Mississippi Broadband Mapping Project: Product Release White Paper

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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 April 1st, 2013 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

- Provider Participation Statistics Summary

Summary	Count
Total Providers Researched/Contacted (Includes Resellers)	222
Total Valid Broadband Providers	59
Non-Responsive Providers	0
Non-Cooperative Providers	1
Number of Providers – Represented in Data Submission	55
Number of Providers - Supplied Updates for this Submission	38
Number of Providers - Confirmed No Updates	10

- New Providers Since Last Data Submission
  - Magnolia Wireless, LLC
  - Media 3
  - Teletec Communications

- Existing Providers – Confirmed No Updates
  - Cable TV of Belzoni
  - Decatur Telephone Co. Inc.
  - DeltaCom, Inc.
  - Georgetown Telephone Company Inc.
  - Skycasters
  - Smithville Telephone Co. Inc.
  - Southern Light, L.L.C.
  - StarBand Communications Inc.
  - Telepak Networks, Inc.
  - ViaSat, Inc.

- Non-Responsive/Non-Cooperative Providers
  - New Edge Network, Inc. (EarthLink)

- Providers researched and identified as non-broadband providers can be viewed within the table at the end of this document.

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	697	277	502	502	502	55
Category 2 - Library	278	234	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	**2730**	**551**	**1413**	**1413**	**1413**	**463**

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	☐
Company Postal Boundary		Source Restriction Description	
Company State		TT Types	--None--
Company Website	http://www.acmebroadband.com		Asymmetric xDSL
Source ID	4999		Symmetric xDSL
Child Source	☐		Other Copper Wireline
Parent URL			Cable Modem-DOCSIS 3.0
Parent Source ID	0		Cable Modem-Other
User Name			Optical Carrier/Fiber to the End User
Password			Satellite
Form 477 Interest	☐	Addr Level Data Provided	☐
Provider Portal Trained	☑	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	Comment

Status Tracking

Non Facilities Based Provider	☐		
Business Only Provider	☐		
Reseller	☐	Non Responsive Provider	☐
NDA Review - Internal	☐	Non Cooperative Provider	☐
NDA Review - External	☐	Source Closed	☐

Service Provider Details

BroadMapper	--None--	BroadMap Status	Unassigned
Initial State Outreach Date		Initial Contact Vehicle	
Provider Origin		Member Association	
		Initial State Outreach	☐
		NDA Status	--None--
		NDA Not Required	☐
Provider Packet Exchanged	☐	NDA Requested	☐
Provider Packet Info Sent		NDA Exchanged	☐
Provider Meeting Status	--None--	NDA Exchange Date	
Technical Meeting Requested	☐	NDA Signed	☐
Technical Meeting Scheduled	☐	NDA Signed Date	
Number of Subscribers			
		Date Loaded	
		Source Closed Date	

BDIA Delivery 0412 Edit

Status	--None--	Provider Data Reviewed	☐
Outreach Date		Provider Data Reviewed Date	
Initial Response		FootPrint	
Meeting Date		MiddleMile	
No Update Date		Subscriber	
Waiting For Data Date		Provider Login	☐
Data Received Date		Provider Login Date	
Data Accepted Date			
Source Ingested		Source Ingested Date	

Additional Data

Notes			
Next Steps			
Inactive	☐	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.

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

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

- 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

- 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

- 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 (**Broadband Provider Validation**, **Third-Party Data Verification**, **Public Verification, and Confidence Values**).

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.

THIRD-PARTY DATA VERIFICATION

The coverage is visually and programmatically compared against third-party data as new or updated coverage area information is received and ingested from providers. All anomalies identified during this analysis are reviewed with the providers.

3rd Party Source Name	Source Type	Verification Type
Pitney Bowes (PBBI)	Exchange Info Plus (Central Office Locations)	Exchange datasets are used to verify the following Transmission Technologies (TT): Asymmetric xDSL (10), Symmetric xDSL (20), Other Copper Wireline (30), and Optical Carrier/Fiber to the End User (50).
Media Prints	Cable Boundaries	Used to verify the following TT: Cable Modem—DOCSIS 3.0 (40) and Cable Modem—Other (41)
American Roamer	Wireless Coverage Patterns (EVDO, GPRS, WISP, HSPA)	Used to verify the following TT: Terrestrial Fixed Wireless—Unlicensed (70), Terrestrial Fixed Wireless—Licensed (71) and Terrestrial Mobile Wireless (80)
Comsearch	Wireless Spectrum Holdings and Tower Data	Used to verify the following TT: Terrestrial Fixed Wireless—Unlicensed (70), Terrestrial Fixed Wireless—Licensed (71) and Terrestrial Mobile Wireless (80)

SME PROVIDER COVERAGE VERIFICATION

Prior to each data submission, a review is completed between the broadband mapping team and broadband subject matter experts. Each coverage footprints is review in detail, including any changes from the previous data submission.

Any questions that arise during this review are brought back to the mapping team for resolution and then signoff. Providers are contacted if the item indented is in response to the initial information they supplied.

