

TTP Installation Guide

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I Introduction

This document describes the procedures and equipment required for the installation and commissioning of a Timetable Processor (TTP).

I.1 BACKGROUND

TTP provides the other subsystems with timetable data via the IECC Information networks.

In order that TTP has up-to-date information, any changes made to the train schedules held on the main Train Service Database (TSDB), resident on a mainframe computer at Crewe, are extracted daily and transmitted to TTP.

Twice daily, TTP produces timetables for the other IECC subsystems. The timetables contain details of those trains scheduled to pass through the IECC area during the next timetable periods.

I.2 ASSUMPTIONS AND RESTRICTIONS

The TTP installation should be performed by someone who is familiar with the Unix operating system.

Line by line accounts of expected outputs from processes and scripts are not given. It is advised that relevant output files are examined (e.g. by using the Unix **pg** utility) for obvious indicators of failure, such as error messages and non zero completion codes.

The passwords for the user identities required to carry out the installation are not stated.

2 Hardware Installation

2.1 PROVISION OF TIMETABLE PROCESSOR

2.1.1 Main Processor Unit

The TTP main processor unit is a commercially available rack mountable microcomputer produced by Motorola, whose generic name is “3520” (early IECCs used “1132” or “1147” systems). These machines are readily scaleable in terms of hard disk size, RAM, processor speed and serial ports. A system with 32Mb RAM and a 1Gb hard disk is adequate.

For further details refer to IECC 4000 and the Engineering Drawing, IECC 5000-****-TTP-102, version F.

2.2 MVME101 AND MVME172 BOARDS

MVME101 processor boards or MVME172 embedded controller boards are added to the main processor unit to enable TTP to communicate with the IECC information networks. One MVME101 or MVME172 board is required for each link to other IECC subsystems via an Information network node. Older non-upgraded systems will contain MVME101 boards, newer or upgraded systems will contain MVME172 boards.

For further details of MVME101 boards refer to the Engineering Drawings, IECC 5000-****-TTP-102, version F, and IECC 5000-****-TTP-301, version F.

For further details of MVME172 boards refer to the Engineering Drawings, IECC 5000-****-TTP-377, version A, and IECC 5000-****-TTP-378, version A.

2.3 SERIAL LINE SWITCH

TTP requires several connections to be made to other items of equipment. To facilitate this with the minimum of complexity, a serial line switch is employed.

The total number of lines required for the serial line switch is dependent upon the IECC system requirements. These requirements are calculated as:

- 2 lines for each information network node TTP is connected to;
- 1 line for the TTP console;
- 1 line for the High Speed Data Ring PC (optional after Upgrade 002);
- 1 line for each user terminal attached;
- 2 lines retained as spares.

The connections from the rear of the line switch are given in the Engineering Drawing, IECC 5000-****-TTP-114, version F.

2.4 SUPERLINK NODES

TTP communicates with other IECC subsystems over the Information networks. A pair of network nodes are required for each IECC link. These are Nine Tiles Network Nodes which are normally mounted in a rack within the TTP cubicle. See Engineering Drawings IECC 5000-****-TTP-102, version F and IECC 5000-****-TTP-103, version F for further details.

The nodes should be connected to TTP through the serial line switch as described in section 2.3. The cabling between the nodes and the MVME101 or MVME172 processor boards (via the serial line switch) is specified in the in Engineering Drawings, IECC 5000-****-TTP-422, version F and IECC 5000-****-TTP-434, version F.

2.5 PROVISION OF TERMINALS

The terminals used with TTP should be "VT220" compatible. Two types of terminal are recommended, the Ampex 220 and the Wyse 185. Details of the configuration of both of these types of terminal are given in appendix A.

Terminals attached to TTP are for one of two purposes and these are outlined in the sections below.

2.5.1 Console Terminal

A console terminal is required for the purpose of installing, commissioning and maintaining the TTP. The console terminal should be situated to enable the operator access to the TTP unit as work done at the console frequently involves the loading and unloading of tapes into the TTP tape drive.

2.5.2 User Terminals

Terminals are required at each user location for the purpose of maintaining the timetable data held on TTP. These terminals need not necessarily be in the same building as the TTP but may be located at alternative sites and connected to the TTP via modem connections.

2.5.3 Terminal Connections

Only the console and up to two user terminals may be attached to TTP. All terminals should be connected to TTP through the serial line switch described in section 2.3.

The connection between the console serial port on TTP and the serial line switch is specified in the Engineering Drawing, IECC 5000-****-TTP-434, version F.

The connection between a user terminal serial port on TTP and the serial line switch is specified in the Engineering Drawing, IECC 5000-****-TTP-434, version F.

The connection between the serial line switch and the primary port on the console or a user terminal is specified in the Engineering Drawing, IECC 5000-****-TTP-429, version F.

2.6 TERMINAL MODEMS

Modems are required when the user terminal is remote from the IECC equipment room. The required modems are available through Racal BRT.

