#DesigningTomorrowTogether

CYIENT

AGILE AND COST-EFFECTIVE

Your Guide to MDU Fibre Design and Rollout

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Introduction

Today's world runs on the Internet. Reliable, high-speed Internet and communication services are the most fundamental of necessities to power everyday transactions across devices, applications, and networks. The explosion of connected devices and the burgeoning need for seamless digital experiences, Multi-Dwelling Units (MDUs) present a set of unique challenges and opportunities for service providers. With urban density gradually growing over the years, efficient, scalable, and cost-effective MDU design and installation becomes paramount to delivering extraordinary digital experiences powered by the Internet.

Cyient, a global leader in engineering, manufacturing, and digital technology solutions, stands at the forefront of this challenge. With a proven track record in telecommunications infrastructure and a deep understanding of the complexities involved in MDU projects, Cyient is uniquely positioned to deliver end-to-end solutions that meet the highest standards of quality, reliability, and customer satisfaction.

In this POV, we outline why Cyient is the ideal partner for MDU design and installation, highlighting our expertise, capabilities, and the strategic advantages we offer to our clients.



Key Challenges and Mitigations in MDU Optical Network Design and Installation

Our expertise puts us at the forefront of fully understanding potential challenges that can arise. We help prepare CSPs and MDUs to stay disruption-proof, identify potential challenges, and enable a mitigation strategy.

Access and Permission:



Through our proven survey and construction LAAN process that notifies landowners of SAT team access, ensuring non-intrusive building access for surveying and installation through clear communication with property managers and flexible scheduling.

Equipment Placement:

Identifying optimal locations for network equipment, balancing accessibility, security, and aesthetics.



Infrastructure Limitations:

Overcoming space and wiring constraints with thorough site surveys and customized, compact installation plans.

Regulatory Compliance:

Ensuring adherence to all regulations by staying updated and obtaining necessary permits in advance.

Objection Resolution and Management:



Managing landowner objections and minimizing resident disruptions by offering flexible installation times, maintaining clear communication, multiple consultation attempts, and documenting interactions to ensure timely and compliant resolutions.



Cabling and Pathways:

Developing efficient cable routing plans that comply with building codes and use innovative management solutions.



Cost Considerations:

Balancing installation costs with benefits through detailed budgeting and exploring cost-saving measures.



Future-Proofing:

Designing scalable, flexible networks that can adapt to future growth and technological changes.

Delivering Value Through Agile, Scalable and Efficient MDU Design and Rollout

Comprehensive End-to-End Solutions

Cyient's approach to MDU design and installation is all-encompassing, covering aspects of the process from initial site assessment to final deployment. Our expertise spans the entire lifecycle of MDU projects, bringing together an understanding of connecting MDUs to the FTTP network, ensuring that all components are seamlessly integrated and optimized for performance.

Cyient takes into account key considerations and objectives during the MDU design and installation phase.



Cyient prioritizes user experience with intuitive designs, reliable connectivity, and responsive support, enhancing resident satisfaction.

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Our Services Tailored to MDU Design and Installation

Cyient's innovative MDU optical fibre design uses automated tools for efficient, precise construction packs. Our MDU design centre is purpose-built to address the current and future challenges of telecom operators, delivering fast, competitive, and accurate designs for both existing and expanding networks.

The illustration below showcases our end-to-end design and installation process:



Cyient's engineering expertise is a key differentiator in the MDU design and installation space. We bring decades of experience in telecommunications and infrastructure projects, backed by a team of highly skilled engineers who are adept at solving complex challenges.



Source: https://www.broadbandsoho.com/FTTx_Tutorial.htm



 MDU Architecture: Tailored network layouts and equipment distribution for specific building needs.

• Last-Mile Connectivity:

High-speed network design for individual units with optimal termination points.

Cabling Techniques:

Efficient routing of cables to minimize signal loss and maximize performance.

