

Title	Apply diagnostic techniques to identify the location and cause of faults in complex network systems and services		
Level	4	Credits	10

Purpose	<p>This standard is intended for technicians who work on complex telecommunications networks.</p> <p>People credited with this unit standard are able to apply diagnostic techniques to identify the location and cause of faults in complex network systems and services.</p>
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Classification	Telecommunications > Telecommunications - Service Delivery
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Available grade	Achieved
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Guidance Information

- 1 Learning and assessment within this unit standard must be carried out in accordance with the following legislation, guidelines, and codes of practice, as relevant to role, and any subsequent amendments:
 - New Zealand Telecommunications Forum Inc., Customer Complaints Code, available from <https://www.tcf.org.nz/industry/resources/publications/industry-standards-guides/>;
 - Health and Safety at Work Act 2015;
 - Privacy Act 2020;
 - Resource Management Act 1991;
 - Telecommunications Act 2001, all available from <http://legislation.govt.nz/>.
- 2 Definitions

Complex refers to three or more components and/or services used together in networks or enterprise solution systems.

Half-split refers to a fault location technique in which the system is continuously split in half, and the faulty section isolated for further investigation.

Industry practice refers to practices that competent technicians within the industry recognise as current industry best practice.

Specifications refer to detailed job specifications, drawings, instructions, manufacturer's specifications and instructions or any employer or company specifications.
- 3 For the purpose of this unit standard, assessment can take place in a core network, access network, or wireless technology telecommunications work environment.
- 4 Range

Evidence for three different worksites is required.

Outcomes and performance criteria

Outcome 1

Apply diagnostic techniques to identify the location and cause of faults in complex network systems and services.

Performance criteria

1.1 Diagnostic techniques are applied to locate faults on the network in accordance with industry practice.

Range techniques may include but are not limited to – observation, simulation, measurement, identification of function loss, comparison, and previous fault data including frequency of occurrence, manufacturers' documentation and diagnostic data, maintenance records, trending, built-in diagnostics, alarm priority, comparison with commissioning results.

1.2 Faulty sub-systems on the network are identified in accordance with industry practice.

Range evaluation of performance tests, use of built-in test equipment and diagnostic tools, systematic testing, isolation of subsystems.

1.3 Faulty components on the network are identified in accordance with industry practice.

Range systematic testing, half-split, loop back, transposition.

1.4 External causes of a given fault and their solutions are identified and recorded in accordance with specifications.

Range faults may include but are not limited to – mechanical versus electrical, control circuit versus power circuit, environmental influences, module versus wiring and terminations.

1.5 Diagnostic techniques that affect the operation of working systems are addressed in accordance with industry practice.

Range standby paths, power supplies, interference, impedance mismatch, use of monitoring points.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 May 2019	N/A
Rollover and Revision	2	25 January 2024	N/A

Consent and Moderation Requirements (CMR) reference	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.