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| ASET-WHIS interface |
| Ministry of Defence ASET-WHIS PAS interface |
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| **2nd November 2011** |

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| A description of the ASET-WHIS patient administration interfaces as implemented in the laboratory information management system (ASET). This document also outlines the required configuration steps required in ASET to activate the interfaces. |

Introduction

# Objectives

The purpose of this development is to provide an automatic interface between the ASET laboratory management system deployed in Camp Bastion and the recently installed Whole Hospital Information System (WHIS). The interface is to deliver three sets of functionality:

1. Patient demographic download. This delivers changes in patient demographic data entered in WHIS to the laboratory system such that the laboratory system has an accurate and up to date copy of patient data. WHIS acts as the master demographic data source and the laboratory system as a slave.
2. Pathology request order. This allows pathology request placed on WHIS to be transmitted to the laboratory system and the tests to be automatically scheduled.
3. Pathology result delivery. Validated pathology test results are transmitted from the laboratory system to WHIS so that they can be automatically attached to the main patient record.

The interface functionality was to be delivered using HL7 messages passed between the two systems using TCP on the existing network infrastructure.

# Implementation

The original specification called for three separate interfaces, one each for each of the required areas of functionality. During the initial design stage it became apparent that a simpler approach would be to develop two interfaces, one for all inbound communication (WHIS to ASET) and a second for all outbound communication (ASET to WHIS). These two interfaces are internally designated as:

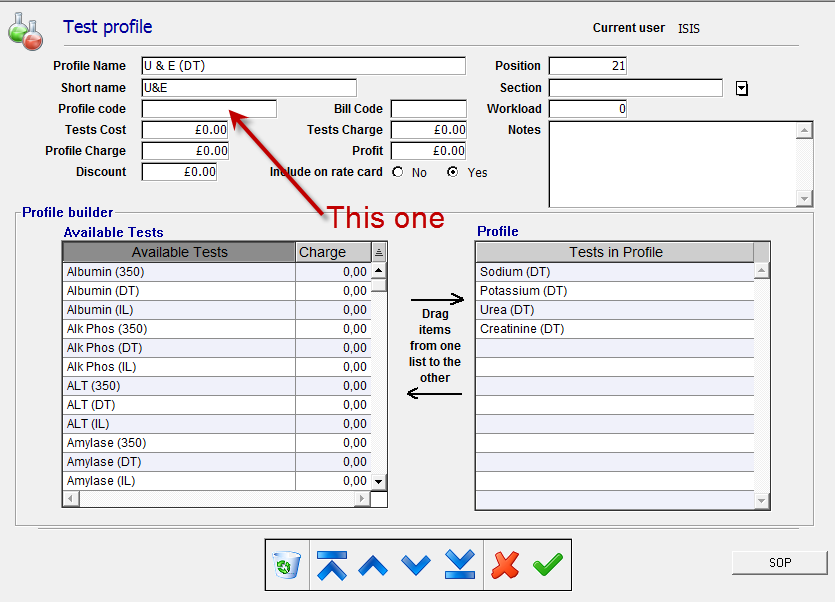
1. WHIS Demographic interface. This is the ASET inbound communication channel over which demographic updates and pathology test orders are accepted. This is implemented in ASET as a standard TCP server where the laboratory system listens for all incoming TCP communication on a designated port and deals with them accordingly. This is an always on interface that runs in the background on a designated ASET laboratory client machine.
2. WHIS Result interface. This is the ASET outbound communication channel over which validated pathology test results are delivered to WHIS. This is implemented as a standard TCP client where ASET attempts to open a TCP connection to a specified TCP address and port on which the WHIS interface engine is listening. This interface is launched on demand from any of the ASET client workstation whereupon it runs to completion and terminates. This interface also delivers order status update messages to WHIS and so it is invoked whenever pathology results are validated and whenever new orders are accepted or cancelled.

