

Bentley[®]
Advancing Infrastructure



OpenComms™ Designer CONNECT Edition

GIS Network Engineering and Communications Solution

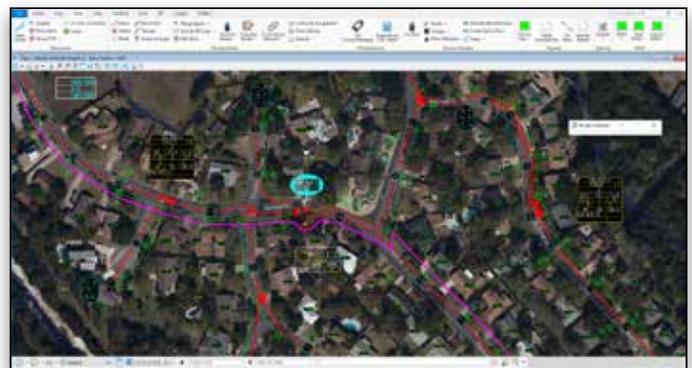
OpenComms Designer is a geospatial information system (GIS) client-based network engineering solution used for the planning, engineering, constructing, and maintaining of fiber, coax, and hybrid fiber-coax networks. You can speed projects with seamless management of work performed in-house or by contractors working outside the network. OpenComms Designer helps you keep up with the demand for new service and network performance with faster designs, reviews, and approvals. By employing an architecture that is GIS and work management system (WMS) independent, OpenComms Designer enables you to easily integrate new network designs into existing work environments to reduce budget and schedule risks from start to finish. A new application for communication design, OpenComms Designer completes the convergence of Bentley Fiber, Bentley Coax, Bentley Inside Plant, and Expert Designer for Communications.

The CONNECT Edition

The SELECT[®] CONNECT Edition includes SELECT CONNECT services, new Azure-based services that provide comprehensive learning, mobility, and collaboration benefits to every Bentley application subscriber. Adaptive Learning Services helps you master use of Bentley applications through CONNECT Advisor, a new in-application service that provides contextual and personalized learning. Personal Mobility Services provides unlimited access to Bentley apps, ensuring you have access to the right project information when and where you need it. ProjectWise[®] Connection Services allow you to securely share application and project information, to manage and resolve issues, and to create, send, and receive transmittals, submittals, and RFIs.

Optimize Work Management of Outside and Inside Plant Networks

OpenComms Designer enables you to improve efficiency and increase engineering throughput of infrastructure design by merging network design and work management in a single environment. For outside plant networks, you can quickly layout and verify coax, FTTx, HFC, and other architectures in a rich engineering GIS that includes the precision of MicroStation[®] with interactive signal calculations. For network facilities, you can speed projects with visual layout of headends, points of presence, central offices, data centers, and other sites. With OpenComms Designer, you can deliver consistent designs and save time with common equipment, layout templates, connection rules, and standard reports.



OpenComms Designer enables design of Fiber/Coax/HFC networks and Inside Plant in a single platform

Integrated Modeling and Documentation Workflows

OpenComms Designer provides an open, connected data environment[®] (CDE) for comprehensive project delivery and connects users, projects, and their enterprise. With a personal portal, you can access learning, communities, and project information. Share personal files including iModels and PDFs directly from your desktop with other users, or stage them for easy access from a Bentley app, such as OpenCities[™] Map Mobile. With the new project portal, your project teams can review project details and status and gain visibility into project performance.

Powerful Functionality to Ensure Streamlined Design Workflows and Seamless Integration for High Productivity

OpenComms Designer enables designers and their supervisors to monitor and fulfill work requests using sophisticated functionality for work order management, job closeout, disconnected contractor workflows, and process measurement and tracking. All parties are automatically notified of request changes for current, future, and past-due work. OpenComms Designer interfaces and integrates with a variety of WMSs to streamline the process of managing projects from inception to completion.

Integration with Oracle Workspace Manager allows a long transaction workspace to be created, named, and then allows connection to the new workspace. OpenComms Designer empowers and supports your contractors by enabling disconnected workflows when VPN access to the engineering documentation server is not permitted. Locked and assigned features in the Oracle workspace can be exported for editing by contractors and re-imported when projects are completed. OpenComms Designer offers preconfigured and fully configurable workflow engines for optimal flexibility to manage complex workflows and meet organizational requirements. It supports work and asset management to speed job throughput,



OpenComms Designer features GIS intelligent network modeling to quickly design and manage your communications infrastructure.

provides a standard message-based interface to be implemented quickly, and saves costly development time while reducing risks of budget and schedule overruns.

Automatically Generate Detailed Audit Trails for Management Reports

User actions, including reviews and approvals, are captured and can be later reviewed for audit purposes. Historical information such as the user, date, and time is recorded as a design or project transitions between the various stages of a work request.

Gain Productivity with Intelligent Models of Outside Plant Networks

OpenComms Designer enables you to create an end-to-end network model, allowing a communications network (fiber, coax, hybrid fiber-coax) to be analyzed at any level, and ensures accurate network documentation. The intelligent network model is created and maintained in a GIS environment and can be used by every department of a communications service provider.

