



Network Implementation Services

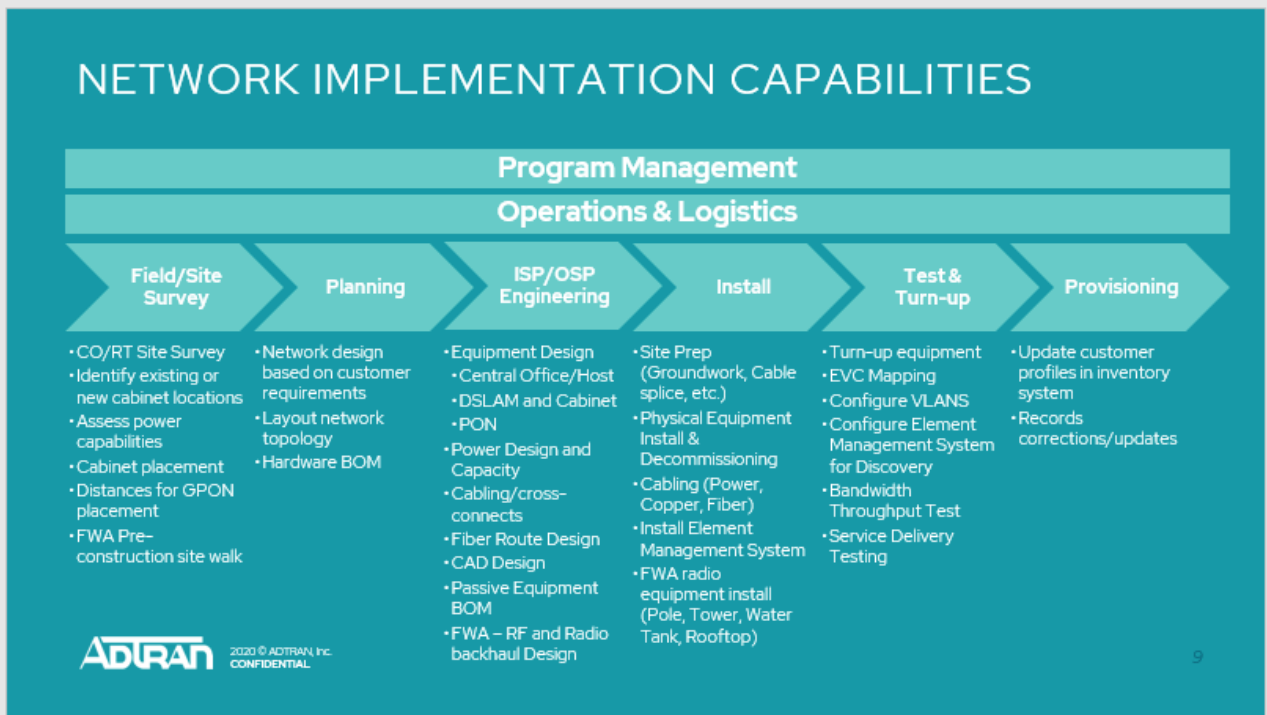
Generic Services
Statement of Work

GPON

OVERVIEW:

At ADTRAN, we know that you want to provide an exceptional experience for your customers. We also understand that new technologies and cloud thinking are bringing a new level of sophistication to your growing network. The ADTRAN Services team will be there to help design, build, and maintain your network with personalized services to help you reach your network and customer retention goals. We will work with you in navigating the challenges that might arise when managing a multifaceted network. With the pace of changing technologies, it is not always easy to devise and execute a plan to reach your network goals. But we are here to help. We will assist you every step of the way, helping turn your network goals into real, actionable plans.