Configuration

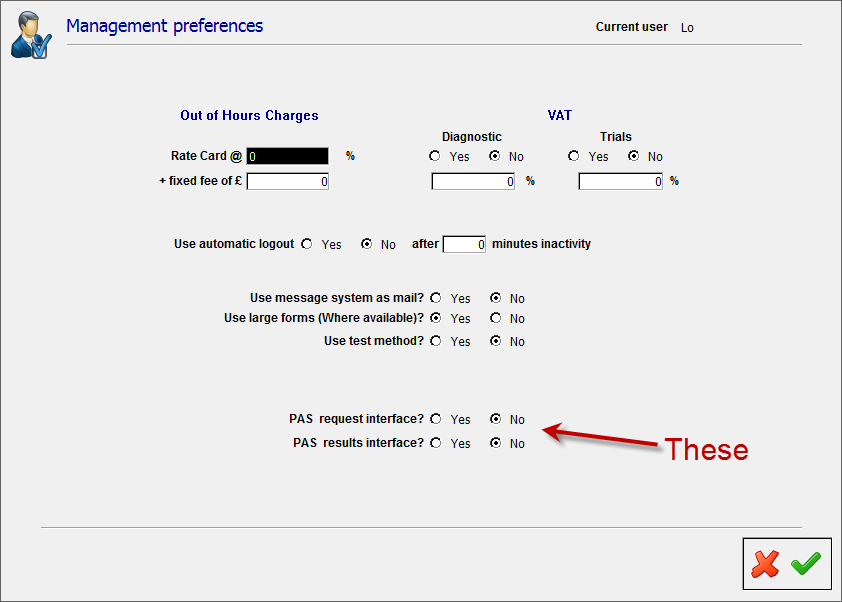
# General configuration

Before setting up either of the interfaces some general system parameters need to be entered.

1. A new data item needs entering on each of the existing test profile records; a unique profile code. This code needs to be non-blank and unique.



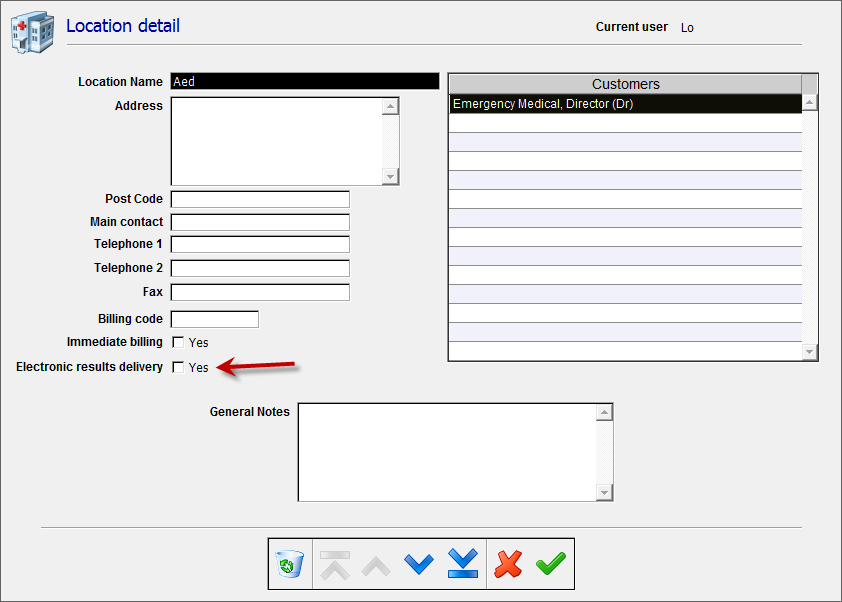
1. The system preferences have to be set to enable the results and demographic interfaces. This is done in the system preferences>management screen – set both radio buttons to yes.



This enables the interfaces and adds a new button to the main splash screen.