PUBLIC VERIFICATION – CROWD SOURCING

Since the last data submission, we have improved the public website - interactive map to collect more detailed feedback on the represented broadband coverage areas. This data had been reviewed with providers during the outreach phase and during one-on-one provider meetings.

The State website can be reviewed at the following hyperlink:

http://msbb.broadmap.com/StateMap/

CONFIDENCE VALUES

All verification, validation and manual quality review results are tracked by provider/technology type and stored and maintained within a **Validation table**. A confidence value is assigned, based on internal assessments of the collected information, to highlight the provider coverage areas and/or attributions that would benefit from further investigation and/or enhancements.

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. We're currently at the initial stages of this initiative, but will have a more complete picture in time for the next data submission.

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. Some of the items included within these checks are:

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

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.

DETAILED PROCESS REVIEW

To review the detailed process, please review the attached object:

BMap_ProcessDetails_2013_04_01.docx

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
5LINX Enterprises Inc. DBA Globalinx
8x8, Inc.
Access Point Inc.
Access Point, Inc. -- TC-123-1518-00
Accessline Communications Corporation
AccuTel of Texas, Inc. -- TC-123-1851-01
ACN Communication Services, Inc. -- TC-123-1793-00
ACN Digital Phone Service, LLC
Airespring, Inc.
Airespring, Inc. -- TC-123-2068-00
ALEC, Inc.
Alternative Phone, Inc.
Alternative Phone, Inc.
American Fiber Network, Inc. -- TC-123-2213-01
Apptix, Inc.
Aptela, Inc.
AT&T Communications of the South
Baldwin County Internet/DSSI Serv., LLC -- TC-123-2091-01
Bandwidth.com CLEC, LLC -- TC-123-2262-01
BANDWIDTH.COM, INC.
Bay Springs Communications, Inc. -- TC-123-2147-01
BellSouth Long Distance, Inc. -- TC-123-1530-00
Benchmark Communications, L.L.C. -- TC-123-2185-01
Benchmark Communications, LLC d/b/a Com One
Big River Telephone Company, LLC
Big River Telephone Company, LLC -- TC-123-1923-00
Birch Communications, Inc.
Birch Telecom of the South, Inc.
BLC Management LLC
BLC Management LLC -- TC-123-2110-00
Broadstar, LLC
Broadview Networks, Inc. -- TC-123-2263-00
Broadvox-CLEC, LLC -- TC-123-2299-00
BroadvoxGo!, LLC
Broadwing Communications, LLC
Broadwing Communications, LLC -- TC-123-2047-00
Budget Prepay, Inc. -- TC-123-1668-01
Budget PrePay, Inc. d/b/a Budget Phone
BullsEye Telecom, Inc.
Business Telecom Inc. -- TC-123-1152-00
Cable tv of Belzoni Inc.
Call Catchers Inc.
Callis Communications, Inc.
Callis Communications, Inc. -- TC-123-2227-01
Cause Based Commerce Incorporated
Cellco Partnership
Cellular South, Inc. -- TC-123-0900-04

iNetworks Group, Inc. -- TC-123-2297-01
Infinity Networks, Inc. -- TC-123-1984-01
InPhonex.com, LLC
Intellicall Operator Services Inc. -- TC-123-1143-00
Interface Security Systems, LLC
Intrado Communications, Inc.
IP Communications, LLC.
IP Networked Services, Inc.
Kentucky Data Link, Inc. -- TC-123-2123-01
Kosmaz Technologies LLC
Level 3 Communications, LLC -- TC-123-1655-00
LightSquared LP
Lightyear Network Solutions, LLC
M5 Networks, Inc.
Madison River Communications, LLC -- TC-123-1835-01
Matrix Telecom Inc. -- TC-123-1045-00
Matrix Telecom, Inc.
MCC Telephony of the South, LLC
MCImetro Access Transmission Serv., LLC
McLeodUSA Telecomm. Services, Inc. -- TC-123-1452-00
Mediacom Southeast LLC
Megagate Broadband, Inc. -- TC-123-1058-02
Metropolitan Telecommun. of MS, Inc. -- TC-123-2174-00
Metropolitan Telecommunications Holding Company
Micro-Comm, Inc. -- TC-123-2084-01
Midwestern Telecommunications, Inc
Millicorp
Mitel NetSolutions, Inc. -- TC-123-2020-00
Momentum Telecom, Inc
Momentum Telecom, Inc. -- TC-123-1927-01
Navigator Telecommunications LLC
Network Telephone Corporation -- TC-123-1609-00
Network USA, LLC
Neutral Tandem-Mississippi, LLC -- TC-123-2236-00
New Edge Network, Inc.
Nextg Networks of Illinois, Inc.
NextGen Communications, Inc.
Nexus Communication, Inc. dba TSI
Nexus Communications, Inc.
nexVortex,Inc.
Norlight, Inc. -- TC-123-2247-01
Norris Telecom, LLC -- TC-123-2056-01
NOS Communications Inc. -- TC-123-1316-00
NOS Communications, Inc.
Ojo Service LLC
OnWav, Inc
Phone.com, LLC
PNG Telecommunications, Inc. -- TC-123-1716-00

