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# Data Format Description Language (DFDL) v1.0

**Experience Document 5**

**Feature Comparison of DFDL v1.0 Implementations**

Status of This Document

Grid Working Document (GWD)

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Abstract

This document provides experience information to the OGF community on the Data Format Description Language (DFDL) 1.0 specification (GFD-P-R.207).

It lists the available implementations of DFDL processors, and compares the features that each supports.

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# Introduction

This document has been created to list the available implementations of DFDL processors, and compares the features that each supports.

# IBM DFDL

This implementation is available from IBM as part of IBM product offerings such as IBM Integration Bus. A free edition of IBM Integration Bus may be obtained at <https://developer.ibm.com/integration/docs/ibm-integration-bus/get-started/get-started-with-ibm-integration-bus-for-developers/>

The processor is available in C and Java, which are functionally equivalent. Tools include an eclipse-based DFDL schema editor and tester.

IBM DFDL is currently at release 1.1.2.

Unsupported features and restrictions are at <https://www.ibm.com/support/knowledgecenter/SSMKHH_10.0.0/com.ibm.etools.mft.doc/df00150_.htm>.

Implementation-specific limits are at <https://www.ibm.com/support/knowledgecenter/SSMKHH_10.0.0/com.ibm.etools.mft.doc/df00151_.htm>.

# Daffodil

This implementation is available from

<https://opensource.ncsa.illinois.edu/confluence/display/DFDL>

The processor is written in Scala which runs on the Java virtual machine (JVM). Java 8 is required.

Daffodil is currently at release 1.1.0 with version 2.0.0 imminent as of 2016-08-02. .

Unsupported features and restrictions are at

<https://opensource.ncsa.illinois.edu/confluence/display/DFDL/Unsupported+Features>

Implementation-specifics limits, which are tunable, are at:

<https://opensource.ncsa.illinois.edu/confluence/display/DFDL/Configuration+File>

# DFDL4S

This implementation is used by the European Space Agency for parsing satellite data.

# Feature Comparison

This section compares the implementations in terms of the optional features that are defined in section 20 of the DFDL 1.0 specification.

| **Feature** | **IBM DFDL v1.1.2** | **Daffodil v2.0** |
| --- | --- | --- |
| Validation | Yes | Partial. Parsing only. |
| Named Formats | Yes | Yes |
| Choices | Yes | Partial - choiceDispatchKey and choiceBranchKey not supported. |
| Arrays where size not known in advance | Partial - not 'stopValue' | Partial – not ‘stopValue’ |
| Expressions | Yes | Yes. Limitation - query-style expressions not supported. These are expressions which require iteration over children of an element rather than constant-time access.  For example fn:count(/a/b) where element 'a' has multiple element 'b' children separated by other element declarations. Hence, gathering all the b children requires iterating. |
| End of parent | No | No |
| Simple type restrictions | Partial - not unions | Partial – not unions |
| Text representation for types other than String | Yes | Partial – type Boolean not implemented |
| Delimiters | Yes | Yes |
| Nils | Yes | Partial - nilKind 'logicalValue' not supported |
| Defaults | Partial - unparsing only | Partial Simple types - ?? (Some support in parsing and in unparsing) Complex types – No |
| Bi-Directional text. | No | No |
| Lengths in Bits | Yes | Yes |
| Delimited lengths and representation binary element | Yes | Partial – delimiters must not use character class entities like %NL or %WSP\*. |
| Regular expressions | Partial - only for dfdl:lengthKind | Yes |
| Zoned numbers | Yes | No |
| IBM 390 packed numbers | Yes | No |
| IBM 390 packed calendars | No | No |
| IBM 390 floats | Yes | No |
| Unordered sequences | Yes | No |
| Floating elements | No | No |
| dfdl functions in expression language | No | Yes |
| Hidden groups | No | Yes |
| Calculated values | No | Yes |
| Escape schemes | Yes | Yes |
| Extended encodings | Yes | Partial - iso-8859-1 works. Others - TBD. |
| Asserts | Partial - not on global elements or simple types | Yes |
| Discriminators | Partial - not on global elements or simple types | Yes |
| Prefixed lengths | Partial - not nested prefixed lengths | No |
| Variables | Partial - not newVariableinstance or external variables | Partial – not newVariableInstance |
| BCD calendars | Yes | No |
| BCD numbers | Yes | No |
| Multiple schemas | Yes | Yes |
| IBM 4690 packed numbers | Yes | No |
| IBM 4690 packed calendars | Yes | No |
| DFDL Byte Value Entities | Yes | No |
| DFDL Standard Character Set Encodings | No | Partial: X-DFDL-US-ASCII-7-BIT-PACKED, but not the 6-bit variant. |
| Bit Order - Least Significant Bit First | No | Yes |

1. Security Considerations

No security issues have been raised.

1. Contributors

Stephen M. Hanson,

IBM Software Group,

Hursley,

Winchester,UK

[smh@uk.ibm.com](mailto:smh@uk.ibm.com)

Michael J. Beckerle,

Tresys Technology,

Columbia, MD, USA

[mbeckerle@tresys.com](mailto:mbeckerle@tresys.com)

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1. References

[DFDL] OGF DFDL 1.0 specification

<http://www.ogf.org/documents/GFD.207.pdf/>