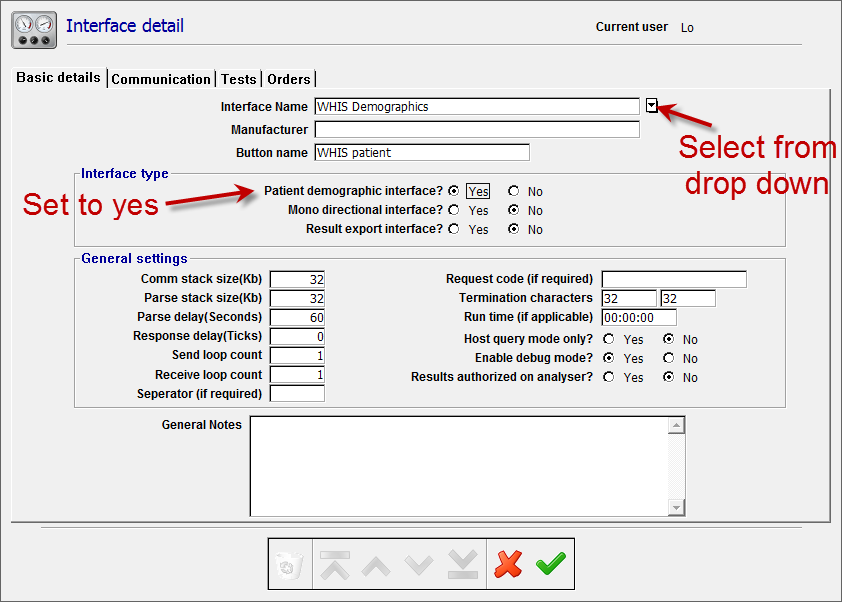


1. All outgoing results pass through a filter process that removes any results not required on the WHIS interface. The filter process uses the request location record associated with the pathology request to specifically include that location as one that gets electronically delivered results. This option needs to be set on all locations for which WHIS will accept results.

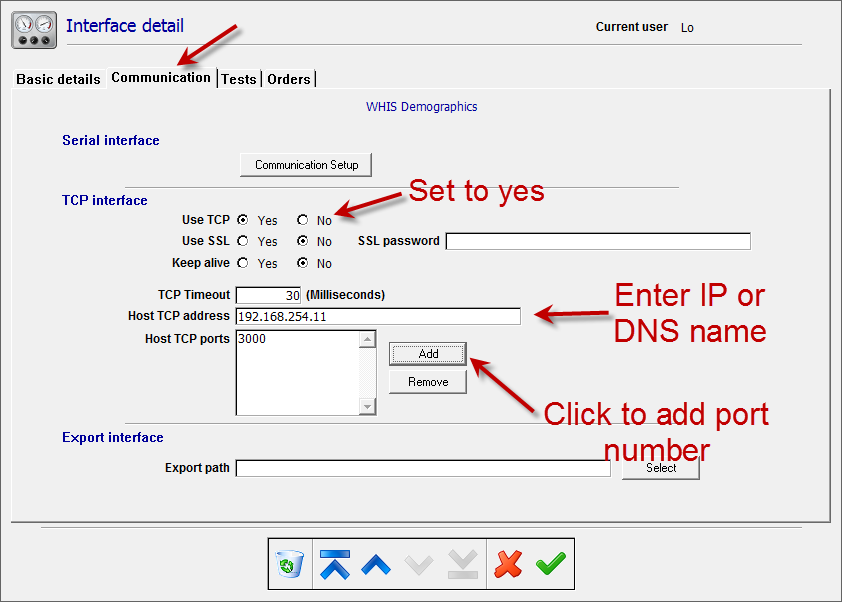


# WHIS Demographic interface

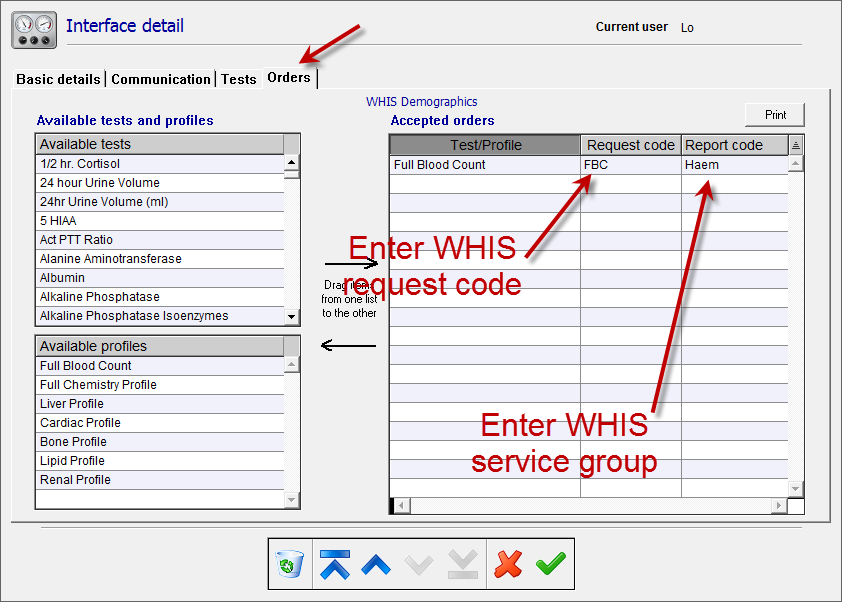
An interface definition record needs to be created for the WHIS demographic interface. Create a new record in the standard interface list:



