

III. Underlying Factors Contributing to the OSS Problems Experienced in New York

In February, 1997, BA-NY claimed its OSS systems were fully functional and in compliance with the 1996 Telecom Act. It took nearly three years before state and federal regulators finally agreed. Why did the review and approval process take so long? And, after almost three years of review and refinement, why did massive failures still occur when the CLECs in New York started using the system on a high volume basis? Based upon our review of the extensive record before the NYPSC and the FCC, we believe there were multiple factors which contributed to the OSS problems experienced in New York.

Conflicting Motives and Incentives

The first contributing factor was the fact that BA-NY and the CLECs had conflicting motives and incentives which came to bear within the context of an inherently adversarial relationship. These conflicting motives and incentives were particularly significant because the CLECs and BA-NY had inherently different OSS legacy systems which needed to be made compatible with each other.

BA-NY needed to at least minimally open its local markets to competitors, because this was a prerequisite to gaining access to interLATA toll markets, pursuant to Section 271 of the 1996 Telecom Act. The Section 271 requirements placed BA-NY in the unusual business position of developing a system which would enable its competitors to more easily take away its customers. The better the OSS functioned, the easier it would be for the CLECs to increase their share of the local market, and the faster BA-NY's market share would decline.

Accordingly, while BA-NY had an incentive to develop an OSS which at least minimally met the needs of the CLECs, this was secondary to its core need, which was to persuade the NYPSC, the Department of Justice, and the FCC that it had fulfilled this portion of the Section 271 requirements. If it were given a choice between making the OSS better and making a more convincing case that the OSS was already acceptable, BA-NY's economic incentives pointed towards the latter choice.

Development of complex software and operating systems is difficult enough in a normal market context, where the developers have a strong incentive to build the best possible system as quickly as feasible. But, in this situation BA-NY didn't have an incentive to create the best possible OSS, or to debug the system more than the minimum amount necessary to convince regulators to give its OSS the stamp of approval.

Many of the CLECs also had conflicting motives and incentives. The competitive carriers who were in the best position to help BA-NY develop a good OSS and to evaluate and test the system on a large scale were the major interLATA carriers, who stood to lose market share and profits once BA-NY fulfilled the Section 271 checklist. Whatever resources these carriers expended on helping develop and debug BA-NY's OSS would also serve to hasten BA-NY's entry into their core markets. While these carriers wanted an OSS which would enable them to compete for BA-NY's local customers, they weren't looking forward to BA-NY's entry into their interLATA markets.

Even the smaller CLECs, who weren't as concerned about protecting their interLATA profits, were concerned about BA-NY gaining the ability to bundle local and long distance services. Thus, it's fair to say that all of the CLECs had motives and incentives which conflicted with their desire to gain rapid access to a fully functioning OSS in order to expand into BA-NY's local market. The sooner the OSS development and review process ended, the sooner the CLECs would face an increased competitive threat from BA-NY.

Further exacerbating the situation was the fact that many of the CLECs were reluctant to reveal details of their internal systems, or to provide company specific data which would potentially facilitate the OSS testing process. Revealing this information might place them at a competitive disadvantage relative to carriers who weren't as forthcoming with information, or who chose to stay on the sidelines during the OSS development and review process.

Poor Initial OSS Development

A second contributing factor was the status of BA-NY's OSS systems prior to commencement of 3rd party testing. Although BA-NY had claimed the system was fully functional and adequate to meet the CLEC's needs, in the months preceding 3rd party testing, various CLECs had identified numerous alleged deficiencies in the OSS. Problems included poor response times, failures to meet "Firm Order Commitments", inadequate capacity, extensive manual processing, interface defects and poor account servicing.

It was undoubtedly difficult for the NYPSC and the FCC to tell whether the problems were as serious as the CLECs claimed, or whether the system worked as smoothly as BA-NY claimed. However, the 3rd party testing conducted by KPMG ultimately confirmed that the system was not, in fact, ready for full scale commercial deployment prior to commencement of the 3rd party testing. Had the NYPSC not adopted a "military style" approach, which continued testing until the system passed, the OSS would undoubtedly have flunked.

