

GNet Solutions - Support #748

Install a Simple Network and Telephone Infrastructure

02/21/2016 08:20 AM - Daniel Curtis

Status:	Closed	Start date:	02/21/2016
Priority:	Normal	Due date:	
Assignee:	Daniel Curtis	% Done:	100%
Category:	Infrastructure	Estimated time:	6.00 hours
Target version:		Spent time:	10.00 hours

Description

I was recently hired to install a new network and telephone cabling in a building with vaulted ceilings that did not have any preexisting telecommunications infrastructure. Since there was no existing infrastructure, I decided to log the process of installing new network and telephone cabling for future reference, as well as to share any tips and tricks that I used along the way.

This project covers the installation of 4 network drop locations containing 1 network jack and 1 telephone jack, that run to a designated network closet; as well as the telephone line from the network closet to the outside telephone box.

For the sake of professional opinion, my methods try to adhere to the K.I.S.S. (Keep It Stupid Simple) ideology. As such this project may lack the elaborate aesthetics found in more expensive setups.

Preparation

Preparing for this project covered gathering materials, researching wiring diagrams, and a generous amount of questions asked to a mentor.

The materials list contains:

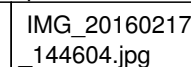
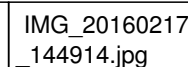
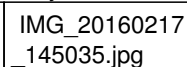
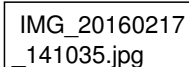
1. 500' Category 5e Cable
2. 4x RJ-25 6-pin telephone keystone jack
3. 4x RJ-45 8-pin ethernet keystone jack
4. 12-port wall mount ethernet patch panel
5. 1-port wall mount telephone box
6. 4x 2-port wall mount box
7. 3' of 1/2" flex conduit
8. 4' of 1/2" rigid PVC conduit
9. 4x 1/2" slip coupling
10. 4x 1/2" PVC wall bracket
11. 3' of 3/4" flex conduit
12. 1' of 3/4" rigid PVC conduit
13. 3/4" slip coupling
14. 3/4" PVC wall bracket
15. 3/4" Fence staples
16. Wood screws

Once the materials had been gathered and research was completed, I consulted with a friend who's experience greatly surpasses mine. He had mentioned that running the cable under the building would be much easier than feeding down from the ceiling, since there was very little access to any attic space.

After doing an initial site survey and crawling under the buildings crawl space, I agreed that running the cabling under the building and affixing the cabling to the floor joists with fence staples when finished.

Phase 1

- To begin the project, I took a 1/2" hole saw and drilled holes in the floor at each of the network drop locations. I kept an eye on where the floor board are nailed to the floor joists, and drilled close to the floor joist; this is to make it easier to slip the PVC conduit down without knocking out the floor insulation.



- Since the designated network closet has a higher amount of cabling running to it than the network drop locations, it will need a larger conduit. I used a 3/4" hole saw to drill into the floor at the network closet.
IMG_20160217_135636.jpg

Phase 2

The next phase of the project covered the installation of the rigid PVC conduit down through the floor, running of the cable, installation of the flex conduit, and the installation of the wall mount boxes and patch panel.

- The rigid 1/2" PVC conduit has a slip coupling placed at the end, and the conduit is fed down to the crawl space.
IMG_20160217_135701.jpg

- Next the cabling for the ethernet and telephone jacks are run to each location. 2 runs of Category 5e cables were run from the designated network closet to each of the network drop locations, one for the network and one for the telephone.

I M G	I M G	I M G	I M G
-	-	-	-
2	2	2	2
0	0	0	0
1	1	1	1
6	6	6	6
0	0	0	0
2	2	2	2
1	1	1	1
7	7	7	7
-	-	-	-
1	1	1	1
4	5	5	5
1	0	0	0
1	6	7	7
1	5	1	2
3.j	1.j	0.j	4.j
p	p	p	p
g	g	g	g
I M G	I M G	I M G	I M G
-	-	-	-
2	2	2	2
0	0	0	0
1	1	1	1
6	6	6	6
0	0	0	0
2	2	2	2
1	1	1	1
7	7	7	7
-	-	-	-
1	1	1	1
6	6	6	6
1	1	1	1
5	3	3	4
2	4	1	2
4.j	7.j	1.j	8.j
p	p	p	p
g	g	g	g
I M G	I M G	I M G	I M G
-	-	-	-
2	2	2	2
0	0	0	0
1	1	1	1
6	6	6	6
0	0	0	0

2	2	2	2
1	1	1	1
7	7	7	7
-	-	-	-
1	1	1	1
6	6	6	6
2	2	2	2
3	2	3	2
1	5	0	4
3.j	1.j	3.j	2.j
p	p	p	p
g	g	g	g

- Once the cabling was run, the flex conduit was cut into four 8" segments. Each of the flex conduit segments were joined to the 1/2" slip coupling with the cabling run through the flex conduit.