2.7 INTER TTP UNIT CONNECTIONS

The TTP units communicate with one another via Ethernet. Two arrangements are possible, depending on the TTP unit configuration:

- 1 BNC connector – Thinnet (Upminster – 1147 unit)
- 2 Attachment Unit Interface (AUI) connector – External BNC transceiver – Thinnet (All other 1147 units and all 3520 units)

To enable communication via Ethernet the Network Services Extension (NSE) software must be running on both TTP units.

2.8 CONNECTION TO CONTROL CENTRE OF THE FUTURE

At some sites TTP provides timetable data to Control Centre of the Future (CCF). The interface to CCF is also via Ethernet. No additional TTP features are required above those for Inter TTP unit connections.

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3 CIF User Registration

3.1 INTRODUCTION

In order for TTP to be able to maintain its database of trains, it is necessary that a copy of any changes made to the trains on TSDB is sent to TTP.

The facility responsible for extracting the changes from TSDB is known as the Common Interface File (CIF) and each IECC scheme must register as a CIF user in order to receive a copy of the changes.

Registration as a CIF user must take place at least eight weeks before the commissioning of an IECC site in order to allow time for the enrolment of the user and for the receipt of the extracts to be checked.

Copies of the forms needed to register as a CIF user and to request the appropriate extracts are included in appendix B.

Sections 3.2.1 and 3.2.2 describes how these forms should be completed. Section 3.2.3 gives additional information on the selection of locations to be included. Section 3.3 describes the suggested procedure for registration of a new IECC site and section 3.4 discusses the expansion of an existing IECC installation.

3.2 USER DESCRIPTION FORM

The form is divided into two sections. The first describes the user details and the second the extract requirements.

3.2.1 User Details

Six items of data are required:

1. User ID
This should be of the format **CFInnn** where nnn is the IECC number assigned to the scheme.
2. System name.
This should be the name of the IECC scheme.
3. Billing Code.
This is provided by Operational Planning Support Unit (OPSU), York.
4. Contract for charging.
This will change through the test, commissioning and production stages. For test and commissioning it will relate to the IECC installation contract. For production running charges will be allocated to the Railtrack Zone concerned.

5. The contact name and address.

This should be of a member of the operational staff responsible for the IECC scheme.

3.2.2 Extract Requirements

The extract requirements for the TTP are:

1. FTF site ID.
This is supplied by Racal BRT as part of the HSDR-PC installation, usually after installation. If the site ID is not known at CIF registration time, then a temporary ID may be obtained through the Production Manager, BSC. (See also the Extract Request Form, Appendix B)
2. File Node
Not used.
3. Time Window.
This should be 84 days.
4. Status Values.
All status values should be circled i.e. P F T B S 1 2 3 4 and 5
5. Category Values.
All category values should be circled.
6. STP User.
The OVERLAY option should be selected.
7. European Data Required.
This will depend on the IECC scheme concerned.
8. Reservable Trains only.
NO.
9. Output on Dat Tape/Zip to 3.5in. disk.
NO.
10. Associations Required.
YES.
11. Locations Required for Geographical User.
See section 3.2.3.

3.2.3 Geographical Selection Criteria

The geographical selection of the locations required for the CIF User Registration requires detailed knowledge of the IECC scheme. The locations (TIPLOCS) specified are used to select the trains that should be sent to the TTP. Any train with an event at any one of the specified TIPLOCS will be included in the data sent to the TTP. As a result the list of TIPLOCS submitted

should not necessarily be the entire set of locations within the IECC area, but more likely only a subset such that all trains passing through the IECC area are selected.

Care should be taken to ensure that trains not passing through the area are not included. If this is not possible, TTP must be configured to carry out filtering of train schedules on input from CIF.

3.3 EXTRACT REQUEST

The registration of a new IECC site passes through three stages, these are:

- the site is registered as a new CIF user and begins receiving extracts;
- the CIF user is made dormant after the full extract is received;
- the CIF user is reinstated two weeks before the commissioning is due to take place and a new full extract is received and daily extracts begin being received thereafter.

As a result, three separate extract requests need to be submitted and it is the same Extract Request Forms that are used each time.

The data required on the Extract Request Form are:

1. User ID
This is the user ID that was given on the User Description Form, see section 3.2.1.
2. System Name
This is the System Name was given on the User Description Form, see section 3.2.1.
3. Options
The appropriate options on the extract request form should be marked along with an appropriate date for the action to take place on.

It should be noted that usually a minimum of three weeks is required for the registration of a user and the receipt of the first extract.

Since timetables may be required prior to commissioning, a full extract of trains on TSDB is requested at the time of the registration of the IECC scheme as a CIF user. This extract is processed by TTP in the conventional way to produce a timetable suitable for the testing of the IECC subsystems prior to commissioning. The extract may also be used for signaller training and TTP user training.

3.4 EXPANSION FOR AN EXISTING IECC SITE

TTP can provide data to more than one IECC site. If it is required to expand a TTP to cover additional IECCs, modifications to the CIF Users geographical details will be required.

In addition, modifications to the configuration of the TTP software will be required. These details fall beyond the scope of this document.