Throughout the testing process, weaknesses and problems which had been alleged by the CLECs were confirmed by KPMG, and many new problems were identified, as well. For example, with regard to OSS interfaces, KPMG stated

At test commencement, BA-NY felt that the EDI system interfaces were ready... It took many weeks (approximately eight for order and four for pre-order) to debug KPMG, HP, and BA-NY software to the point where live testing could commence. While a new CLEC should be expected to have initial difficulties with its interface, we did not expect BA-NY to release software and documentation in the condition we encountered.

KPMG eventually concluded that BA-NY's systems were "commercially available" and ready to handle reasonable anticipated future volumes. However, this endorsement was not provided until after 12 months of problem identification, remedial proposals, responsive comments, corrective action and retesting.

Had BA-NY's systems been fully developed and debugged prior to commencement of the 3rd party testing, the testing process would have been far less time consuming, and the tests would have revealed few, if any, problems.

Unclear Ground Rules

A third contributing factor was the fact that substantial ambiguities and uncertainties existed concerning fundamental “ground rules” which influenced the appropriate design of the OSS, as well as the specific criteria which would be used in determining whether or not the OSS met the Section 271 requirements.

The NYPSC developed a collaborative process to resolve disputes concerning these policy issues and ground rules. But this process didn’t begin until well after BA-NY began developing its OSS, and it continued well into the 3rd party testing process.

Fundamental policy issues which had an impact on the OSS design, such as whether the “UNE-Platform” would be available, were still being debated long after BA-NY considered its OSS to be completed and ready for use by the CLECs. Similarly, business rules, such as whether CLECs should be required to enter customer information into ordering forms, or whether they would be allowed to obtain that information from BA-NY’s databases, were still being developed after the OSS was supposedly finished. Needless to say, uncertainties and changes in these areas contributed to the problems which BA-NY and the CLECs experienced in trying to develop and debug their systems.

Testing Problems

A fourth contributing factor was that the 3rd party testing process had weaknesses. While the NYPSC and KPMG are to be commended for their efforts, the testing was necessarily conducted in an artificial environment, which didn’t (and couldn’t) account for all real world factors. For example, during commercial usage, it was discovered that some orders fell out of the system because the end user owed money to BA-NY. While past due bills might appropriately trigger human intervention if the customer were placing an order for new or additional services with BA-NY, it wouldn’t necessarily merit special attention if the order were being placed with a CLEC. In any event, because the 3rd party testing didn’t generally involve “real” customers, it didn’t adequately reflect this source of “fallout” from the automated systems.

Similarly, KPMG acknowledged that it was not feasible “to test all possible permutations and combinations of all features and functions across all offered products”. Rather than attempting to exhaustively test all order types, troubles and processes, KPMG instead relied upon interviews with BA-NY personnel, review of historical data, and other fact gathering methods.

The scope of the 3rd party testing also excluded certain “live” tests, in an effort to avoid disrupting BA-NY and CLEC activities. Performance in these areas was evaluated with “other means”. Also, due to scarce BA-NY resources, KPMG used the same account to run multiple different tests in sequence, rather than testing different accounts with different ordering scenarios, or with different service combinations. Thus, the sheer number of different tests which were performed was not fully indicative of the extent to which the system was being tested, since certain aspects of the test (e.g. account-specific circumstances) were being duplicated repeatedly.

Furthermore, the testing process was oriented toward BA-NY, since BA-NY was the entity pushing for 271 approval, and was seeking to “prove” its OSS was adequate. However, it became

apparent that both BA-NY and the CLECs were experiencing problems that could only be solved with involvement of both.

Also, while the duration and extent of the 3rd party testing was impressive, it did not involve comparable magnitudes to the sustained volumes that were subsequently experienced after Section 271 approval was granted and the competitive environment intensified.

KPMG’s “normal volume” and “peak volume” testing was designed to simulate 5,271 and 7,907 orders per day, respectively. Ultimately, KPMG conducted two separate “Normal Volume Performance Tests”, in which approximately 4,500 service orders were submitted, and one “Peak Volume Performance Test”, in which approximately 6,500 orders were submitted. One “stress test” was conducted at higher volumes, but only for a period of a few hours. This fell far short of replicating the level of “real world” volumes that followed subsequently.