The ADTRAN Services Scope of work (SoW) shall include Site Identification, Planning, Engineering, Site Prep, Installation, Test & Turn-Up, and Provisioning. ADTRAN Project Management will develop an implementation schedule that will be coordinated with [Customer]'s Project Plan. This implementation schedule shall meet the mutual objectives and milestones of the project. The following general steps will be taken to plan the transition and implement the Services described in this SOW. Design, Execution, and Implementation milestones will be invoiced per unit as they are completed, and deliverables are accepted by [CUSTOMER]. ADTRAN assumes that [CUSTOMER] will provide all necessary accesses to internal engineering systems and provide proper training on such systems, if needed. Future revisions of this SOW will be required to support deployments not outlined within this program.





[CUSTOMER] SOW SUMMARY:

PROGRAM/PROJECT MANAGEMENT (ADTRAN):

Scheduling, Coordination, Tracking, Reporting, Risk Assessment, Administration into Project Management tools shall be performed by the ADTRAN PMO team. The ADTRAN PMO team will be responsible for tracking the master program and providing updates all on risk mitigation in reference to this document. ADTRAN will develop a detailed program plan in a phased approach that will outline the requirements and timetable for Design, Execution, and Implementation activities.

DESIGN PHASE:

RIGHT OF WAY SITE ACQUISITION ([CUSTOMER]):

It is assumed that equipment will be installed at existing sites. Any Right of Way acquisition requirements will be [CUSTOMER]'s responsibility. ADTRAN will direct all ROW issues to assigned [CUSTOMER] Local Engineer.

SITE SURVEY (ADTRAN):

Site visit shall capture details pertinent to planning and engineering of site. This information includes heat, space, power, location of site, and any other site-specific details required to design the site. These details will be captured on an ADTRAN Site Survey Form using a mobile application system and will be provided to [Customer] via final engineering documents for future use.

PLANNING (ADTRAN):

Utilizing the Basic Site Information and Site Survey ADTRAN will perform all work necessary to research the proposed project to determine the best possible solution within budget guidelines. This includes performing a network assessment while reviewing all records, site location availability to find spare fibers, determination of new structure placement (if required), and origin of fiber feed. Once the best possible solution has been determined and agreed upon with the customer, ADTRAN will create a planning package to be delivered to [Customer] and ADTRAN Engineer which contains the project narrative and projected expenditures.

ENGINEERING (ADTRAN):

Using a [CUSTOMER] provided planning document that outlines the work order detail, ADTRAN would verify existing site information and create a Scope of Work for the site. Engineering includes creation of detailed EDP/SPEC Engineering Package (BOM, Installer Notes, etc.). BOM will be delivered to [CUSTOMER] for equipment/material ordering. Utilizing a completed site survey and the standard [CUSTOMER] Engineering Specification template (to be agreed upon before work begins); this service component will create an Engineering Specification Package. During Engineering, ADTRAN will perform proper power and heat calculations for the new equipment and deliver any actions due to inadequacies to [CUSTOMER] Local Engineer. CAD Construction Prints will deliver all structural locations and [Customer] requirements along with current ROW conditions and existing utilities. ADTRAN shall specify in the Engineering Specification Package all network equipment and installation of materials associated with each device being installed. It is assumed that [CUSTOMER] will order all materials either from ADTRAN or 3rd party necessary to complete the site and as mentioned in the Engineering Specifications Package. ADTRAN shall update all site information within the original site survey package to reflect the final installation location of all installed equipment per an ADTRAN Redlined Specification and shall provide this to [CUSTOMER]. ADTRAN will direct/assign all ROW issues to [CUSTOMER] Local Engineer. If Maintenance of Traffic (MOT) or Barricade Plans are required, ADTRAN assumes this effort will be completed using the Permitting units. ADTRAN assumes [CUSTOMER] will work with ADTRAN on any required systems access and training requirements to properly engineer project.

FIBER DESIGN (ADTRAN):



ADTRAN will perform all necessary work to design aerial, buried, and underground telecommunications facilities including but not limited to fiber cable, poles, terminals, pedestals, hand holes, manholes, duct runs, racking and splice cases. It will include pre-planning and review of design schematics and cut sheets with [Customer]. ADTRAN will be responsible for obtaining records and maps required to complete design from [Customer] systems; identifying cable counts and tabulation of labor and material associated with design. Determine all permits required by permitting agencies or easement owner applicable to scope of work. CAD Construction Prints to be compliant with local permitting requirements.

