



ADSL Layer 2 Assurance

The Structural Separation Undertaking (SSU) is a set of commitments Telstra has made to the ACCC that requires Telstra to provide transparency and equivalence in relation to the supply by Telstra of wholesale and retail services on Telstra's Copper Network. The Network Services Business Unit (NSBU) has principal control over and responsibility for:

- service activation and provisioning; and
- fault detection, handling and rectification,

for regulated services provided to wholesale customers and equivalent services provided to retail customers. NSBU staff and contractors must therefore understand and comply with the commitments made in the SSU.

The NSBU utilises equivalent systems, processes and procedures for the assurance of ADSL Layer 2 services for both retail and wholesale customers including the issuing, processing, management and completion of tickets of work issued to field staff. This ensures that the fault detection, handling and rectification of an ADSL Layer 2 service can occur in an equivalent manner regardless of whether a ticket of work was received from a retail or wholesale customer.

Fault Detection, Handling and Rectification – Wholesale Asymmetric Digital Subscriber Line (ADSL) Layer 2

This document describes the end-to-end view of processes and systems used in the fault detection, handling and rectification of Wholesale ADSL Layer 2 services. The Wholesale ADSL Layer 2 service is a broadband service which provides access to the world wide web and works off a fixed telephone service.

Fault management system

Service Improvement in Assurance Management (SIAM) is a tool used for reporting customer faults and service difficulties. SIAM manages the lifecycle of faults including incident capture, problem diagnosis, restoration activity tracking and fault restoration details. SIAM will create cases from a number of different media such as auto-creation from external systems, manual and via the web. These cases are then either resolved by Front of House (FoH) staff at the initial point of contact (out of scope of this process document), or dispatched to various queues within SIAM to be resolved by the appropriate remediation group.

Linx Online Service (LOLS) is a web-extension of the SIAM assurance Management System and is Telstra's wholesale service assurance fault ticketing system. The LOLS application is integrated in the background with the SIAM application.

LOLS allows, in a secure online browser environment, the Access Seeker (AS) to:

- lodge a fault report for its end user
- view relevant real time notes and test results entered by Telstra operational workgroups, technical engineers and field staff;
- view reschedule notification emails sent by Telstra in LOLS notes;
- interact with Telstra technical staff with additional notes and updating information within LOLS;
- view up to date information on major network outages;
- view Incorrect Callout Charge information; and
- close a fault report.

Fault allocation

Business rules that are configured in SIIAM/LOLS will determine the appropriate course of action for fault resolution. Initial SIIAM testing and diagnosis will determine whether the case is assigned to testers or specialist groups for further testing and investigation or whether a sub-case is created and dispatched to the field workforce for rectification. Details from the preliminary testing that occurs during order entry will be provided on the ticket of work to assist in the restoration process.

Where a field sub-case is created on an order, SIIAM/LOLS interfaces with the field workforce management system, PROMISE MOBILE to book an assurance appointment (where testing has indicated that access to the end user premises may be required) or to make a commitment timeframe in which to restore the service (where access to the end user premises is unlikely to be required) which is sent through to the field workforce for resolution.

Once this task is received in PROMISE MOBILE, the Back Ground Optimiser (BGO) (automated system) allocates the tasks to the Communications Technician (CT). This may need further manual refinement or rescheduling by the Field Resource Co-ordinators.

Fault Detection and Handling

Prior to conducting testing the CT will contact the wholesale customer to advise that they will be working on the fault.

The CT will view the fault details in PROMISE MOBILE via their Tablet. PROMISE MOBILE is a software application through which the CT gets visibility of task details. The CT will then perform a FAST/OATS and Customer Access Network Test Set (CTS) test which assists to identify the potential location of a fault and provide current service specifications.

FAST is a tool utilised to provide field staff with a standard network based testing environment. To do this FAST interfaces with the Subscribers Universal Line Test Access Network (SULTAN) via an Interactive Voice Response (IVR) unit. SULTAN is Telstra's national system for remote testing and fault diagnosis of Public Switched Telephone Network (PSTN) services, principally the Customer

Access Network (CAN), customer premise equipment, and the associated exchange inlet. FAST translates the test results that SULTAN provides via the IVR. FAST provides the basic line tests of:

- Foreign Battery;
- Insulation Resistance to Earth;
- Insulation Resistance between the A and B Legs;
- Capacitance; and
- Open Circuits.

The service will proceed through each of these tests separately, and the results of a particular test will determine whether the service will proceed to the next test. If an out of specification result is received the CT is then automatically offered a second level test. This option runs all tests again.

OATS is an online tool available to the field workforce and the AS for testing ADSL. There are three package tests available via the OATS tool:

- Package test with premises parameters set;
- Package test with exchange parameters set; and
- Single test to the premises or exchange.