The interface uses standard TCP communication over the existing Ethernet network. The TCP parameters are set on the communication tab – the TCP address is that of the machine running this interface and the port number is the TCP port that the interface will listen on. The other default settings are usually fine.

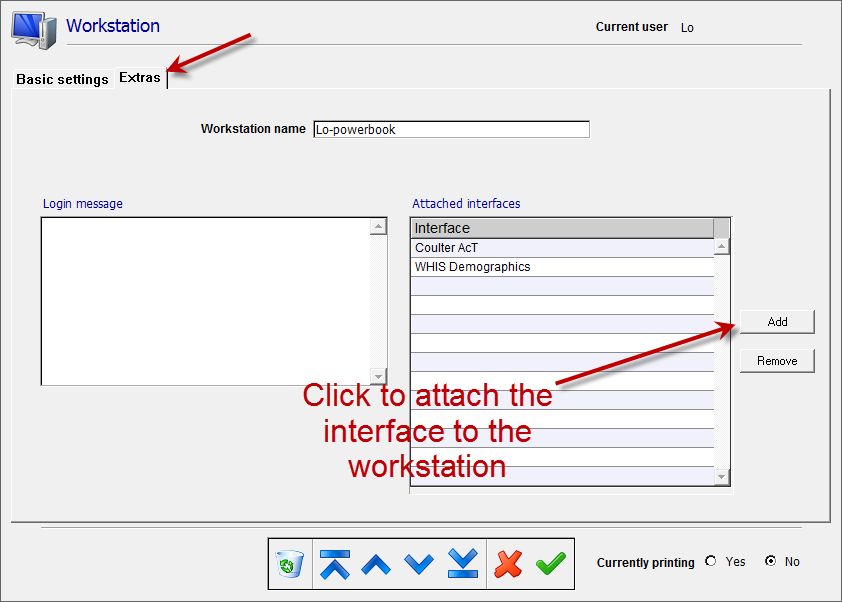


The demographic interface also accepts the pathology test orders from WHIS and the tests and profiles being offered by the lab need to be assigned to this interface – these are added on the order tab:



All of the available tests and profiles are listed on the left hand side of the screen and the accepted tests/profiles are assigned by dragging from the lists on the left into the list on the right. Once dragged into the right hand list two codes need to be associated with the available tests/profiles. The first is the request code sent by WHIS for this test/profile (mandatory) and the second is the WHIS service group for that test/profile (the default service group is none if left blank). NOTE: The new ASET profile code MUST be assigned to all profiles before they are added to this list.

