- Client Communication – coordinate subscriber communication schedule, manage call forwarding, compile test numbers, identify any colocated clients, notify of intent.
- Testing / Billing / Mediation – design, draft, execute test plans, validate softswitch configuration, validate call records.
- Operational Support Systems / Business Impacts – manage inventory system changes, automated provisioning, related systems and business impact, validate and assist with equipment connectivity.
- Migration Phase – small migration event, larger migration events.

#### 4.3.3 Decommission Phase

- Engineering – disconnect any trunking, decommission switch.
- Environmental / Warehouse – remove equipment, decommission building / power, telecom equipment removal / store / transfer / sell.
- Real Estate – personnel relocation arrangements, floor space return, infrastructure removal / space restoral, bill cease



#### 4.4 How Do I Validate My Architecture?

Effective switch migrations require extraordinary attention to detail. Time spent caring for your subscribers and validating essential network functionality will pay dividends when it comes to ensuring that the transition to a new network is seamless for your subscribers.

In order to properly care for your subscribers it is important to understand exactly what services and features they use on the current legacy switching platform. An in depth review, true-up and scrubbing effort is generally required to complete this analysis. Once a complete list of features and functionality is assembled, the next step is to complete a switch parity and mapping exercise from the legacy switch to what your partner is able to provide via the softswitch. This effort can often uncover discrepancies that must be investigated individually. Often like or similar features can easily be substituted for legacy switch function with very little impact to your subscriber base. In some cases, if a feature is widely used and does not map across seamlessly it may need to be developed on the softswitch platform; it is important that your partner is able to support development of the required feature.

A necessary step in this feature equivalency effort is to test for any user experience differences. This can be accomplished most effectively by a side-by-side trial of each feature. Test a feature using a test telephone line on your legacy switch, then test the same feature using a test line on the softswitch, and note any subtle differences. If differences are discovered a decision must be made on whether the difference is significant or noticeable enough to warrant communication with your subscriber base.

If you are planning to offer new services and features to your subscribers once they have been migrated to the softswitch platform, now is an appropriate time in the migration project to engage with your marketing department. Typically this group will complete new feature development, pricing, promotion, training, and a necessary sales campaign. Having a partner who can assist with understanding these features, demonstrating their functionality, and guidance on how to price and market them most effectively will save your marketing group considerable time.

Validating and testing essential network functionality and ensuring that the fundamental cornerstones of your TDM network are supported by the softswitch is a critical next step. You should develop plans for the implementation and testing of items such as:

- Lawful interception (in the US, this is called CALEA, for the Communications Assistance for Law Enforcement Act)
- Local number portability (LNP) – Can your softswitch support your preferred configuration?
- Least Cost Routing – what options are supported on your softswitch?
- Equal Access
- Emergency access (e.g. E911 in the United States)
- TDM loop carrier access protocols – GR-303 or V5.2 – look carefully to see that all devices have been proven to work with your softswitch
- TDM trunking protocols – T1 CAS / PRI / E1 / MF
- SS7 / C7
- SIP
- Intelligent network (e.g. AIN) feature parity
- Residential and business group features and services
- PBX access management
- Announcements
- Voice mail – settings and messages
- Point code proxy or sharing – what options does your partner offer to ease the implementation of the softswitch?
- Billing / Mediation
- Alarm / System Monitoring
- Provisioning integration – are required languages supported – SOAP/XML, CORBA, etc.?

Testing each feature, service, and essential network function thoroughly is crucial to the success of your migration project. Investing the appropriate effort and time in this phase of a migration actually accomplishes more than just making the migration seamless for your subscribers. Testing and working with the softswitch builds internal confidence in your process, uncovers any gaps in engineering or design, and gives your staff familiarity and experience with the new equipment.

#### 4.5 How Do I Ensure that this Project is Successful?

In order to make certain that your migration project is successful, it is important to understand why projects tend to falter.

