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**Douglas I. Brandon**  
Vice President -  
External Affairs & Law

Fourth Floor  
1150 Connecticut Avenue, NW  
Washington, DC 20036  
Phone: 202-223-9222  
Fax: 202-223-9095  
Wireless: 202-255-5011  
doug.brandon@attws.com

December 10, 2003

John B. Muleta  
Chief, Wireless Telecommunications Bureau  
Federal Communications Commission  
445 12<sup>th</sup> St., S.W.  
Washington, D.C. 20554

Dear Mr. Muleta:

This letter responds to your letter dated December 4, 2003, inquiring about the recent experience of AT&T Wireless Services, Inc. ("AWS") in implementing local number portability (LNP). This letter explains the nature of the difficulties that AWS has experienced, the steps that AWS has taken to resolve these difficulties, and the progress that has been made. This letter represents our best understanding of the nature of the LNP difficulties. Because the porting process is dependent on the interoperability of carriers' systems, however, we have had to determine what occurred to some extent based on information from other parties to the porting process including our clearinghouse vendor, other carriers, and their clearinghouse vendor. We continue to work with our vendor, other carriers, and their vendor to identify and resolve outstanding issues.

### **Summary**

As you correctly anticipated, the complexity and magnitude of LNP implementation was likely to, and in fact has, resulted in some "technical bumps" which in turn has resulted in delays in the porting process for the entire wireless industry. As discussed below, the difficulties that AWS has experienced are attributable to a combination of factors, including technical limitations in our clearinghouse vendor's systems. In addition, while AWS conducted intercarrier testing, including bilateral and round-robin systems testing, the other carriers' clearinghouse vendor implemented its systems based on a differing interpretation of industry guidelines and suffered periodic outages during the critical last weeks of testing that hampered adequate testing. These factors resulted in significant delays in processing *both* requests that AWS *received* from other carriers to port out, and requests that AWS *issued* to other carriers to *port in* numbers. As soon as the problems were identified, AWS devoted substantial resources to solving them, prioritizing resolution of *port-out* requests over resolution of AWS' own port-in requests, and developing processes to clear the delayed ports as quickly as possible. AWS' ability to quickly and

effectively resolve these problems was enhanced by the responsiveness and cooperation of its vendor, NeuStar, and by the other carriers. As a result of these efforts, AWS has cleared thousands of backlogged ports and errors and is pleased to report that it is now responding to port requests on a level comparable to the rest of the industry. Specifically, we are now responding to port requests with a valid response, consistent with industry standards in under 30 minutes greater than 75% of the time.

### **Introduction**

AWS is committed to providing LNP and has devoted considerable resources – both financial and human – to the implementation of LNP. AWS has been preparing diligently for some time for wireless LNP and implementing the necessary processes and procedures to be LNP-capable. Among other things, AWS began its design and development of operational system upgrades in support of the LNP architecture in April of 2002 (with actual system upgrades in October 2002); hired additional personnel and established a Porting Administration Group solely devoted to addressing and resolving porting problems with other carriers and the Number Portability Administration Center (NPAC); certified its systems with the NPAC; fully trained its employees for porting processes; negotiated and entered into LNP agreements with other carriers (where it could reach agreements); and participated in testing – both internally with our clearinghouse vendor and externally with other carriers' clearinghouse vendor. As part of its preparation for LNP, AWS selected Nightfire (an affiliate of NeuStar) as its clearinghouse vendor in June 2002, well in advance of the *prior* November 24, 2002 deadline *and* before substantially all other carriers in the industry chose TSI as their vendor for intercarrier communications. AWS chose Nightfire as its vendor because (i) Nightfire had a proven track record with wireline porting, (ii) AWS had an established relationship with Nightfire for porting AWS' fixed wireless service offering, and (iii) at that time Nightfire had the most complete wireless porting solution available in the market.

Despite all of these efforts to implement and prepare for a smooth transition to LNP, the implementation of LNP has not been without problems for AWS as well as the wireless industry as a whole. LNP is a major undertaking of great complexity that affects nearly every aspect of carriers' systems; this complexity is compounded by the fact that various carriers' systems need to interface and communicate with each other seamlessly during a compressed period of time for porting to work smoothly. Further, the lack of uniform and enforceable LNP standards in a number of areas, including the intercarrier communications process, has created some conflict and confusion regarding the porting process and the appropriate way to implement LNP. As a result, the entire industry has been experiencing delays in processing and completing ports.

As discussed below, the issues that AWS has experienced with LNP implementation are primarily attributable to two unanticipated factors: (i) system issues; and (ii) the fact that the other carriers' clearinghouse vendor developed its systems based on differing interpretations of industry guidelines and agreements. These factors were largely responsible for (i) the creation of significant backlogs during the intercarrier communications process, which resulted in delays of port-outs of AWS numbers; (ii) the false impression in some cases that AWS failed to respond to a number of port-out requests; and (iii) significant port-in delays to AWS.