OATS gives the maximum amount of data and performs FAST testing checks as well as the Remote View On Port (RVOP) and ADSL tests. These tests will ascertain whether the ADSL service is within specification, as well as check the speed and whether the end-user username is logged on.

The CTS Standard Model is a multi-functional test unit designed to provide the CT with the core test functionality for copper pair testing in one unit. The functionality list of the CTS is:

- Multi-meter (AC/DC, loop resistance);
- Resistance Fault Location (RFL);
- Pulse Echo Testset (PET);
- Capacitance meter;
- Balance meter;
- Remote device; and
- Noise/Pair quality.

All FAST/OATS and CTS test results are recorded and reported in a database (CRUX) to assist in managing any future fault tickets of work.

Where the service is testing within specification and the wholesale customer is satisfied that the service is working without fault symptoms, then no further fault location/repair action is required and the fault ticket of work can be closed as completed.

Fault Rectification

Where the service is not testing within specifications, the CT will travel to the first work location (end-user premises, exchange, pillar, pit, etc.). When the CT arrives at the first work location they will conduct further testing with appropriate fault locating equipment to identify the fault location. The CT will verify the ADSL signal to the Telstra Gateway via OATS testing, checking modem sync, lights and

power and using ADSL Test gear to prove signal at the Network Boundary Point (NBP) (usually the main distribution frame or the first socket within the premises) and conduct further isolation testing if required. End user premises equipment and premises cabling faults attract fee for service charges if the fault is deemed to be within the end user's CPE or internal cabling. In-line and central filters are also checked to confirm if all installed devices across the service are correctly filtered or if they will interfere with the ADSL modem. If an ADSL signal is present at the cable pair then the CT will identify any potential source of a fault symptom within the network provisioning the service and complete any required repair, replacement or, if the current network path is unable to be restored, the transposition of the service to an alternate network path, to restore the service to specification.

The CT will also keep the wholesale customer informed of progress, the expected completion time and the likelihood of service interruptions.

Upon repair of the service the CT will conduct another FAST/OATS and/or CTS test to ensure the service is testing within prescribed technical specifications before completing the ticket of work. Both FAST and CTS test results are uploaded into CRUX.

The CT will then contact the wholesale customer and inform them that the service has been restored to ensure they are satisfied prior to completing the ticket of work.

When completing the ticket of work the CT will populate the clearance code details needed to complete the task in PROMISE MOBILE, and add any relevant completion comments. They will ensure accurate restoration times are recorded when completing the ticket of work. The restoration time used is the actual time the service was restored and not the time when all activities associated with the ticket of work were completed.

Where the service has been restored by way of transposition to an alternate network path, the CT will enter a Customer Network Improvement (CNI) into the CNI database in PROMISE MOBILE, identifying the faulty network element and the required work to remediate the infrastructure to standard. As this network element is no longer provisioning the end-user these are managed in a separate process.

Where the attending CT is unable to complete the repair work (such as where additional resources are required) to restore the service, the ticket of work is passed over to another workgroup for rectification and completion. The CT will incomplete the ticket of work, following approval from their team manager, and add extensive details regarding the minimum scope of work to restore the service, possible solution, location of the fault, test results, details of any wholesale customer or end-user contact, team manager sequence number, name and contact number, customer priority and whether the fault is affected by an outage. The CT will contact the wholesale customer and advise of the reasons for the delay in restoration.

The workgroup who receives the ticket will read all relevant notes and details provided by the CT and then conduct further necessary testing as required to further isolate the fault. The workgroup will arrange for civil work to be completed, haul and joint cable, and obtain materials or parts necessary to provide a lasting repair to restore the service following the standard process.

There may be other reasons the CT is unable to complete a task. These reasons could include:

- extreme weather conditions;
- insufficient time and/or spare parts required; and
- end user not in attendance.

If the CT is unable to complete the task for any reason, they will update the task to reflect the incomplete reason, with appropriate notes and incomplete code. The ticket of work will then be seen in a review queue in PROMISE MOBILE. From that point, the ticket of work will be manually managed by the customer service consultants for that geographic region, who will liaise with the customer to reschedule the appointment/commitment for a later date or seek after hours attention, if required. The fault will then be restored following the standard process.

Notification of Fault Restoration

When a service has been restored, and the CT enters the appropriate clearance code in PROMISE MOBILE, the case will be auto-closed and SIAM will automatically receive a transaction update from PROMISE. The response and restore times are also translated into the relevant fields in SIAM.

When the service is restored and the case closed, the wholesale customer will automatically receive an SMS or e-mail (generated by SIAM), according to the preferred contact method selected by the wholesale customer, to advise the service has been restored.