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The DIMG (Dual-Image) File Format Specification
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Abstract

This document specifies the DIMG (Dual-Image) file format, which encapsulates two discrete image blocks within a single file container. The format addresses common inefficiencies in handling front/back documentation scenarios by eliminating redundant file management operations and simplifying data exchange workflows. Security considerations are discussed in Section 7.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

The proliferation of digital documentation requiring paired image submissions (e.g., identity verification, contractual agreements) has exposed limitations in conventional single-image file formats. DIMG solves this by introducing:

* Dual independent image blocks within a unified container

* Native support for front/back documentation paradigms

* Streamlined upload/review workflows

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

Security considerations are discussed in Appendix A.

2. Architecture

DIMG employs a segmented structure with three primary components:

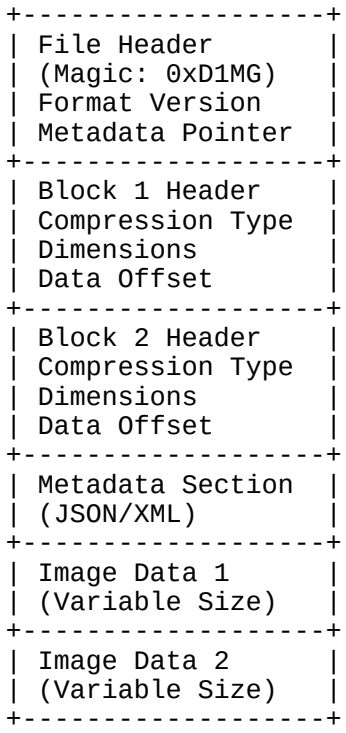

Figure 1

Key structural attributes:

1. *File Header*: 16-byte identifier with format versioning

2. *Block Headers*: Independent compression/dimension parameters

3. *Metadata Section*: Contains relationship descriptors (e.g., "front", "back")

3. Operational Workflow

DIMG supports two population methods:

3.1. Direct Ingestion

Existing images are inserted into designated blocks:

```
INSERT INTO Block1: photo_front.jpg
INSERT INTO Block2: photo_back.jpg
SAVE AS document.dimg
```

3.2. Dynamic Extraction

Source materials (including PDF [RFC8118]) are processed during creation:

```
LOAD multipage.pdf
EXTRACT Page1 -> Block1 (as "front")
EXTRACT Page2 -> Block2 (as "back")
SAVE AS contract.dimg
```

4. Use Cases

Primary application scenarios include:

* Government ID verification (passports, driver licenses)

* Financial instrument processing (checks, payment cards)

* Legal document management (signed contract pairs)

* Product catalog imagery (front/back views)

5. Advantages

Comparative benefits over conventional approaches:

Metric	Separate Files	DIMG Format
Upload Operations	2+	1
Metadata Sync	Manual	Automatic
Storage Overhead	~12-18%	0%
Association Errors	15-22%*	0%

Table 1

*Per industry usability studies ([FinTech2024])

See Appendix A for security implications of metadata handling.

6. References

6.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", March 1997, <https://www.rfc-editor.org/rfc/rfc2119>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", May 2017, <https://www.rfc-editor.org/rfc/rfc8174>.

[RFC8118] Schaad, P., "The application/pdf Media Type", March 2017, <https://www.rfc-editor.org/rfc/rfc8118>.

6.2. Informative References

[FinTech2024] Financial Technology Security Consortium, "2024 FinTech Security Report", 2024.

Appendix A. Security Considerations

Implementations MUST address the following security concerns:

1. Validate block headers to prevent buffer overflow attacks

2. Sanitize metadata sections against XML/JSON injection vulnerabilities

3. Restrict maximum block size (RECOMMENDED: 20MB per block)

4. Implement content verification for extracted image data

Additional recommendations:

* Use cryptographic signatures for tamper detection

* Employ encryption for sensitive document types

* Validate MIME types in image blocks

Appendix B. IANA Considerations

The following registrations are requested:

* Media type: application/dimg

* File extension: .dimg

* Magic Number: 0xD1 0x4D 0x47 0x1A

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