

## Are you wiring for a SMART home?

Advice for **cable installers** on the wiring requirements for access to telecommunications and other 'wired' services.



## INTRODUCTION

Advances in technology mean it's more important than ever to make sure the wiring and connections in homes are capable of delivering modern telecommunications, entertainment and building services.

This pamphlet provides an overview to those things you'll need to do to ensure a home is being properly wired.

It is based on the 'Premises Wiring Code of Practice', approved by the Telecommunications Carriers' Forum (TCF) in February 2010. The latest version of this Code can be accessed on the TCF's website at: [www.tcf.org.nz/premwiring](http://www.tcf.org.nz/premwiring)

## MINIMUM COMMUNICATION CABLING REQUIREMENTS

Following are the *minimum* cable installation requirements we recommend for new homes and major renovations for which there is an opportunity to install new wiring:

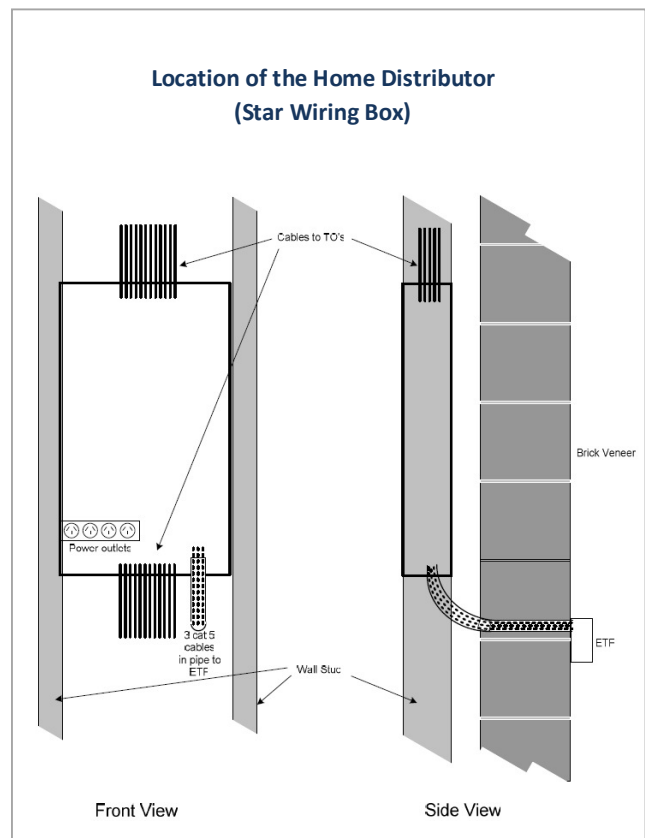
1. Cabling must be 'star wired'. Telecommunications cables need to be a minimum specification of Cat5e (UTP). RF video distribution cables need to be a minimum specification of tri-Shield RG6 Coax.
2. A home distributor (star wiring box) needs to be located at a 'star point' - to provide for the interconnection and distribution of cabling around the home, as well as for testing capability. It is the homeowner or builder's responsibility to supply the home distributor, a patch panel, and patch cords.
3. The home distributor should be easily accessible and above the height of the External Termination Point (ETP) to minimise the risk of water entering the premises. It is typically located at about eye level on the inside of a home's external wall in a garage or utility room.
4. The home distributor must be large enough - with minimum dimensions of 350mm (W) x 700mm (H) x 80mm (D) - to house devices such as a router and video splitter. It must also have integrated power sockets for these devices. A dual power outlet is recommended.
5. The door on the home distributor must be louvered so air can circulate and prevent the equipment from overheating.
6. Three Cat5e cables must be fed from the star point, through the wall to the ETP, leaving at least 500mm of

cable slack at the ETP and at least 1000mm of slack at the home distributor.

