American Samoa

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
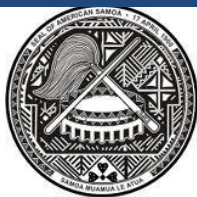
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OVERVIEW

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
  - None
- Providers Included Data (DBA Name)
  - Moana
- Providers Stated *No Update*
  - ASTCA
  - Blue Sky
- Non-Responsive/Non-Cooperative Providers
  - VCX

COMMUNITY ANCHOR INSTITUION (CAI) DETAILS

OVERALL STATISTICS

Community Anchor Institution - Categories	Overall Count	CAIID Counts	Transmission Technology	Advertised Speed Down	Advertised Speed Up
Category 1 - School K through 12	49	27	0	0	0
Category 2 - Library	1	0	1	1	1
Category 3 - Medical/Healthcare	2	0	0	0	0
Category 4 - Public Safety	4	0	0	0	0
Category 5 - Universities/Colleges	1	1	1	1	1
Category 6 - Other: Government	26	0	7	7	7
Category 7 - Other: Non-Government	33	0	0	0	0
Total	**116**	**28**	**9**	**9**	**9**
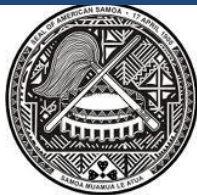
HIGH-LEVEL SUMMARY

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

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 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 data mining, research and State inputs.
- 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 allow 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's allows them 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
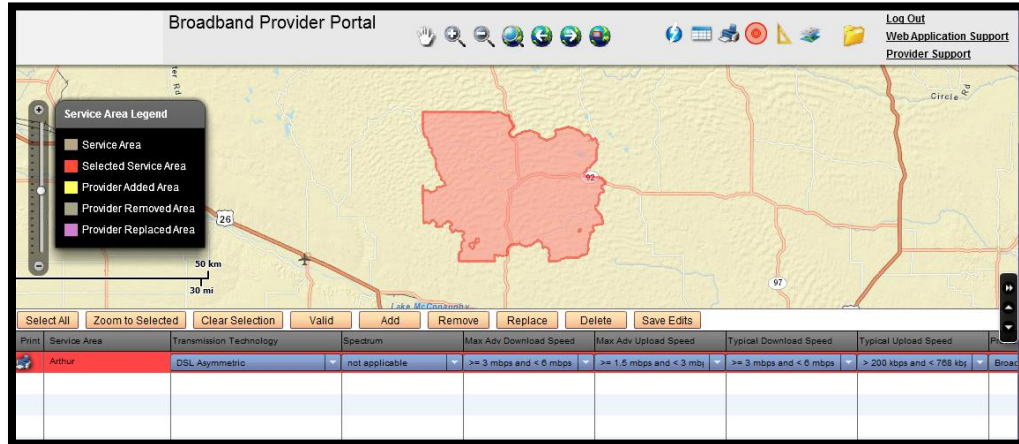
- The provider can Add/Remove portions, or all, of the footprint requesting that their footprint be increased or refined.
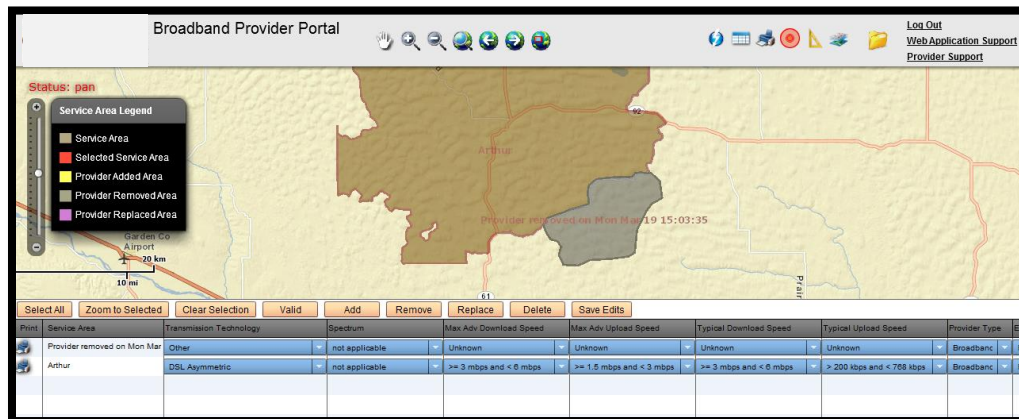
- Middle Mile and Average Weight Nominal Speed (AWNS) collection and validation