From operations to billing departments, the intelligent network model provides value to many departments. For example, operations department uses the intelligent network model for network monitoring, trouble-ticketing dispatch, fiber tracing to locate outages, and locating affected customers. It can also be used for call before-you-dig responses, and information such as services available for particular addresses or to determine what amplifier, node, or power supply is feeding specific addresses.

Billing and other business departments will use the intelligent network model for purging duplicate addresses, discovering addresses missing (but serviceable) from the billing system, managing accurate rate center, e911 boundary relationships, and facilitating accurate mailing by CASS-certifying addresses.

Work Faster with Fewer Errors in an Optimized Engineering Environment

OpenComms Designer provides you with an easy-to-use graphical user interface (GUI) for specifying equipment, drawing, and engineering standards used in the design and documentation of your fiber, coax, and hybrid fiber-coax networks, which includes a preconfigured library for quick startup.

RF/Coaxial Cable Designs

Designed for your coax networks, OpenComms Designer 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. It 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. You 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, you can power the plant. Powering is based on user-defined boundaries or power blocks that define the area to be powered. You have the option of changing the power count percentage when using power-passing taps.

FTTP, HFC, and Other Fiber Architecture Designs

Using OpenComms Designer to configure your equipment standards ensures consistency throughout projects. OpenComms Designer supports the multiplexing and de-multiplexing of wavelength for use in commercial fiber and HFC architectures. Fully supported by OpenComms Designer, this functionality is available in all multiplexing equipment. OpenComms Designer allows efficient fiber cable splicing automatically or manually, depending on the complexity of the network. From an easy-to-use GUI, you can select fibers to splice together, the type of splice to use, the position they will occupy in the enclosure, their status, tray/slot/holder location, and fiber entry port allocation for the incoming sheaths. Quickly find any device, locate an outage anywhere in the network, locate a path between two devices based on several criteria, or locate customers. There are several 'locate' utilities including the ability to locate particular devices, customers, slack loops, and the locate outage tool.

Powerful Reporting Functionality for Designers

OpenComms Designer includes powerful reporting functionality with bills of materials (BOM) for all equipment and cable, BOM by build state, address list by node service area, and more.

Reports are displayed on the screen and may be output as text files for printing or for importing to other file formats. Various reports are available, including a resource report that details the equipment specifications of the spec file(s), a device information report listing the properties of the routed equipment, a device BOM report that lists the materials and costs of equipment used in a definable area or in an entire project, a sheath BOM report of the active work area or an entire project, and a reel BOM which shows assigned sheaths to reels in the active work area or an entire project.

OpenComms Designer provides the capability to route and manage conduit within a duct system and to perform capacity analysis. Integrated OpenCities Map print preparation capabilities can be used to facilitate construction plans. Print preparation functionality is delivered with a standard schema and sample border templates and other items. This facilitates quick startup, but print preparation is also fully customizable to meet the user's organizational standards. OpenComms Designer allows you to publish PDFs and iModels to Bentley CONNECTservices.

With OpenComms Designer, keep up with demand for new services and network performance with faster designs, reviews, and approvals.



Enhance Design and Documentation of Inside Plant Networks

OpenComms Designer enables you to define, configure, and place equipment in racks and floor plans that visually depict the precise layout of the facility to ensure consistency and data integrity throughout your projects.

Administrators can define a library of frames (racks), cards, and equipment used in the design process along with their associated properties. Equipment in racks and slots can be pre-configured within the equipment. Rules defining valid card-to-slot relationships and jumper cable-to-port type validation can also be defined. Racks and equipment are displayed on floor plans created with MicroStation or imported from other sources. These can be as simple as the building footprint, or a detailed architectural drawing.

With Oracle Spatial and OpenComms Designer, all your intelligent geometry is persisted in the database. OpenComms Designer employs Oracle Workspace Manager, giving you the ability to create and manage versions in an optimistic or pessimistic mode.

Pre-Configured Templates Help Reduce Design Time

You can use pre-configured templates to place a rack or frame on a floor plan. Elevation views are automatically created. Equipment can be moved within the rack by dragging and dropping. Connections are established by selecting the equipment and the associated ports, which allows you to assign a jumper cable length, type, and color. OpenComms Designer allows you to assign this jumper a "service"

name, which is then automatically rippled throughout the entire facility. Schematic representations can be generated automatically by service name. When connecting to fiber outside the building, you can view optical system names or sheaths, and select the fiber and port to connect or disconnect. You can easily copy connected racks or groups of racks. All connections are automatically maintained, which significantly reduces the time to document multiple facilities with similar equipment.

Ability to Generate Advanced Reports Saves Time

OpenComms Designer can generate several time-saving reports. The Equipment Specifications Report provides details of equipment used in the design. The Bill of Materials Report includes all racks, equipment, and associated costs. The Connection Report displays the port level connections of the selected equipment. Wire Run and Circuit Trace Reports and logical schematic drawings are automatically created.

