COMMUNICATIONS ALLIANCE LTD

INDUSTRY GUIDELINE

G675:2025

NETWORK MANAGEMENT FOR EMERGENCY CALLS

G675:2025 Network Management for Emergency Calls Industry Guideline

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INTRODUCTORY STATEMENT

The G675:2025 ***Network Management for Emergency Calls*** Industry Guideline is designed to address Recommendation 16 in the *Government Response to the Bean Review Final Report* and give industry guidance on:

- Establishing "*the ability to remotely access and activate network management tools … in the event of a core network outage*"; and
- Having "*sufficient network redundancy to deploy" these network management tools "in the event of a core network outage*".

James Duck
Chair
Network Management for Emergency Calls Working Committee

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1 GENERAL

1.1 Introduction

1.1.1 Section 112 of the *Telecommunications Act 1997* (the Act) sets out the intention of the Commonwealth Parliament that bodies and associations representing sections of the telecommunications industry develop industry codes relating to the telecommunications activities of participants in those sections of the industry.

1.1.2 The development of the Guideline has been facilitated by Communications Alliance through a Working Committee comprised of representatives from the telecommunications industry and Government regulatory agencies.

1.1.3 The Guideline should be read in the context of other relevant codes, guidelines and documents.

1.1.4 The Guideline should be read in conjunction with related legislation and regulatory instruments, including:

(a) the Act; and

(b) the *Telecommunications (Emergency Call Service) Determination 2019* (the Determination).

1.1.5 If there is a conflict between the requirements of the Guideline and any requirements imposed on a Carrier by statute, the Carrier will not be in breach of the Guideline by complying with the requirements of the statute.

1.1.6 Compliance with this Guideline does not guarantee compliance with any legislation. The Guideline is not a substitute for legal advice.

1.1.7 Statements in boxed text are a guide to interpretation only and not binding as rules.

1.2 Scope

1.2.1 The Guideline applies to the 'Carriers' section of the telecommunications industry under section 110 of the Act.

1.2.2 The Guideline deals with the 'carrying on business as a Carrier' telecommunications activity as defined in section 109 of the Act.

1.2.3 The Guideline does not apply to the following sections of the telecommunications industry under section 110 of the Act:

(a) Carriage Service Providers; or

(b) Persons who manufacture or import Customer Equipment or Customer Cabling.

1.2.4 The Guideline deals with the restoration of Emergency Call capability by Carriers that manage a Core Network during a Core Network outage in the following areas:

(a) Core Network node connectivity; and

(b) Core Network management.

1.2.5 The Guideline does not deal with:

(a) Network nodes, systems and processes that are not related to Emergency Calls;

(b) Additional routine network management practices e.g. alarming, observing;

(c) Items covered by existing regulatory arrangements e.g. the *Telecommunications (Emergency Call Service) Determination 2019*, existing industry codes and industry guidelines;

(d) The access mechanism used to restore the Emergency Call capability;

(e) The Access Network;

(f) Carriers that do not manage a Core Network;

(g) Redundancy of a Core Network; or

(h) Details of carriage services.

1.3 Objectives

1.3.1 The objectives of the Guideline are to give industry guidance on:

(a) Establishing "*the ability to remotely access and activate network management tools … in the event of a core network outage*"; and

(b) Having "*sufficient network redundancy to deploy" these network management tools "in the event of a core network outage*".

1.4 Guideline review

The Guideline will be reviewed after 5 years and every 5 years subsequently, or earlier in the event of significant developments that affect the Guideline or a chapter within the Guideline.

2 ACRONYMS, DEFINITIONS AND INTERPRETATIONS

2.1 Acronyms

For the purposes of the Guideline:

5G

means **Fifth Generation**.

DSL

means **Digital Subscriber Line**.

LEO

means **Low Earth Orbit**.

LTE

means **Long Term Evolution**.

NBN

means **National Broadband Network**.

POI

means **Point of Interconnection**.

RAN

means **Radio Access Network**.

SDH

means **Synchronous Digital Hierarchy**.