PERMITTING (ADTRAN)

Utilizing the Planning and Engineering documents, ADTRAN will perform all necessary work to prepare letters, forms, drawing maps, digital photographs, and any other type of details required by the permitting agency or easement owner and submittal of such permit package to the permitting agency on behalf of [Customer]. This includes necessary Right of Way research, title search, and permits as well as obtaining any existing facilities information from municipality or utility that may be required. This shall include an exhibit, sketch, digital picture, and narrative sufficient enough to describe the effort to which the permit is required. Permitting units will be broken out into Basic Permitting and Complex Permitting to support the requirement variables that fluctuate between states, municipalities, agencies, and utilities. Permit fees will be paid for by ADTRAN on behalf of [Customer] and cost returned using a designated unit. If a Professional Engineer (PE) Stamp is required, such unit will apply to obtain the stamp and cost returned using a designated unit.

POLE ATTACHMENT/JOINT-USE APPLICATIONS (ADTRAN):

All work necessary to determine all JU/JPA requirements and application guidelines/deliverables required by pole owners applicable to the scope of work. ADTRAN shall identify, analyze, prepare, submit, and track on behalf of [Customer] all required pole attachment applications, pole replacement applications, and Joint Pole Administrators (JPA) to support licensing of the attachment. ADTRAN shall manage the applications through the utility approval process resulting in a license to attach. Application fees will be paid for by ADTRAN on behalf of [Customer] and cost returned using a designated unit. Make ready engineering will be completed by [Customer] to determine all necessary transfers, rearrangements, arms, guys, and anchors required by all pole owners and tenants to accommodate [Customer]'s attachment. [Customer] is responsible for the attachment agreement and all legal requirements that accompany the agreement.

EXECUTION PHASE:

MATERIAL MANAGEMENT (ADTRAN):

ADTRAN will handle logistics surrounding material management on associated work orders assigned/awarded to ADTRAN. This includes:

1. Tracking of material/product, in addition to receipt of all materials at an ADTRAN/[CUSTOMER] designated location
2. Inventory of material/product processing (Scan and Email) of any packing slips to [CUSTOMER] for receipting
3. Allocation and Staging of material/product
4. Handoff and sign-out of Material/Product to ADTRAN field engineering for installation at site
5. Processing of any RMAs necessary, prior to or during, installation of a site.
6. Any excess material/product purchased or removed from a site, will be staged and turned over to [CUSTOMER] at the end of the associated program, or at various points during the program, as agreed to.



OSP CONSTRUCTION (ADTRAN):

OSP conduit and cables to be placed by ADTRAN at existing cross-connect location, ADTRAN's assumption is "no" Fiber Extension (or Replacement) nor any Fiber Splicing is required in the route. The placement of the pole with up to a 100' run of fiber will be completed by ADTRAN. Grounding will be placed, according to local grounding standards. No more than 4 rods shall be placed, per scope. Additional grounding rods can be covered as an adder, if required, to reach a 25 OHM standard. Fiber splicing at site is to be performed by ADTRAN. ADTRAN to terminate Fiber. If line powered, it is an assumption there will be no line power pairs to be installed by ADTRAN. All power shall be placed by [Customer], per local power company requirements, at all individual locations. Per this scope, [Customer] shall work with an ADTRAN PM and assigned [Customer] Engineer for all power requirements and permits. The new equipment will be spliced directly into the existing Fiber Distribution Panel or Parking Lot Panel and it is assumed there is sufficient fiber installed to support the equipment being added.

INSTALLATION OF TA5000 AT EXISTING CO, CEV, OR HUT LOCATION (ADTRAN):

ADTRAN shall install a single TA5000 in a Central Office, in a CEV, or in a Hut. This includes cabling the shelf in its entirety utilizing existing cable management (ladder rack and existing support infrastructure) ADTRAN assumes there is existing fiber and fiber distribution panel block available. ADTRAN assumes that existing space, heat, and power are sufficient to support the new shelf install.

