

# Equipment

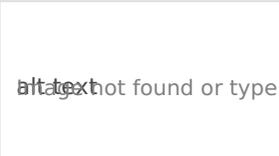
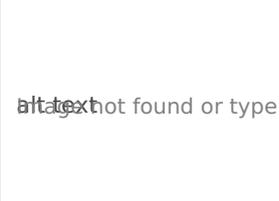
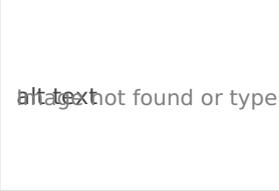
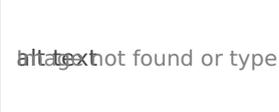
To connect to NYC Mesh, you will need to install wireless networking equipment on a rooftop or outside a window. This page lists a range of equipment and tools that are commonly used for typical installations. Before assembling any equipment, first carry out a site survey and make an install plan to narrow down the equipment you really need. For detailed information about specific routers, visit the [hardware](#) docs.

You can download a handy checklist of the equipment listed on this page [here](#).

**For DIY installers:** To get help figuring out which essential equipment you need for your installation, first familiarize yourself with the equipment below and then reach out to the NYC Mesh community on [slack](#) on the #diy-install-support channel.

**For volunteer installers:** Prior to any install, make sure you have access to the equipment listed below. If you are missing any equipment needed for an install, reach out to install leaders on [slack](#) on the #install-team channel to ask to borrow them. Shared tools are available and we can purchase, order and ship networking equipment (routers, cable, connectors, etc.) to your address.

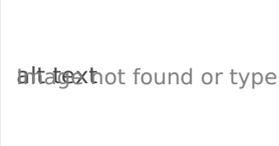
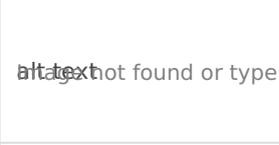
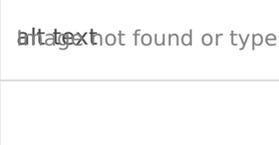
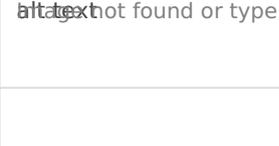
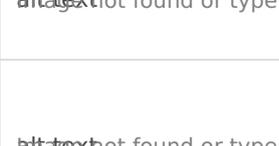
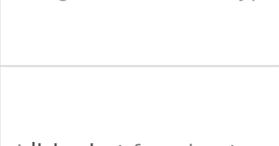
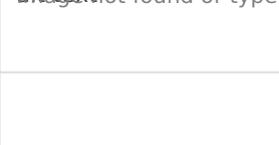
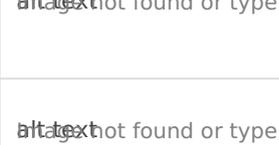
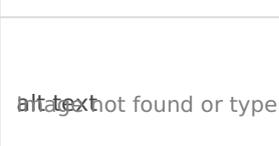
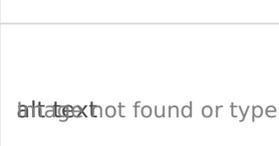
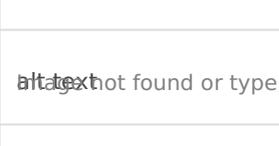
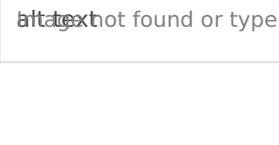
## Networking Equipment

Product Name	Product Photo	What it's used for	Where you can get it	Cost
Laptop (charged)		Configuring outdoor and indoor routers, reading docs and install plan	Bring your own	
Outdoor router(s) (pre-configured)		Connecting to a node	Order online or collect from mesh room stock (refer to specific product page in <a href="#">hardware</a> docs)	
Power Over Ethernet (POE) adapter and power cable		Providing power to the outdoor router and passing data to and from indoor router	Comes packaged with the outdoor router	
Indoor router		Connection point for user's devices	Order online or collect from mesh room stock	\$20+

