



BROADMAPSM
Beyond The Boundaries

Mississippi Broadband Mapping Project: Product Release White Paper

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Product Specification: December 2013 NTIA Data Model
Product/Process: NTIA—October 1, 2014 Data Deliverable
Dataset Submission QC: NTIA—SBDD_CheckSubmission.py



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OVERVIEW

This white paper highlights the **Submission Summary** for this deliverable, as well as describes the **Data Gathering**, **Data Integration**, **Data Validation and Verification** and **Quality Control** processes used to create the Broadband Mapping Project's October 1st, 2014 data submission. To support varying levels of technical and program knowledge, both a **high-level summary** and a **detailed process review** are supplied.

SUBMISSION SUMMARY

PROVIDER DETAILS

PROVIDER PARTICIPATION

- New Providers Since Last Data Submission
 - Cogent Communications
- Existing Providers – Confirmed No Updates
 1. Cable TV of Belzoni
 2. Delta Link Inc.
 3. Delta Telephone Co Inc.
 4. Frontier Communications of Mississippi, LLC
 5. Georgetown Telephone Company Inc.
 6. MegaPath Corporation
 7. Noxapater Telephone Company
 8. Ripley Video Cable
 9. SkyCasters
 10. Teletec Communications
 11. Viasat, Inc.
- Providers Included Data This Round
 1. AT&T Mississippi
 2. AT&T Mobility LLC
 3. Bailey Cable TV
 4. Bruce Telephone Co. Inc.
 5. CenturyLink (CenturyTel)
 6. Charter Communications Inc.
 7. Cogent Communications
 8. Comcast
 9. Cricket Communications, Inc. (Leap)
 10. C Spire Fiber (Telepak)
 11. C Spire Wireless
 12. Decatur Telephone Co. Inc.
 13. Franklin Telephone Co. Inc
 14. InLine



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15. Lakeside Telephone Company Inc.
 16. Level 3 Communications, LLC
 17. Mediacom
 18. MetroCast Communications of Mississippi, LLC
 19. Sledge Telephone Co. Inc.
 20. Smithville Telephone Company, Incorporated
 21. Sprint
 22. TDS Telecom (Calhoun City Telephone Company, Inc.)
 23. TDS Telecom (Myrtle Telephone Company, Inc.)
 24. TDS Telecom (Southeast Mississippi Telephone Company, Inc.)
 25. TEC (Bay Springs Communications)
 26. TEC (Bay Springs Telephone)
 27. TEC of Jackson, Inc.
 28. T-Mobile
 29. TW Telecom of Mississippi, LLC
 30. Verizon Wireless
 31. Windstream Mississippi LLC
- Non-Responsive Providers
 1. Cable One
 2. Dixie-Net
 3. Firenet1.com
 4. Fulton Telephone Company, Inc.
 5. Gulf Pines Communications
 6. Hughes
 7. Magnolia Wireless
 8. Media 3
 9. Megagate Broadband
 10. Mobile Communications, LLC
 11. Mound Bayou Telephone and Communications, Inc.
 12. NetWireless Solutions, LLC
 13. Network Telephone Corporation / Cavalier Telephone
 14. Southern Light, LLC
 15. Starband Communications
 16. Suddenlink Communications (Cebridge Acquisition)
 17. Tri State Internet, LLC
 18. Vance Wireless
 19. Vicksburg Video, Inc. (WEHCO)
 20. XFone USA, Inc.
 21. Zayo Group, LLC
 - Providers researched and identified as non-broadband providers can be viewed within the table at the end of this document.