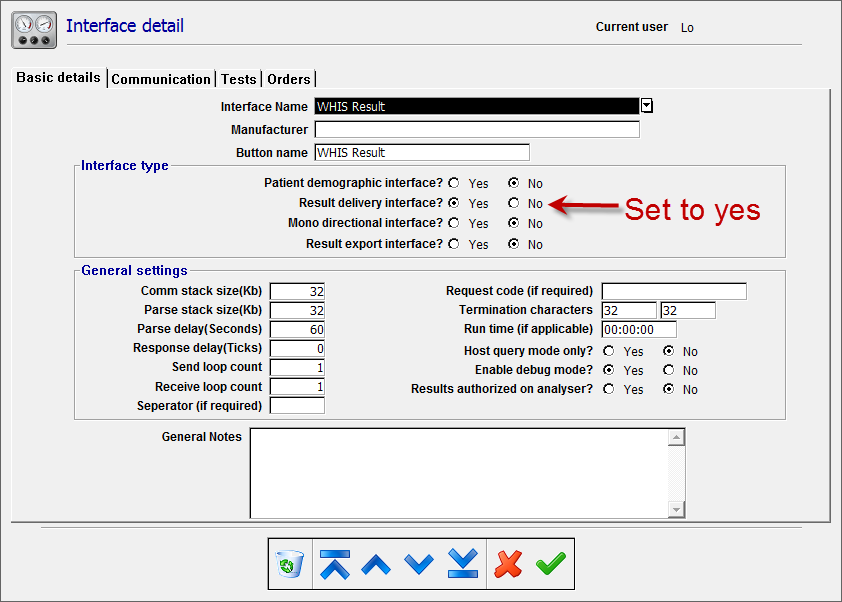
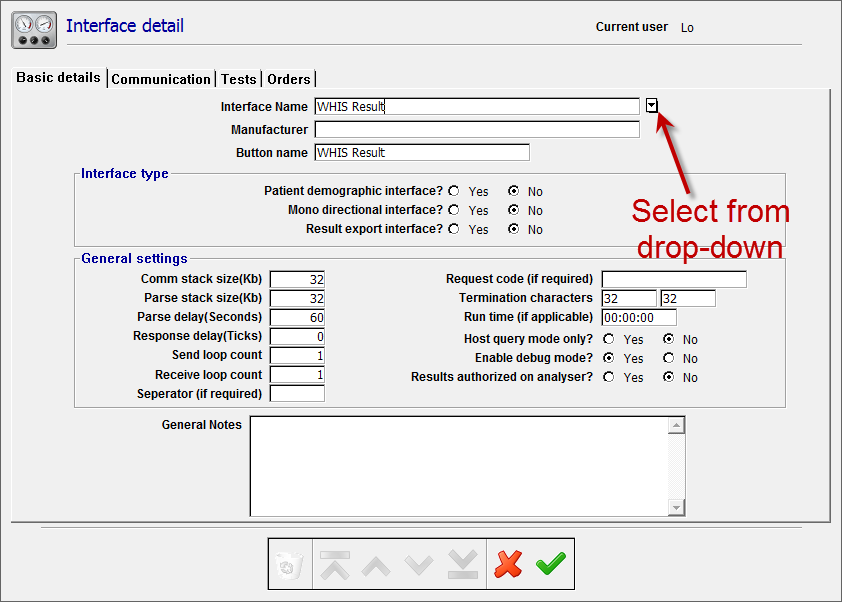
Once the interface record has been created the interface must be set to run on a designated ASET client machine. As with the laboratory analyser interfaces the link is set to run as a background process on a designated machine and starts automatically when that client logs into ASET. To assign a workstation select the required machine from the workstation list and ‘attach’ the interface to this workstation by selecting the interface from the drop-down list on the extras tab of the workstation record.



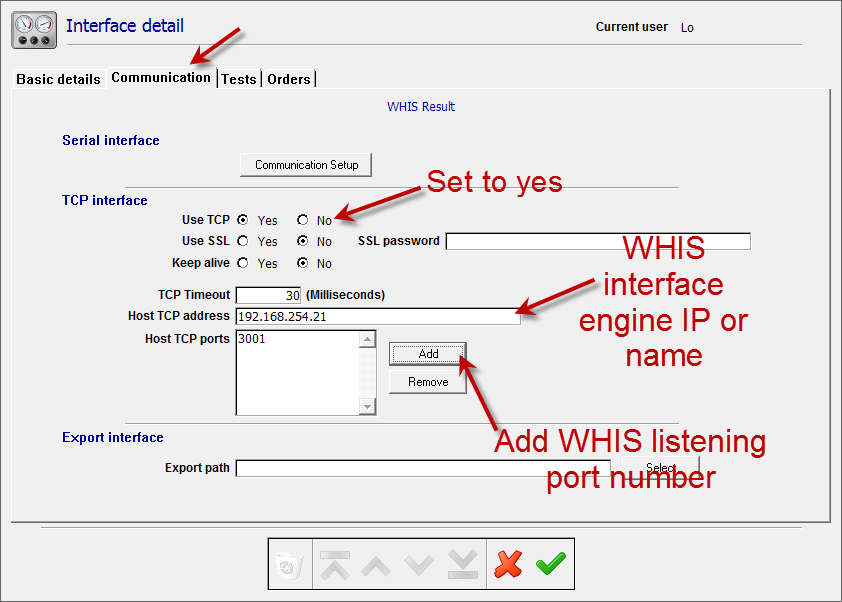
This interface can be run on any client and can co-exist with any other interfaces running on the same client machine. As this is designed to be a high availability, always on interface it is suggested that this is run either on a dedicated machine, or an existing client that is constantly running. Once the designated workstation is re-started the interface is enabled and listening on the designated port for incoming demographics and order messages from WHIS from any IP address.

