Facility Equipment Removal Procedures

XYZ Telecommunications

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This document was completed as the final requirement for the Technical
Writing Certificate at Bellevue College, Technical Writing Capstone

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1. GENERAL INFORMATION

LIMTED AUDIENCE ONLY – This information is only to be used within XYZ Telecommunications and shared only with XYZ approved vendors. This document should **NOT** be shared with anyone else (e.g. news agencies, employee handbooks, training manuals, newsletters, blog posts, etc.) without approval from the appropriate XYZ Telecommunications manager. The same limited use also applies to XYZ Telecommunications approved vendors.

1.1 Purpose

This Network Practice (NP) is intended to help define safeguards and responsibilities to establish procedures for processing and removing equipment from all XYZ Telecommunications (XYZ) facilities.

1.2 Scope

The information in this NP is intended for both Internal and External audiences who have been directed by XYZ Telecommunications management to remove equipment at any one of XYZ Telecommunications facilities and data closets. This NP's intended use is for all XYZ Engineering, Installation, and Operations groups and any 3rd party organization that is contracted through XYZ Telecommunications.

1.3 Responsibilities

- All Operations, Engineering, and Installation groups are accountable to ensure equipment is removed from the XYZ network in accordance to this document.
- Any deviations or changes from this NP must have approval from XYZ management prior to its implementation.
- XYZ Deployment groups – The teams that maintain standards and operational documentation are jointly responsible for implementing and maintaining the NP documents.

1.4 References

The following links are reference documents that point to other XYZ network related practices. Teams that perform work at XYZ locations should be familiar with the following documents:

1.4.1 XYZ Telecommunications Related Network Practices (NP)

DOCUMENT	DESCRIPTION
Document Name or Number	Network Change Management Practices
Items would be hyperlinked to IntraNet	Equipment Packaging Techniques
	Power Safety and Practices
	General Fire Safety Guidelines
	Hazardous Material Containment
	Hazardous Material Transportation

1.4.2 Industry Standard Related Documents

DOCUMENT	DESCRIPTION
NFPA 70	National Electric Code
NFPA 76	Standard for the fire protection of telecommunication facilities

2. IDENTIFIED ITEMS FOR REMOVAL

2.1 Pre-Removal Requirements

The person in charge of the equipment removal must review each task and complete the following items before any work is performed:

1. Inspect the area for potential safety hazards
2. Inspect the area for any special problems that may occur during the work being performed
3. Verify the equipment and connections that will be removed
4. Verify with the Operations teams that the equipment to be removed has no live network traffic – no traffic-bearing circuits are still active – and the detailed work to be performed is outlined in the Method of Procedure (MOP) document.
5. Submit a work ticket to Operations to remove any connections to the equipment being removed, i.e. fiber and Cat5 or Cat6 jumpers or other special cables.
6. Notify all organizations tasked with the monitoring/testing of live network equipment prior to any actual removal work taking place.

The XYZ or 3rd party equipment removal technician will make sure that the equipment identified for removal matches all items on the work order exactly.
Example:
- Part Numbers
- Circuit Names
- Quantity of items/connections being removed
- The physical location of the device **and** physical building address

If any discrepancies are detected when comparing the work order to what is on site, the technician should contact the party responsible for issuing the task, e.g. Project Engineers or Planner, for corrective action. It is the Project Engineer's organization that is responsible to ensure all databases are updated with any changes to XYZ's network design.

⚠️NOTE: If the number of reported discrepancies is significant enough to impact the removal project itself, the XYZ team who ordered the equipment removal work may request a site audit to assist in finding a solution.

Pre-Removal Discussions

The personnel assigned the removal task will conduct a pre-removal coordination meetings with the Operations Supervisor and associated staff. They will review the supplied documents that outline the removal task that was provided by the Project Engineer. The Material Transfer Form (MTF) should also be included with the documents to outline proper equipment disposal.

Equipment removal requires a high level of attention. The removal work will be coordinated with other project activity occurring within the network. The personnel involved with the removal task, e.g. XYZ Operations, Installation, and Project Engineers, will create a sequence of events to arrange temporary off-site storage for equipment removed, and sequencing the installation of new equipment, if being installed. Reference the associated MOP for the duties being performed.