- Missing items due to lack of thoroughness in your design
- Loss of momentum or internal backing
- Blocked due to politics or resources
- Miss-scheduled long lead time tasks
- Missed dependencies on external parties, such as transport not being delivered on schedule.

We talked above about the process and importance of ensuring essential network functionality and caring for your subscribers. These two items build the strong technical foundation that allows the transition to a softswitch platform to appear seamless to your subscribers.

Behind the scenes of a migration effort, project management resources are key to keeping things organized and on schedule. It is very important that your project manager has a strong technical understanding of the existing switching network but also has had an opportunity to understand and learn about the softswitching network and infrastructure. This background will enhance his/her skills and go a long way toward helping them proactively identify dependencies and understand the right questions to ask to keep your project on track and moving forward.

A strong project manager should also assist in the initial pitching and selling of a project internally. This initial sell will be based largely on the formal migration plan or business case that you have developed. This business case is key to building excitement and momentum around the project and to keeping perspective on overall timeline, scheduling and project goals.

Understanding and clearly communicating your internal resource requirements is very important early in launching a project. You need to get buy-in from various departments that have a piece to play in the project. These groups will need to understand very specifically what involvement is required, the scope of the involvement, and the general time-frame. If internal resources are lacking, you need to have a vendor or partner that you can lean on to fill in the gaps and keep your project on track.

Identifying long lead time tasks and kicking them off as early as logistically possible is crucial to keeping your project on target. These tasks need to be watched carefully as often the dependency is on an external party. Examples of long lead time tasks often associated with migration work and some potentially tricky “gotchas” are listed below.

#### Interconnection negotiations and arrangements

- Standard intervals for negotiations can be lengthy, especially if a new site is being established
- Legal and regulatory groups are often involved
- Typical intervals can be 60 business days

#### New trunk builds

- Standard intervals for establishing new network trunking can be 30 business days

#### SS7 / C7 design – point code proxy, point code sharing.

- Requires detailed planning and engineering
- New link orders have a long lead time. Facility delivery, turn-up, certification
- Building diversity is tricky and time consuming

#### CO build

- Acquiring additional space, power, HVAC if necessary – (is this dependant on another carrier?)

#### Secure or build backhaul / transport

- Fiber build lead-times can be considerable
- Securing leased transport needs to be done very early on
  - Is transport available?
  - Is it diverse – does it meet your requirements?
  - Terms
  - Procure
  - Contact to your network

Tackling these long lead time tasks early in a project is very smart. It is also helpful to develop a tactic for keeping a project team motivated and interested during these long windows of work. One suggestion might be to set early milestones to celebrate as you work aggressively to clear small tasks out of the way as quickly as possible.

#### 4.6 How Do I Execute My Design?

Continuing in the theme of following your plan, it is essential that you understand and educate your team; they are essential to executing your design successfully. Communicating promptly and clearly ensures participation and dedication to the project, helps to uncover any unknown dependencies, and aids in general understanding and education throughout your company.

Migration projects are very different from most other projects in that they typically have a fundamental impact on your company. Nearly every department has a stake in a migration project. Because of this, it is essential that you take care to plan the details of how these people are going to be involved. Appendix C provides a detailed look at the scope of how various groups are

typically involved in a migration project.

It is important to remember throughout this process that you do not have to manage all the work of a migration project simply with your internal resources. You need to be able to lean on a partner who has experience with hundreds of switch migrations and a strong professional services team that can provide migration planning and support. The right partner should be flexible and able to customize a support plan for your individual network and business objectives. This partner should be able to provide:

- **Planning assistance and project management**
- **IP network design**
- **Migration event engineering support**
- **Post-cut troubleshooting**
- **Customized tools for subscriber migration**
- **Translation support**
- **OSS integration assistance.**

Training is integral for all departments impacted by this project and serves the primary purpose of developing familiarity with the equipment, technology and skills required, but also builds confidence and general enthusiasm for the project. Key groups to make sure are include in training are operations, repair and customer service, engineering, and provisioning.