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COMMUNITY ANCHOR INSTITUTION (CAI) DETAILS

OVERALL STATISTICS

Community Anchor Institution - Categories	Overall Count	CAIID Counts	Broadband Subscriber (1 or 2)	Trans Tech	Advertised Speed Down	Advertised Speed Up
Category 1 - School K through 12	1084	1084	116	1057	1057	1057
Category 2 - Library	278	244	197	197	197	37
Category 3 - Medical/Healthcare	437	0	243	243	243	136
Category 4 - Public Safety	869	0	136	136	136	93
Category 5 - Universities/Colleges	40	40	0	0	0	0
Category 6 - Other: Government	409	0	335	335	335	142
Category 7 - Other: Non-Government	0	0	0	0	0	0
Total	3117	1368	1027	1027	1027	1465



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HIGH-LEVEL SUMMARY

DATA GATHERING

BROADBAND SERVICE AREAS, MIDDLE MILE AGGREGATION POINTS AND BROADBAND SERVICE OVERVIEW

The collection of Broadband Service Areas, Middle Mile Aggregation Points and Broadband Service Overview information is handled through the following Provider Outreach Process:

- Build and maintain an inventory of Broadband providers through currently known providers and research.
- The inventory and everyday interaction with providers is tracked using the Provider Catalog (PCat). Below are some examples of the web application, which has a shared access between our team and mapping partner (BroadMap).

Company Information		Edit Clone History AAD	
Provider Name	acmetech (All)	Source Name	acmetech
Company Address		Source Description	
Company PO Box		Layer Name	TBD
Company House Number	12345	Source Usage Type	Tracking
Company Street Name	Acme Avenue	Source Provider Type	BroadMap
Company City Name	Portland	Source Content Type	
Company Suite		Source Restrictions	<input type="checkbox"/>
Company Postal Boundary		Source Restriction Description	
Company State		TT Types	--None-- Asymmetric xDSL Symmetric xDSL Other Copper Wireline Cable Modem-DOCSIS 3.0 Cable Modem-Other Optical Carrier/Fiber to the End User Satellite
Company Website	http://www.acmebroadband.com		
Source ID	4999		
Child Source	<input type="checkbox"/>		
Parent URL			
Parent Source ID	0		
User Name			
Password			
Form 477 Interest	<input type="checkbox"/>	Addr Level Data Provided	<input type="checkbox"/>
Provider Portal Trained	<input checked="" type="checkbox"/>	Preferred Contact Method	

Contacts							New
Type	Name	Preferred	Phone 1	Phone 2	Email	Position	
P	Sourcing						

FRN Info	
Provider Name	DBA
	FRN Number

Confidence		New
TT Type	Confidence	Last Modified
Status Tracking		
Non Facilities Based Provider	<input type="checkbox"/>	
Business Only Provider	<input type="checkbox"/>	
Reseller	<input type="checkbox"/>	
NDA Review - Internal	<input type="checkbox"/>	Non Responsive Provider <input type="checkbox"/>
NDA Review - External	<input type="checkbox"/>	Non Cooperative Provider <input type="checkbox"/>
		Source Closed <input type="checkbox"/>
Service Provider Details		
BroadMapper	--None--	BroadMap Status
Initial State Outreach Date		Unassigned
Provider Origin		Initial Contact Vehicle
		Member Association
		Initial State Outreach <input type="checkbox"/>
		NDA Status
		--None--
		NDA Not Required <input type="checkbox"/>
		NDA Requested <input type="checkbox"/>
		NDA Exchanged <input type="checkbox"/>
		NDA Exchange Date
		NDA Signed <input type="checkbox"/>
		NDA Signed Date
		Date Loaded
		Source Closed Date



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BDIA Delivery 0412		Edit
Status	--None--	Provider Data Reviewed <input type="checkbox"/>
Outreach Date		Provider Data Reviewed Date
Initial Response		FootPrint
Meeting Date		MiddleMile
No Update Date		Subscriber
Waiting For Data Date		Provider Login <input type="checkbox"/>
Data Received Date		Provider Login Date
Data Accepted Date		
Source Ingested		Source Ingested Date
Additional Data		
Notes		
Next Steps		
Inactive <input type="checkbox"/>	Owner: briordan	
Created By: briordan 2011-06-13 12:06:35		Last Modified By: krousseau 2012-03-16 13:41:58

- Update provider material that describes the data requirements and logistics for data transfer.
- Update Non-Disclosure Agreement (NDA) for use in the project, where applicable.
- Maintain multiple protocols for the provider to submit data, including Secure File Transfer Protocol (SFTP) technology when desired.
- Conduct one-on-one informational discussions with each provider to communicate the following:
 - Requirements of this project;
 - Broadband data required to support the product data model;
 - Submission protocols available;
 - Capability to validate how the supplied data is aggregated.
- Download/receive provider data.
- Establish a repeatable process with provider. Maintain provider communication, transaction and data handling records throughout the project (dates contacted, data received, etc.).

