

Servicing Guidelines for existing Multi-Dwelling Units (MDU)

Last revised 03162015

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1. The SaskTel Fibre Optic Network

Migration from the new Fibre Optic Network will take several years to complete. For new builds, arrange to install one category 5e cable and one bend insensitive fibre from the building entry/electrical room to each multi-dwelling suite Optical Network Terminal (ONT). The ONT is described on [page 8](#).

If you have questions regarding the type of wiring or design to be used in new fiber builds, contact SaskTel Building Industry Consulting Service (BICS) by email at Communication.DistributionDesign@sasktel.com.

Over the past 100 years, SaskTel has provided its residential and business customers with telecommunication services using primarily copper based telephone wire/cable systems to carry the signals to the homes and businesses.

Although this is still very effective and will continue to be utilized for some time to come, as with most other infrastructure systems, it requires continued maintenance and rebuilding. With the increasing price of copper as a non-renewable mineral and the ever increasing costs of fuel and materials to provide maintenance, infrastructure is a common issue throughout the telecommunications industry.

SaskTel was a pioneer in the field of fibre optics back in the 1980's; it again looks at fibre as a solution to this infrastructure question. For the past 20 years, partners within telecommunications have been working towards a viable solution using fibre optics to replace the expensive copper transport systems. **Gigabit Passive Optical Network (GPON)** fibre systems represent the result of that 20 year development path.

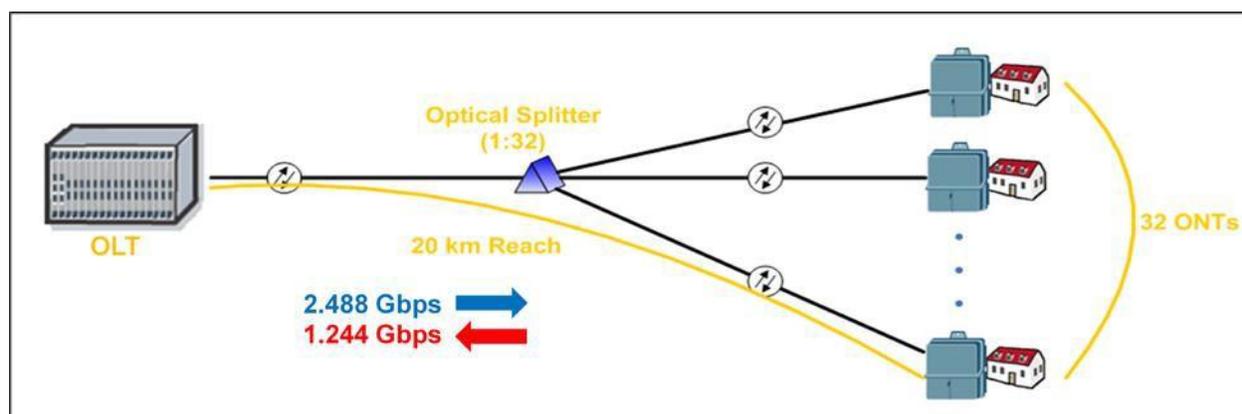
The SaskTel Fibre Optic Network will be GPON - based. A PON is a fibre-based transmission network containing no active electronics, providing gigabit speeds that provide individual services for up to 32 customers, per fibre.

Passive components reduce the need for power consumption, greatly reducing the cost of running the network. Also, a single fibre run from one of our central offices can feed up to 32 homes or living units with the use of a GPON 1/32 splitter.

Using splitters reduces the overall cost of deployment by reducing the need for very large cables and construction costs that were incurred with copper builds of the past.

The physical reach of GPON from OLT (located at SaskTel's office) to ONT (placed in the home) is 20 km maximum and practically about 14 km, which will help SaskTel reach out to service the expanding nature of land development and Saskatchewan's economy without the ongoing burden of ever increasing infrastructure costs.

GPON Network



1.1 Components of a SaskTel MDU Distribution System

Distributing SaskTel Fibre Optic Network throughout an MDU property requires several stages of equipment between the SaskTel facilities and each type and size of residential building.

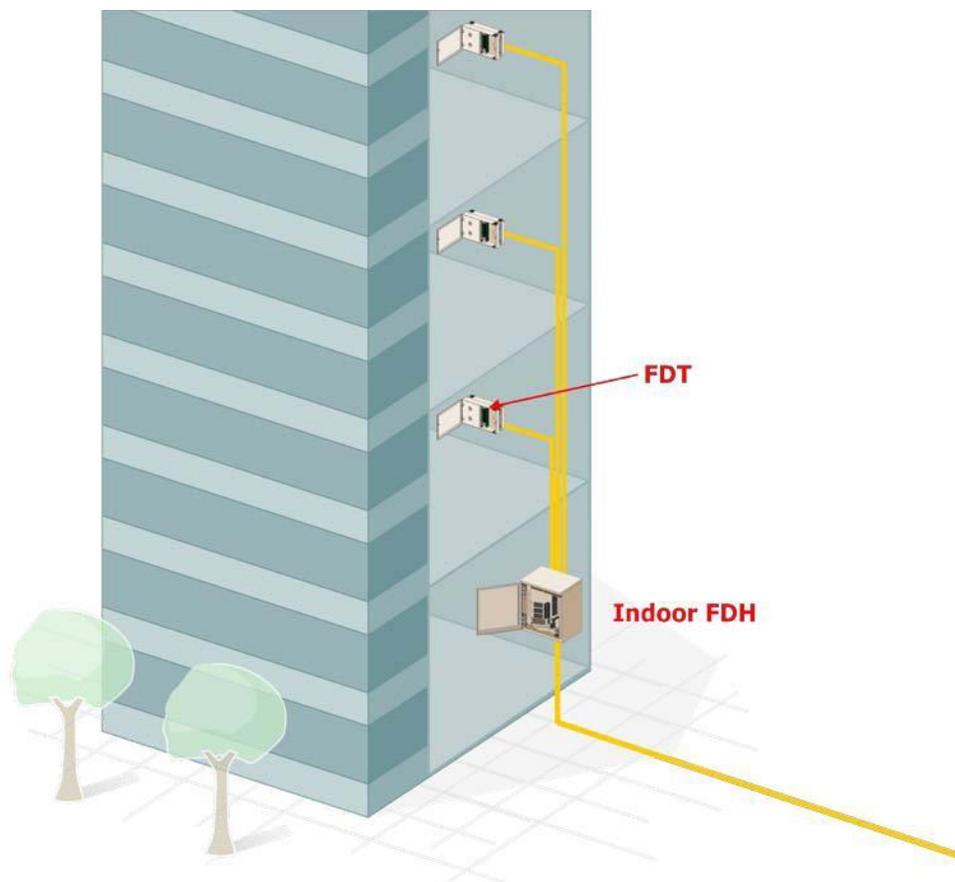
- Fibre Distribution Hubs (FDH) required for larger buildings with approximately 45 units or more.
- Fibre Splitter Box (FSB) required for buildings with typically 24 to 44 units.
- Fibre Distribution Terminals (FDT) required for smaller buildings of less than 24 units.
Inside Fibre Cables
- Optical Network Terminal (ONT)
- Uninterruptable Power Supply (UPS)

1.2 Interior or Indoor Fibre Distribution Hub (buildings typically sized 45 units and larger)

In a large building, an Interior or Indoor Fibre Distribution Hub (iFDH) would be installed into the property and have direct fed fibre and optical fibre splitter device.