Migration projects require the right amount of attention to detail and a strong emphasis on planning and preparation. Although the work may seem a bit daunting, it is important to remember a few things. First, the amount of effort put into planning has a direct correlation to the seamlessness of the migration event. Second, the front loaded nature of a first migration project simply means that subsequent migration projects will reap the benefits of this effort, and the time spent preparing and testing, and the overall process and timeline going forward, will be greatly reduced. Finally, successful migrations with minimal impact to your subscriber base can be assured by a strong partnership with the right company.

## IMPLEMENTING A SUCCESSFUL NETWORK MIGRATION

IMPLEMENTING A SUCCESSFUL MIGRATION IS AN EXERCISE IN PAYING ATTENTION TO THE DETAILS. THERE IS A DIRECT CORRELATION BETWEEN THE TIME AND EFFORT SPENT IN PREPARING FOR A MIGRATION AND THE ULTIMATE SUCCESS AND SEAMLESSNESS OF THE EVENT. THIS WORK OF PREPARING, PLANNING AND SCHEDULING IS NOT NECESSARILY COMPLICATED OR CHALLENGING, ARMED WITH A FAMILIARITY OF THE STEPS INVOLVED, PROPER ATTENTION TO DETAIL, AND THE NECESSARY TIME TO COMPLETE THE WORK; MIGRATIONS FROM SIMPLE SWITCHES SERVING SEVERAL THOUSAND SUBSCRIBERS TO MASSIVE MIGRATION PROJECTS OF SEVERAL HUNDREDS OF THOUSAND SUBSCRIBERS CAN BE ACHIEVED WITH MINIMAL IMPACT TO YOUR CUSTOMER BASE.

In this section we will focus our attention on planning and scheduling a migration. We will look at how to compile and accurately maintain subscriber records throughout the migration process, and leverage automation for a more accurate and seamless transition. We will talk about how to care for last minute subscriber changes, and give you tips on how to effectively communicate a migration event to your customer base.

### 5.1 How Do I Plan and Schedule a Migration Event?

There are many options for organizing a migration event. Typically these options are somewhat related to the physical architecture of the network being migrated. For example, migrations are often done by site, by colocation, or by device. Migrating by site might work if your network is fairly small. Often though, this option is not feasible since the migration event would impact a relatively large number of subscribers. Migration by colocation typically works very well as it often matches the way transport is arranged and gives a clean, organized feel to the project. Migrations by device can be small and controlled events with minimal risk to your subscriber base. In weighing these options, keep in mind that physical transport can often lead these decisions. Depending on the diversity of your network, physically moving one transport DS3 might affect other DS3s, in which case you will have no option but to move them all at the same time. Migrating by device is a recommended way to start small and gain confidence.

The relative size of a migration event can be calculated as the total number of subscriber lines and trunks, number of actual customers or accounts, or the number of physical transport DS3s. Variations in the mix of these elements can lead to more or less significant migration events.

How big or how small depends fundamentally on your overall level of organization, the thoroughness of your preparation, your confidence in your process, and the accuracy of your data. Other items that should be factored into this decision are:

- Expected customer impact and your ability to field subsequent repair issues
- Staffing
- Burnout
- Time needed to prepare between migration events
- Larger – more spread out migration events
- Smaller – more frequent migration events
- Level of training and familiarity with equipment and project
- Physical changes / manual updates needed – how quickly can these be done?
- Options for scripting and automating this work.

A sensible way to approach sizing a migration project is to start small, prove your process, gain experience, and slowly ramp up the size of your migration events. Many service providers start with a migration event of two hundred to five hundred subscriber lines or a mix of a few hundred subscriber lines plus several subscriber trunk groups. From here they can ramp up gradually by factors of a thousand to a rough maximum migration size of five thousand subscriber lines and forty to fifty subscriber trunks.

