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Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices

BICSI®

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Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices

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Preface

Revision History

December 20, 2017 First publication of this standard, titled ANSI/BICSI 008-2018, *Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices*

March 27, 2024 Revision of ANSI/BICSI 008-2018, published as ANSI/BICSI 008-2024, *Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices*

Major Revisions include:

- Restructure of former Sections 5, 6, ,7 and 8 for organization, readability, and usability
- Addition of materials for W-Fi 6E, Wi-Fi 7, and other WLAN protocols
- Addition of access point enclosures
- Requirement of two horizontal cabling links for Wi-Fi 7
- Requirement that new WLAN installations comply with BICSI 007, to allow for additional connectivity and cabling methods not defined within this standard.
- Addition of fault-managed power

Minor Revisions include:

- Expanded content on hybrid cabling
- Update to direct connection and MPTL
- Addition of Appendix B, *Basic Service Sets* (content within the former Section 6.7)
- Addition of Appendix D, *Light Fidelity Technology*
- Other content updates and editorial corrections

Document Format (Usability Features)

This standard has the following usability features as aids to the user:

- Additions and changes, other than those for editorial purposes, are indicated with a vertical rule within the left page margin.
- Deletion of one or more sentences within unrevised content is indicated with a bullet (•) within the left page margin.

NOTE: The relocation of content within or between sections and the creation or modification of headings related to structure, readability, or content alignment is not indicated.

Translation Notice

This standard may have one or more translations available as a reference for the convenience of its readers. As the act of translation may introduce inconsistencies with the original text, where differences between the translation and the published English version exist, the English text shall be used as the official and authoritative version.

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1 Introduction

1.1 General

In-building and campus-wide wireless local area networks (WLANs) are a relatively mature technology, having existed in many forms for approximately three decades. However, during the last decade, the demand for robust WLAN access has grown at expediential rates. Today, the WLAN network is often described as an essential and required utility in both enterprise and residential markets. WLAN availability has become a necessity in everyday life, work, and business. Both consumers and businesses alike have come to expect not only an instant connection, but also a fast, reliable, and uninterrupted connection. For countless enterprise networks, failure to provide ubiquitous coverage and performance in many places such as restaurants, transportation, retail, universities, public venues, green spaces, healthcare, etc. can be a detriment to business, as well as affect the critical operation of the facility.

The many emerging technologies and new digital devices under development that can operate across various types of wireless systems will soon find their way onto the WLAN network. Planning for a robust WLAN infrastructure that will support future generations of technology now means considering new technologies that can improve performance capabilities, updating the cabling infrastructure, and revolutionizing wireless access point (WAP) installation methods.

1.2 Purpose

The purpose of this standard is to define requirements and recommendations for the planning, design and optimization of wireless local area network (WLAN) systems. It is intended for the designers, installers, managers, and other WLAN ICT professionals working with or are responsible for these systems.

1.3 Categories of Criteria

Two categories of criteria are specified—mandatory and advisory:

- Mandatory criteria generally apply to protection, performance, administration, and compatibility; they specify the absolute minimum acceptable requirements.
- Advisory or desirable criteria are presented when their attainment will enhance the general performance of the system in all its contemplated applications.

Mandatory requirements are designated by the word *shall*; advisory recommendations are designated by the words *should*, *may*, or *desirable*, which are used interchangeably in this standard. Where possible, requirements and recommendations are separated to aid in clarity.

Notes, cautions, and warnings found in the text, tables, or figures are used for emphasis or for offering informative suggestions.

Where equivalent local codes and standards exist, requirements from these local specifications shall apply. Where reference is made to a requirement that exceeds minimum code requirements, the specification requirement shall take precedence over any apparent conflict with applicable codes.