COMMUNITY ANCHOR INSTITUTION (CAI)

The collection of CAI information is handled through the following CAI Collection Process:

- Collect and maintain inventory of CAIs through currently known CAIs, data mining, and research.
- Maintain web-based CAI portal for institutions to add or confirm attribution, location and enter broadband-specific information.
- Upload web-based data to Core Database for standardization.
- Perform internal cleansing, such as removing duplicate records, identifying gaps in broadband attribution and verifying category.
- Geocode CAI locations.
- Translate Core Database data to deliverable-ready format.
- Continue engagement with non-responsive institutions.



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DATA INTEGRATION PROCESS

The data integration and processing mechanisms currently used allows for multiple types of inputs and result in a standardized output that meets the NTIA deliverable requirements. This flexible process supports data model changes and project-requested enhancements.

- Receive inputs from providers via submission protocols; upload into Sourcing Database and catalog with provider information.
- Review provider-supplied data for completeness and for potential discrepancies that require resolution prior to processing and flag as necessary.
- Categorize input into data-type category (addresses, block lists, paper maps, etc.).
- Standardize input based on data type within Staging Database.
- Create Compact Polygons (CP)—(internal methodology for generating area-based feature for coverage in Staging Database).
- Apply broadband attribution to CP; apply metadata to CP.
- Perform quality analysis of the CP against the source supplied to identify any completeness or accuracy issues.
- Request additional information from the provider if elements of coverage are missing or contain discrepancies. This is a second manual quality check to ensure data is complete.
 - Process coverage area to build the required NTIA data model layers.

With the deployment of the Provider Portal this round, the data collection and later validation process was streamlined allowing both activities to occur within a secure web application. The majority of the providers used this methodology as it supplies them with more visibility into how their data is being represented and gives them knowledge and ownership of their coverage representation. Below are some bullet points and supporting screen shots on how the portal is used.

- Each provider is assigned credentials with a strong password to ensure security measures are taken into consideration

Login

Username

Password

Login

- Collection and confirmation our contact, as well as the company's DBA Name and FRN accuracy

Contact and Provider Information

Please enter contact information and change provider information if incorrect:

Contact name:

Contact E-mail:

Contact Phone:

Doing Business As (DBA) Name:

FCC Registration Number (FRN):

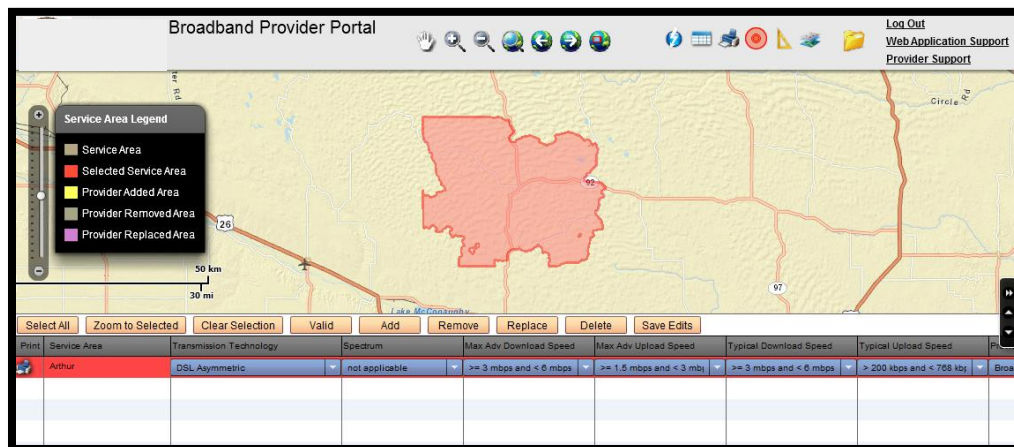
Please note the following:

- Contact info will only be stored when a record is saved
- Provider info will be applied to all service areas

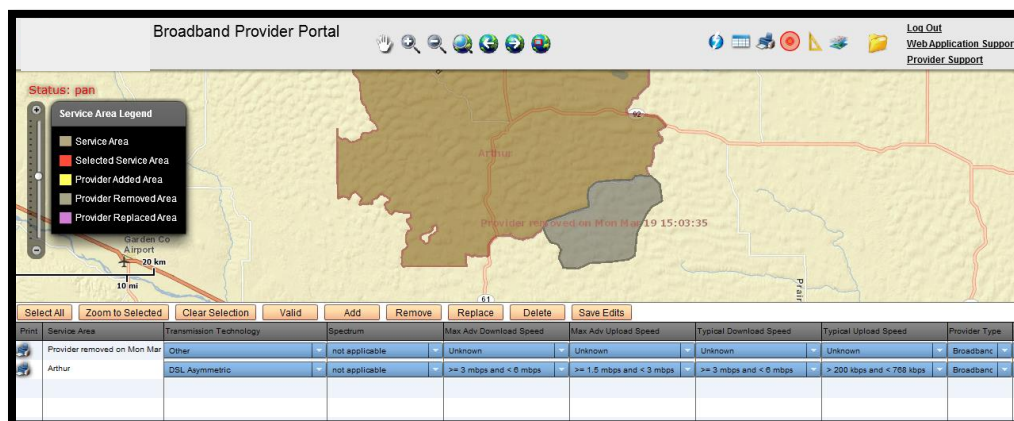


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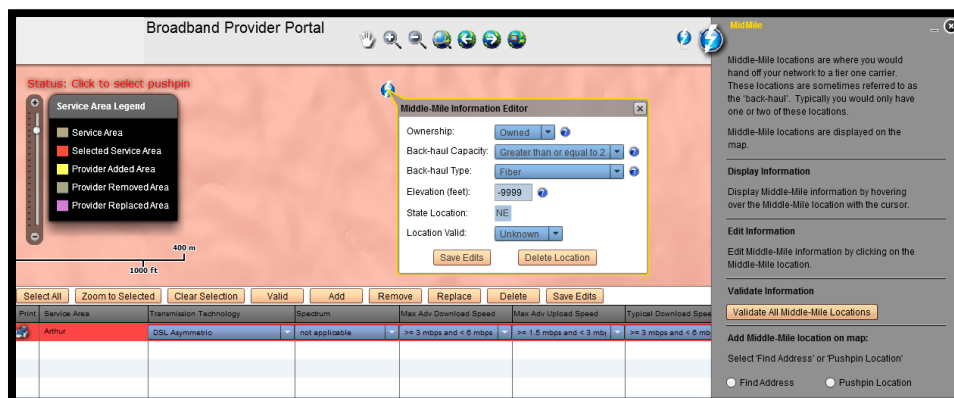
- Capability to review and request changes to the coverage footprint



- The provider can Add/Remove portions, or all, of the footprint requesting that their footprint be increased or refined.



- Middle Mile and Average Weight Nominal Speed (AWNS) collection and validation





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AWNS

AWNS Settings for 'DSL Symmetric' in Arthur County

Change the advertised download speeds and/or change the number of subscribers and click 'Calculate AWNS'

Advertised Download kbps #1:	<input type="text" value="0"/>	# of Subscribers:	<input type="text" value="0"/>
Advertised Download kbps #2:	<input type="text" value="0"/>	# of Subscribers:	<input type="text" value="0"/>
Advertised Download kbps #3:	<input type="text" value="0"/>	# of Subscribers:	<input type="text" value="0"/>
Advertised Download kbps #4:	<input type="text" value="0"/>	# of Subscribers:	<input type="text" value="0"/>
Advertised Download kbps #5:	<input type="text" value="0"/>	# of Subscribers:	<input type="text" value="0"/>

AWNS in kbps:

- File upload functionality to support providers that would prefer a shapefile, spreadsheet, PDF, KMZ/KML file be used to reflect changes for the data round



Welcome

1 Choose a file to upload: (50MB max)

*Uploading a new file with the same name as an existing file will overwrite the existing file

Uploaded Files

2 Please click here to auto-notify BroadMap of your uploads, thanks.

3 Logout

- Once the provider has review completed changes to their coverage, middle mile and AWNS, then can validate them all by signing off that everything is accurate.