An interior or indoor fibre distribution hub is an (FDH) cabinet where the SaskTel fibre cabling is connected to the property and is located in the main telephone room of larger multi-dwelling unit buildings (MDUs), or clusters of multiple MDU buildings.

For smaller MDUs, a smaller fibre splitter box (**FSB – buildings typically 24-44 units**) would be adequate to provide service.



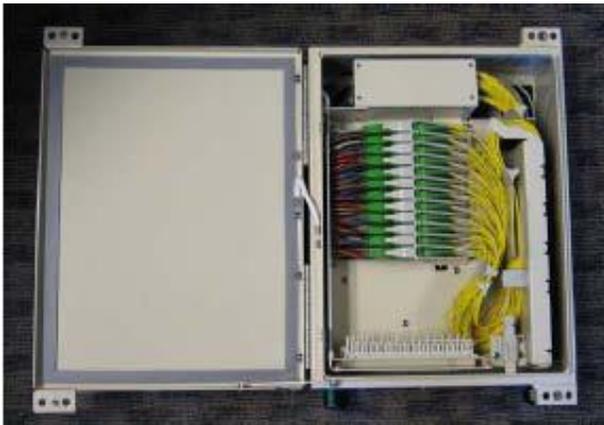
1.2.1 Spaces required for Fibre Entrance Equipment

SaskTel requires spaces, suitable for the installation and maintenance of the Fibre Optic Network equipment, that are safe, secure and easily accessible. For the installation of connection equipment, (FDH, FDT, and FSB), the following points should be considered:

- ease of access by SaskTel,
- secure from damage or tampering,
- having adequate lighting,
- dry and free from moisture damage,
- clean and free of dust or vaporous chemicals, and
- will not cause an obstruction hazard.

1.2.2 FDH

Indoor FDH's come in different sizes to supply services to different sized buildings.



72 unit iFDH - 19”h x 13” w x 7”d



288 unit iFDH – 33”h x 24”w x 17” d

Choose a space with a backboard 4’W x 8’H x ¾” D, though there may be some consideration given according to the size of building and units being installed.

Larger units can be wall or floor mounted and requires a 12” spacing around the cabinet for access. The Canadian Electrical Code requires 30” clearance directly in front of the panel. Though the device itself may be deemed small for the space, working clearance for easy installation, maintenance and repair is necessary.

Consult SaskTel BICS by email at Communication.DistributionDesign@sasktel.com for more information.

1.2.3 FDT or FSB

Multiple different versions exist to accommodate the different building requirements found throughout different MDU's. The following is a sampling of interior and exterior devices to provide an idea as to size and space requirements.

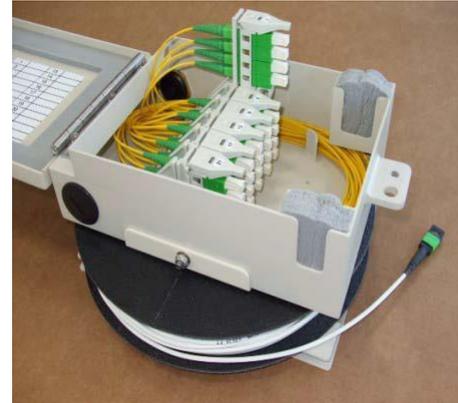
FDT



6-24 unit – 15”h x 8”w x 6”d



6-24 unit – 17”h x 16”w x 6”d



12- 24 unit – 6”h x 9”w x 4”d

iFSB's

32 unit – 8”h x 13”w x 5”d



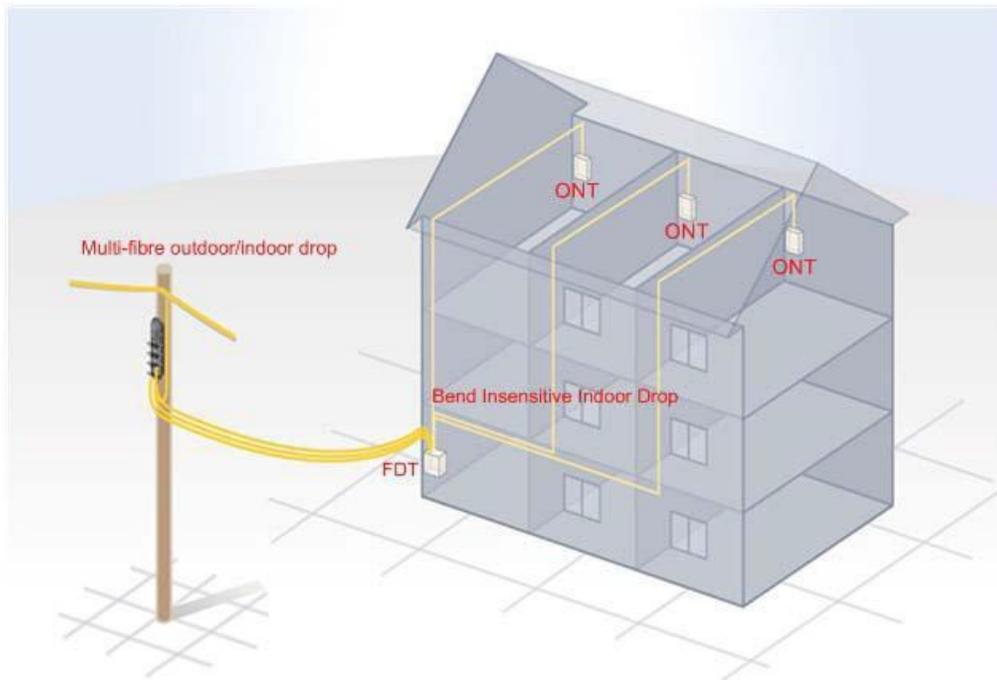
Choose a space with a backboard 2'W x 2'H x ¾"D in accordance with local, provincial, and federal codes. These devices can only be mounted and are designed to be mounted at a standing work height.

The recommended spacing is 6" around the FDT for access and 30" front access. Contact SaskTel BICS by email at Communication.DistributionDesign@sasktel.com for more information.

1.3 Exterior Fibre Distribution Terminal (buildings typically sized less than 24 units)

Fibre Distribution Terminals (FDT) are used to connect the fibres feeding the site from the neighborhood FDH to individual suite ONT's. FDTs are smaller cabinets, and are usually located in a common area at each MDU property.

FDT's are important pieces of equipment that service multiple customers and therefore need to be secure and accessible by SaskTel at all times for installation and repair.



1.4 Fibre Optic Equipment required inside the end Living Unit

1.4.1 Optical Network Terminal

The Optical Network Terminal (ONT) is the device where the fibre signals are converted to electrical signals that can feed telephones, television sets, and computers. The ONT is located in the living unit. In Single-Family Units (SFU's), there is a separate ONT for each suite/home.

There are two options in which the ONT can be placed within the Living Unit: (See [section 4](#)).

1. The preferred option is the placement of the ONT and associated components in a recessed wall cabinet (preinstalled Multimedia cabinet) at the common wiring location within the residence. The use of a recommended cabinet, allows for the neat and proper installation of all the required fibre devices and wiring into a location that is unobtrusive and secure.
2. The other option is to surface mount the ONT and associated components at the common wiring location within the home

MDUs use the same ONT as used in single family detached units. It is designed to interconnect with conventional Structured (Cat5e) Wiring in each Unit. The multimedia cabinet does require **local electrical power** and a ground connection (i.e. grounded power receptacle) in each unit.