- Equipment Placement: Strategic location of network elements considering accessibility, security, and space.
- Interior Design and Modeling: Optimal infrastructure layout in common areas and utility spaces.
- Splitter & Distribution: Efficient optical splitter configurations for signal distribution.
- Material Estimation: Accurate identification and recording of required materials.
- Link Budget Analysis: Ensuring signal integrity through careful calculation of signal loss and attenuation.

Schematic Diagrams:

Visual representations of network design for installation and maintenance.



Components of MDU Optical Network Installation

- **Fibre Optic Cabling:** Deploying fibre cables from the local exchange to individual units within the MDU.
- Fibre Termination Points: Installing ONTs or FTBs to connect fibre cables to the internal network.
- Internal Distribution Network: Routing fibre cables to each unit with distribution panels, trays, or conduits.
- Subscriber Connection Points: Setting up ONTs or fibre sockets in each unit for resident access.
- Equipment Installation: Installing routers, switches, and Wi-Fi access points for connectivity.
- **Testing and Commissioning:** Verifying network functionality, signal strength, and performance.
- **Documentation and Labeling:** Creating as-built drawings, network documentation, and labeling for maintenance.
- **Compliance and Regulations:** Ensuring installations meet all legal, safety, and industry standards.

Why Us?

Simplifying MDU Design and Installation with Automation

Cyient has pioneered a suite of advanced automation tools that are built to improve the quality, productivity, and cost-efficiency of the design process, setting a new benchmark for excellence in MDU network design. Our tools and accelerators include:

- CyPlaNet
- Properties Mapping
- MDU Living Units Classification
- Feeder Cable Design
- · Identification of feasible raiser/hallway paths
- Multi-floor/Multi-flat Cable Design
- Cable/Duct/Trench Lengths & Number Calculation
- Quality Check/Assurance
- Equipment Placement and Termination
- Design and Construction Annotation
- Various Design and Construction report generation
 - BoM/BoQ
 - Splice Sheets
 - Schematics
 - Viewports / Layouts
 - Detailed work instruction drawings / WO
 - Link budget analysis



CyPlaNet: CyPlaNet is a Cyient Accelerator that showcases our strategic methodology for rolling out scalable and efficient Fibre networks. It facilitates the streamlining of Fibre optic network design, documentation, and management processes. It acts as a crucial link between conventional and modern methods during the development of High-Level Design (HLD), Low-Level Design (LLD), Permit plan, and Traffic Control Plan (TCP).

It optimizes:

- Creating network layouts
- Calculating Fibre optic cable lengths
- Managing splice points and connections
- Generating documentation for construction and maintenance

Expertise in copper reclamation:

In the case where MDUs are already connected with a copper (twisted pair or coax) network to provide telephone/ broadband/both services, upgrading them with fibre network may pose space constraints to install new infrastructure. CSPs should utilise this opportunity to reclaim the copper used in the network in one go while deploying the fibre network.

Cyient's copper reclamation services focus on efficiently removing outdated copper networks, helping companies save costs while supporting sustainability efforts. By using advanced technologies like AI and RPA, Cyient offers a full range of solutions that optimize resource recovery and reduce downtime. With a track record of delivering a 40% return on investment and saving \$1 million for every 350,000 feet of copper reclaimed, Cyient helps telecom providers improve network performance and streamline operations. A leading telecommunicat ions and technology company in Australia **Services Provided:** MDU Survey, Design, and As-Built Services for FTTB, FTTP, and HFC Networks

Volumes Delivered:

- 3,000 MDU designs for the FTTB network
- 500 MDU designs for the FTTP network
- 7,500 MDU designs for the HFC network

Cyient successfully partnered with the customer to deliver comprehensive MDU design solutions across multiple network types, ensuring seamless integration and high-quality results for one of Australia's leading telecom providers.

