



Astute DDS

GVA-First Data Distribution Service for Defence

FEATURES

DDSI-RTPS 2.5 Wire Protocol

DDS-XTypes 1.3 Extensibility

XCDRI/XCDR2 Serialisation

IDL 4.2 Compiler (astutedds-idl)

DDS Security 1.1 (AES-GCM, PKI)

GVA LDM v10 — 42 IDL Files

RTI Connex Interoperable

Cyclone DDS Interoperable

Content-Filtered Topics

TypeLookup Service

Shared Memory Transport

TCP Transport

astutedds-inspect QoS Tool

LDMX GVA Debugger

Bohemian SysML + Copilot

Rhapsody File Import

Qt6 Shapes Demo Included

C++20 Static Library



MADE IN AUSTRALIA

Astute DDS is a comprehensive C++20 implementation of the OMG Data Distribution Service (DDS) specification, purpose-built for UK MoD Generic Vehicle Architecture (GVA) programmes. Delivering full DDSI-RTPS 2.5 wire protocol interoperability with RTI Connex, Cyclone DDS, Fast DDS, and OpenDDS, Astute DDS provides a lightweight, high-performance middleware layer designed from the ground up for military and embedded applications.

With complete DDS-XTypes 1.3 support including type extensibility (@final, @appendable, @mutable), TypeObject/TypeIdentifier negotiation, and Dynamic Data API, Astute DDS enables forward-compatible data models that evolve with your programme. Our GVA-First approach means native support for the UK Land Data Model (LDM) v10 — all 42 IDL files compile out of the box with our IDL 4.2 compiler, generating production-ready C++20 code with XCDRI/XCDR2 serialisation in minutes, not hours.

Astute DDS ships with dedicated tooling to accelerate development and debugging. **astutedds-inspect** is a Qt6-based QoS matching and diagnostics tool that passively monitors your DDS network, detecting QoS mismatches across 7 RxO policies, visualising entity topology (Domain → Participant → Publisher/Subscriber → Endpoint), and exporting diagnostics logs. **LDMX** (Land Data Model Explorer) provides a dedicated GVA DDS debugging environment supporting the complete LDM v10 data model for DEF STAN 23-009 compliance.

For teams extending the Land Data Model, our **Bohemian** SysML modelling tool with built-in AI Copilot helps developers rapidly create and validate domain models. Bohemian supports importing IBM Rational Rhapsody files and provides seamless IDL-to-code generation with Astute DDS model with Bohemian, deploy with Astute DDS. The entire workflow from SysML model to running DDS application takes minutes rather than days.

Endpoints		Output				
Name	Data Type	Type	Color	Partitions	Read/Take	QosSetting
1 Square	ShapeType	Sub	*	-	Take	Default
2 Triangle	ShapeType	Sub	*	-	Take	Default
3 Circle	ShapeType	Pub	GREEN	-	-	Default

GVA FIRST DATA DISTRIBUTION SERVICE



FIND OUT MORE

Model with Bohemian. Deploy with Astute DDS.

Astute Systems is a global leader in defence middleware, GVA-compliant software, and AI-powered development tools for mission-critical vehicle systems.

SPECIFICATIONS

DDS SPECIFICATION COMPLIANCE

DDS 1.4 DCPS API

DDSI-RTPS 2.5 Wire Protocol

DDS-XTypes 1.3 Type System

DDS Security 1.1/1.2

IDL 4.2 Interface Definition

TYPE SYSTEM & EXTENSIBILITY

@final — No extension (performance)

@appendable — Forward compatible

@mutable — Full flexibility (member IDs)

@key, @optional, @id, @autoid

@data_representation (XCDR1|XCDR2)

TypeObject/TypeIdentifier negotiation

Type assignability engine

QOS POLICIES

Reliability (BEST_EFFORT, RELIABLE)

Durability (VOLATILE, TRANSIENT_LOCAL)

History (KEEP_LAST, KEEP_ALL)

Ownership (SHARED, EXCLUSIVE)

Deadline, Lifespan, Partition

Liveliness (AUTOMATIC, BY_PARTICIPANT, BY_TOPIC)

Content-Filtered Topics

SECURITY (DDS SECURITY 1.1)

PKI Authentication (X.509)

AES-256-GCM Encryption

HMAC-SHA256 Signing

Audit Logging

Confidentiality Data Tagging

XML Access Control

IDL 4.2 COMPILER — ASTUTEDDS-IDL

Full IDL 4.2 lexer and parser

C++ code generation (structs, enums)

XCDR1/XCDR2 serialiser generation

TypeSupport scaffolding

TypeObject generation

Annotation support (@key, @optional, etc.)

TOOLING

astutedds-inspect — Qt6 DDS diagnostics

QoS mismatch detection (7 RxO policies)

Entity topology visualisation

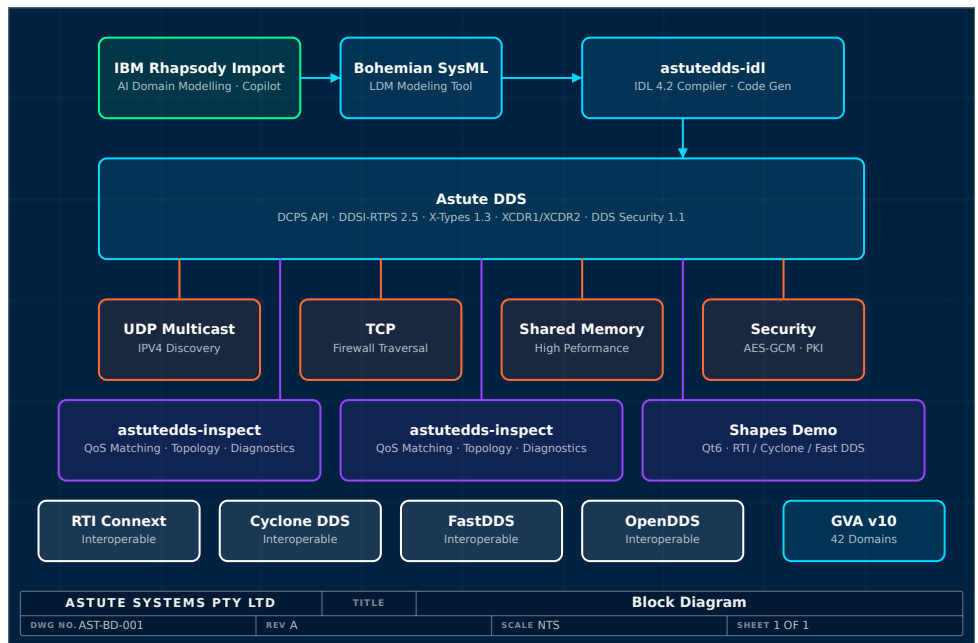
Diagnostics log with CSV export

LDMX — Land Data Model Explorer

GVA v10 DDS debugging

Bohemian — SysML + AI Copilot

IDL → Astute DDS C++ in minutes



** Preliminary Datasheet

Specifications subject to change without notice

CONTACT YOUR LOCAL REPRESENTATIVE

FOR MORE INFORMATION ON HOW WE CAN ADAPT OUR SOLUTIONS TO MEET YOUR IO REQUIREMENTS

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