The ONT is to be placed in a heated environment **where there is no risk of the ambient air temperature falling below 0° (zero) Celsius**. A garage is NOT a suitable location. The preferred location is in at the common wiring location be it in the HVAC room, utility closet, or laundry room etc.



1.4.2 Uninterruptable Power Supply

The uninterruptable power supply (UPS) is an electrical apparatus that provides emergency power, via a backup battery, to the ONT when the power fails. This is important to power the ONT - enabling telephone service in power blackout situations.

The UPS contains a sealed maintenance-free lead-acid battery that has a life expectancy of about 5-8 years. The battery is 7.2 Ahr which translated means approximately 8hrs of phone service in the event of an extended power failure.

It also has a 20% battery remaining emergency call feature that during an outage will power down to conserve the last 20% of the battery. This allows the customer to make emergency calls past the 8hr period. The UPS also has an audible alert to warn of bad battery or battery replacement.



1.4.3 HomeNet Gateway Device and Network Switch

Customers that have SaskTel maxTV and Internet services will require network equipment to receive those services. The HomeNet gateway enables the creation of a wired or wireless home N-network. With HomeNet, you can:

- Network the computers in your home or small office.
- Simultaneously access the Internet on multiple computers, and share documents and printers from any of your networked computers.
- Protect and manage online experience by: restricting access by day of week and time of day and control access to different sites and services.
- Keep your computers secure with automatic firewall updates for all the devices connected to your network.



2. SaskTel Responsibilities for New Construction

SaskTel will provide, install, terminate and maintain all SaskTel property up to and including the building entry. This would include, but not be exclusive to; the Fibre Entrance/Distribution Cables; FDHs; FDTs; and associated hardware.

NEW - SaskTel will now work with the developer/building management to install, terminate and maintain all SaskTel fibre optic property inside the buildings. This would include, but not be exclusive to; inside fibre cables and fibre riser cabling; terminations; ONTs; UPSs; and associated hardware.

In the past, the **developer/complex owner** was solely responsible for the cabling between the main telephone entry room and each end unit.

SaskTel is has now taken the responsibility and ownership for this portion of the telecommunication cabling in regards to “fibre optics” feeding SaskTel FTTP equipment. Therefore all developers should contact SaskTel to discuss the options available for their individual scenarios.

SaskTel will request, from the developer/manager/owner, permission to install communication equipment and facilities on the property.

Please refer to the [special note](#) at the beginning of Section 1 on page 4.

3. SaskTel/Property Owner Responsibilities for Existing Buildings

These guidelines are generic. The type, quantities, and location of network components will vary based on the layout of the MDU complex. All components will be placed in locations mutually agreed upon by SaskTel and the MDU owner/developer.

The purpose of these guidelines is to assist owners and builders by informing them of the considerations of:

- provisioning interior and exterior pathways and entries,
- providing adequate spaces for the installation of equipment, and
- the installation of types of fibre optic cabling inside the premise.

Please refer to the [special note](#) at the beginning of Section 1 on page 4.

3.2. Pathways/Conduit throughout the MDU

“Pathway Creation” in the typical form of cabling routes and materials is a negotiated responsibility between of SaskTel the building owner. The use of varying methods of installations will be a mutually agreed upon decision.

Fibre “pathways”, conduits or cables are required between all telephone rooms where SaskTel Fibre Optic Network equipment will be located and the telephone rooms, either main or secondary, and to the multimedia panel in the individual suite.

3.2.1 Different Options available for installation into an Existing MDU

Multi-Dwelling Units present many challenges to finding spaces and pathways acceptable to installation of FTTP equipment.

The SaskTel Building Inspection Service Technician will need to perform a survey inspection that will determine the best options to fit the building.

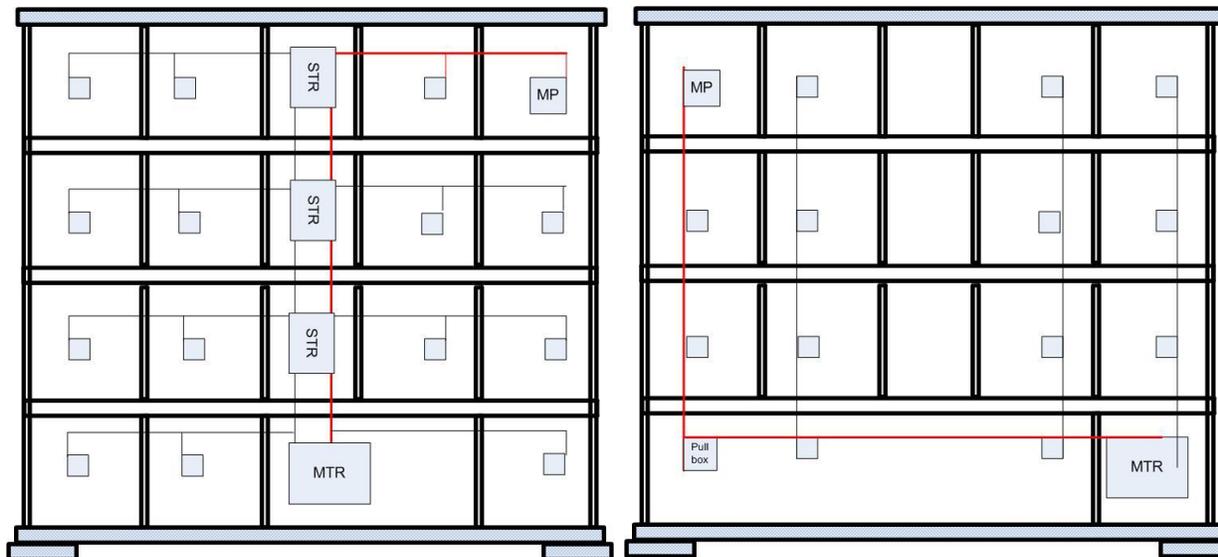
To help meet owner’s expectations, SaskTel has different equipment and installation methods available.

The below examples are simply demonstrations to illustrate the basic different wiring and design options that are available. There are technologies not included in the examples below, that are available or may become available as this project is implemented.

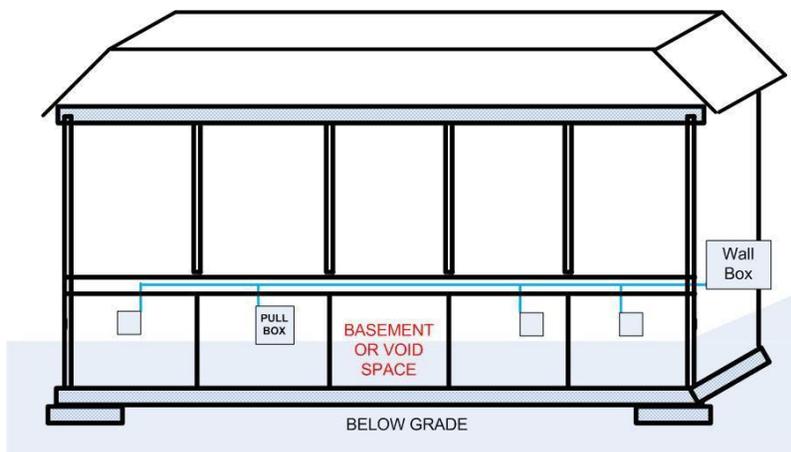
In any of the examples demonstrated below, regarding the structure styles and present equipment, **contact SaskTel Building Industry Consulting Service (BICS) by email at Communication.DistributionDesign@sasktel.com**.