# WHIS result interface

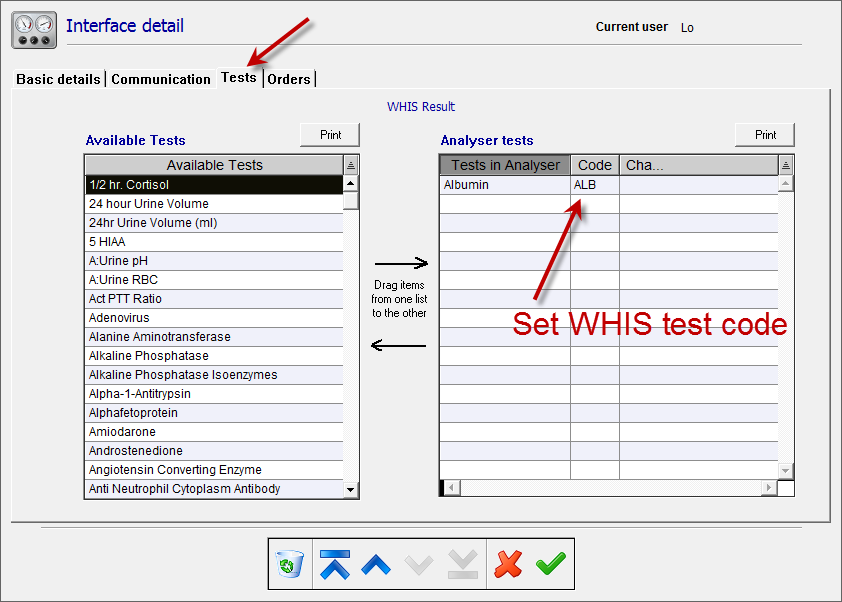
The WHIS result interface needs to be defined in the same way as the demographics interface.



Set the TCP communication parameters:



Assign the tests that are being returned to WHIS using the test tab. All reported results must be assigned from the available list to the assigned list by dragging from the left hand list to the right hand list. Each test must also have the WHIS test code assigned, if this is not assigned the internal ASET test code will be used.



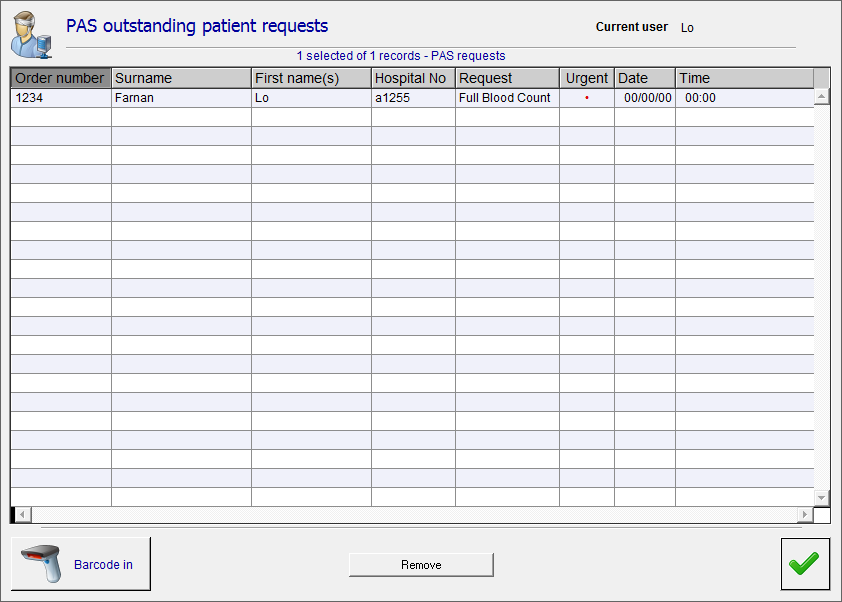
The result delivery interface is designed to run on demand so there is no requirement to attach this interface to any of the ASET client workstations. The interface is invoked whenever any pathology results are validated so that results are delivered to WHIS in a timely manner. This interface is also responsible for the delivery of request status updates to WHIS so it is also invoked whenever the PAS request screen is opened.