DATA VALIDATION AND VERIFICATION

Following the creation of the product, process steps within Data Validation and Verification occur. To ensure the data collected and processed is as accurate and comprehensive as possible, provider validation and internal verification activities are employed. After the initial mapping of providers' coverage areas and serviceability claims, additional reviews are performed using the methods described in the subsections below in order of action.



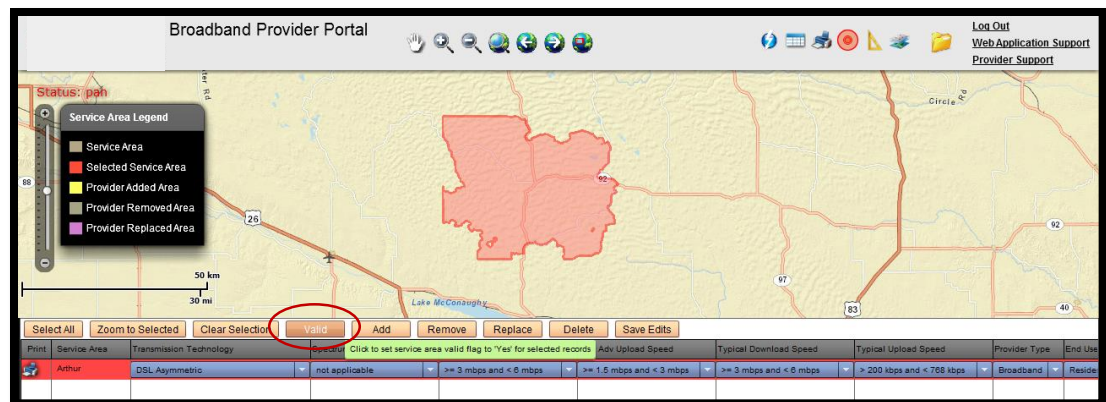
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BROADBAND PROVIDER VALIDATION—PROVIDER PORTAL APPLICATION

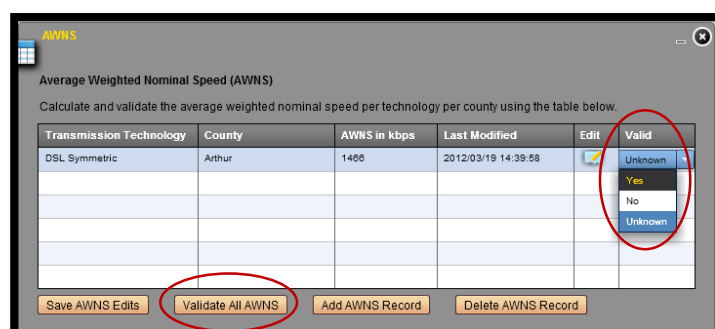
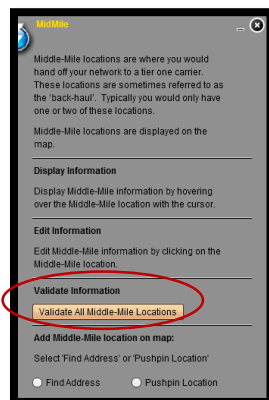
Providers are trained on and requested to use a secure interactive web application to review their current coverage area(s) and supporting broadband attribution and validate their data or submit change requests to update their data. All provider change requests go through the [Data Integration Process](#) and are reviewed with the provider to complete validation.

With the latest released of the Provider Portal, validation on the coverage area, middle mile and average could be completed individually. Validation examples are as follows:

- Coverage validation can be done on one record/footprint at a time or by selecting footprints and selecting the 'Valid' button. The provider could also print off or download their coverage for their own tracking purposes.