### **System Issues**

The Nightfire system provides a clearinghouse gateway between AWS and other carriers' clearinghouse vendor and acts as a conduit for the intercarrier communications process. Nightfire's system is part of a fully hosted solution and package of services that includes hardware, software, network architecture, and personnel to manage the clearinghouse.

Specifically, Nightfire's role in the port-out process is as follows. Nightfire receives port requests from other carriers' clearinghouse vendors; and checks the port request against the Wireless Intercarrier Communications Interface Specifications ("WICIS") industry guidelines to ensure that the request contains the necessary information. If the request is complete, Nightfire submits the port request to AWS for customer validation. If the information is incomplete or otherwise incorrect, Nightfire automatically generates an "error response." Nightfire also transmits port responses from AWS to other carriers' clearinghouse vendors.

Problems with the system produced delays in each of the steps of the intercarrier communications process outlined above, creating a considerable backlog of port-out requests. Specifically, Nightfire took too long to verify and submit the port requests to AWS for customer validation. Further, due to these processing delays, AWS routinely responded to the port requests after the "due date" and "time" of the port request had expired, which in turn resulted in the system generating a "resolution required –due date expired" response (i.e., requesting the other carrier to resubmit the port request with a new due date). The system also delayed transmitting these responses back to the requesting carriers. Compounding the delayed ports was the fact that the Nightfire workflow management tool used by AWS' Porting Administration Group representatives to resolve errors would either freeze or crash, causing additional delays in resolving the backlog problems.

### **AWS and Nightfire Steps to Address These Issues**

AWS and Nightfire have worked diligently and collaboratively to address the system issues. With Nightfire's full participation, AWS focused on and prioritized resolving the backlogged *port-out* requests before addressing backlogged port-in requests to ensure that *other carriers'* port requests were cleared. AWS established contacts at multiple levels throughout with our trading partners, from the Porting Administration Group to the CEO level to address and work through these problems. We have been coordinating with other carriers to ensure that they understand the scope of the issues and that they work with us to reach solutions. We worked closely and collaboratively with Nightfire to resolve the performance issues with various applications, and to correct these as soon as possible. In addition, AWS asked for and received full cooperation at the highest management and technical levels at Nightfire to resolve problems.

AWS has used a two-pronged approach to correct the outstanding problems as quickly as possible: (i) we have worked to eliminate the backlog created by the problems described above; and (ii) we have worked to correct those problems. The following is a list of some of the steps that AWS has taken to clear the backlogged ports, as well as a list of the steps that AWS has taken to correct the system problems.

***Steps to Resolve the Backlog:***

- An AWS/Nightfire team immediately implemented a series of interim work-arounds and processes to address the backlog, without using the problematic systems.
- AWS requested that other carriers submit lists of outstanding port requests in batches. Its Porting Administration Group cross-referenced these lists against its customer records to validate the port requests (prioritizing them based on the age of the request), and responded directly to the requesting carrier.
- AWS altered the criteria for responding to port-out requests to eliminate the immediate rejection of port requests processed outside of the timing windows.
- AWS established dedicated teams for each of our major wireless trading partners and established open conference bridge lines to coordinate and resolve porting problems with other carriers on a continuous basis.

***Steps to Correct the System:***

- AWS has had regular senior team meetings between our CIO and technical staff and Nightfire's executive management and high level information officers.
- AWS placed technical teams on site at multiple Nightfire locations to work collaboratively with Nightfire's technical and other personnel to resolve issues, rewrite code, and find other solutions.
- AWS worked with Nightfire to upgrade hardware and place the intercarrier communications process software and system on larger, faster computers.
- AWS worked with Nightfire to increase network bandwidth.
- AWS worked with Nightfire to change the communications network architecture to be more fault-tolerant, thereby reducing the opportunity for backlogs and crashes in the system.
- AWS and Nightfire technical teams worked with developers to rewrite the software code in applications so that it would operate more efficiently.
- AWS technical teams worked with Nightfire to tune the application set to improve system stability, throughput, and performance.

The successful implementation of these solutions means that (i) AWS has been able to respond to more than 90 percent of the backlogged port requests,<sup>1</sup> and (ii) AWS is able to rely on the

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<sup>1</sup> By "respond," AWS means that it has been able to validate or otherwise respond with "resolution required" to the port-requests that its system has received from other carriers. This does not mean that all

Nightfire systems once again to complete ports. As a result, AWS is now able to respond to port requests within WICIS guidelines. AWS is specifically responding to port requests with a valid response within 30 minutes greater than 75% of the time.

### **Interoperability Issues**

At the same time that AWS has responded to the backlogged ports and resolved most system issues with its clearinghouse vendor, there remain some issues with the other carriers' clearinghouse vendor that contributed to problems with both port-in and port-out requests. Most of the other wireless carriers chose a different clearinghouse vendor, TSI, for their intercarrier communications system. As explained in detail below, TSI implemented its clearinghouse system in a manner that was based on differing interpretations of industry guidelines and wireless carrier agreements, which consequently gave the false impression that AWS was not responding to a number of port requests and also resulted in inappropriate rejection of a number of AWS port-in requests.