# Usage

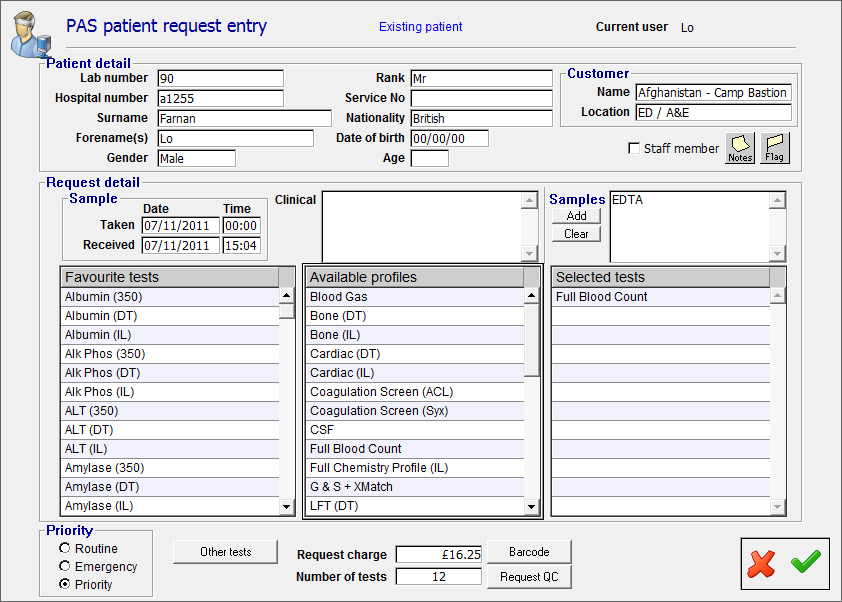
Once defined the operation of both the demographics and result interfaces is largely automatic and there is no dedicated end user interface to either.

The demographic interface delivers patient updates to the lab system which are processed immediately on delivery. Any altered patient data is updated in ASET and new patient demographic records are created in ASET when required. Patient demographic updates are independent of pathology request updates such that patient records are updated and created regardless of whether any pathology request is received or not.

New pathology requests are received by ASET and stacked in a pending request queue before being either accepted by the laboratory staff or, in rare cases, rejected. Outstanding pathology request are listed on the PAS request button on the main ASET splash screen.



Double clicking a record in the list opens that record in the standard request entry screen with the request pathology tests pre-selected. The laboratory can then amend this request or accept it as is. If the sample arrives with a barcoded WHIS order number then the barcode button will open a dialog to scan in that number as an alternative method of opening up the request. A request can be rejected by the laboratory by selecting the item in the list and using the remove button – a request cancelled message is generated and sent back to WHIS.



When a request is accepted in the above screen an in-progress message is created and sent to WHIS. Once accepted the PAS request follows the normal laboratory testing workflow. If WHIS sends an unknown test request code an error is generated when the request entry screen loads detailing the code and allowing the laboratory staff to pursue the matter manually.

When completed laboratory tests are validated the WHIS result interface is invoked on that client machine as a background process that packages the results in an HL7 message and then attempts to send any outstanding messages to WHIS. This uses a store and forward protocol such that if ASET is unable to open a TCP connection to WHIS at any point the pre-prepared messages will remain in the outbound queue until a successful send cycle is completed. The status of the outbound messages can be checked by using the WHIS result button on the testing screen which will list any un-sent result and status messages.

