



## Bentley Coax

### Efficient Design and Management of Coax Networks

Bentley Coax is a robust RF engineering product that creates an intelligent coax network model during the design process. Bentley Coax works with Bentley Fiber and Bentley Inside Plant to create an end-to-end network model, allowing a hybrid fiber-coax network to be analyzed at any level, and ensuring accurate network documentation.

#### Integrated Modeling and Documentation Workflows

Bentley Coax provides a common environment for comprehensive project delivery and connects users, projects, and your enterprise. You now have a personal portal to access learning, communities, and project information. You can also share personal files including i-models and PDFs directly from your desktop with other users, or stage them for easy access from a Bentley app, such as Bentley Map Mobile. With the new project portal, your project teams can review project details and status, and gain visibility into project performance.

#### Intelligent Network Model Brings Productivity Gains

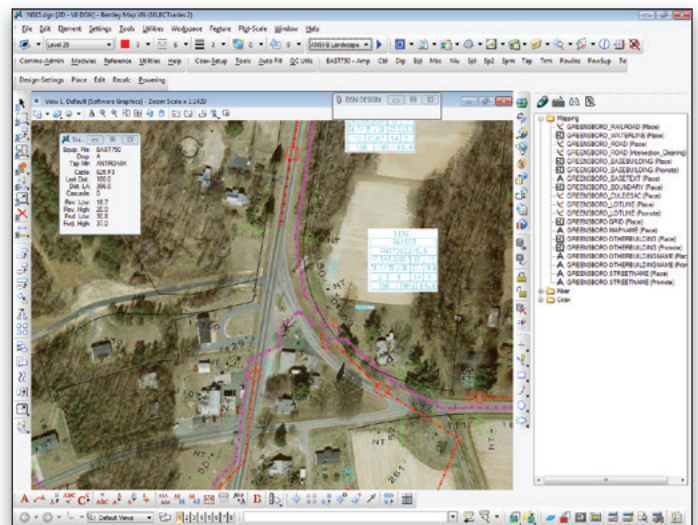
The intelligent network model is created and maintained in a GIS environment and can be used by practically every department of a communications service provider. The operations department uses GIS for network monitoring, trouble ticketing dispatch, tracing to locate fiber outages, and locating affected customers. Operations uses the intelligent network model for call-before-you-dig responses, and engineering retrieves information such as services available for addresses or to determine amplifier, node, or power supply feeding specific addresses. Additionally, the GIS can generate engineering reports such as total cable footage as well as house or device counts within a specified geographic area.

The intelligent network model is needed by billing and other business departments for purging duplicate addresses, discovering missing addresses not in the billing system but serviceable, managing accurate rate center and e911 boundary relationships, and facilitating accurate mailing by CASS-certifying addresses. Accounting uses the model to generate reports of assets, for franchise fee calculations, duct and pole leasing invoices and payments, the generation of reports to taxing authorities, and identifying retransmission royalties.

Finally, sales and marketing takes advantage of the model for locating commercial addresses within a certain distance from the network, integration with demographic data, targeted marketing campaigns, churn rate correlation with calls, locating high-demand services areas, identifying market trends, evaluating marketing campaigns, and to generate reports to identify and reduce repeated services.

#### Optimized Engineering Environment Lets Designers Work Faster with Fewer Errors

All aspects of equipment, drawing, and engineering standards used in RF/coaxial cable design are fully configurable through an easy-to-use graphical user interface (GUI), which includes a preconfigured library for quick startup.



*RF design calculations are performed as equipment is placed.*

Bentley Coax uses a graphical routing process based on existing landbase and strand map information such as poles, pedestals, manholes and duct to build an intelligent network model of the coax and related outside plant facilities. Bentley Coax offers different functions to edit, modify, or delete existing coaxial plant. These functions maintain connectivity throughout the entire network. Editing a device causes the network to be recalculated automatically, and devices that don't meet the design specification used in the project are identified for further correction.

A complete set of tools is available to place different kinds of annotation driven by information from the database. Users can place data blocks (amplifier, power supply, end of line) that were previously customized in the setup. There are two ways to verify the network design: the first calculates signal level and distortion automatically while the user is laying out the coaxial network; the second allows the user to recalculate the signal level and distortion from any coaxial device on the network until an amplifier or terminator is reached.

After the design has been completed, Bentley Coax allows designers to power the plant. Powering is based on user-defined boundaries or power blocks that define the area to be powered. Designers have the option of changing the power count percentage when using power-passing taps. Bentley Coax also includes powerful reporting functionality. This includes bills of materials for all RF equipment and cable, bills of materials by build state, address list by node service area, and more. And users can publish PDFs and i-models to Bentley CONNECT Services.