- Middle Mile & AWNS Validation



All validation results are tracked internally through our Validation Table, which also improves the overall [Confidence Value](#) as mentioned below.

PEER REVIEW

The BroadMap Team takes the time to sit down together and visually inspect the data for any abnormalities that need to be discussed.



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SUBJECT MATTER EXPERT REVIEW

Relationships and partnerships often already exist between the state of Mississippi and the broadband providers, giving a first-hand look at the services offered and where they are offered. In addition, the Mississippi broadband team has ready access to industry experts within the fields of telecommunications and data networking. Any anomalies or questioned material is relayed to the providers for review.

PUBLIC VERIFICATION

The broadband interactive map has been released to the public, which includes functionality to collect feedback on the provider's coverage areas, as well as running a speed test. The feedback and speed results are collected and reviewed with the providers prior to the next data submissions to identify if any map refinement is required.

The public website can be viewed at the following hyperlink:

<https://msbb.broadmap.com/StateMap/>

CURRENCY OF OVERALL PROCESS

This is a review of providers who sent updated coverage area data to BroadMap, or were at least cooperative, reporting no updates or changes for this round of submission.

SOURCING QC GEOMETRY AND ATTRIBUTION

This is a review that providers whose coverage areas submitted through the portal or via shapefile, met standards for the following:

- Format correctness;
- Table and field structure;
- Valid values, including default values, where applicable;
- Geographic extent and topology errors.

INTERNAL QC SCRIPTS

Internal QC scripts were run to check that data input into the attribution of the coverage areas matched the data in the internal Provider Catalog. This included attributes such as FRN number, source id # and Provider Name.

NTIA SUBMISSION CHECK

Prior to data submission, another quality control script supplied by NTIA is run. This script, SBDD_CheckSubmission.py, creates an output in text form that is required to be submitted along with the final deliverable. All errors must come up clean, unless otherwise specified by NTIA.

CONFIDENCE VALUES

All verification, validation and manual quality review results are tracked by provider/technology type and stored and maintained within a Validation spreadsheet. A confidence value is assigned, based on internal



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assessments of the collected information, to highlight the provider coverage areas and/or attributions that would benefit from further investigation and/or enhancements.

The confidence value is calculated from the provider meeting the Quality Control checks listed below (and outlined in detail above):

- Provider Validation
- Peer Review
- State Review / Subject Matter Expert Review
- Crowd Sourcing
- Currency of Overall Process
- Sourcing QC Geometry and Attribution
- Internal QC Scripts
- NTIA Submission Check

With the continued efforts on provider validation, 3rd party verification and the release of the public interactive map with feedback collection functionality, the confidence values will be utilized further to identify specific areas in need of attention.

QUALITY CONTROL

Following collection, processing and analysis of the provider and CAI data, the product is checked manually and algorithmically against the NTIA data model. These items are outlined above in the [Sourcing QC Geometry and Attribution](#) and [Internal QC Scripts](#) and [NTIA Submission Check](#) under [Data Validation and Verification](#).



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PROVIDERS RESEARCHED

Below is a list of providers that were researched and contacted, but identified as non-broadband providers and didn't require inclusion within the data submission. Some may be due to different naming conventions or inaccurate FRN/DBA names and were therefore considered a closed source.