A leading provider of integrated services in Australia and New Zealand **Services Provided:** MDU Design and As-Built Update Services for FTTB, FTTP, and HFC Networks

Volumes Delivered:

- 5,403 MDU designs for the FTTB network, covering 53,766 end-user premises
- 6,924 FTTP MDU as-built updates in SpatialNET, covering ~63,282 end-user premises
- 7,659 HFC MIMA as-built updates in AutoCAD, covering ~70,000 end-user premises

Cyient delivered extensive MDU design and as-built updates for the customer, significantly enhancing network accuracy and efficiency across thousands of end-user premises in Australia.

An Australian telecom infrastructure delivery partner **Services Provided:** MDU Design and As-Built Update Services for FTTP and HFC Networks

Volumes Delivered:

- 2,706 FTTP MDU designs, covering 16,887 end-user premises
- 1,933 FTTP MDU as-built updates in SpatialNET, covering 11,351 end-user premises
- 1,005 HFC MDU designs, covering 11,764 end-user premises

Cyient provided comprehensive MDU design and as-built update services for the customer, enhancing network precision and coverage for a significant number of end-user premises across Australia.

One of New Zealand's leading suppliers of broadband design, cabling and construction **Services Provided:** Planning, Design, and As-Built Updates for Fibre Network

Volumes Delivered:

- 1,700 MDU designs, covering 17,486 end-user premises
- 2,702 MDU as-built updates in Netmap, covering 47,962 end-user premises

Cyient expertly managed the planning and design, as well as the as-built updates for the customer, delivering extensive fibre network solutions and ensuring comprehensive coverage for end-user premises across Australia.

A Provider of Cyber Security, Firewall & Ransomware Protection Services Provided: MDU Design Services for FTTP Network

Volumes Delivered:

• 30,000 end-user premises designed within one month

Cyient rapidly delivered comprehensive MDU design services for the customer, efficiently covering 30,000 end-user premises in just one month, demonstrating exceptional speed and precision in FTTP network design.

A leading Telecom Operator of Netherlands **Services Provided:** FTTH Access Network and Fibre Cable Design for High-Rise Buildings

Volumes Delivered:

- Designed FTTH access for 300,000 homes across 22 cities in Netherlands
- Completed in record time of one year

Cyient delivered a comprehensive FTTH access network and high-rise fibre cable design for the customer, achieving coverage for 300,000 homes in 22 cities within a remarkable one-year timeframe.



Your Partner of Choice

In the competitive world of telecommunications, selecting the right partner for scalable and efficient MDU design and installation can take you the miles it needs to achieve success. Cyient's comprehensive end-to-end solutions, advanced engineering capabilities, proven track record, and strategic advantages make us the ideal choice for MDU projects of any size and complexity. Our commitment to quality, innovation, and customer experience ensures that we build a stable, enduring, and long-lasting relationship of delivering innovation together.

Walk the mile with us and let us steer your MDU network design and installation project to new heights.

For more information on our Smart FTTx offerings, please visit <u>here</u>.

About the Author



Vijay is a seasoned Telecom and Utilities expert with over 23 years of experience, specializing in data transformation, fibre network design, MDU (Multi-Dwelling Unit) design, and as-built engineering using cuttingedge FTTx technologies. His versatile roles—spanning pre-sales, bid management, and the delivery of complex telecom projects-have positioned him as a trusted leader in driving success for Tier 1 and Tier 2 customers globally. Vijay's in-depth knowledge of fibre design and deployment, particularly in MDU environments, guarantees seamless execution, superior quality, and optimal network performance. His contributions continue to fuel Cyient's innovation and growth in the telecom sector.

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About Cyient

Cyient (Estd: 1991, NSE: CYIENT) partners with over 300 customers, including 40% of the top 100 global innovators of 2023, to deliver intelligent engineering and technology solutions for creating a digital, autonomous, and sustainable future. As a company, Cyient is committed to designing a culturally inclusive, socially responsible, and environmentally sustainable Tomorrow Together with our stakeholders.

For more information, please visit www.cyient.com



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