## System Requirements

Refer to the 'Requirements' section of the Bentley Utilities Designer ReadMe file:

[www.bentley.com/BC-Specs](http://www.bentley.com/BC-Specs)

**Find out about Bentley at: [www.bentley.com](http://www.bentley.com)**

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### Global Office Listings

[www.bentley.com/contact](http://www.bentley.com/contact)

# Bentley Coax At-A-Glance

## Design and Documentation

- Intelligent coax network model for HFC networks
- Placement, edit, and review of all cable, devices, and other facilities
- Real-time signal calculations and tap sizing during design
- Calculation of RF signal levels for up to eight frequencies in any combination of forward and return
- Calculation of all noise and distortion levels
- Determination of powering requirements for all equipment
- Maintenance of network model connectivity during placement and edit
- Automatic property-based annotation of amplifiers, tap levels, end-of-line levels
- Equipment shown in different build states during design lifecycle
- Support for cable simulators, loss in cable splices, and user-configured devices
- Jumper settings for powering amplifier legs in any combination
- Headend to customer network model
- Full network connectivity between outside plant and inside plant documented with Bentley Inside Plant
- Fully integrated with Bentley Fiber and Bentley Inside Plant
- Support for node segmentation and MUX scenarios for today's HFC networks
- Access to Bentley CONNECT Services

## Configurable Equipment Standards

- Definition of all aspects of equipment used in RF/coaxial cable design
- Easy-to-use GUI for equipment specification
- Options to control all drawing placement tools
- Configurable parameters for all coax devices and power supplies
- Graphical performance display of device frequencies
- Preconfigured library included

## Engineering Calculations

- Real-time noise and distortion analysis
- Analysis of carrier noise (C/N), composite triple beat (CTB), second order distortion (SOD), and cross modulation (XMOD)

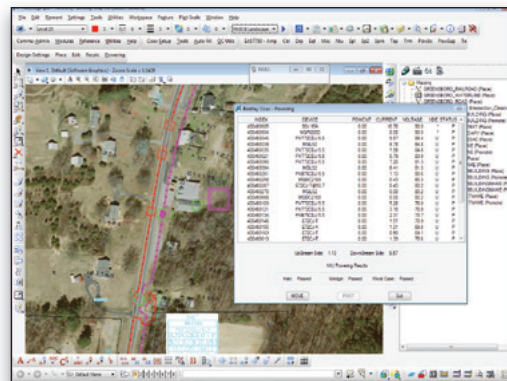
- Visual identification of items that exceed design specifications
- Interactive powering calculations and optimization
- Active and global recalculations
- Calculates the forward, return, interstage pads, and equalizers
- Support for fixed and variable pads and equalizers

## Analysis and Reporting

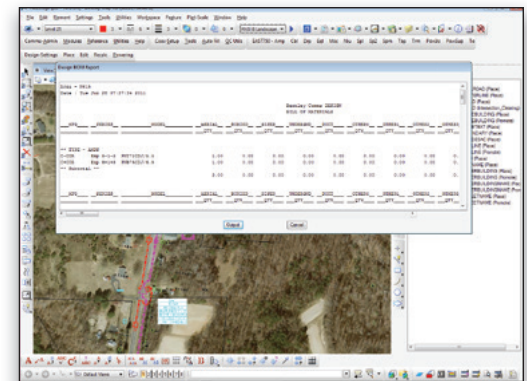
- Review all devices
- Apply and review unlimited customizable attributes to any graphical coaxial feature
- Review signal levels on any device and addresses fed from taps
- Locate and render devices anywhere in the system
- Produce bills of material for all RF equipment and cable
- Access bills of material by build state
- Access the address list by node service area
- Monitor minimum forward and return amplifier inputs
- Verify consistency between strand/duct footages and cable lengths
- Quickly and easily optimize service areas based on homes passed with node boundary feature placement command

## Powering Standards and Calculations

- Configuration of power supplies with up to four outputs
- Centralized powering scenarios supported
- Cross node power supported
- Move and change power equipment
- Power by power supply boundary feature or power block point features
- Power count percentage
- Easy-to-move power supply/insertor functionality produces optimum results
- Supports direct input power to amplifiers, nodes, and other coaxial features used for power insertion
- Automatic update of amp/end-of-line block information after powering
- Supports HALO, wedge, and worse-case scenarios
- Supports power passing and equalized taps
- Supports splitting power supply outputs



*Provides the ability to perform powering calculations and visually show results.*



*Bentley Coax easily generates bills of material reports.*