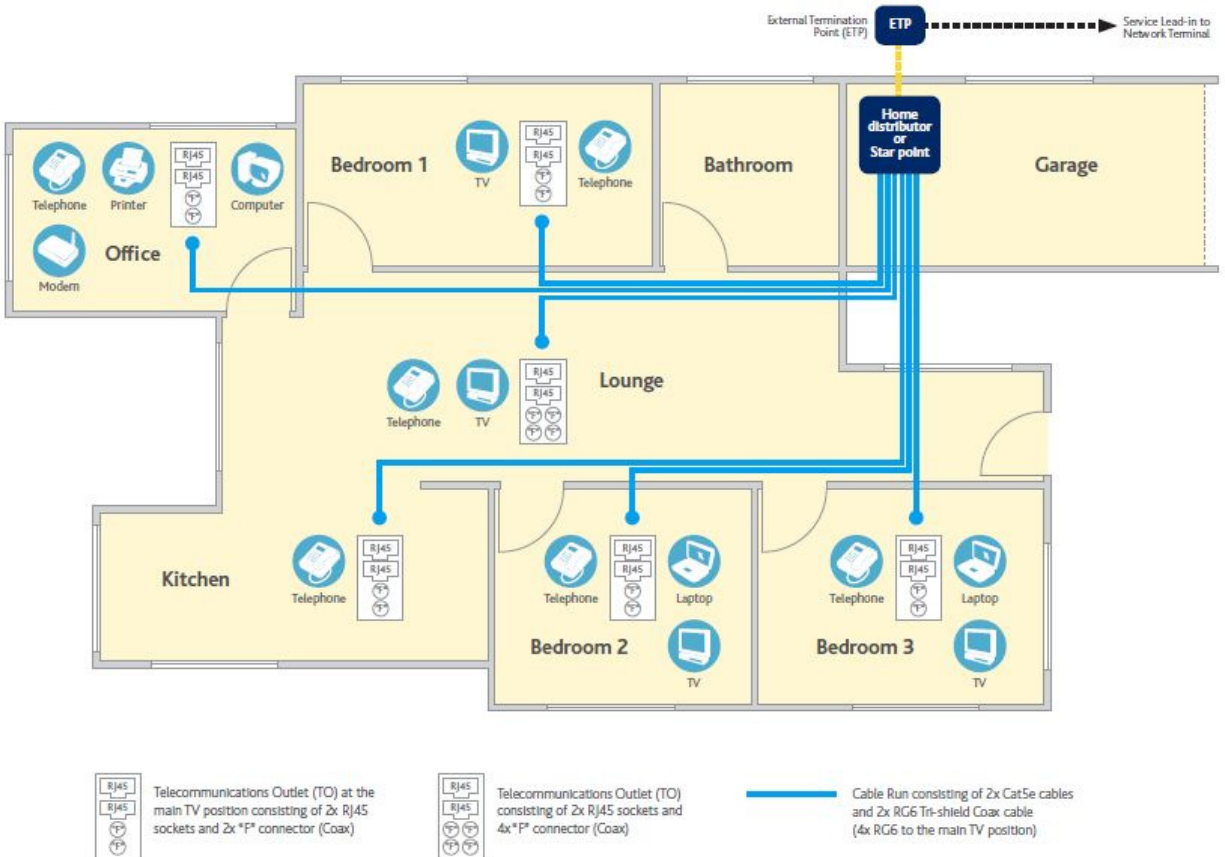
7. This cabling must be protected within a short length of plastic pipe – minimum of 20mm diameter and 300mm 90° bend up into the home distributor. Do not use an elbow bend.
8. At the home distributor, all Cat5e cables should ideally be terminated on keystone RJ45 type modular sockets mounted in a patch panel. This will allow for very simple patching to/from routers and easy replacement if any develop a fault.

## WIRING FOR THE FUTURE

Although Cat5e standard wiring is sufficient for meeting the bandwidth demands of existing telecommunications services, it is a good idea to prepare ahead for future upgrades and services. Installing ducting when building or renovating the home can be a good way of preparing a property for future options such as Cat6 (10Gbits/sec) cable or fibre optic cabling.