## 5.2 How Do I Make Sure My Data is Accurate?

Compiling and maintaining accurate subscriber and transport data throughout the migration process is integral to your success. Clearly identifying which circuits and subscribers are moving as part of each migration event is often trickier than you might initially think due to an often pervasive lack of data integrity across internal OSS, Billing systems, and actual network Switching equipment. Although this process of reconciliation is challenging, it presents a unique opportunity to clean up records and start fresh in a market with a new switching device and an accurate back office.

The often manual and labor-intensive process of data validation and circuit scrubbing is highly dependant on the accuracy of your back office records. Generally, data is pulled from three sources:

- Operational Support System – customer information, subscriber records, circuit detail and design information
- Legacy Switch Data – line information, features, office equipment, DS1 and trunk information
- Peripheral Equipment – cross connect information, Transport data, switch ports, data gear, DLCs, etc.

Once this data is retrieved and compiled in such a way that full subscriber records can be viewed, it needs to be cross checked, and field validation is often required. This process of validation is complicated by the fact that your subscriber data is a moving target. New, disconnect and change orders are continually being processed right up until the freeze period prior to a migration event. It is important to develop a method for keeping this data accurate and up to date.

After you have compiled specific circuit and subscriber data moving as part of a migration event and are confident that this data is accurate, you then need to assign and track:

- access or transport changes
- switch port assignments – DS1's, Office Equipment
- data changes
- switch routing changes – changes that might be necessary to route calls to the proper termination point

This final validation and assignment process should be coordinated with the start of a freeze period, and will be repeated just prior to each migration event.

## 5.3 How Do I Manage Pre-Building and Testing?

Once your subscriber and circuit data has been compiled it is time to pre-build as many of the elements of the new design as absolutely possible. Focus on the subscriber builds in your softswitch, the cross connects in both DACS and data gear, and any pre-wiring possible. In order to increase accuracy and efficiency, look for opportunities to automate these pre-builds where possible. Ideally, it would be best to develop a method to take assignments from a worksheet, load these into a script, and run it into a particular device without any human intervention. It is often possible to lean on your softswitch partner to provision subscribers and related translations into the switch. For some devices pre-building is impossible. For these, the required changes need to be documented and the work organized for night of migration.

Because the subscriber translations are in a constant state of flux, it is important to develop a process for handling moves, adds and changes up until the migration event. Often, changes in a legacy switch can be automatically recorded in a log database that can then be parsed prior to the migration event.

Testing is a critical final step in the process of ensuring that your subscriber migration will be seamless. There are several simple rules to follow. First, pre-test wherever possible; new circuits, new DLCs and new trunks can be tested easily. Second, develop methods for manual and automated spot checking and logical validation of data both in your spreadsheet and against the physical device. Finally, get multiple resources involved to test and validate your data.

A final step in organizing data for a migration event is to select test numbers to validate subscriber in service state post migration event. It is important to pre-call these numbers and develop a method for tracking call results. This will eliminate confusion and make your post migration testing much simpler. It is recommended that you test into each DLC, each subscriber DS1, and to any high priority subscribers such as hospitals, alarm companies, fire stations, etc.

## 5.4 How Do I Negotiate a Freeze Period and Care for Last Minute Changes?

A freeze period is the time between when you have taken the final snapshot of what the network looks like and when you complete the migration event. Ideally, this time period should be at least a couple of weeks or more, but the reality – based on the activity level of your network – is that this freeze period is usually a matter of days. As a general rule of thumb, try to negotiate the longest freeze period possible while balancing the impact to your business and subscriber base.

Enforcing a freeze period can be troublesome and traditionally requires close coordination across various parts of your company. Unfortunately, since there are few convenient ways to block access to part of a switch or a particular peripheral device, effective and clear communication is necessary.