Steps to ensure a smooth project execution –

1. Perform a risk assessment of the removal activities to determine the impact on the network. If the risk of network impact is high, additional measure will need to be taken. Contact the XYZ Network Operations Manager.
2. Converse with the person in charge of the 3rd party vendor technicians, if employing.
3. Inform the XYZ Site Supervisor at the location of the work being performed to ensure that technician coverage is available.
4. Discuss the removal plan with all involved parties. Emphasize communication requirements, housekeeping duties, and job safety.
5. Make sure that the crew(s) responsible for the work are aware of their duties and what is expected of them
6. Provide additional information where needed and ensure all groups involved have the tools and skills necessary to successfully complete the task.
7. Ensure that the organizations responsible for network monitoring (XYZ Operations) has been notified of the planned work day and time **prior to** any actual removal work.
8. Removal work shall **always** be scheduled during the standard maintenance window. Consult the Change Management Control (CMC) documents for additional information.

   The following is the standard request lead-times to perform network maintenance:
   a) Customer Impacting – 15 Business Days
   b) Network Redundancy Impacting – 5 Business Days (*Minimum*)
   c) Non-Impacting or Offline Maintenance – 2 Business Days (*Minimum*)

9. Review the list of personnel authorized to enter the site and grant temporary access to those performing the work.

3. SAFETY AND HOUSEKEEPING

XYZ Telecommunications has maintained a strong safety record at all levels of the organization by following strict state and local safety regulations and also by implementing its own set of rules. Data center environments contain a lot of sensitive equipment and fire suppression systems. Exercise extreme caution when working around Halon equipment and fire detection systems to prevent accidental operation. Ensure that items used during equipment removal/installation (e.g. hand tools, cables, covers/shields), have anti-flammable properties. Protect all adjacent equipment and cables during the removal/installation process.

Employee Health and Safety (EHS) practices at XYZ require that personnel performing work at any facility shall wear eye protection, hard hats, and gloves to minimize injury. Any tools that are used by either XYZ technicians or XYZ contracted 3rd party vendors that are used around power systems will have the proper insulation to prevent damage and bodily harm (e.g. wire cutters, screw drivers, wrenches and associated items, pliers, etc.).

XYZ instills the ideology that all employees should maintain a clean work space for both personal health and to maintain a clean company image. This ideology extends in to the data closets and any other facility XYZ has a presence in that would otherwise not be seen by outside visitors. Maintaining a clean work environment is also for safety reasons. The following recommendations should be considered:

- All flammable materials such as: cloth and plastic bags, foam, waste paper, and other similar materials used during the project should be removed and disposed of every day during the project. This includes packing material for both received and sent items.
- Do not store materials in stairwells, hallways, in front of or around both fire extinguishers and fire exits, or around AC/DC power equipment (e.g. control panels, batteries, switches, etc.).
- When transporting heavy equipment to and from the cage, it's highly recommended to use 1/8" or greater Masonite boards that can be temporarily duct-taped to the floor to prevent damaging the facility floor.
- Prior to beginning any work, watches, rings, and other metal objects on the body should be removed.
- To prevent items from accidentally falling, do not place tools and other objects on top of equipment in the data center cabinet or ladders.
- When cutting cables, place a drop cloth underneath to catch any metal shavings that fall. This is especially important when working above live equipment.
- ⚠ IMPORTANT – Tools used on power systems or bus bar connections must be insulated to prevent shorting the power system and causing accidental death.

4. NETWORK EQUIPMENT REMOVALS

Before starting the equipment removal process, the personnel performing the removal task should determine the equipment's source of power and turn the power source off.

Prior to any equipment removal, personnel will conduct an on-site inventory of the designated equipment to be removed. After the equipment has been removed from service, the personnel performing the removal task will clean the equipment being packaged for shipping, properly label, and pack the equipment in properly designated shipping containers.

⚠**NOTE:** To prevent unnecessary damage, exercise extreme care when removing, cleaning, and packaging removed equipment.