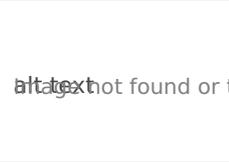
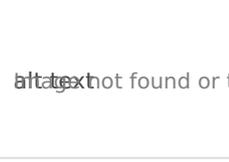
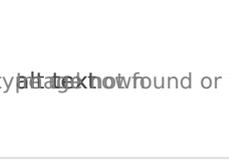
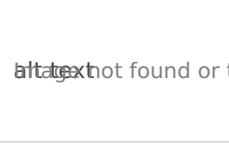
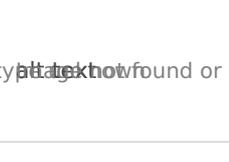
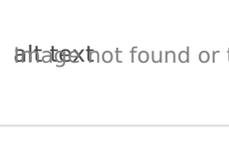
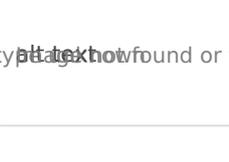
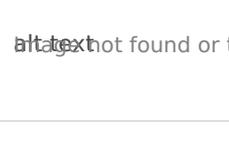
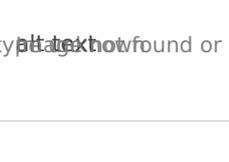
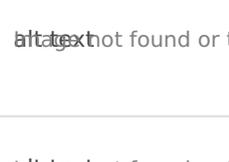
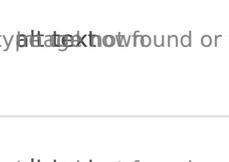
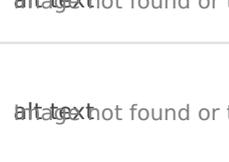
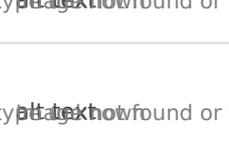
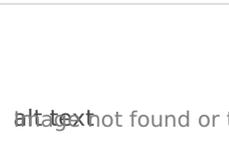
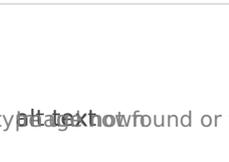
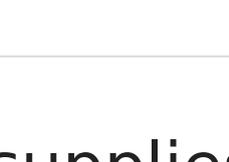
Product Name	Product Photo	What it's used for	Where you can get it	Cost
CAT5e cable (outdoor-rated, grounded and shielded)	alt;text not found or type unknown	Passing power and data between outdoor router, indoor router and power outlet	Available from online retailers in different spool lengths - <a href="#">recommended product</a>	\$130-150/1000ft \$90-110/500ft \$20-30/100 ft
RJ45 pass through connectors (metal, with grounding loop)	alt;text not found or type unknown	Gets crimped onto the ends of the CAT5e cable to provide power and data interface	Available from online retailers - <a href="#">recommended product</a>	\$0.34/connector
Two Ethernet patch cables	alt;text not found or type unknown	Connecting routers to POE injector, battery pack, laptop	Available from online retailers - <a href="#">recommended product</a>	\$1.5-2 per <=3ft cable
Portable battery pack with three-prong power outlet (charged)	alt;text not found or type unknown	Providing power to outdoor router while surveying for signal	Available from online retailers - <a href="#">recommended product (less expensive)</a> / <a href="#">recommended product (better features)</a>	\$50 for 11,600 mAh \$150 for 46,400 mAh
Gigabit USB/Thunderbolt to Ethernet adapter	alt;text not found or type unknown	Connecting laptop without an ethernet port to outdoor router (not needed if connecting wirelessly)	Available from online retailers	\$15

## Tools

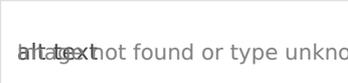
Product Name	Product Photo	What it's used for	Where you can get it	Cost
Ethernet cable crimper (pass through)	alt;text not found or type unknown	Attaching RJ-45 connectors to CAT5e cable	Online retailers - <a href="#">recommended product</a>	\$44
CAT5e cable stripper	alt;text not found or type unknown	Stripping CAT5e cable	Online retailers (included in crimping all-in-one kit) - <a href="#">recommended product</a>	\$25 for crimping all-in-one kit