As part of your internal communication plan, build a process for handling emergency changes during the freeze period and tracking these changes in the migration event data. Caring for recent customer-originated changes, such as call forwarding, requires a bit of last minute coordination. Options usually exist for retrieving this information from your legacy switch. These changes will then need to be applied to the softswitch just prior to migration.

### 5.5 What is the Best Way to Tell My Subscribers?

While some service providers choose not to tell their customers about an upcoming switch migration, and encounter no issues, such projects may present a unique opportunity to communicate with your customer base about your company and your network. A clever way to talk about an upcoming migration is to emphasize the benefits of next-generation architecture. This approach underscores your position as a forward thinking, cutting edge service provider. Take the time to highlight the enhanced reliability and flexibility of your new network. Depending on the direction of your company, this can also be a good occasion to pre-sell any new features and functionality that you may decide to offer with your new softswitching platform.

When communicating with your subscribers, always set realistic service interruption expectations. Include details of where to go for additional information or for answers to frequently asked questions, and define any out of the ordinary trouble reporting procedures.

The identification of subscribers is typically done through your billing or operational support system. Compiling a mailing one month ahead of time, and then a reminder one week ahead of the event, is a common method of notification. If the appropriate systems are available, e-mail notifications or voice mail notifications are another effective method of communication. Finally, individual calls to highly sensitive or unusually large subscribers can also be useful.

### 5.6 A Few Final Things Before Migration Day!

Make sure to spend time planning your post migration support strategy. Especially for the first several migration events, it is important to maintain support staff sufficient to handle any unexpected amount of fall-out. Put procedures in place for how to move subscribers back to their original network design if things should go wrong. By the nature of transport, sometimes this is not possible. Consider and document your full or partial back-out options.

Follow up customer surveys can be an interesting way to gather feedback on how your subscribers viewed the migration event. This feedback can lead to improvements in your process, though the number of customer trouble tickets is often the real gauge of how successful a migration was. It is perfectly reasonable to target less than 1% fallout – measured in trouble tickets or customer issues. With practice and thorough preparation this can easily be reduced to 0.1%.

Developing a detailed migration event MOP and taking the time to review the tasks in detail with your team is an important final step in preparing for migration. Appendix C is a list of major tasks you should ensure are included in your MOP. Because migration work is usually done during maintenance windows late at night, it is helpful if your MOP includes the appropriate level of detail and is easy to follow. Remember to include preliminary tasks such as internal maintenance window notifications, as well as detail on testing, and contingency back-out plans should they become necessary.

Throughout this process, keep in mind the ultimate goal of developing a streamlined and highly repeatable process. Look continually for ways to update and improve your planning documents, the actual preparation process and the night of migration work.

## SUMMARY

A NEXT-GENERATION NETWORK PROVIDES GREATER CORE REDUNDANCY AND FAULT TOLERANCE, REDUCED EXPENSES, AND GREATLY SIMPLIFIED OPERATIONS. SUCH A NETWORK OFFERS THE FLEXIBILITY TO MORE EASILY BUILD AND DEPLOY NEW CONVERGED PRODUCTS AND APPLICATIONS. IN ADDITION TO THESE FACTORS, MANY SERVICE PROVIDERS ARE SEEING THE WISDOM IN STANDARDIZING ON A RELIABLE AND FLEXIBLE IP INFRASTRUCTURE THAT WILL ENABLE THEIR BUSINESS TO CONTINUE AND GROW WITHIN A VIABLE, FUTURE-PROOF, LONG-TERM BUSINESS MODEL.

Seamless migrations from legacy switching equipment to next-generation architecture with minimal impact to your subscriber base are very achievable. Appropriate planning and preparation is the key to your success. In order to accomplish successful migrations you need to:

- **develop a good plan**
- **prove it financially**
- **sell it internally**
- **team up with a strong partner**
- **organize your resources**
- **care for your subscribers**
- **pre-build and automate process**
- **test, test, and test again**
- **communicate clearly and obsessively.**

## CASE STUDIES

HUNDREDS OF SERVICE PROVIDERS WORLDWIDE, FROM TIER-ONE CARRIERS TO REGIONAL INDEPENDENT AND CABLE OPERATORS, HAVE ADOPTED METASWITCH SOLUTIONS. MILLIONS OF SUBSCRIBERS ARE SERVED BY METASWITCH DEPLOYMENTS IN NORTH AMERICA, EUROPE, CARIBBEAN/LATIN AMERICA, AND THE ASIA-PACIFIC REGION.