The personnel will complete all necessary forms and applications, including the Material Removal Form. Depending on the form type and direction received from XYZ management, they will either be faxed to XYZ personnel or included in the packaging of the equipment. The following are the appropriate steps to follow for equipment removal:

1. Use a Volt-Ohmmeter (VOM) to verify if the designated equipment has been powered down.
2. Notify the site management and XYZ Operations if power has not been removed from the equipment. A solution can be worked on. The personnel on-site may assist as needed.
   ⚠ NOTE: XYZ management will review equipment power connections and determine if the Carrier Hotel will be responsible for power disconnect.
3. To completely remove power to the equipment, turn off the circuit breakers at the Power Distribution Bay (PDB) as needed.
4. Remove the fuses at the equipment end. Fuses are usually at the Power Distribution Unit (PDU) within the cabinet.
5. Use the VOM to verify power has been removed from the equipment.
6. Remove all the power wire from the equipment. If the power wire is to remain for future projects, use electrical tape to insulate the ends of the bare power wire.
7. Ensure that all associated jumpers and interconnecting wiring connections have been removed from the device.
8. Take care in the removal of the equipment. If the equipment is electrical static sensitive, wear an electrical static wrist wrap while handing the device. Be sure the package or wrapping the device is going in is an electrical static approved container.
9. Label all equipment for easy identification and shipping.
10. Package the removed equipment so that it isn't damaged during transport.

5. CABLE REMOVAL/MINING

5.1 Considerations

Cable mining is considered a 'High Risk' activity and should only be carried out after the appropriate approvals have been received and precautions have been reviewed in order to protect the network, personnel, and equipment from failure. Cable mining will only be performed during scheduled maintenance windows and approved by the appropriate organizations.

It is important to remove unused and abandoned cables so they do not interfere with future XYZ equipment installations, cause heat dissipation issues (also known as 'Hot Spots'), or congest the overhead cable trays and rail systems inside cabinets. If cables are not removed and over time more cables are installed, it becomes increasing complicated to remove them. Abandoned cables can be a fire hazard due to the additional material to burn.

REFERENCE: For cable mining and removal standards, refer to the Telcordia Standards GR 1275 document.
REFERENCE: For fire safety information regarding cable bundles and the removal of unused cables, reference the NFPA-70, *National Electric Code*, sections 300.21, and NFPA-76, *Standard for the Fire Protection of Telecommunications Facilities*, section 9.9.3. All excess, dead, and unidentified cables should be removed to reduce the amount of fuel in the event of a fire.

Guidelines for removing cables -

- When removing cables, exercise extreme care around existing fiber cables to avoid physical stress. Introducing micro-bends and stress to fiber can induce errors into a live network.
- For cables that need to be cut, they should be cut at the equipment source end and then mined towards the opposite end.
- **Never cut cables at random**
- Never cut a cable in the middle where one end cannot be identified. This is especially true for power, ground, and switchboard cables.
- Only remove up to 8-12ft of cable at a time.

This information only applies to cables that are within the XYZ cage space. For cables that leave XYZ's co-location space and go to another room, contact the Carrier Hotel or site supervisor for information and inform XYZ's Operations group. A work order may be required to finish the cable mining.

5.2 Procedures for Non-Congested Cable Removal

Before any work begins, verify the cables that are to be removed:

1. Identify the cable(s) that are to be removed.

2. Use the VOM to measure the voltage of all power cables on the device to be removed to make sure they are inactive.

3. Use the VOM to read the voltage of the ground cables.

4. Locate both ends of the Cat5, Cat6, fiber jumper(s), power and ground cables. Unplug both ends of the cables and/or cut the connectors off on each end.

5. Wrap the ends of the cable with electrical tape.

6. Trace the cables from end-to-end and cut the cable ties or anything that is securing the cable(s) in place.

7. Free the cable from where it has been secured and free it from any obstacles around it. If available, use a reel to wrap one end of the cable around it.

8. Use of pulley blocks may be required depending on the length of the wire being removed and what type it is. If pulley blocks are used, place them at every corner of the wire route.

9. If the cable being removed will slide on top of or next to other cables, cover the cables that are not being removed with some type of drop cloth to prevent rubbing or snags from the cable that is being removed.

10. Connect one end of the cable to the reel and slowly start to reel the cable in. If any snags are felt, do not jerk on the reel to break the cable free. Find out where the snag is.

11. If the pulling tension on the wire increases, stop reeling the cable in and follow it to where the obstruction might be.

12. Re-secure the cable bundles that may have been unbundled after the cable has been removed. Keep the remaining cables bundled as neatly as possible.

5.3 Procedures for Highly Congested Cable Removal

When cables have been stacked in bundles to where they are in the middle or underneath groups of cables, it may be necessary to use mechanical means such as a hoist to remove the cables.