CenturyTel Acquisition LLC
Centurytel Fiber Company, II, LLC -- TC-123-2155-01
CenturyTel Solutions, LLC -- TC-123-1748-01
Charter Fiberlink MS - CCVI, LLC
Cincinnati Bell Any Distance, Inc. -- TC-123-2094-00
Columbia Telecommunications, Inc.
Comcast Phone of Mississippi, LLC -- TC-123-2196-01
CommPartners, LLC
Communication Lines, Inc.
ConnectMe, L.L.C.
Contact Network, Inc. -- TC-123-1993-01
Covista, Inc. -- TC-123-1646-00
Credit Loans, Inc. -- TC-123-1742-01
Crexendo Business Solutions, Inc. -- TC-123-2329-00
Cypress Communications, Inc.
DAVCO, INC. -- TC-123-1449-01
DeltaCom, Inc. -- TC-123-1076-00
Dialog Telecommunications Inc.
Dialog Telecommunications, Inc. -- TC-123-2070-01
Diamond Telephone Services, Inc.
DIECA Communications, Inc. -- TC-123-1775-01
Dixie Net Communications, Inc. -- TC-123-1634-01
Dixie-Net Fiber, Inc. -- TC-123-2026-01
dPI Teleconnect, L.L.C.
DSLnet Communications, LLC -- TC-123-1679-01
ECR Voice, LLC
EnTelegent Solutions, Inc.
Equinox, Inc.
Ernest Communications, Inc.
Etan Industries
EveryCall Communications, Inc.
EveryCall Communications, Inc. -- TC-123-2131-01
Evolve IP, LLC
Excel Home Phone, Inc.
Express Phone Service, Inc.
Fast Phones, Inc.
Fionda VOIP, LLC
Florida Multi-Media Services, Inc
Four Star Marketing, LLC -- TC-123-2324-00
France Telecom Corporate Solutions, LLC
Frontier Communications of America, Inc. -- TC-123-1853-01
Global Capacity Direct, LLC -- TC-123-2188-01
Global Capacity Group, Inc. -- TC-123-2259-01
Global Connection Inc. of America
GLOBAL CROSSING TELECOMMUNICATIONS, INC.
Go-Tel, LLC
GRANITE TELECOMMUNICATIONS LLC
Granite Telecommunications, LLC -- TC-123-2000-01
GreatCall, Inc.
GulfPines Communications, LLC -- TC-123-1664-01
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

Proximiti Technologies, Inc.
Quality Telephone, Inc.
QuantumShift Communications, Inc.
Qwest Communications Company, LLC
Razorline LLC
RING CONNECTION, INC.
Ring Connection, Inc. -- TC-123-1995-01
Ripley Video Cable, Inc.
RNK, Inc.
Rosebud Telephone, LLC
Select Connect Communications, LLC -- TC-123-1986-00
SinglePipe Communications
Smartresort Co, LLC dba Beyond Communications
Southern Communications Services, Inc., d/b/a Southern LINC
Southern Light, L.L.C. -- TC-123-2118-00
Southern Telecommunications Co. LLC -- TC-123-1600-01
Spectrotel, Inc. -- TC-123-2159-01
Sprint Communications Company L.P.
Stratos Offshore Services Company
Suddenlink
Suddenlink Communications
Talk America Inc.
TC Systems, Inc.
TEC of Jackson, Inc. -- TC-123-0820-00
TecInfo Communications, LLC -- TC-123-2050-01
TecInfo, Inc
TelCove Operations, LLC
Telepak Networks, Inc. -- TC-123-1741-01
Telesphere Networks Ltd.
TelLan Network Technologies, Inc. DBA: VoIPnet Technologies
Tennessee Telephone Service, LLC -- TC-123-2125-01
Tennessee Telephone Service, LLC d/b/a Freedom Communications USA, LLC
The Other Phone Company, Inc. -- TC-123-1612-01
Thinking Phone Networks, LLC
Trans National Commun. Internat'l, Inc. -- TC-123-1750-00
Trans National Communications International, Inc.
tw telecom of mississippi llc -- TC-123-1991-01
UCN, Inc. -- TC-123-2052-00
Universal Telecom, Inc.
US LEC of Tennesse Inc., d/b/a PAETEC Business Services
US LEC of Tennessee Inc. -- TC-123-1720-00
Velocity Networks Inc
Velocity The Greatest Phone Co. Ever Inc -- TC-123-2312-00
VoIPStreet, Inc.
Vonage Holdings Corp.
Wave2Wave Communications Inc.
WEHCO Video, Inc.
Wholesale Carrier Services, Inc. -- TC-123-1992-00
WiMacTel, Inc.
Windstream NuVox, Inc. -- TC-123-1606-00
WirelessLand Technologies, Inc.
XFone USA, Inc. -- TC-123-2121-01
XO Communications, LLC
YMax Communications Corp. -- TC-123-2203-01
Zayo Enterprise Networks, LLC