At Metaswitch, we're very proud of the success of our customers. Their success means that the lives of their subscribers are enriched by the services that we at Metaswitch enable. Our customers serve families, businesses and communities, bringing them together through better communications powered by Metaswitch.

We enjoy sharing their stories because they help you to understand that choosing Metaswitch means more than just selecting the best technology partner for your successful network evolution. Choosing Metaswitch connects you with an interactive community of like-minded professionals that is unparalleled in the industry. These are the people whose best interests and concerns, like your own, steer our product development. Their challenges and successes mirror your own.

The following case studies address 4 specific customers who have migrated to a next-generation network using Metaswitch.

### 7.1 IT&E - GROWING WITH GUAM

HOW IT&E OPTIMIZED ITS NETWORK AND BROUGHT REAL TELECOM COMPETITION TO GUAM

IT&E, a 28-year-old carrier serving the 212-square mile US territory in the Marianas island chain, had several goals when it installed Metaswitch technology. First, it sought more efficiency in its tandem network. Second, it wanted to build on its history as a successful provider of long distance, PCS wireless and Internet service by offering new IP-based services such as wireless Internet and unified communications to its residential and business customers. IT&E saw an opportunity to optimize its tandem network with the latest technologies and offer new enhanced services.

Read their story at <http://www.Metaswitch.com/rescenter/ite>

## 7.2 MOUNTAIN RURAL TELEPHONE COOPERATIVE: A CASE STUDY

### BUILDING A SECURE IP NETWORK FOR DELIVERY OF TRIPLE PLAY SERVICES

Communications companies face many challenges that next-generation technology can help to address. This case study outlines a joint solution from leading vendors Cisco and Metaswitch for the secure migration of communications services from four separate Nortel DMS switches to a Metaswitch platform for Mountain Rural Telephone Cooperative, a Kentucky based telecommunications provider. Mountain Telephone understands that better equipment/solutions almost always means doing the job more efficiently, and that it will be able to stay competitive and offer the same services as larger outside phone companies. Mountain is continually looking for ways to advance its services and increase its product portfolio. Its business objectives led Mountain to deploy a new softswitch to deliver a wide range of VoIP, legacy TDM and next-generation telephony services, and to upgrade its core network. This new IP network will be utilized to provide High Speed Data, Broadcast IP Multicast Video, Video on Demand, Metro Ethernet and other future services.

Read their story at  
<http://www.Metaswitch.com/rescenter/mountain>

## 7.3 ONE COMMUNICATIONS: A CASE STUDY

### MERGERS, MIGRATIONS, AND METASWITCH: HOW ONE COMMUNICATIONS BUILT ITS NEXT-GENERATION NETWORK

Formed through the merger of three prominent CLECs, One Communications was tasked with integrating its formerly independent network architectures. After rigorous testing and evaluation, it selected Metaswitch as its common platform for integrated voice and data communications and has begun migrating existing customers from thirty-three legacy switches. To facilitate this, it contracted with Metaswitch Professional Services to provide a variety of migration related services, including project management, migration planning, tool development, translation services, engineering and troubleshooting support. The Metaswitch distributed softswitch platform now supports a variety of standalone and converged voice and data solutions for both its business and carrier customers.