## GENERIC CABLING SYSTEM COMPONENTS



## CABLING THE REST OF THE PREMISES

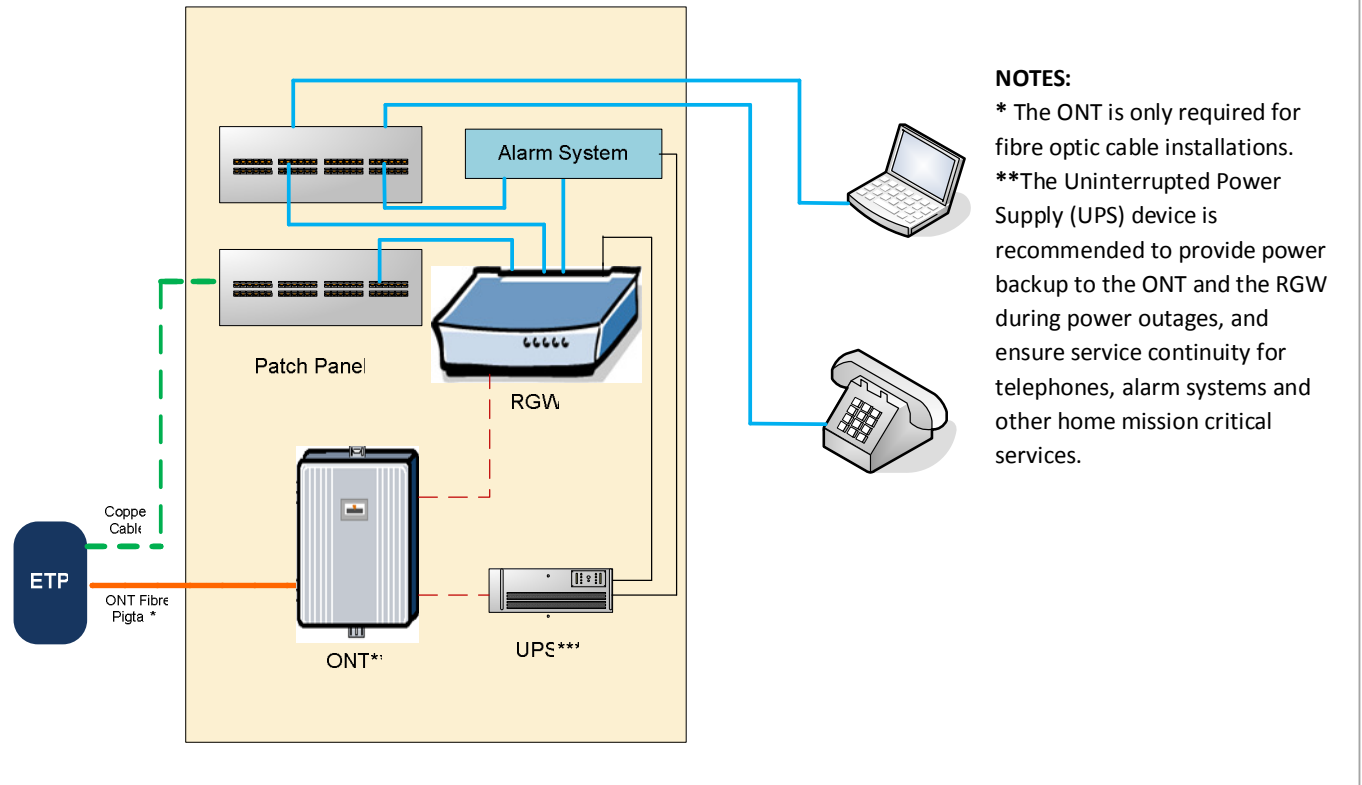
When cabling:

- Two Cat5e cables should be fed from the home distributor each outlet position at which communication services are required, including the main TV position.
- Two coax cables should be fed to each outlet position at which RF video services are required. Note that four coax cables should be fed to the main TV position.
- Make sure clearances between communication cables and power cables are maintained. See the Premises Wiring Code of Practice for more detail on the 'segregation of services' (cable separation).
- Leave at least 300mm of cable slack at each outlet.

When you're considering where to install outlets or jackpoints, be sure to consider the following:

- At least two RJ45 type jackpoints with two 'F' co-axial outlets (four 'F' co-axial at the main TV position) on the same faceplate in each bedroom and normally occupied room.
- Two or more such outlets are recommended in the lounge, rumpus room, and study.
- Avoid wet areas such as bathrooms and laundries.

### HOME DISTRIBUTOR GENERIC EXAMPLE



**NOTES:**

- \* The ONT is only required for fibre optic cable installations.
- \*\*The Uninterrupted Power Supply (UPS) device is recommended to provide power backup to the ONT and the RGW during power outages, and ensure service continuity for telephones, alarm systems and other home mission critical services.

### QUALITY COMPONENTS, TESTING AND VERIFICATION

We strongly recommend only installing good quality components such as patch cords and connectors, that have been independently certified – e.g. that are Underwriters Laboratories ‘(UL)’ certified. Low quality components will affect the performance of phone or broadband services.

We also recommend that newly installed cabling be tested and verified (by its installer) as being capable of operating at the speed for which it is rated. Service performance will be affected where:

- Too much cable insulation is removed, or there is excessive untwisting of copper cable pairs, at termination points;
- The wiring is incorrectly terminated;
- The communications cabling is too close to electrical cabling, lighting, or appliances that can cause interference;
- The minimum bend radius is exceeded; and
- Low quality components have been used.

### CHECKLIST FOR WIRING A SMART HOME

1. Are you familiar with the cabling requirements necessary for wiring a smart home available at: [www.tcf.org.nz/premiring](http://www.tcf.org.nz/premiring)?
2. Is the home distributor large enough and easily accessible?
3. Is Cat5e cabling or better being used?
4. Are there multiple outlets assigned in key living areas?
5. Have you tested and verified the installed cabling?

### FOR MORE INFORMATION

Visit the Premises Wiring page on the TCF website: <http://www.tcf.org.nz/premiring>