2.2 Definitions

For the purposes of the Guideline:

Access Network

has the meaning given by Appendix B.2 of the Guideline.

Act

means the *Telecommunications Act 1997 (Cth)*.

Carriage Service Provider

has the meaning given by section 87 of the Act.

Carrier

has the meaning given by section 7 of the Act.

Core Network

has the meaning given by Appendix B.3 of the Guideline.

Customer Cabling

has the meaning given by section 20 of the Act.

Customer Equipment

has the meaning given by section 32 of the Act.

Determination

means the *Telecommunications (Emergency Call Service) Determination 2019*.

Emergency Call

has the meaning given by the Determination.

2.3 Interpretations

In the Guideline, unless the contrary appears:

(a) headings are for convenience only and do not affect interpretation;

(b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;

(c) words in the singular includes the plural and vice versa;

(d) words importing persons include a body whether corporate, politic or otherwise;

(e) where a word or phrase is defined, its other grammatical forms have a corresponding meaning;

(f) mentioning anything after include, includes or including does not limit what else might be included;

(g) words and expressions which are not defined have the meanings given to them in the Act; and

(h) a reference to a person includes a reference to the person's executors, administrators, successors, agents, assignees and novatees.

3 INTRODUCTION

3.1 Background

The Bean Final Report included as recommendation 16 that a Carrier must be able to remotely manage its network(s) in the event of a core network outage.

NOTE: Refer to Appendix A for the wording of recommendation 16 and the Australian Government response to it, which is in the 'Australian Government Response to the Bean Review Final Report'.

4 REMOTE NETWORK ACCESS

4.1 Ability for remote access

A Carrier must have the ability to remotely access network management tools in the event of a core network outage.

NOTE: Carriers should follow standard practices on security for remote access of network management capabilities e.g. a multi-step process for authentication and authorisation.

4.2 Characteristics of remote access

4.2.1 Network node connectivity for the restoration of Emergency Call capability typically needs to be:

(a) Out of band;

(b) Independent;

(c) Physical; and

(d) Logical.

NOTE: In practice, especially in remote areas, it may be necessary to attempt in band connectivity when it is not possible to provide out of band connectivity.

4.2.2 Network management for the restoration of Emergency Call capability typically requires:

(a) Out of band connectivity; and

(b) An ability to enter instructions e.g. command line interface (CLI) commands.

4.2.3 Out of band access to a network element via the public internet may be a necessary option.

NOTES:

1. Access via the public internet could be managed via the use of equipment suited to the task e.g. to secure the link with appropriate authentication and authorisation.

2. A Carrier also needs to follow existing requirements for:
(a) Security of Critical Infrastructure (SoCI), which incorporates the former Telecommunications Sector Security Reforms (TSSR).
(b) Cyber security;
(c) Security of energy source(s) e.g. for electrical power; and
(d) Physical security e.g. lockable doors, pit lids, access grates.

5 NETWORK REDUNDANCY

5.1 Sufficient network redundancy

A Carrier must have sufficient network redundancy for network management, to restore Emergency Call capability during a core network outage.

NOTES:

1. Network redundancy is a usual part of network design to reduce the risk of a 'single point of failure'.

2. In the rare event of a core network outage, having sufficient network redundancy will better enable the Carrier to deploy its network management capabilities (refer to section 4.2 for more information).

3. One level of redundancy is to ensure network management can be achieved via networks that are separate to the network that is affected by the outage.

4. Another level of redundancy is to have redundant paths for each of the:
(a) core network; and
(b) the out of band network to manage the core network.

5.2 Characteristics of network redundancy

5.2.1 A Carrier should follow good practice for the design and operation of links to its network management elements. This good practice may include the use where possible of:

(a) Physically diverse paths; and

(b) A 'ring' architecture.

5.2.2 A carrier should minimise the use of a 'hub and spoke' architecture for links to major aggregation nodes.

NOTE: These principles could also apply to a 'thin IP network outside the core network i.e. to build it with the diversity one would apply to other networks.

5.2.3 Redundancy for a management of a core network will vary for each network but would typically include locations in:

(a) Capital cities; and

(b) Key regional centres.