Read their story at  
<http://www.Metaswitch.com/rescenter/OneComm>

## 7.4 TCT: A CASE STUDY

### HOW A RURAL TELEPHONE COMPANY TRANSFORMED ITSELF INTO A COMPETITIVE IP COMMUNICATIONS COMPANY

This case study examines the transformation of TCT, a rural, yet very forward-thinking IOC that continues to face its challenges head-on and is ever-evolving in order to stay competitive in today's telecommunications market. We'll discuss how they have leveraged Metaswitch's award-winning softswitch technology as well as Metaswitch technology partners in order to maintain their competitive edge. A key part of TCT's network transformation from legacy TDM-based technology to next generation IP-based technology was their selection of Metaswitch's VP3510 softswitch solution. When the lease on their legacy Lucent 5ESS TDM switch was coming to an end in 2004, TCT realized that the timing was right to look at implementing a softswitch-based switching solution, and Metaswitch was chosen to make this transition.

Read their story at <http://www.Metaswitch.com/rescenter/tct>

## APPENDIX A: METASWITCH PROFESSIONAL SERVICES

DEPLOYING NEW TECHNOLOGY CAN BE A CHALLENGE – ONE YOU DO NOT WANT TO FACE ALONE. THAT IS WHY THE METASWITCH PROFESSIONAL SERVICES TEAM IS AVAILABLE TO AUGMENT YOUR INTERNAL CAPABILITIES AND ENSURE THAT YOUR NETWORK ROLLOUT IS SUCCESSFUL.

Whether you need support with network design, project management, commissioning, training or custom development, we can help. The Metaswitch Professional Services team is staffed by some of our most talented engineers with an in-depth knowledge of Metaswitch products and how to deploy as smoothly and rapidly as possible.

Metaswitch does not believe in a “one size fits all” approach. Every network has a unique combination of equipment in a unique topology, and every customer’s engineering and operations teams have a unique set of skills and experience built up over many years. Most importantly, every service provider has its own specific customer base and business objectives.

For these reasons, we offer a broad range of options that can be combined and customized to create a tailored solution to complement your in-house capabilities and meet your deployment and budget objectives most efficiently. Metaswitch’s Professional Services are developed from the following building blocks to ensure a successful deployment. These core elements are combined to create custom programs to meet your specific requirements.

- 1 Project Management - Metaswitch will assign a project manager to help oversee your deployment from the planning stage through to completion. The project manager will plan, coordinate and report on project activities to help ensure your success.**
- 2 IP Network Design - Metaswitch experts will plan and configure an optimal design for your network that integrates new and existing network elements.**
- 3 Subscriber Migration - Metaswitch has extensive experience in migrating subscribers from a wide variety of legacy Class 5 switches to Metaswitch. This service will plan, provide tools and support subscriber migrations to Metaswitch.**
- 4 PSTN Facilities Migration Support - This service plans and supports the migration of existing PSTN facilities, including SS7 links and MF, PRI, ISUP and SIP trunk groups along with the related translations from your legacy switch to the Metaswitch.**
- 5 End to End Equipment Verification - Deploying a multi-vendor network can be challenging. Metaswitch has several years’ experience of making this successful, and can provide support with all aspects of verification testing from writing test plans and designing test networks, to tracking issues with other vendors.**
- 6 Targeted Engineering Support - Metaswitch will assign an experienced engineer to tackle specific key tasks, including support for major cutovers, establishment of operational procedures and guidelines, and development of custom-built tools.**
- 7 Custom Application Development - Custom application development provides the ability to tailor Metaswitch products to meet your exact requirements, for example by customizing billing records.**
- 8 Marketing Support - This program includes a mix of demographic and competitive analysis, pricing studies and product definition, to ensure that your new services are optimally positioned for the target market.**

## APPENDIX B: RESOURCE PLANNING

TYPICAL ROLES AND RESPONSIBILITIES FOR THE MAJOR GROUPS IMPACTED BY OR INVOLVED IN A MIGRATION PROJECT ARE DETAILED BELOW.