1-800-RECONEX, INC. -- TC-123-1525-01	iNetworks Group, Inc. -- TC-123-2297-01
5LINX Enterprises Inc. DBA Globalinx	Infinity Networks, Inc. -- TC-123-1984-01
8x8, Inc.	InPhonex.com, LLC
Access Point Inc.	Intellicall Operator Services Inc. -- TC-123-1143-00
Access Point, Inc. -- TC-123-1518-00	Interface Security Systems, LLC
Accessline Communications Corporation	Intrado Communications, Inc.
AccuTel of Texas, Inc. -- TC-123-1851-01	IP Communications, LLC.
ACN Communication Services, Inc. -- TC-123-1793-00	IP Networked Services, Inc.
ACN Digital Phone Service, LLC	Kentucky Data Link, Inc. -- TC-123-2123-01
Airespring, Inc. -- TC-123-2068-00	Kosmaz Technologies LLC
ALEC, Inc.	LightSquared LP
Alternative Phone, Inc.	Lightyear Network Solutions, LLC
Alternative Phone, Inc.	M5 Networks, Inc.
American Fiber Network, Inc. -- TC-123-2213-01	Madison River Communications, LLC -- TC-123-1835-01
Apptix, Inc.	Matrix Telecom Inc. -- TC-123-1045-00
Aptela, Inc.	Matrix Telecom, Inc.
AT&T Communications of the South	MCC Telephony of the South, LLC
Baldwin County Internet/DSSI Serv., LLC -- TC-123-2091-01	MCImetro Access Transmission Serv., LLC
Bandwidth.com CLEC, LLC -- TC-123-2262-01	McLeodUSA Telecomm. Services, Inc. -- TC-123-1452-00
BANDWIDTH.COM, INC.	Mediacom Southeast LLC
Bay Springs Communications, Inc. -- TC-123-2147-01	Metropolitan Telecomm. of MS, Inc. -- TC-123-2174-00
BellSouth Long Distance, Inc. -- TC-123-1530-00	Metropolitan Telecommunications Holding Company
Benchmark Communications, L.L.C. -- TC-123-2185-01	Micro-Comm, Inc. -- TC-123-2084-01
Benchmark Communications, LLC d/b/a Com One	Midwestern Telecommunications, Inc
Big River Telephone Company, LLC	Millicorp
Big River Telephone Company, LLC -- TC-123-1923-00	Mitel NetSolutions, Inc. -- TC-123-2020-00
Birch Communications, Inc.	Momentum Telecom, Inc
Birch Telecom of the South, Inc.	Momentum Telecom, Inc. -- TC-123-1927-01
BLC Management LLC	Navigator Telecommunications LLC
BLC Management LLC -- TC-123-2110-00	Network USA, LLC
Broadstar, LLC	Neutral Tandem-Mississippi, LLC -- TC-123-2236-00
Broadview Networks, Inc. -- TC-123-2263-00	New Edge Network, Inc.
Broadvox-CLEC, LLC -- TC-123-2299-00	Nextg Networks of Illinois, Inc.
BroadvoxGo!, LLC	NextGen Communications, Inc.
Broadwing Communications, LLC	Nexus Communication, Inc. dba TSI
Broadwing Communications, LLC -- TC-123-2047-00	Nexus Communications, Inc.
Budget Prepay, Inc. -- TC-123-1668-01	nexVortex, Inc.
Budget PrePay, Inc. d/b/a Budget Phone	Norlight, Inc. -- TC-123-2247-01
BullsEye Telecom, Inc.	Norris Telecom, LLC -- TC-123-2056-01
Business Telecom Inc. -- TC-123-1152-00	NOS Communications Inc. -- TC-123-1316-00
Call Catchers Inc.	NOS Communications, Inc.
Callis Communications, Inc.	Ojo Service LLC
Callis Communications, Inc. -- TC-123-2227-01	OnWav, Inc
Cause Based Commerce Incorporated	Phone.com, LLC
Cellco Partnership	PNG Telecommunications, Inc. -- TC-123-1716-00
Cellular South, Inc. -- TC-123-0900-04	Proximiti Technologies, Inc.
CenturyTel Acquisition LLC	Quality Telephone, Inc.
Centurytel Fiber Company, II, LLC -- TC-123-2155-01	QuantumShift Communications, Inc.