NOTES:

1. Locations for nodes for network management should include points at or near the boundary between an access network and the relevant core network.

2. Refer to Appendix B for more detailed examples describing such a boundary for fixed networks and for mobile networks.

6 REFERENCES

Publication	Title
Industry Documents	
Review into the Optus outage of 8 November 2023 – Final Report (Bean Review Final Report)	https://www.infrastructure.gov.au/department/media/publications/review-optus-outage-8-november-2023-final-report
Australian Government Response to the Bean Review Final Report	https://www.infrastructure.gov.au/department/media/publications/australian-government-response-bean-review-final-report-review-optus-outage-8-november-2023-april
Legislation	
Telecommunications Act 1997	*https://www.legislation.gov.au/C2004A05145/latest/text*
Telecommunications (Emergency Call Service) Determination 2019	*https://www.legislation.gov.au/F2019L01509/latest/text*

APPENDIX

A Australian Government Response to recommendation 16 of the Bean Review Final Report

A1 Recommendation 16

"*Network operators should be required to establish the ability to remotely access and activate network management tools, and have sufficient network redundancy to deploy them, in the event of a core network outage.*"

A2 Australian Government Response

"*Agreed.*

The Government acknowledges that Optus has indicated it is implementing this measure in response to the 8 November outage. It is appropriate for these arrangements to be made an explicit requirement to prevent similar circumstances occurring in any potential future outages.

The Government supports the development of an industry code, providing industry with an opportunity to identify how this recommendation could best be implemented. The Government's expectation is that this code should be in place within twelve months of commencement of drafting."

APPENDIX

B Boundary between Access and Core Networks

B1 Introduction

The IP network boundary between the access network and the core network is a critical demarcation point in telecommunications architecture, facilitating seamless connectivity and service delivery.

B2 Access Networks

The access network, encompassing technologies such as:

(a) Radio Access Network (RAN);

(b) Geostationary Satellites;

(c) Low Earth Orbit (LEO) Satellites;

(d) Synchronous Digital Hierarchy (SDH);

(e) Digital Subscriber Line (DSL);

(f) Optical Fibre; or

(g) wholesale broadband access networks, including NBN

defines the entry point where end-user devices connect to the network.

The access network primarily manages transmission, signal processing, user equipment, and initial network access.

B3 Core Networks

The core network, on the other hand, handles essential functions such as

(a) Routing;

(b) Subscriber data management;

(c) Mobility management (for mobile networks); and

(d) Service delivery.

B4 Access-Core Network Boundary

The boundary between these two segments is typically defined by standardized interfaces, such as

(a) the N1 and N2 in 5G;

(b) the S1 interface in LTE;

(c) the POI in typical fixed network deployments;

(d) the interface between an Access or Regional Aggregation network and Provider edge routers at key regional and metro sites; or

(e) equivalent interfaces or POI arrangements for future technologies.

These interfaces ensure interoperability between diverse access network components and centralized core network systems, enabling scalability, efficient resource utilization, and the implementation of network policies while maintaining end-to-end connectivity for both data and voice services.

The physical demarcation boundary for these interfaces is typically located at the ingress router ports of the IP network, as designated and declared by the respective carriers.

This boundary is crucial for routing user data and signalling traffic and supports network requirements for out-of-band (OOB) recovery procedures during network outages.

PARTICIPANTS

The Working Committee that developed the Guideline consisted of the following organisations and their representatives:

Organisation	Membership	Representative
Australian Communications and Media Authority (ACMA)	Non-voting	Cuong Nguyen
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NBN Co	Voting	Alison Mitchell
Optus	Voting	James Dam
Optus	Non-voting	Monica Liem
Symbio	Voting	Wing-yan Louey
Telstra	Voting	Gerard Tracey
Telstra	Non-voting	David Nicolas
TPG Telecom	Voting	Mahilchi Ullaskumar

This Working Committee was chaired by James Duck of Communications Alliance who also provided project management support.

Communications Alliance was formed in 1997 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.

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