Example 1: Reusing existing pathways or conduit

Vertical MDUs



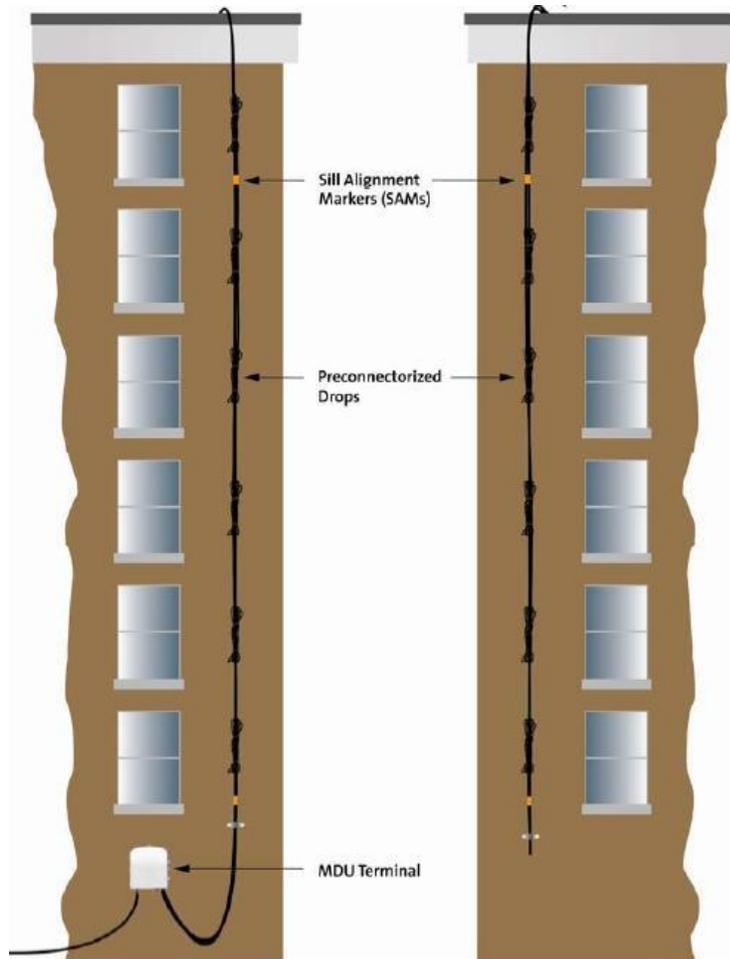
Horizontal MDUs 1 or 2 level



The reuse of existing pathway or conduit is the least intrusive scenario to the installation of new FTTP materials into existing MDU structures. New fibre-optic cable is fed into the existing telecommunication conduit or routed through existing telecommunication pathways. The ability to use existing conduit/pathways may not be possible due to location, age, size or type of existing conduit and copper cabling. This would need to be determined on site.

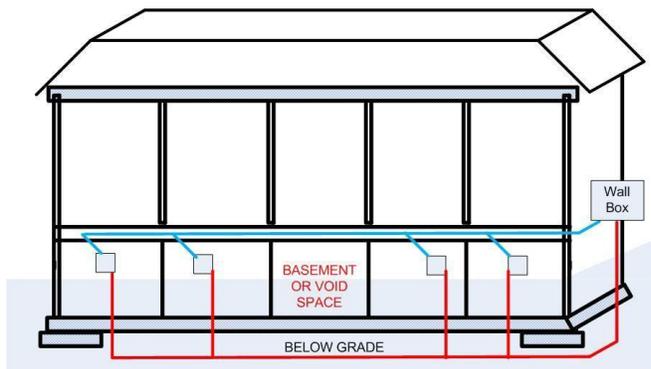
Example 2: Creation of new pathways - exterior

Vertical MDUs



Use of exterior grade fibre is available if there are no interior options available. This process entails the hanging of exterior grade fibre-optic bundles and accessories along the exterior of the building. Typically, the color of exterior grade cable is black but there are different aesthetic options if this method is chosen. The exterior cable can be covered with a coloured metal U-guard.

Horizontal MDUs



2 examples of installation options: exterior cables can be hung along the exterior in an acceptable method or buried around the foundation.

Example 3: Creation of new pathways - interior

3M One Pass Fibre Pathway

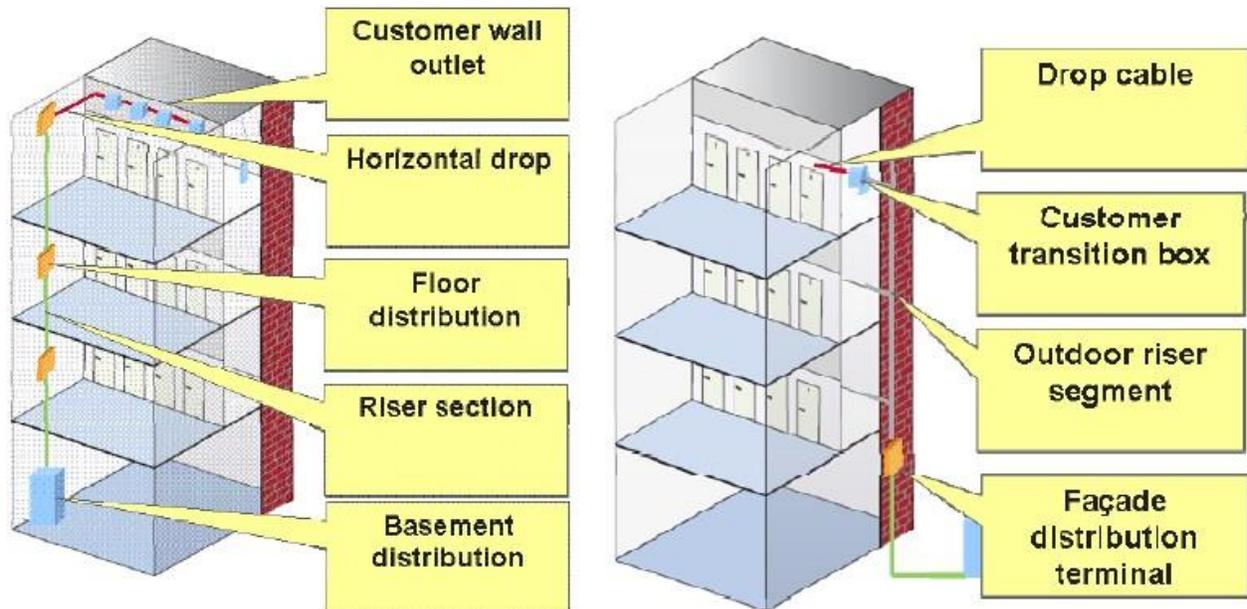
Using a combination of the adhesive technology for which its parent company is best known and its fibre optic cable expertise, 3M Communications' has developed the One Pass Fibre Pathway, a multi-cable drop solution that is almost as easy to install as a strip of adhesive tape. One Pass Fibre Pathway creates an aesthetically pleasing and paintable drop cable that can be mounted in apartment buildings, with curved walls, signs, mouldings and other potential obstructions. It is an aesthetically pleasing solution that is easy to install, which mean less intrusive to tenants: quiet, installable in hours and less disruptive than other techniques.