XYZ suggested cable removal procedures:

1. Identify the cable(s) to be removed.
2. Locate the ends of the cable and cut the ends off. Wrap each cut end with electrical tape.
3. Follow the path of the cable and cut any cable ties, wraps, or any other object that holds the cable in place.
4. If the cable is located between bundles of cables or at the bottom of the cable stacks, it is possible to hoist the cables up, cut the cable being removed in to sections, and remove it piece by pieces.
5. Attach the strap to a secure spot on the other side of the cable bundle. If using a hoist, make sure it is a hand hoist. The strap should be a minimum of 1 ¾ inch in width to prevent bending or damaging the cables. Lift the cables up a couple of inches so there is enough space to access the cable being removed.
6. Using a second hand hoist, secure it in the same way about 5 feet away from the first hoist.
7. Once the hoists are in place and the cable bundles have been lifted off the cable being removed, cut each end of the cable being removed as far as it can be. Remove the section of cable.
8. Release the first hoist and slowly lower the cable bundles. Leaving the second hoist in its position, set up the first hoist like before and lift the cable bundle back up. Cut and remove as large a section as possible from the dead cable.

NOTE: Make sure that any point used to anchor the hoists is secure or that the hoist points are the secure points. If the cable bundles are extremely dense or heavy, a structural or facility engineer should be consulted for a step-by-step process to remove the cable.

9. Re-bundle and re-secure the remaining cables as neatly as possible after the cable has been removed.

5.4 Procedures for Bundled Cable Removal

If a cable being removed is within a bundle of cables and cannot be pulled out then it may have to be cut in to sections and removed piece by piece. **Note:** This procedure is for non-fiber based cables.

XYZ suggested cable removal procedures:

1. Identify the cable(s) to be removed.

2. Locate the ends of the cable and cut the ends off. Wrap each cut end with electrical tape.

3. Follow the path of the cable and cut any cable ties, wraps, or any other object that holds the cable in place.

4. Place the cable that is to be removed in one hand or inside of ring cutters. This will ensure that the appropriate cable will be cut.

5. Holding on to the cable, move the hand holding the cable along it until about an arm's reach away. While still holding the cable, mark one end of the cable that will remain in the bundle and use a pair of cable cutters to cut the other end of the cable. Be sure the end of the cable that has the mark is the end that will be left in the bundle.

6. Remove the cut section of cable.

7. Repeat steps 5 to 7 for the rest of the cable.

8. Re-bundle the cable as neatly as possible after the cable has been removed.

▼ CAUTION: When using this method of cable removal, never release the cable that is being removed unless it has been clearly marked.

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5.5 Procedures for Between Room Cable Removals

When removing cables between a XYZ Telecommunications room and an adjacent room not owned or leased by XYZ, contact the facility's engineering/operations team to confirm the cable being removed is clear of obstacles and potential issues. When working between floors, always begin on the top floor and continue downward where possible. Always use caution to not lose control of the cable.

5.6 Recommended Tools for Cable Removal/Mining

Ring Cutters	Cable Cutter (Closed End Only)
Cable Reel	Rubber Blanket
Cable Ties / Velco	Rubber Gloves
Drop Cloth	Electrical Tape
Safety Eyewear and Headwear	Wire Cutters
Hand Hoists and Pulleys	Power Cable Cutters (Closed Ended Only)

6. FLOOR REPAIR

Take care when moving equipment around in XYZ facilities to not damage the floors. As outlined in previous steps, if moving equipment between the loading bay and telecommunications closet, use some sort of barrier between the cart with the equipment and the facility floor.

6.1 Concrete Flooring

Refer to in-house document NP-200-200A for steps repairing concrete floors that had anchor bolts used. The anchor types can be from stanchion poles, equipment racks, or other items that required the use of anchor bolts.

6.2 Raised Computer Flooring

Tiles that have cutouts or damage from the installation of equipment racks, HVAC ducts, electrical circuits and outlets should be replaced with either solid or perforated tiles (where applicable) once equipment has been removed.

Most of XYZ's raised floor facilities will have extra tiles in storage that can be used to replace the damaged tiles. If there are no tiles, contact the building engineer for direction on where additional tiles can be acquired.

