JSP 602 Instruction	1027	**Applicability**	Infrastructure, Integration, Network/Communications
Configuration Identity	Version: 01.02 Amended: 2009-03-02 Reviewed: 2006-06-16	**Epoch Applicability**	2005 - 2009

JSP 602: 1027 - Time Services

Outline

Description: Time Services are protocols and practices that enable accurate synchronisation of time between networked systems and devices.

Reasons for Implementation: To enable the timely execution of military, business and operational tasks, synchronised time sources and a standardised approach to time stamp dissemination is essential. Without a degree of standardisation, there is a high risk that services provided and hosted on the GII will not be able to effectively communicate in time-critical environments.

Issues: Time synchronisation across local and wide area networks will inevitably suffer from some latency. NTP provides accuracies generally in the range of 1 to 2 milliseconds in LANs and up to a few tens of milliseconds in global WANs. These synchronisation errors are deemed to be small enough to meet general defence requirements. The use of local time sources can provide more accurate synchronisation in tactical domains. However, even these may not be suitable for hard
real-time applications, where bespoke solutions may be required.

Guidance: The e-GIF does not address time services. NC3TA mandates the use of NTPv3 (see comments below)

Policy

Strategic

1027.01: Time Synchronisation Standard

1027.01.01 All devices requiring a common time reference shall implement the following standards:

1027.01.01.01 NTP (RFC1305:1992) using UTC

NTPv4 is the de-facto standard for disseminating time around a network. UTC is the standard time common to the whole world.

Comment: NTP ensures that there is a negligible difference in the time across the whole information infrastructure. NTPv4 is backwards compatible with NTPv3, as mandated by NATO. UTC is the time format used by NTP and all reference time sources.

1027.02: Time Source Location

1027.02.01 Systems and projects providing infrastructure services in a major geographical area shall provide a tier 1 time source.

To minimize time inaccuracies caused by latency across the network, each widely separated geographical area requires a tier 1 time source.

Comment: NTP time sources - Each time source can either be another NTP time server or can be another source such as GPS, radio clock or platform-based atomic clock.

1027.03: Infrastructure Services

1027.03.01 Systems and projects providing LAN infrastructure services shall provide a local time server.

A local time server reduces the load on higher level time sources.

1027.03.02 Time servers provided with a LAN shall synchronise to a tier 1 NTP time source.

A number of time sources are required to ensure accuracy and reliability.

Comment: A time source can either be another NTP time server or can be a source such as GPS, radio clock or platform-based atomic clock.

1027.03.03 Each device on a LAN that requires time services must synchronise itself with the local time server.

This ensures that all networked devices display the same time. This time does not have to be exactly the same as UTC but it does need to be correct across the LAN.

1027.04: Time Service Naming

1027.04.01 Time services shall be named in accordance with the MOD DNS rules for naming time-sources as defined in JSP457 The Defence Manual of Interoperable Network and Enabling Services.

This provides consistency across the network, see JSP602: 1023 - Domain Naming and IP Addressing.

Deployed
As for Strategic domain.

Tactical
1027.05: Time Synchronisation Standard **1027.05.01** Tactical systems shall synchronise directly to a GPS time source, Precise Time Frequency Standard (atomic clock) or radio time source. *Many tactical system (e.g. Bowman) use GPS for location finding and uses the GPS signal as its reference time source.* *Comment:* The accuracies provided by these time sources are generally sufficient for near real-time and many real-time systems. Hard real-time systems may require better accuracies and hence very specialised solutions.

Remote
As for Strategic domain.

Responsibility for Implementing the Policy

Implementation of this policy shall be the responsibility of all IPTs (and their suppliers) that provide time services or use time services to determine a common time reference.

Procedure

The principal authority for this policy in the strategic environment is DII. For specific guidance on DII, MOD CIS Managers must contact the DII Integrated Design Team with all Client Configuration related queries. Point of Contact - DII IPT Engineering Management EM1Cons3: (D900, 5135MIN, 01793 555135).

Relevant Links

JSP602: 1023 - Domain Naming and IP Addressing

JSP 457 The Defence Manual of Interoperable Network and Enabling Services can be found here (not yet available) (http://www.ams.mod.uk)

Details of those RFCs listed can be found here. (http://www.rfc-editor.org/rfcsearch.html)

A glossary of terms and abbreviations used within this document is available here.

Instructions on how to read a JSP602 leaflet are available here.

Compliance

Stage	Compliance Requirements
Initial Gate/DP1	MOD Projects shall submit a formal declaration that they have read and understood the policy and sought guidance from the SME(s).
Main Gate/DP2	MOD Projects shall reference in their SRD (and MODAF technical views) the specific policy elements contained within this leaflet that are applicable to the system, equipment or application they are procuring or updating.
Release Authority/DP5	MOD Projects (supported by their equipment suppliers) shall provide evidence of their compliance with the elements of this policy defined within the SRD (and MODAF technical views). Evidence of conformance with standards shall be presented; sources of evidence may include: conformance/compliance certificates provided by equipment suppliers (e.g. under type approval or other assessment regimes), demonstrations, inspection, analysis, tests carried out by suppliers (e.g. Factory Acceptance Tests) and tests carried out at Defence Test and Reference Facilities.