- 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 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—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 their coverage for their own tracking purposes.
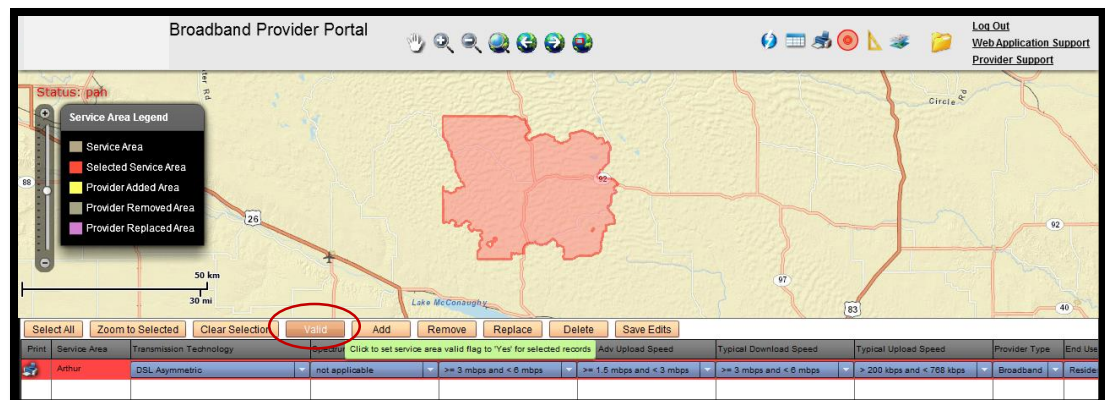
- Middle Mile & AWNS Validation

All validation results are tracked internally through our Validation Table, which also improves the overall **Confidence Value** as mentioned below.

PEER REVIEW

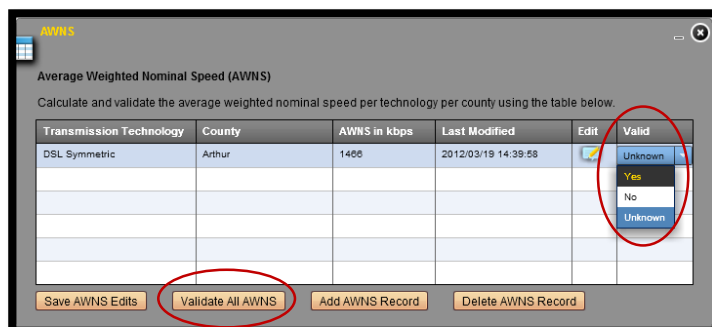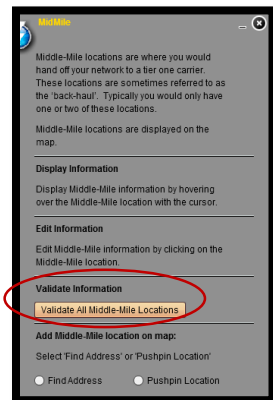The BroadMap Team takes the time to sit down together and visually inspect the data for any abnormalities that need to be discussed.

INDUSTRY KNOWLEDGE – SUBJECT MATTER EXPERTS

Relationships and partnerships often already exist between the territory of American Samoa and the broadband providers, giving a first-hand look at the services offered and where they are offered. In addition, the American Samoa 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:

http://asbb.broadmap.com/PublicMap/

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 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**.

DETAILED PROCESS REVIEW

To review the detailed process, please review the document Bmap_ProcessDetails_2014_10_01.pdf