IMG_20160217_163617.jpg	IMG_20160217_163628.jpg	IMG_20160217_163639.jpg	IMG_20160217_163650.jpg
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- The wall mount boxes were then affixed approximately 3/8" above the flex conduit to allow for the cabling to be routed to each port properly. The flex conduit was affixed to the wall using a 1/2" PVC bracket and wood screws.

IMG_20160217_0932.jpg	IMG_20160217_0945.jpg	IMG_20160217_1017.jpg	IMG_20160217_1027.jpg
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- The network closet has a similar setup to the network drops, except 3/4" conduit was used instead since more cables were run to the network closet; 1/2" conduit will run 7 cables comfortably, the total amount of cable runs to the closet was 9 cables. The telephone line was just a single run of Category 5e out to the crawl space vent, it was left coiled up until the telephone company came to install the outside telephone box. A 3' segment 3/4" flexible conduit was joined the 3/4" PVC slip coupling and affixed to the inner stud of the network closet with a 3/4" PVC bracket and wood screws. The 12-port ethernet patch panel was mounted approximately 4' above the floor, to the inner stud of the network closet. The telephone jack for the DSL modem was mounted approximately 4" below the patch panel.

IMG_20160217_135717.jpg	IMG_20160217_162324.jpg	IMG_20160218_173215.jpg	IMG_20160218_155432.jpg
IMG_20160218_155426.jpg	IMG_20160218_154911.jpg	IMG_20160218_154755.jpg	IMG_20160218_155110.jpg

Phase 3

- The final phase of the installation covered terminating the jacks and panels and testing their connection. The ethernet jacks were terminated using the 568a standard. The telephone jacks were terminated using the Orange and Orange/White pair for Line 1, Red going the Orange wire, and Green going to the Orange/White wire. For the second phone line the Green and Green/White pair were used as Line 2, the Green wire pairing to the Yellow and Green/White going to the Black wire.

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- Once the patch panel was punched down and the jacks terminated, the lines were tested. There was a slight problem with the telephones not having a dial tone, which later turned out to be the telephone lines being improperly connected at the outside telephone box. When the lines were connected properly the telephone lines had a working dial tone. The network connections were tested by connecting the DSL modem to each of the individual ports on the ethernet patch panel and connecting a laptop to each of the individual network drop locations.

IMG_20160219_124140.jpg	IMG_20160219_124531.jpg
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Resources

- <http://www.wire-your-phones.com/>

History

#1 - 02/21/2016 12:32 PM - Daniel Curtis

- Description updated
- Status changed from New to In Progress
- % Done changed from 0 to 50

#2 - 02/21/2016 01:39 PM - Daniel Curtis

- File IMG_20160217_135636.jpg added
- File IMG_20160217_135701.jpg added
- File IMG_20160217_135717.jpg added
- File IMG_20160217_141035.jpg added
- File IMG_20160217_141113.jpg added
- File IMG_20160217_144604.jpg added
- File IMG_20160217_144914.jpg added
- File IMG_20160217_145035.jpg added
- File IMG_20160217_150651.jpg added
- File IMG_20160217_150710.jpg added

#3 - 02/21/2016 01:56 PM - Daniel Curtis

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- File IMG_20160217_161347.jpg added
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- File IMG_20160217_161524.jpg added
- File IMG_20160217_162242.jpg added
- File IMG_20160217_162251.jpg added
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#4 - 02/21/2016 02:12 PM - Daniel Curtis

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- File IMG_20160218_173215.jpg added
- File IMG_20160219_124140.jpg added
- File IMG_20160219_124531.jpg added

- File IMG_20160219_124702.jpg added

- File IMG_20160219_124719.jpg added

- File IMG_20160219_124738.jpg added

- File IMG_20160219_124802.jpg added

#6 - 02/21/2016 02:15 PM - Daniel Curtis

- File IMG_20160219_125007.jpg added

#7 - 02/21/2016 02:37 PM - Daniel Curtis

- Description updated

#8 - 02/21/2016 02:38 PM - Daniel Curtis

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#9 - 02/21/2016 02:39 PM - Daniel Curtis

- Description updated

#10 - 02/21/2016 02:41 PM - Daniel Curtis

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#42 - 02/21/2016 02:57 PM - Daniel Curtis

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#49 - 02/21/2016 03:00 PM - Daniel Curtis

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#54 - 02/21/2016 03:47 PM - Daniel Curtis

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- Description updated

#55 - 02/21/2016 04:04 PM - Daniel Curtis

- Description updated

#56 - 02/21/2016 04:21 PM - Daniel Curtis

- Description updated

#57 - 02/21/2016 04:29 PM - Daniel Curtis

- Category set to Infrastructure
- Status changed from In Progress to Resolved
- % Done changed from 50 to 100

#58 - 03/12/2016 02:02 PM - Daniel Curtis

- Status changed from Resolved to Closed
- Private changed from Yes to No

Files

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