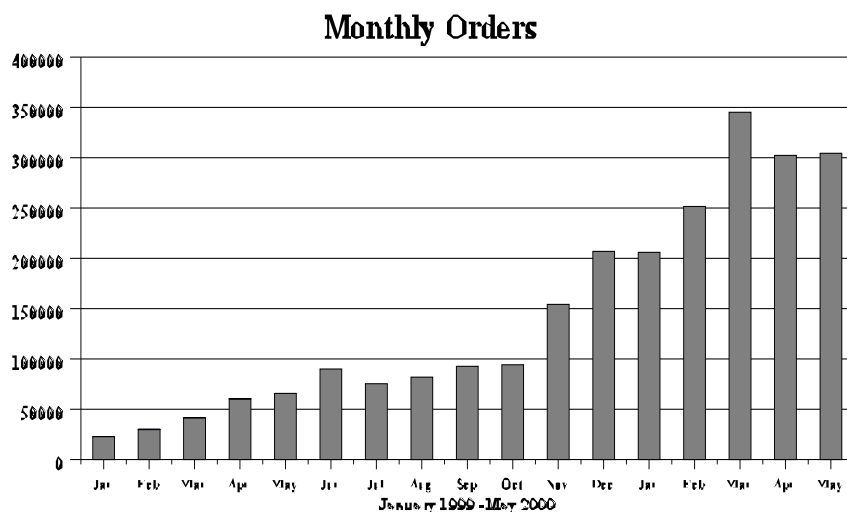
The chart below shows monthly order volumes from January, 1999 through May, 2000. As shown, in the first month after BA-NY received section 271 approval, approximately 206,000 orders flowed into BA-NY’s systems. During May, in excess of 300,000 orders were submitted, or approximately 14,000 per average business day. This far exceeded the volumes tested by KPMG.

Further, KPMG’s “normal volume” and “stress” tests only included orders that would flow through BA-NY’s systems. Manual orders, which require labor and other resources, were not included in this aspect of the testing. Additionally, the stress and volume tests were conducted in “training mode”. Orders submitted in training mode do not go beyond BA-NY’s Service Order Processor. Hence, KPMG’s volume and stress tests did not fully evaluate the extent to which BA-NY would be able to provision the orders, or measure BA-NY’s “service completion” and “billing completion” notification performance under high volume conditions.

Finally, KPMG acknowledged that very little, if any, of its testing was truly “blind” to BA-NY. For example, most transactions arrived on circuits which were known to be dedicated to the testing firm. Thus, BA-NY had the opportunity to devote extraordinary efforts to “passing the test”. To that extent, success in passing the test wouldn’t necessarily be indicative of the level of performance which would occur once Section 271 approval was granted and the competitive environment intensified.

*IV. Insights for
Regulators in
Other States*

For more than 15 years, the NYPSC has been a national leader in opening local markets to competition. Together with numerous industry participants, the NYPSC



has set a commendable example for other states by conducting a rigorous and extensive three year investigation into the adequacy of BA-NY's wholesale OSS systems.

While other states may not have the resources available to match New York's very detailed review and testing of the incumbent's wholesale support systems, they can certainly benefit from this experience. We think the New York OSS experience can provide regulators in other states with insights in 9 major areas, as set forth below.

Importance of a Functional OSS

As regulators well know, if the OSS works well, it can speed the transition to effective competition. The New York experience confirms this fact, but it also demonstrated the other side of the coin: OSS failures can have serious adverse impacts on customers and CLECs, including those who aren't directly involved. Without nondiscriminatory access to fully functioning OSS systems, CLECs cannot effectively and efficiently place orders for UNEs or resale, submit maintenance and repair requests or properly bill their customers. If the OSS fails under actual commercial conditions, it can hurt consumers and slow the trend towards effective competition.

Ground Rules First

The policy issues and "Ground rules" which will control interactions between the ILEC and the CLECs should be in place before the OSS is fully developed and tested. For example, it simplifies the OSS development process if regulators decide at an early stage which specific UNEs will be available to competitors, and in which combinations. Regulators should also decide the extent to which the CLECs' preferences and legacy systems will be accommodated. Do CLECs do all the adapting? Should the ILEC meet them half way?

Regulators can also play a valuable role in resolving disputes concerning the specific business rules which define an acceptable OSS. For example, what specific ways can orders be entered into the OSS? Precisely what information must be provided by the CLEC? Do CLECs have to enter data that is already in the incumbent's databases (like the end user's name and address), or will they be allowed to extract and reuse that data, thereby streamlining the process and reducing the risk of typing errors?