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CenturyTel Solutions, LLC -- TC-123-1748-01	Qwest Communications Company, LLC
Charter Fiberlink MS - CCVI, LLC	Razorline LLC
Cincinnati Bell Any Distance, Inc. -- TC-123-2094-00	RING CONNECTION, INC.
Columbia Telecommunications, Inc.	Ring Connection, Inc. -- TC-123-1995-01
Comcast Phone of Mississippi, LLC -- TC-123-2196-01	RNK, Inc.
CommPartners, LLC	Rosebud Telephone, LLC
Communication Lines, Inc.	Select Connect Communications, LLC -- TC-123-1986-00
ConnectMe, L.L.C.	SinglePipe Communications
Contact Network, Inc. -- TC-123-1993-01	Smartresort Co, LLC dba Beyond Communications
Covista, Inc. -- TC-123-1646-00	Southern Communications Services, Inc., d/b/a Southern LINC
Credit Loans, Inc. -- TC-123-1742-01	Southern Telecommunications Co. LLC -- TC-123-1600-01
Crexendo Business Solutions, Inc. -- TC-123-2329-00	Spectrotel, Inc. -- TC-123-2159-01
Cypress Communications, Inc.	Sprint Communications Company L.P.
DAVCO, INC. -- TC-123-1449-01	Stratos Offshore Services Company
DeltaCom, Inc. -- TC-123-1076-00	Talk America Inc.
Dialog Telecommunications Inc.	TC Systems, Inc.
Dialog Telecommunications, Inc. -- TC-123-2070-01	TecInfo Communications, LLC -- TC-123-2050-01
Diamond Telephone Services, Inc.	TecInfo, Inc
DIECA Communications, Inc. -- TC-123-1775-01	TelCove Operations, LLC
Dixie-Net Fiber, Inc. -- TC-123-2026-01	Telesphere Networks Ltd.
dPI Teleconnect, L.L.C.	Tellan Network Technologies, Inc. DBA: VoIPnet Technologies
DSLnet Communications, LLC -- TC-123-1679-01	Tennessee Telephone Service, LLC -- TC-123-2125-01
ECR Voice, LLC	Tennessee Telephone Service, LLC d/b/a Freedom Communications USA, LLC
EnTelegent Solutions, Inc.	The Other Phone Company, Inc. -- TC-123-1612-01
Equinox, Inc.	Thinking Phone Networks, LLC
Ernest Communications, Inc.	Trans National Commun. Internat'l, Inc. -- TC-123-1750-00
Etan Industries	Trans National Communications International, Inc.
EveryCall Communications, Inc.	UCN, Inc. -- TC-123-2052-00
EveryCall Communications, Inc. -- TC-123-2131-01	Universal Telecom, Inc.
Evolve IP, LLC	US LEC of Tennessee Inc., d/b/a PAETEC Business Services
Excel Home Phone, Inc.	US LEC of Tennessee Inc. -- TC-123-1720-00
Express Phone Service, Inc.	Velocity Networks Inc
Fast Phones, Inc.	Velocity The Greatest Phone Co. Ever Inc -- TC-123-2312-00
Fionda VOIP, LLC	VoIPStreet, Inc.
Florida Multi-Media Services, Inc	Vonage Holdings Corp.
Four Star Marketing, LLC -- TC-123-2324-00	Wave2Wave Communications Inc.
France Telecom Corporate Solutions, LLC	Wholesale Carrier Services, Inc. -- TC-123-1992-00
Frontier Communications of America, Inc. -- TC-123-1853-01	WiMacTel, Inc.
Global Capacity Direct, LLC -- TC-123-2188-01	Windstream NuVox, Inc. -- TC-123-1606-00
Global Capacity Group, Inc. -- TC-123-2259-01	WirelessLand Technologies, Inc.
Global Connection Inc. of America	XFone USA, Inc. -- TC-123-2121-01
GLOBAL CROSSING TELECOMMUNICATIONS, INC.	XO Communications, LLC
Go-Tel, LLC	YMax Communications Corp. -- TC-123-2203-01
GRANITE TELECOMMUNICATIONS LLC	Zayo Enterprise Networks, LLC
Granite Telecommunications, LLC -- TC-123-2000-01	
GreatCall, Inc.	
Hypercube Telecom, LLC -- TC-123-1921-01	
iCore Networks, Inc.	
IDT America Corporation -- TC-123-1253-00	
IDT Corporation	
Image Access, Inc. -- TC-123-1638-01	
iNETWORKS GROUP, INC	



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DETAILED PROCESS REVIEW

To review the detailed process, please review the document BMap_ProcessDetails_2014_10_01.pdf that was sent with this submission.