Example 4: Combination of pathway options and technologies - interior/exterior

Use of common riser conduit with use of 3M One Pass technologies



As is demonstrated by the above figure, the technologies can be used in various combinations in an attempt to meet the special requirements of each site. Single fibre risers can be run in the interior or the exterior in an inconspicuous manner. Then, once the floor is reached it can be housed in a distribution device (fdt, fip) and then transitioned to a different technology (such as 3M One Pass down the hallways) again to reach the individual living units.

3.2.2 Fire-stopping

It is imperative that, in addition to the material presented here, the owner consult local authorities and follow federal, provincial and local codes concerning fire stopping.

If there are any further questions or concerns about fire-stopping consult SaskTel BICS.

4. Living Unit Wiring

The living unit wiring should be done in a “star configuration” where the individual set runs from each telephone jack and TV location and collect at a “**common location**” within the suite. Daisy Chained style communication runs are unacceptable.

Common Location (distribution device): is the central location where all communication wiring is wired to and cross-connected to the network feed facility. The fibre facility feed runs to this common location and is then distributed through-out the residence via a distribution device.

All new residential wiring standards including the North American TIA-570-B recognize the increasing complexity of residential wiring. As such these standards call for higher grade wiring with larger outlet numbers and wire run counts inside the residence. This is consistent for coax, UTP (unshielded twisted pair) and optional fibre-optic cabling.

- Basic grades of residential cabling are RG-6 (tri-shield 100% braid) coax, 4 pair category 5 UTP (for both basic voice and data), and 900 micron tight buffered bend insensitive fibre encased within a standards approved jacket. **The industry standardized “minimum” count inside each communication outlet is 1 coax and 2 CAT 5e UTP per outlet.**
- These higher cable counts require a separate distribution panel space, at a “**common location**”: such as beside the electrical panel box. This panel can consist of a $\frac{3}{4}$ ” sheet of plywood to mount devices, or can be a dedicated “multimedia enclosure”.

In any instance the minimum working space of this panel is (24”w x 36”h) for plywood, and (14.35”w x 28”- 42”h) for a multimedia enclosure. These are the industry standardized sizes for distribution panels accommodating 9 to 16 terminated cables of any type (coax, UTP, fibre) and to account for any additional required communication equipment.

- In addition to the panel, a 15 A, 120 VAC nominal, non-switchable duplex electrical outlet shall be provided within 1.5 m (5 ft) of the panel. The height of the electrical outlet should be appropriate for the panel and any associated equipment being installed. Alternatively, the distribution panel can have its own outlet.

This is an industry requirement for all panels that will be providing more than basic telephone, satellite, or community basic cable. To name a few, these advanced residential communication services can be VoIP telephony, high-speed Internet, high definition television receivers and multi tuner HD personal video recorders, digital interactive video, Internet Protocol Television.

All these are readily available today in the Saskatchewan marketplace, from all telecommunication, cable and satellite companies.

Historically a 4 inch x 4 inch unit communication wire wall box has been the standard, though suites with an abnormally high number of outlets may require a larger box; however a multimedia panel is preferred.

Note: It is important to remember that the numbers of cables recommended are “minimum guidelines”.

The actual number cables and types needed for each individual communication outlet are determined by the “actual” number and type of devices each outlet will feed.

Telephones, computers, IPTV boxes, media server boxes, gaming systems, etc. each require a minimum of 1 run of CAT5e for each such device at that location.

Furthermore, satellite receivers, cable digital boxes, etc require a minimum of 1 run of RG6 for each such device.

SaskTel is working to provide the highest quality network for Saskatchewan.

Our goal is to implement the new network in the 9 largest communities first. As a neighbourhood is transitioned to the fibre optic network, the copper equipment will be removed, recovered, and recycled. Therefore as a home owner or developer it is important to plan the location and installation of the inside equipment to ensure the ease of future enhancements.

The devices that SaskTel is currently installing have the ability to provide up to 2.4 Gbps. However, the maximum SaskTel service offering is currently at 200 Mbps, which is faster than most end users require.

The common location will consist of all the required equipment to install a fibre voice, Internet and television service.

Therefore, it can require a large amount of space, for mounting the ONT and UPS, the Broadband Ethernet Gateway (Actiontec), potentially multiple Ethernet switches, plus all the wiring and terminations required.

This is a picture that has been given to homebuilders stating the minimum size requirements for the installation of a FTTP “common location”, and a picture from an actual customer residence following SaskTel recommended space guidelines.



4.1 Wiring the common locations with the HomeNet Gateway and Switches (only required for Max and High Speed)

There are 3 typical wiring configurations that SaskTel can use. They will not cover all situations but should provide assistance.

Each situation needs to be wired according to standards, (co-locating devices, use of coloured patch cabled), to assist with help desk support and customer return of equipment (switches and gateways).

4.1.2 Using an ONT/UPS surface mount



4.1.3 ONT/UPS mount with cover

This mount houses all the physical hardware required to run, phone, TV, and Internet, with the battery backup, all in one compact device.

The cover varies slightly in appearance from version to version. The unit is vented as the lasers and electronics can heat.



4.1.4 Mounting ONT/Equipment separately from the UPS

It is possible to mount the power supply in a location separate from the network equipment. A 20' cable to connect the power supply to the network equipment is available for this application.