7. HANDLING OF REMOVED MATERIALS

There are three main categories for handling equipment that has been removed:

1. Sell or scrap the equipment at the site.
2. Transfer the equipment:
   a. To another XYZ site via a site-to-site transfer
   b. To the warehouse for staging (*Staging is the act of temporarily storing the equipment until it can be shipped to another location*)
3. Return it to the XYZ warehouse:
   a. The XYZ warehouse will handle the disposal or scrapping of the equipment
   b. Equipment will be placed back into inventory for use at another site and will be available to all departments.

⚠ **NOTE:** Removed equipment **cannot** be abandoned at the facility. All removed equipment must be handled by one of the three options listed above.

⚠ **NOTE**: Equipment that will be shipped to the warehouse or to another site must not have any parts removed or the device itself reconfigured from the time it was removed from the network. All documented equipment must be present.

7.1 Packing

All equipment must be packed in adequate cartons and crates per specific device type and size. Review the Material Transfer Forms to see what materials are required for shipping devices and a packing list order. The following are suggested XYZ packing practices:

- Do not pack equipment that is designated to be scrapped or sold on site.
- Salvage all the hardware that was used when the equipment was installed. For small items, place them in plastic bags and either tape the bag to the chassis or place in the shipping container next to the main device. Place larger items in the crate with the main device. Make sure items are covered and situated to not cause damage during shipping.
- Use only approved static sensitive bags and containers when shipping electro-sensitive equipment.

7.2 Shipping

Fill out all the appropriate shipping forms, labels, and tags for the equipment being shipped. Contact a XYZ Telecommunications approved transport service to schedule a pickup time and place the shipping tags in the appropriate location on the shipping boxes.

8. DOCUMENT INFORMATION

Any updates to this NP should receive approval from at least two XYZ Telecommunications managers from any of the Engineering, Installation, and Operations groups.

8.1 Approvals

Date Created:	4/15/2019	
Last Revised:	1/30/2020	
Approved By:	Joe Dirt	'Macho Man' Randy Savage
	Hulk Hogan	

8.2 Subject Matter Expert and Approval History

Name and Title	Division	Date
JONES, Daniel	Zone A	4/27/2019
JONES, Daniel	Zone B	5/17/2019
JONES, Daniel	Zone C	7/1/2019
JONES, Daniel	Zone D	01/30/2020

9. STYLE SHEET

Special Symbols

⚠ Use the symbol to call out notes to the reader to point out vital information about a topic.

⚠ Use the symbol for cautionary statements where there may be physical or mental harm

Permissions/Credits Needed

-

Tables, Figures, Captions

Cite the source of any pictures used in this article

New section headings need to be in Heading 1 style, Arial font, black color, bold, size 12.

Section sub-headings need to be in Heading 2 style, Arial font, black color, bold, size 11.

Non-heading and sub-heading document text is to be Arial format, size 11 font.

Numbers and Dates

Spell out numbers under 10, except for units of measurement

If any measurements are used, use Imperial system

Use 'to' when specifying a number range (Ex: 11 to 20)

Abbreviations

etc. is OK in parenthetical expressions only

The use of **e.g** is OK

Spell out units of measurement (Ex: in. is to be inches)

Employee Health and Safety to EHS

Volt-Ohmmeter to **VOM**

Power Distribution Bay to **PDB**

Secondary Power Distribution Bay to **SPDB**

Power Distribution Unit to **PDU**

Shorten the name XYZ Telecommunications to **XYZ**

Method of Procedure is **MOP**

Material Transfer Form is **MTF**

Change Management Control is **CMC**

Category 5 and 6 cable is **CAT5/6**

Material Transfer Form **MTF**

Miscellaneous

One space between page header, topic, and main paragraph body

No indentation for subject matter

Using "Justify" margin settings

Two spaces between sub-topic sections

Text in tables is size 9 and Arial format

Refer to engineering groups as "Organizations"

Italicize additional information in parenthesis

Bold the titles of new article sections

'they shall' meaning the referenced group at the beginning of the document or those performing the task mentioned

Punctuation
Contractions OK
Serial comma (a, b, and c).
Possessives: XYZ Telecommunication's

10.Alpha List

Traffic-bearing	Removal/Installation
Masonite	Anti-flammable
Project Engineer	Duct-tape
Planner	On-site
Re-secure	Co-location
Deployment Manager	'High Risk'
Operations Supervisor	Micro-bends
Network Operations	Inter-cage
Manager	Non-fiber
Off-site	Step-by-step
Lead-time	Site-by-site
Re-bundle	End-to-end