INSTALLATION OF HOST UNIT AT EXISTING FIBR DISTRIBUTION PANEL LOCATION (ADTRAN):

ADTRAN shall mount TA5004/TA5006 Remote OLT onto new cabinet or stub pole. Terminate cables into TA5004/TA5006 (Including: uplink V-, fiber distribution cables, network management cable, etc.). ADTRAN shall seal cable entrance into fiber splitter connections..

FIELD TEST AND TURN-UP (ADTRAN):

ADTRAN shall power up equipment. ADTRAN shall connect to craft port and enter network management information (IP Address, Subnet Mask, Node #, etc.). ADTRAN to consult with internal [CUSTOMER] network engineers to develop all coordinating information. ADTRAN shall turn-up and speed test equipment and will work with internal [CUSTOMER] network engineering to gain access to all equipped network elements to achieve TTU. ADTRAN assumes no IPTV testing will be required (IPTV testing can be included in the pricing model as an 'Adder' if required). Any delays outside of ADTRAN control may incur additional charges for downtime. The quantity of the Client TTU unit invoiced will be based on the number of Clients TTU at the site.

ADDITIONAL UNITS FOR PROCESSING JOB CHANGE ORDERS (ADTRAN):

ADTRAN shall utilize these additional units as needed to cover the various circumstances that may be experienced during field execution. Return Trips are intended for use when a stop and start of the project apply outside of ADTRAN control. Return Trips are not intended for multiple use on consecutive days and will be handled through the JCO Process. The Additional Work Unit covers out of scope work, troubleshooting, etc. requested by [CUSTOMER] under this program that does not fall into another unit. The Additional Work Unit is intended to be used as an incremental unit and will be handled through the JCO Process. Downtime compensation for standby/downtime caused by other entities outside of ADTRAN control will be billed on an hourly basis and will be handled through the JCO Process.

IMPLEMENTATION PHASE:

BROADBAND DEPLOYMENT AUGMENTATION (ADTRAN):

Augmentation of existing service will require [CUSTOMER] OPS with ADTRAN resources dedicated to deployment. This will help assist in the reduction of wait times and improve efficiency of field resources. If ADTRAN is not performing this function, additional charges may apply due to wait time. ([CUSTOMER] to provide workstation on [CUSTOMER] premise for an ADTRAN FSE/SME with facilities, including accesses and training to various [CUSTOMER] Systems).

ADTRAN shall validate engineering and provisioning changes per customer to include any affected equipment within the [CUSTOMER] network from the Core to the Access device. ADTRAN shall consult on all OEM gear but is not responsible for deficiencies in such OEM equipment. It shall be the sole responsibility of [CUSTOMER] to engage OEM vendors for such deficiencies.

For example, the addition of a new OLT requires provisioning from the Core to the Access Devices.

- Caveats:
 - Subscriber migration: ADTRAN shall be responsible for the physical subscriber migration and circuit rolls but will require a SME on all OEM equipment from [CUSTOMER] to assist in cut sheets from OEM equipment to the ADTRAN DMT. Circuit rolls within aggregation and core networks shall be the sole responsibility of [CUSTOMER], as ADTRAN is not responsible for such communications per customer outlined scope. ADTRAN to perform the layout and engineering of such Layer 3 provisioning as a consultant but is not responsible for such provisioning changes. ADTRAN can provide changes at an additional cost.