Design in Digital Context

A comprehensive solution, OpenComms Designer enables you to consume multiple data types to effectively understand existing conditions of their networks. You can rapidly capture the "as-built" condition using ContextCapture, Bentley's reality modeling solution, to quickly produce 3D reality models from photographs and/or point clouds. With OpenComms Designer, you can incorporate reality meshes, point clouds, thematic mapping, imagery, and other geocoordinate data sources to provide continuous real-world digital context under one GIS system.

OpenComms Designer At-A-Glance

Intuitive Interface

- Adheres fully to Windows application standards
- Allows users to customize the way information is displayed as well as the toolbars, shortcuts, and other navigational tools
- Access to Bentley CONNECTservices
- CAD Workprint Capabilities

Supported Architectures

- Coax
- FTTx
- HFC
- FITL
- LAN/WAN
- Metropolitan
- Long haul
- SONET/ATM
- Many others

Work Management

Workload Management

- Provides a powerful and configurable data organizer that can be tailored to the user's preferences to provide intuitive lists for pending, past-due, and in-progress work

- Tracks the timelines of each project and shows which ones need attention
- Calculates the duration of each project and stores notes about project details

Integrated Work Management

- Manages work requests and designs in either a stand-alone mode or in combination with users' WMS
- Keeps track of the lifecycle status and scheduled due date of every job as it progresses from initiation through completion
- Treats work requests and designs as discrete data sets
- Provides access to archived drawings from the work request
- Helps users find information faster and organize it in different ways for viewing — by due date, project type, work request name, customer name, and more

Strand & Duct Integrated Strand Mapping

- Configurable specifications
- Structure creation
- Addresses automatically associated to structures
- Address information from billing systems can be utilized
- Duct Management
- Route and manage conduit and bundles
- Assign ownership

System Requirements

Processor

Intel or AMD processor
3.0 GHz or greater

Operating System

Bentley OpenUtilities™ V8i (SELECTseries 4) supports Windows 7, Windows 8, and Windows 8.1. (32-bit and 64-bit versions.)

Memory

2 GB of RAM minimum,
4 GB or more recommended

Disk Space

2 GB free disk space minimum

Graphics Card

DirectX 9.0c supported

Find out about Bentley at: www.bentley.com

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OpenComms Designer At-A-Glance (continued)

- Create elevation views
- View cross sections
- View wall diagram reports
- Manage duct capacity
- Report on leased facilities

Fiber

Analysis and Engineering Calculations

- End-to-end tracing at sheath, fiber, and circuit level
- Engineering calculations can be performed by area or the entire network
- Fiber loss budget analysis
- Optical coupler optimization
- Rippling/throwing of optical systems or circuits
- Locating potential fiber paths
- Specification file may be saved for re-use
- Splice, cable, and connector loss definitions
- Laser loss budget
- Engineering calculations BOM

Design and Documentation

- Color-coded cross sections based on buffer tube or ribbon fiber
- Equipment model validation rules
- Circuit allocation and bandwidth management on an individual fiber basis
- Full support of WDM devices and network models
- Customizable standard fiber reports
- Engineering workprints

Operations Functions

- Locate outage, device, customer, slack, node, and path
- Use FTtx customer activation, deactivation, and work order generation tools

Coax

Analysis and Engineering Calculations

- Interactive 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
- Supports fixed and variable pads and equalizers

Design and Documentation

- Interactive calculation of RF signal levels for up to eight frequencies in any combination of forward and return
- Automatic property-based annotation of amplifiers, tap levels, end-of-line levels
- Equipment shown in different build states during design lifecycle
- Jumper settings for powering amplifier legs in any combination
- Support for node segmentation

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/insertion 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

Analysis and Reporting

- Signal levels on any device and addresses fed from taps
- Produce bills of material for all RF equipment and cable
- Access the address list by node service area
- Report minimum forward and return amplifier inputs
- Verify consistency between strand/duct footages and cable lengths

Inside Plant

Setup and Configuration

- Easy-to-use GUI for equipment specification
- Preconfigured equipment library
- User-customizable attributes
- Detailed database and graphical properties defined
- Configure frames, equipment, slots, and port assemblies
- Copy frame/rack assemblies for easy replication of equipment
- Validation rules
 - » Properties
 - » Card in proper equipment
 - » Card in proper slot
 - » Equipment placement in racks
 - » Air spaces between equipment
 - » Port mapping through equipment
 - » Connection rules

Design and Layout

- Generate rack elevations (front and back views) automatically
- Simple drag and drop equipment placement
- Depict equipment state and port connectivity graphically by color
- Seamless integration of connections inside building or to outside plant
- Generate connections report
- Maintain connections while copying or moving equipment and frames

Engineering Documentation

- Wire run reports
- Circuit trace reports
- Automatically generated schematics
- Rack elevation views (front and back)
- Connectivity reports by service
- Equipment properties such as noise level, power consumption, and HVAC requirements
- Circuit Layout Record
- Equipment report
- Consolidated bill of materials containing fiber equipment and cable