Product Name	Product Photo	What it's used for	Where you can get it	Cost
Ethernet cable tester		Testing that Ethernet cable has been correctly crimped	Online retailers - <a href="#">recommended product</a>	\$10
Spare 9v battery		Replacement in case tester is left on	Online retailers - <a href="#">recommended product</a>	\$10
Scissors		Cutting CAT5e cable and cable ties	Hardware store tools aisle	
Needlenose pliers		Clamping CAT5e cable ground wire, pulling cable through holes	Hardware store tools aisle - <a href="#">recommended product</a>	\$12
Cordless hammer drill		Drilling holes, inserting screws, securing pipe clamps	Hardware store tools aisle	
Hex socket drill bits (3/8" for hose clamps and 1/4" for masonry screws)		Tightening hose clamps, inserting concrete screws	Hardware store drill bits aisle	
Carbide-tip masonry drill bit (5/32")		Drilling holes in concrete or masonry for inserting masonry screws	Hardware store drill bits aisle	
Cobalt / titanium drill bit (1/4")		Drilling hole for CAT5e cable to pass through steel window frame	Hardware store drill bits aisle	
Hammer		Driving in concrete nails	Hardware store tools aisle	
Concrete nail		Starting a hole in concrete or masonry (makes drilling easier)	Hardware store nails aisle	
Phillips Precision Screwdriver (No. 1)		Assembling Litebeam Router	Included in crimping all-in-one kit, Hardware store tools aisle	
Adjustable crescent wrench (6")		Assembling J-pipe mount	Hardware store tools aisle	
Vise grips		Removing stuck drill bits	Hardware store tools aisle	

# Mounting Equipment

Product Name	Product Photo	Field Photo	What it's used for	Where you can get it	Cost
Small diameter (28) hose clamp			Securing the router to a thin mast or pipe	Comes with outdoor router, hardware store plumbing aisle	
Large diameter (88) hose clamp			Securing the router or mast to a large pipe or window guard	Hardware store plumbing aisle	
J pipe antenna mast			Mounting to a wall or parapet	Online retailers - <a href="#">recommended product / 10-pack</a>	
L pipe antenna mast			Orienting an SXT router up and down	Online retailers - <a href="#">recommended product</a>	
Concrete screws (3/16" hex head CSH316134)			Securing mast mounts to concrete or masonry	Hardware store screws and anchors aisle	
Washers (1/4" hole diameter)			Securing mast mounts to concrete or masonry	Hardware store fasteners aisle	
Zip ties			Securing ethernet cable	Hardware store electrical aisle	
Cable staples			Securing ethernet cable to an indoor wall	Hardware store electrical aisle	
Cable fastener clips			Securing ethernet cable to an outdoor vertical surface	Hardware store electrical aisle or online retailers - <a href="#">recommended product</a>	

# Miscellaneous supplies

Product Name	Product Photo	What it's used for	Where you can get it
Electrical tape		Pulling cable through holes	Hardware store adhesives aisle

Product Name	Product Photo	What it's used for	Where you can get it
Weather stripping (9/16" thick or greater)	alt text not found or type unknown	Sealing the bottom of a window when the CAT5e cable is run over the window frame	Hardware store insulation aisle
Rubberized waterproof sealant	alt text not found or type unknown	Sealing gaps and holes to prevent water infiltration	Hardware store adhesives aisle
WD-40 or other oil	alt text not found or type unknown	Drilling through thicker metals	Hardware store
Small brush and dustpan	alt text not found or type unknown	Sweeping up cable ends and metal shavings from drilling through window frame	Online retailers
Biodegradable wet wipes	alt text not found or type unknown	Cleaning dirty hands	Online retailers - <a href="#">recommended product</a>
Small garbage bag	alt text not found or type unknown	Disposing of garbage	Reuse a shopping bag
Hand truck	alt text not found or type unknown	Transporting cable reel box and equipment bag in and out of subway stations - stair-climbing model is ideal!	Online retailers, larger hardware stores
Backpack	alt text not found or type unknown	Transporting equipment safely up ladders - slim backpacks are the safest!	Many places

## Safety gear

Product Name	Product Photo	What it's used for	Where you can get it
Safety Glasses	alt text not found or type unknown	Eye protection while drilling	Hardware store apparel aisle
Thick-soled shoes or work boots	alt text not found or type unknown	Protection against sharp objects on rooftops	Work wear store
Sunblock and hat (in summer)	alt text not found or type unknown	Preventing sunburn	Pharmacy
Cold weather apparel (in winter)	alt text not found or type unknown	Preventing frostbite	Clothing store
Water and a snack	alt text not found or type unknown	Staying hydrated and preventing fatigue	Grocery store
First aid kit	alt text not found or type unknown	Treating minor injuries	Pharmacy
Fully-charged cell phone	alt text not found or type unknown	Communication in case of lockout, team communication, providing mobile hotspot	Charge at home

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