The typical software development process involves a sequence: overall goals and requirements are determined first, then the applicable business rules, then software specifications are written, then computer code is created, then the systems is tested and debugged, and finally it is implemented. In contrast, BA-NY developed its OSS before many of the ground rules controlling interaction between the ILECs and the CLECs were determined. The New York experience confirms that state regulators are in the best position to establish those ground rules and to resolve any disputes which arise concerning those ground rules.

Benefits of 3rd party testing

The New York experience confirms that independent, 3rd party testing can eliminate much of the finger pointing and trench warfare that occurs when the adequacy of the OSS is being debated. When the only evidence consists of tests and surveys conducted by the incumbent, and anecdotal

“horror stories” offered by the CLECs, it can be exceedingly difficult for regulators to evaluate the true nature of the situation.

For example, in its initial filing, BA-NY claimed that, through its proposed SGAT, the company would provide non-discriminatory access to 8 UNEs, including the company’s OSS. Numerous parties questioned the adequacy of BA-NY’s systems, and disputed the company’s claims that it was prepared to offer access to an OSS that was in parity with its own retail systems. BA-NY then filed a supplemental Petition that included the results of OSS tests conducted by Coopers and Lybrand, L.L.P. (“C&L”).

Other parties questioned the value of this “endorsement,” since the Firm was hired and supervised by BA-NY, and because their testing parameters and the benchmark performance standards were all provided by BA-NY. The lack of independence and objectivity inherent in the Coopers & Lybrand tests fueled the continuing debate over the adequacy of BA-NY’s OSS.

In contrast, once the NYPSC initiated 3rd party testing the tone of the debate improved. There was less finger pointing and more problem solving. The independent tests conducted by KPMG narrowed the focus of disputed issues and allowed the NYPSC to gain a much more accurate and unbiased view of the actual status of BA-NY’s OSS.

The FCC has made it clear that not just any 3rd party test will do. The New York experience suggests that, to be fully beneficial, the 3rd party testing process should satisfy several criteria. First, it should be rigorous, extensive and intensive. Second, the testing should be supervised by regulators, who should be involved throughout the entire process. Regulators can help ensure objectivity and can act as an arbitrator when disputes arise. Third, testing should be open (not secret) with the immediate posting of results, explanations of problems encountered, and proposed solutions. This will allow all interested parties to both contribute to the process and allow time to adjust their own software. Finally, testing should verify as much as possible that the OSS is fully functional in the real world, with real CLECs, and real customers.

Test a Finished Product

To the extent possible, the OSS should be fully developed, tested, and de-bugged prior to 3rd party testing. The primary goal of 3rd party testing should be to confirm the OSS is adequate; a secondary goal should be fine-tuning of the system to facilitate the transition to effective competition, and to help prevent it from adversely affecting customers. The ‘learn-as-you-go’ approach which occurred in New York was an unfortunate result of the fact that BA-NY’s system was not, in fact, ready for widespread commercial deployment at the time the testing began. This resulted in a long, drawn out testing process, and it required the NYPSC and industry participants to expend considerably more time and resources than would have been necessary if BA-NY brought a finished, thoroughly debugged, system into the test.

Use Real World Data

To the extent possible, real world data should be used in the development and testing process. The FCC has defined a hierarchy of evidence regarding the extent to which OSS systems are operationally ready. The most probative evidence, according to the FCC, is actual commercial

usage, followed by carrier-to-carrier testing, third party testing, and finally, internal testing. The New York experience suggests that, to the extent possible, 3rd party testing should include actual carrier to carrier transactions, including live commercial transactions involving actual customers. A purely artificial test cannot accurately assess the OSS performance which CLEC will experience in actual commercial usage.

Military Style Testing

The New York experience showed that the “test until you pass” approach has advantages which merit consideration by regulators in other states. For example, military style testing encourages errors in OSS systems to be corrected, rather than being ignored or minimized. If a one-time testing approach is used, a system may contain errors, but still “pass” because they are considered to be too minor to justify rejection of the system. With multiple rounds of testing even small problems can be thoroughly scrutinized and resolved.

Furthermore, the military testing approach used in New York established an iterative learning process which helped both BA-NY and the CLECs refine their software and procedures. When a problem was discovered, all industry participants were given the opportunity to suggest solutions, and then BA-NY and the CLECs (with assistance from KPMG) were able to modify their systems to overcome the problem. Thus, the 3rd party testing process not only identified problems, it also helped find solutions to those problems.