### Transport / Fiber Engineering

- Gather and analyze transport facilities to support migration
- Design and coordinate implementation of new facilities
- Manage orders for install and configuration
- More closely involved if optical muxing technique is used

### Environmental / Installation / Warehouse

- Physical implementation of all hardware and colocation related tasks
- Switch/Colo CFA/Space/Power/Equip
- Augments and Degrowth
- POTS termination – DLCs / BLCs

### Systems / Switch / Development

- Manage, plan, design, and implement the Switching infrastructure
- Care for all aspects of switching
- Provision services to be migrated
- Plan, design and implement access equipment
- Plan, design and implement trunking
- Test all components of new network thoroughly
- Work with 3rd party vendors
- Ensure integration and compatibility

### Capacity management

- Plan and manage any changes to network trunking
- Manage augments and disconnects as necessary
- Track and plan for any post migration bulk changes

### Translations / Network Routing

- Gather and analyze existing Switch Translations and Routing Plans
- Plan, design, and implement the Translations and Routing Plans
- Coordinate bulk changes to network routing - often with ILEC or other carriers

### Network Planning / Provisioning

- Negotiate End Office Integration and ILEC Interconnection Discussions
- Order and manage turn-up of any required leased circuits
- Manage any code administration changes required as part of the migration
- Place and track any required Facility orders
- Issue and track trunking orders
- Care for any customer DS1 orders

### Customer Service / Repair

- Gather and process customer related information and coordinate notification and support procedures
- Post migration involvement
- Must be able to scale to handle fallout
- Must have subject-matter experts trained on any new equipment

### Circuit design

- Circuit scrubbing
- Validate client and network data and/or TDM circuit paths
- Assist in groom sheet creation (PVC and DS3, DS1, DS0 level)

### Billing / mediation

- Integration of new equipment into billing platform
- Thorough pretesting
- Care for billing records appropriately as services are migrated
- Mediation - bill start for new trunks / end of disconnected trunks

### OSS – back office process

- Circuit assignment migration
- Client migration
- OSS migration – gather, analyze and import all customer-specific, OSS-related data to reflect the migration

### Data / IP engineering

- Gather and analyze IP / data network and requirements
- Plan, design and implement migrations
- Site-specific IP network to support migration
- Redundancy and QOS

**SS7 / Voice mail**

- Gather and analyze SS7 facilities requirements
- Plan, design, and implement the SS7 migration
- Coordinate porting if necessary
- Potential SS7 rehome for point code sharing / proxy
- Design plan for voicemail move

**Operations**

- Field validation
- Preparation and pre-wiring
- Circuit migration – night of cut

**Network Surveillance**

- Integration of alarming for any new network devices
- Post migration support
- Assist with pre and post test calling and tracing

**Real estate**

- Acquire new space as necessary
- Demo vacated property
- Floor space return

## APPENDIX C MIGRATION EVENT MOP

### Preliminary Tasks

- Communicating migration event
- Establishing freeze period
- Coordinating resources
  - Internal engineering staff
  - Operations
  - 3rd party
  - Testin
- Administrative tasks – conf. bridge, contact lists, etc.
- Circuit extract / scrub / load
- Distribute cut sheets
- Physical pre-build tasks
- Validation tasks – lines, trunks, data
- Recent customer-originated changes
- Exception routing / porting task coordination

### Pre-migration tasks – evening of migration event

- System backups / system config snapshots
- Upload call forwarding data
- Remove any physical loops to prepare for event
- Activate PRIs / IDTs on the softswitch
- Verify alarm state of all equipment and DS1s (avoid confusion after the event)

### Migration Event

- Move transport – make physical changes
- Initiate exception routing / translations changes
- Verify that DS3s, DS1s, DLCs and Trunks have restored to service
- Place test calls to confirm in service
- Ping client equipment
- Verify data circuits have restored to service
- Verify alarm state matches pre-cut snapshot
- Execute backup / force SPS

### Contingency Plan

- Full back-out
- Partial back-out