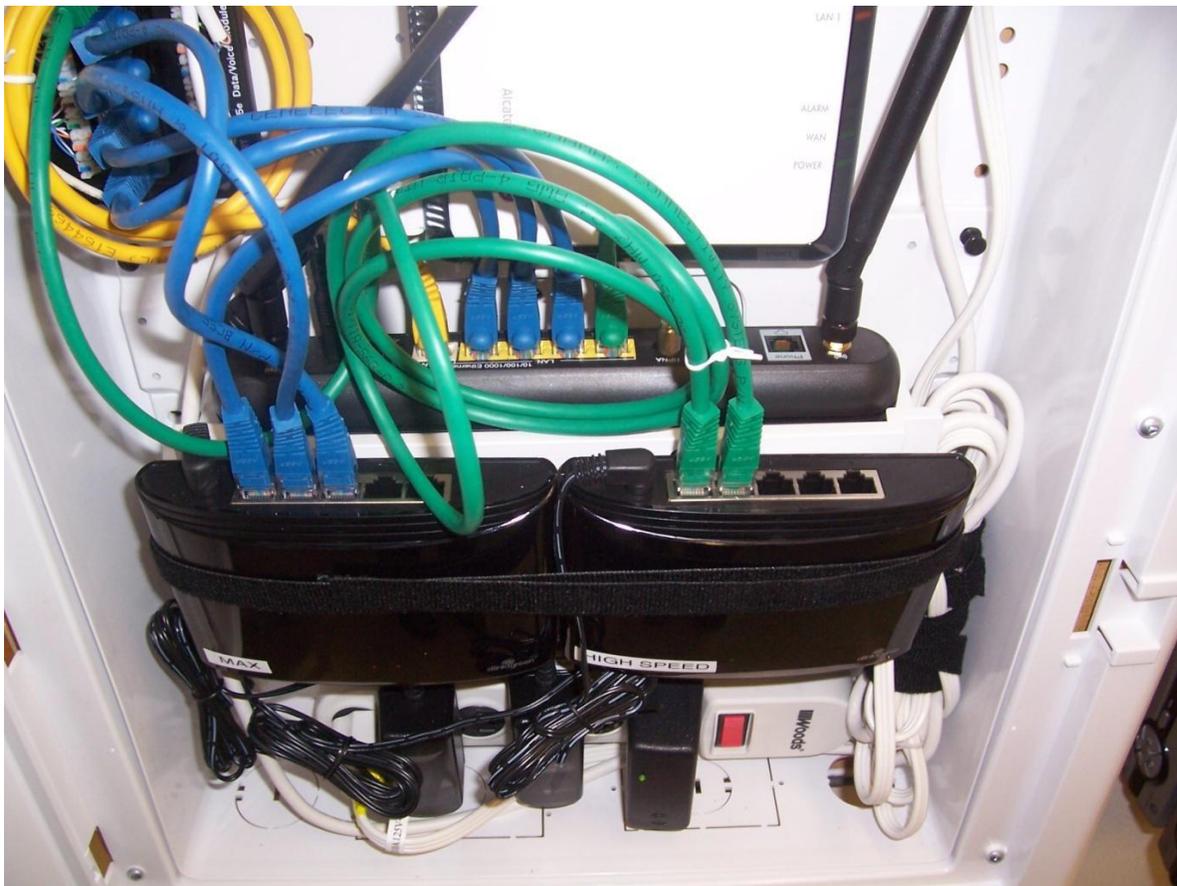
There are 4 ports on the gateway; if more ports are required additional switches can be added.

An important note is that High Speed Internet and MAX services cannot be mixed on a single switch. SaskTel is using coloured CAT 5e patch cords to identify the services connected to the Gateway and switches.

YELLOW – cables feed from the ONT into the Gateway.

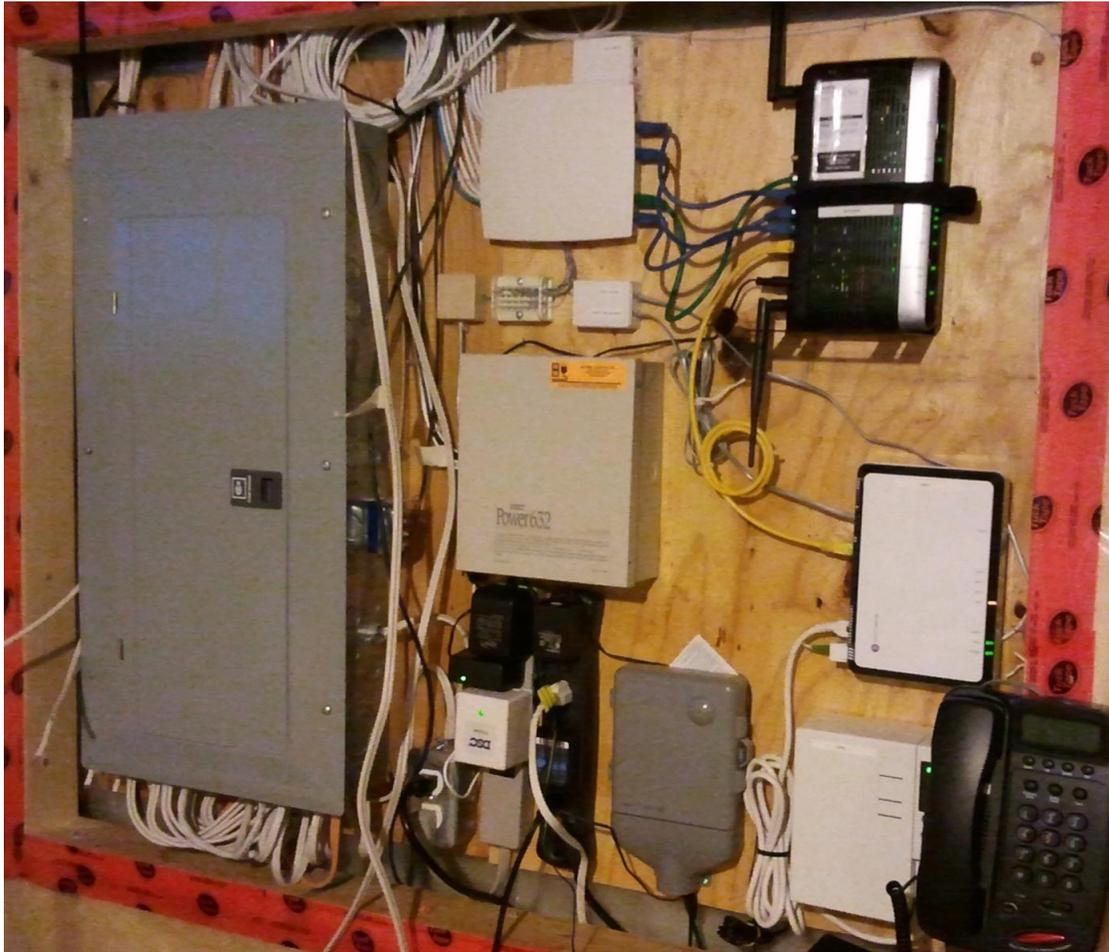
BLUE – cables will represent MAX services, grey can still be left at the set top box (STB) end.

GREEN – cable will represent High Speed services, grey can still be left at the PC end.



4.1.5 Flat mounting of the ONT and devices

Example of an actual new electrical entry meeting space requirements to wall mount SaskTel Fibre Optic Equipment and extra room to wall mount extra customer equipment (alarm systems, lawn watering timer) required to run the SaskTel Fibre Optic Network.



Here is a larger example of the previous mentioned picture. **Note that the customer should plan for space for “all” companies equipment not just SaskTel’s.**

Often other companies require space to mount their equipment as well, such as seen above: house alarms, lawn water timers, extra home multimedia equipment, and extra power bars for all the devices wiring.

4.1.6 Mounting devices in a multimedia cabinet

SaskTel is recommending equipment space be designed and built into all new homes, apartments and condos. Enough to fit all communication equipment (both SaskTel and other companies: cable/satellite, alarm companies, etc).

The installation of a multimedia box such as shown below, is designed to fit in the 16" joist spacing and allows equipment to be housed and hidden in an enclosure that is flush to the wall it is installed. A soft ABS or plywood backed multimedia box is needed to flush mount equipment into these devices.