The New York experience also showed that military testing has certain disadvantages. First, it reduced the incentive to fully develop, test and debug the OSS prior to commencement of the test, since BA-NY knew it would have multiple opportunities to fix any problems during the testing process. Second, it leads to a continual narrowing of the scope of testing and a cumulative increase in knowledge and experience of the testing agent, which can potentially result in misleading, biased, and/or inconclusive results. Third, with military testing there is the potential for the testing process to become very time consuming and costly, particularly where the OSS being tested is not fully debugged. In New York, the testing took more than a year to complete, and cost in excess of \$15 million. Many states cannot devote this level of the resources to the OSS issue.

The Benefits of a Transition Period after Testing

The problems encountered in New York after BA-NY received section 271 approval showed that testing is not the same as real world experience, and no testing program can catch every possible problem. One way to overcome this weakness is to provide a transition period after testing is completed, so that all parties have time to ramp up and monitor how their systems are performing under increasing volumes of actual commercial activity.

The New York experience demonstrates the dangers in a scenario in which market activity escalates at a very rapid rate after testing is completed, because even a very lengthy and thorough testing process may not reveal problems which occur under actual commercial conditions. During the transition process, continued regulatory involvement is beneficial, to ensure that problems encountered by any party will be immediately addressed and corrected.

In its Prefiling Statement filed on April 6, 1998, BA-NY proposed a mechanism to ensure its continued OSS performance after section 271 approval was granted.¹ After 17 months of debate, the NYPSC approved a modified version of this plan, which was designed to protect against “backsliding” after interLATA entry.

The Performance Assurance Mechanism

While the goal of the Performance Assurance Plan (“PAP”) was commendable, it was not adequate to deal with the massive problems which were subsequently encountered in New York. First, many of the mishandled orders did not affect BA-NY’s score under the PAP. Lost orders were not counted as an “occurrence”, and therefore were not included in the data set used to measure BA-NY’s performance. Second, under the PAP, there was a delay of several months from the time poor performance occurs until the time associated penalties are imposed. This reduced the incentive for BA-NY to maintain acceptable performance.

V. Implications for Consumers

The New York experience demonstrates the importance of CLEC access to the incumbent LEC’s OSS. If parity is achieved, so that the OSS performs as well for the CLECs as it does for the incumbent’s retail operations, the OSS can facilitate the transition to effective competition. If parity is not achieved, and the OSS fails to perform adequately, it can harm competitors and their customers, and adversely affect the prospects for effective competition.

An extraordinary level of effort was expended in New York to ensure that the OSS was adequate. Yet, despite all this effort, the OSS failed in actual practice. Tens of thousands of orders were lost or mishandled, numerous customers were harmed, and the transition to effective competition was set back.

One of the reasons why the OSS failures were so massive is that competition had rapidly escalated as the 3rd party testing neared completion and section 271 approval appeared to be imminent. This escalation in market activity exposed flaws in the OSS which were not, and arguably could not be, detected by the testing process. The unfortunate consequence was that massive system failures occurred which harmed both competitors and consumers.

The NYPSC and the FCC had established mechanisms to guard against “backsliding” or system failures of this type. Pursuant to these mechanisms, regulators penalized BA-NY millions of dollars, and some of this compensation flowed to competitors (in the form of discounts or rebates). One can certainly question whether this compensation was sufficient to mitigate the damage to the CLECs’ reputations, as well as the extra costs and lost revenues which they suffered due to the OSS failure. But, at least the CLECs were provided with some degree of compensation. No such compensation was provided by the PAP to end use consumers for the costs, inconvenience and frustration they experienced during this period.

It is also important to realize that the consequences of the OSS failure go well beyond the harm suffered by individual customers whose orders were lost or mishandled. Other customers will

undoubtedly be more fearful and less willing to consider changing carriers, based upon the bad experiences suffered by customers whose orders were lost or mishandled by the BA-NY OSS. As a result, it will be more difficult for competitors to gain a foothold in the market, and the transition to effective competition will be slowed, further harming consumers.

1. *Pre-Filing Statement*, Docket No. 97-C-0271, April 6, 1998, p. 34 et. seq.