- Escalation:
 - Non-Outage escalations shall go through normal [CUSTOMER] channels for associated equipment.
 - Outage escalations shall go to the normal channels and ADTRAN can be consulted on a per network basis.
 - Product escalations shall go directly to the product OEM (TAC).
- Systems Access:
 - [CUSTOMER] to provide systems access (Login and Password credentials) to ADTRAN personnel.
- Point of Contact:
 - Once access is established, [CUSTOMER] has responsibility to maintain access in accordance with ADTRAN personnel.
 - Points of Contact (POC): [CUSTOMER] to provide all necessary POCs to facilitate communications between the ADTRAN groups and the various Engineering, NOC, and Operations organizations.
- ADTRAN shall provide a roster of BBD Engineering personnel to [CUSTOMER] and maintain the roster on a regular basis.

RECORDS REVIEW:

ADTRAN services shall perform records review and verify updates to ensure all required [CUSTOMER] systems and databases are updated to meet standard network practices. [CUSTOMER] to provide a list of required records systems and databases. ADTRAN can provide consulting on systems used within other network deployments to [CUSTOMER], if required.

*Additional systems which may be required must be identified and added to the SoW once agreed upon.

ADTRAN to provide consulting on network standard best practices to [CUSTOMER] but is not held responsible for decisions made outside of ADTRAN's recommendations.

- Deviations in design conformance:
 - ADTRAN shall identify any deviations in the design conformance. ADTRAN engineering shall make

corrections within records to ensure that final engineering conforms to best practices standards.

- Provisioning removals:
 - Input from [CUSTOMER] is often required for provisioning removals. ADTRAN shall co-ordinate within [CUSTOMER] for provisioning removals. Any service affecting records updates require that MOPs be peer reviewed within [CUSTOMER] and ADTRAN consulting before implementation.
 - MOPs are not required for non-service affecting records updates. During initial deployment MOPs shall be prepared to ensure deployments meet standards and conforms with best practices that have been laid out in the FOA. MOPs are required for all service affecting applications. Records re- work due to [CUSTOMER] errors or planning/engineering changes shall be evaluated for additional billing. Records re-work due to ADTRAN errors shall not be billable.

ASSIGNMENTS AND PRE-PROVISIONING:

- ADTRAN Scope of Work shall include:
 - Assignments and MOP's for all ADTRAN affected devices and paths per best standards and practices.
- The ADTRAN services scope includes, in conjunction with [CUSTOMER]:
 - All IP and VLAN assignments are required for all deployments identified within this scope. ADTRAN will consult on all required VLAN and IP schemes. ADTRAN is responsible for all Layer 2 aspects within deployment. ADTRAN to provide consulting on all OEM equipment but is not responsible for identifying deficiencies within such equipment for all deployments.
 - ADTRAN shall not to be responsible for any physical installs or the implementation process for any OEM devices without additional costs. ADTRAN can provide such service via 3rd party or within the ADTRAN services group, per [CUSTOMER] request.

MOPS:

ADTRAN BBD includes the following MOP tasks, MOP requirements include but are not limited to:

- Defined intent of change
- Pre-maintenance service checks
- Post-maintenance verification checks
- Back-out procedure
- Implementation contact information and escalation contacts

Existing MOPs can be used for non-service-affecting events. Event-specific MOPs are required for service- affecting events such as Node Insertion, QoS provisioning (requires node reset), and other service affecting events. ADTRAN will provide a MOP template for MOP creation. ADTRAN to work with [CUSTOMER] to develop such documents and may require a SOW update once completed. ADTRAN services is responsible to implement MOP's during deployment and all MOP's to be peer reviewed before implementation. ADTRAN shall schedule maintenance events and perform associated work in a peer defined maintenance window.

It is ADTRAN sole responsibility to engage field resources and any other required personnel to complete a MOP provided. Delays due to [CUSTOMER] errors or planning/engineering changes shall be billable. Delays due ADTRAN errors shall not be billable.

DEVICE UPGRADE:

ADTRAN is responsible for ensuring all ADTRAN systems are up to the current systems software revisions. ADTRAN will provide consulting on what software revision, or code, should be installed on each system. ADTRAN can provide upgrade services after initial deployments at an additional cost. Service upgrades, after the first customer deployment, is not



included in the current SOW. ADTRAN is not responsible for OEM vendor upgrades