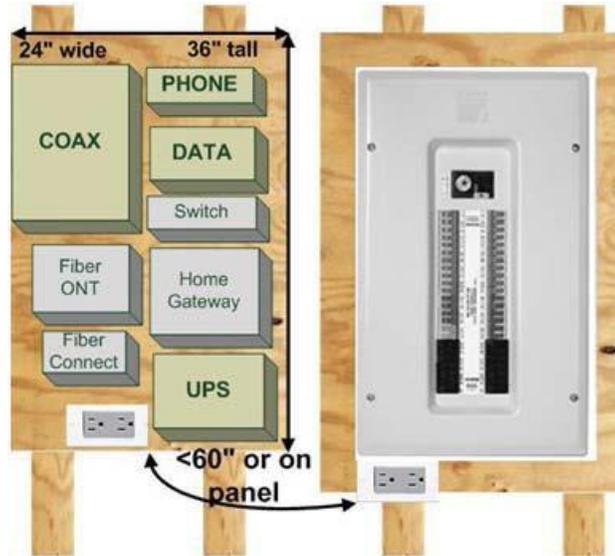


- ONT
- Gateway
- UPS
- Data terminations
- Voice termination
- Coax termination
- Fibre termination

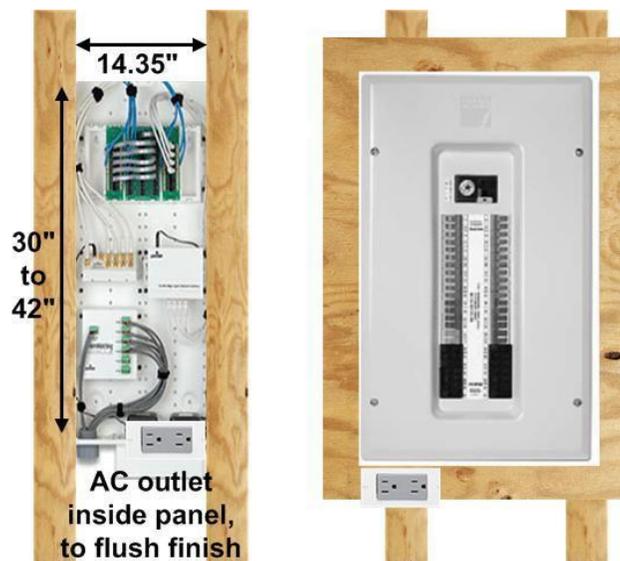


Diagrams of the Distribution Panel and Multimedia Enclosure at the Common Location

- Example of a distribution panel mounted beside the electrical panel



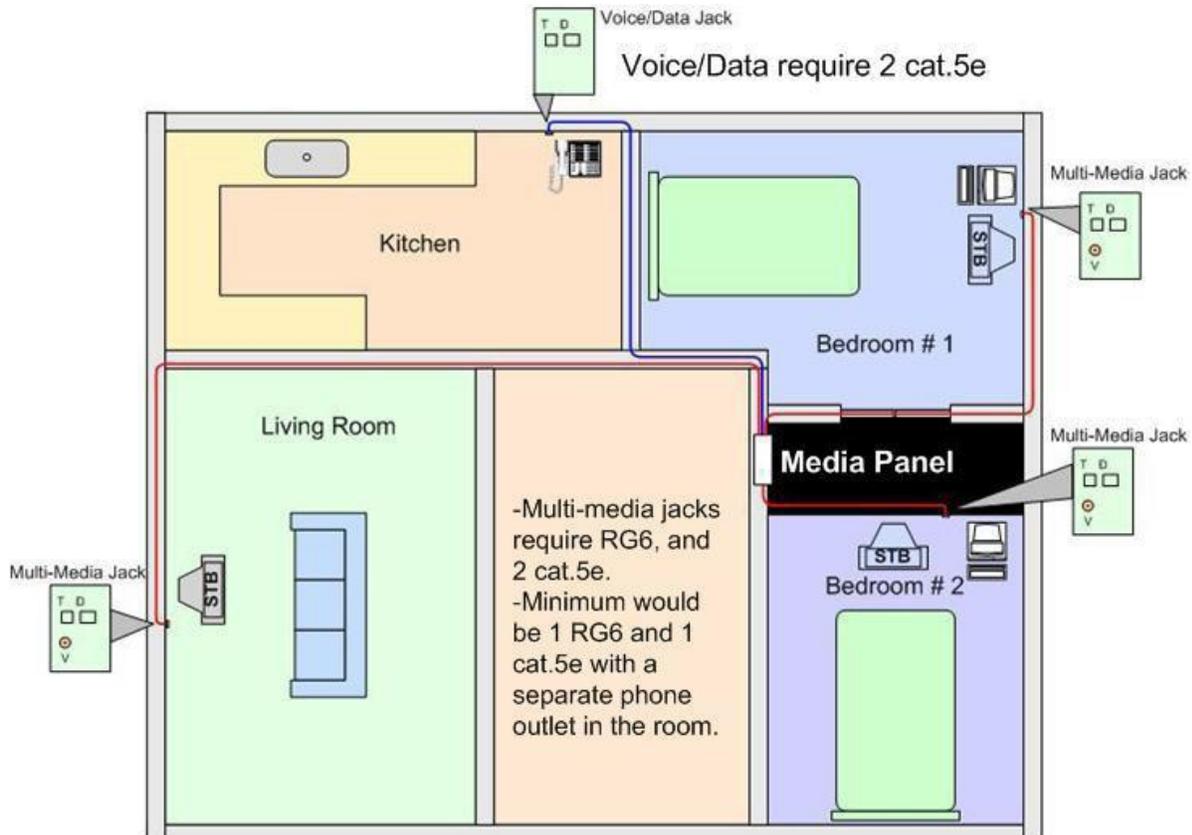
- Example of a multimedia enclosure flush mounted in between the standard stud spacing (note some UPS's may be too deep to fit inside this enclosure)



*Note, when using the media panel and installing an A/C outlet, the panel must be bonded to the A/C ground.

4.2 Other wiring and location considerations

- Take into consideration present and future needs (e.g. second line, children's line, computer modem, fax machine, television, security system, Internet devices, fridge, TV's, etc.). In large rooms, place for functionality of the room.
- Take into consideration ease of accessibility, traffic and furniture placement. Jack locations should be accessible and in areas where they won't be damaged by furniture or normal activities.
- Recommended locations for communication service are master bedroom, spare bedrooms/den, living room, kitchen, dining room, family room, deck and garage.
- As per Canadian Electrical Code, communication outlets cannot be placed within areas that may provide a shock hazard; this applies to media outlets as well (i.e. Inside bathrooms, next to kitchen sinks).
- A communication jack should be installed with any coax outlet. This will allow for future television requirements such as satellite television or other entertainment service.
- All communication outlets should be within 6' of an A/C outlet.
- Where the ONT/media panel is placed, is to be in a heated environment **where there is no risk of the ambient air temperature falling below 0° (zero) Celsius**. A garage is NOT a suitable location. The preferred location is in HVAC room, utility closet, or laundry room etc. Builder/Owner will provide One (1) duplex 15A non-switched power receptacle dedicated to networking equipment at this location.
- If a unit wiring drop box is placed as well as a Media panel these should be joined by running a 25 mm [1 inch] EMT or ENT (per building codes).



5. Other Services

Some factors affect a customer's ability to have special **voice services** on the SaskTel Fibre Optic Network.

In general, any device that is designed to plug into a conventional telephone outlet will work properly with telephone services provided via the SaskTel Fibre Optic Network.

It's imperative to note, that the ability to provide services via fibre will depend upon the end location of the ONT and its accessibility to fibre optic drops and the quality of inside wire.

5.1 Special Circuits

Some special communications circuits may not work on the fibre optic network: business circuits (ground-start PBX, leased line alarm/monitoring circuits, etc.). These must be served with conventional copper circuits, although SaskTel Optical circuits may still be installed at the same premises for other voice applications.

