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Real-time Publish-Subscribe (RTPS)

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Real-time Publish-Subscribe(RTPS) [wireprotocol](#) defines a set of requirements for a wire protocol suitable for the [Data Distribution Service \(DDS\)](#). Primary considerations in the design of the RTPS wire protocol are: [performance](#), configurability (tuning quality-of-service), [fault-tolerance](#) (no single points of failure), extensibility (support new transports), plug-and-play connectivity (automatic discovery), [modularity](#), [scalability](#), and [type safety](#).

RTPS imposes very little requirements on the underlying transport: a connectionless service capable of sending packets [best-effort](#) is sufficient. A connection-oriented protocol can be used but is not required. The mechanisms of the underlying protocol map to the generalized notions of the RTPS [Platform Independent Model \(PIM\)](#).

The original [DDSI-RTPS](#) specification defined a [Platform Specific Model \(PSM\)](#) built upon the User [udp](#) because of its simplicity, universal [availability](#), best-effort and connectionless capabilities, predictable behavior, scalability, and [multicast](#) support.

However, some DDS systems would benefit from an RTPS PSM built upon the [Transmission Control Protocol \(TCP\)](#). Among other scenarios, a TCP PSM would be better suited for communication through firewalls, where often UDP traffic is filtered; could leverage existing TCP-based [load-balancing](#) infrastructure; and would allow DDS to be deployed in some applications where governance mandates TCP exclusively. Therefore, the [goal](#) of this [Request For Proposal \(RFP\)](#) is to meet the requirements set forth by the RTPS PIM with minimum possible overhead using TCP.

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