At the outset, AWS notes that the interoperability problems between Nightfire's system and TSI's system were not identified during the intercarrier communications testing process because there was insufficient opportunity to test the TSI systems and the interface with AWS' clearinghouse. Specifically, TSI performed two software upgrades within the last four weeks prior to the LNP implementation date, which shut down critical intercarrier communications testing.<sup>2</sup> Consequently, AWS and the industry lost approximately *two weeks* of intercarrier testing prior to November 24, 2003, during which time some of the problems might have been discovered and addressed. Moreover, because TSI's software revisions were performed so close to the LNP implementation date, AWS did not have adequate opportunity to test the upgraded software.

One of the problems that could have been identified with additional intercarrier communications testing is the fact that TSI designed its system in a manner that apparently failed to pass through error responses to its wireless carrier customers. According to the industry WICIS requirements, a port request must contain certain information in certain formats, or it will automatically be rejected.<sup>3</sup> In the initial days of porting, AWS received a number of incorrect or improperly formatted port-out requests, which Nightfire properly rejected. Consistent with the WICIS guidelines, AWS provided an explanation of the port reject in the Common Object Request Broker Architecture (CORBA) error log, and transmitted the error log to TSI. However, the information in the error log was reportedly not transmitted by TSI to the requesting wireless

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these ports have necessarily been completed, because some of these port requests may contain errors or be invalid, and AWS would have responded accordingly.

<sup>2</sup> The first upgrade was implemented the weekend of October 18, 2003 and caused intercarrier testing to shut down until Friday October 24, 2003. The second upgrade was executed the weekend of November 8, 2003 and testing could not begin again until Thursday November 13, 2003.

<sup>3</sup> See Section 4., Data Dictionary, WICIS v2.0.1 (September 2003). For example, as provided in the WICIS guidelines, the account number should be the customer's account number and should not contain spaces or dashes in the field.

providers. Instead, it appeared to the other wireless carriers as if AWS had not responded to these port requests. This interoperability problem between Nighthire's and TSI's systems thus created the false perception that AWS was not properly responding to a large number of port-out requests.

Another issue with TSI's system resulted in significant delays in the processing of AWS' *port-in* requests. Specifically, TSI designed its software to reject port requests with "due dates" outside of the NPAC business operating hours. Although the North American Numbering Council (NANC) flows specify that the NPAC long business operating hours are between 9 am-9 pm, seven days a week within the predominant time zone for each NPAC region,<sup>4</sup> the NANC flows do not restrict the hours in which wireless ports can occur (*i.e.*, when due dates can be specified). In order to facilitate efficient porting and to support the industry goal of a two and half hour porting interval, the major wireless carriers had agreed to permit ports to be completed on an automatic basis, 24 hours a day, seven days a week.<sup>5</sup> TSI, however, designed its software to reject port requests with port due dates outside of the NPAC operating hours.<sup>6</sup> For AWS, TSI's unilateral decision resulted in a significant number of AWS' port-in requests being improperly rejected. For the industry, TSI's decision would significantly limit the number of wireless ports that may be completed within the same day and significantly compromise the industry's ability to meet the targeted two and a half hour porting interval. Significantly, when this issue was brought to the Wireless Number Portability Operations (WNPO) committee for resolution on December 8, 2003, the committee agreed that carriers should *not* restrict the ability to process ports on a 24 hour, seven day a week basis.

### **Conclusion**

AWS has devoted substantial resources and energy to addressing and resolving these intercarrier communications problems. As of the date of this letter, AWS has successfully responded to more than 90 percent of backlogged port requests, and is currently responding to new port requests on a level comparable to the rest of the industry. In this regard, our system response time reflects that greater than 75 percent of port requests are being responded to within 30 minutes. We look forward to continuing our work and coordination with Nighthire, the other carriers, and TSI to resolve inconsistencies and issues arising during LNP implementation, and to making the porting process as efficient and effective as possible for consumers.

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<sup>4</sup> See NANC Inter-Service Provider LNP Operations Flows (July 2003), Figure 4, Flow Step 5.

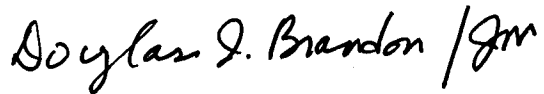
<sup>5</sup> See, *e.g.*, AWS-Verizon Wireless LNP Operations Agreement.

<sup>6</sup> Further exacerbating this problem is the fact that, a port request apparently needed a due date within the operating hours of the applicable NPAC office of the region, which may have a different time zone than the place in which the port request originated. For example, the applicable time zone for the Pacific Northwest region is actually Mountain time, due to that being the dominant time zone of the states included within the Western NPAC region.

Mr. Muleta  
December 10, 2003

Please let me know if you have questions.

Sincerely,

Handwritten signature of Douglas I. Brandon in cursive script, including a stylized initial 'D' and a slash followed by 'gm'.

Douglas I. Brandon

cc: Bryan Tramont  
Sheryl Wilkerson  
Jennifer Manner  
Samuel Feder  
Paul Margie  
Barry Ohlson  
Dane Snowden  
David Solomon  
David Furth