Contact SaskTel for more information on possible service limitations.

Note: the ability to provide any circuit depends on the accessibility to fibre optic drops and the quality of inside wire.

5.2 Internet

Similarly, any device designed to connect to conventional Internet access providers should work properly on SaskTel services; however, services that are proprietary to a specific Internet Service Provider may not be available.

Note: the ability to provide any circuit depends on the accessibility to fibre optic drops and the quality of inside wire.

5.3 Alarms

Intrusion and Medical Alert Alarm monitoring systems will generally operate on SaskTel circuits; although the systems should be tested to ensure compatibility. Note that most of these systems require a working telephone line for monitoring, so residents must have telephone service if they want alarm systems to be monitored.

In locations where residents are not subscribing to land-line telephone service, owners may want to consider alarm systems that use Internet monitoring, or radio-based monitoring systems.

5.4 Enterphone

There are two basic types of enterphone designs:

- **An intercom style, door entry system that is designed to interface with residents' telephone connection at a central Telephone Room.** This service requires copper phone wiring to be run throughout the building, in addition to the fibre. This is because the enterphone is its own closed circuit service.

However, SaskTel offers a product that can be installed at the common location in each unit that can automatically switch residents' telephone outlets from fibre services to an enterphone door call, via a "call waiting" operation.

- **A door entry device that calls residents via its own telephone line.** This system works with fibre when the correct equipment is installed. SaskTel is willing to work with various enterphone systems. In most instances this type of enterphone will require the resident to have a telephone line although there are some cases where cellular phone usage is possible.

6. Responsibilities

6.1 Customer responsibilities in regards to services

Customers are responsible for notifying SaskTel of any proposed communications devices that may be installed at the property that may not be suitable for connection to SaskTel circuits, so engineers can determine if additional copper circuits are required and then provision the installation of those circuits.

Customers should verify the presence of such systems with:

- mechanical/electrical/plumbing (MEP) engineers,
- fire contractors,
- elevator contractors, and
- any code authorities having jurisdiction (AHJ) in their municipality.

6.2 SaskTel responsibilities in regards to services

SaskTel will install copper facilities in fibre served areas if required, but additional costs may be incurred, particularly if these circuits are required post installation.

7. Review notes

SaskTel standards for demarcation equipment

1. Location and size of Service Entrance as determined by SaskTel. If aerial drop, it is to be concealed in wall cavity, supply and install a minimum size 25mm (1") EMT conduit in wall - cavity for SaskTel only.
2. Main terminal space-size to be determined by SaskTel.
3. Telephone Backboard size to be determined by SaskTel.
4. CATV should be in separate system beyond main Tel. room. If in the same conduit the diameter must be increased.
5. The main electrical panel ground must be accessible. If main electrical panel ground is not present in the same room as the main telephone terminal, provide 25 mm [1"] rigid conduit to main electrical panel with an approved #6 green ground wire as specified in CEC-60-706.
6. Provide and install all ducts and conduits with a waterproof pull-cord.
7. All cable and wiring installed by SaskTel.
8. Size and number of conduits to be determined by SaskTel.

Suggested Standards on the Subscribers Side of building Demarcation Equipment

9. Home run of 25 mm [1"] EMT, Flexible ENT or rigid PVC conduit (rated acceptable by applicable codes) to the residence unit box or media panel in each individual unit from telephone terminal room. Depending on building structure, the conduit may be placed horizontally and/or vertically.

If fibre runs are installed in a multi-drop or multi-point system, where one larger conduit feeds off to successive units vs. having individual home run conduit, then the conduit at the beginning of the run should be a larger diameter to accommodate the multiple single cables progress to each suite. The conduit sizing should conform to the following chart.

This table provides a guide for conduit sizing when there are multiple cable in the conduit and is as per ANSI/TIA 569-B & 570-B.

		Cable Outside Diameter mm (In)								
Conduit ID mm (In)	Trade Size (In)	4.6 (0.18)	5.6 (0.22)	6.1 (0.24)	7.4 (0.29)	7.9 (0.31)	9.1 (0.37)	13.5 (0.53)	15.8 (0.62)	17.8 (0.70)
16 (0.62)	1/2	1	1	0	0	0	0	0	0	0
21 (0.82)	3/4	5	4	3	2	2	1	0	0	0
27 (1")	1	8	8	8	3	6	2	1	0	0
35 (1.25")	1 1/4	14	12	10	6	4	3	1	1	1
41 (1.5")	1 1/2	18	16	16	7	6	4	2	1	1
53 (2")	2	28	22	20	14	12	7	4	3	2
63	2 1/2	40	36	30	17	14	12	6	3	3
78 (3")	3	60	50	40	20	20	17	7	6	6
90 (3.55)	3 1/2	-	-	-	-	-	22	12	7	6
103 (4")	4	-	-	-	-	-	30	14	12	7

10. The unit communication wire wall box installed is to be a min. 200 x 200 mm (8 inch x 8 inch, similar to RB8 box) deep outlet box. Suites with an abnormal number of outlets may require a larger box.

The location of the unit box and media panel is at switch level height in a **heated environment where the ambient air temperature will NOT fall below 0° (Zero degrees Celsius)** such as in the utility closet. This box must be readily accessible. When a unit box is placed in lieu of a Media Panel then an external non-switch 120VAC electrical outlet is required to be within 45cm (18 inches) of the box.

11. The Multimedia Panel Box. Where the ONT/media panel is placed, is to be in a heated environment **where there is no risk of the ambient air temperature falling below 0° (zero) Celsius**. A garage is NOT a suitable location.

The preferred location is in HVAC room, utility closet, or laundry room etc. Builder/Owner will provide One (1) duplex 15A non-switched power receptacle dedicated to networking equipment at this location. If a unit wiring drop box is placed as well as a Media panel these should be joined by running a 25 mm [1 inch] EMT or ENT (per building codes).

12. Developer/Owner to install communications wiring in wall cavity, either in conduit or through the studs if no conduit installed.

a. **Buildings Designated as Fibre Fed**, from the electrical room to the suite install an inside fibre drop cable of a type that best matches the layout and design of the property.

If this route consists of either a single shared conduit with multiple drop-offs into consecutive units, or no conduit but fibre drop between the studs, then the fibre for all the suites must be placed simultaneously by the owner/developer during building construction.

Contact SaskTel BICs to find-out if the building is designated as fibre only.

13. Suites Runs: all suite runs from Media Panel to the outlet jack in the suite must be CAT5e four pairs twisted 24AWG solid copper wires.
14. If the runs “home” on Auxiliary MTR, then there are (2) options determine the conduit capacity between the Auxiliary MTR and Main MTR.

If conduit capacity allows for the large number of single drops, then continue the drops through to the MTR – this is the preferred arrangement. If conduit capacity does not allow for the large number of single drops, then do a transition splice and route a short piece of riser cable from the Auxiliary MTR to MTR.

****Contact SaskTel to determine the final method as other options may still be available****

The use, number and location of iFDTs, if required, will be determined by SaskTel. This is because iFDTs come in set number counts and, to reduce wastage, may be installed on alternating floors to properly fill the devices. The builder should then be prepared to run the floor fibre drops up or down one floor to meet the iFDT location, and this should be discussed with SaskTel prior to installation of the indoor fibre drops.