

NEMS/400

HARDWARE MONITORING AND REPORTING FOR IBM iSERIES & AS/400

SYSTEM OVERVIEW

NEMS/400 (NYCO ENGINEERING MANAGEMENT SYSTEM for the IBM iSeries and AS/400) is designed to monitor an iSeries or AS/400 system and to automatically report any problem log faults, which require engineering support. The product has two main components, the Problem Management Centre and the Client System. The product's main aim is to transmit hardware faults to a Hardware Maintenance company to allow their engineers to diagnose and take the appropriate action to resolve the problem. The Problem Management Centre is installed at the Maintenance Company operations centre where messages are received from clients' AS/400s that have the Client System software loaded. The Client System installed on each client iSeries or AS/400 uses two jobs, which will be auto-started to monitor and transmit messages within a dedicated subsystem. The NEMS Client takes entries from the problem log, filters out unwanted messages and places them into a message log file. A communication program selects the messages for transmission to the host system, to enable all selected messages to be actioned centrally. Communications to the Problem Management Centre is via an IP connection using FTP or via an asynchronous modem attached to a V24 port on the Client machine.

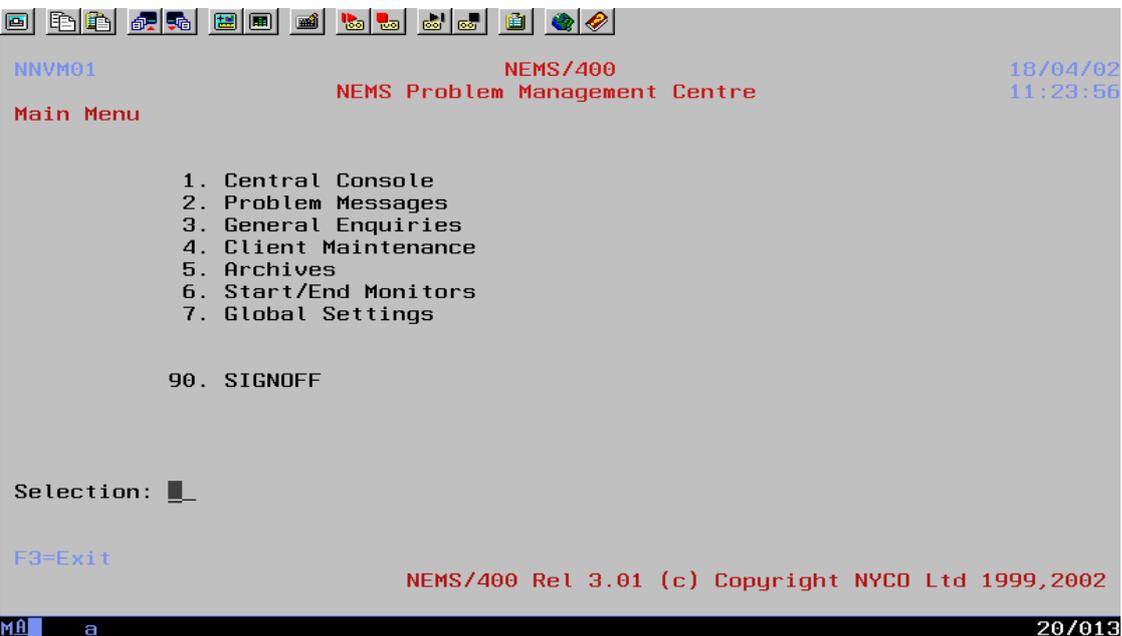
PROBLEM MANAGEMENT CENTRE (PMC)

The main purpose of the Problem Management Centre is to receive system generated problem log messages filtered by the Client and “heartbeats”, from associated iSeries and AS/400s, and to have those printed and e-mailed/paged/texted to the hardware engineer to assess the nature and cause of that particular problem. Client details are logged on this system along with machine information. Detailed below is some of the system information that can be received:

1. A system generated problem number.
2. The message ID.
3. The current rack configuration.
4. The problem function.
5. System Reference Code.
6. Machine Serial Number.
7. Date and Time of the problem.
8. First level text.
9. Problem log details.
10. Pertinent hardware and software details.

“Heartbeats” have been incorporated into the product to ensure that the company monitoring the iSeries or AS/400 is constantly updated as to the status of its monitored units. Should the Problem Management Centre not receive a “heartbeat” within a desired period of time, then it will produce its own warning message to alert an engineer, of a possible “system down” scenario. The first screen that we see is the Main Menu.

Main Menu



```

NNVM01                                NEMS/400                                18/04/02
                                NEMS Problem Management Centre        11:23:56

Main Menu

    1. Central Console
    2. Problem Messages
    3. General Enquiries
    4. Client Maintenance
    5. Archives
    6. Start/End Monitors
    7. Global Settings

    90. SIGNOFF

Selection: █

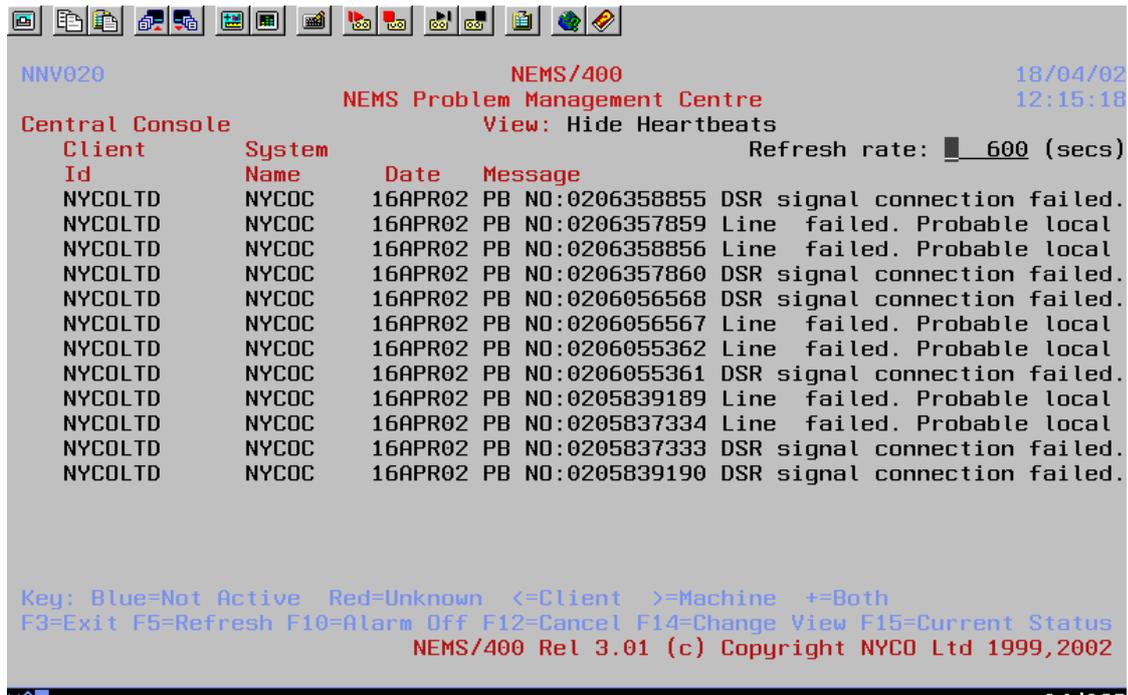
F3=Exit

                                NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002

```

The Main Menu Screen shows the options available. The use of these options will be expanded upon below. Our first option is Central Console.

Central Console



```

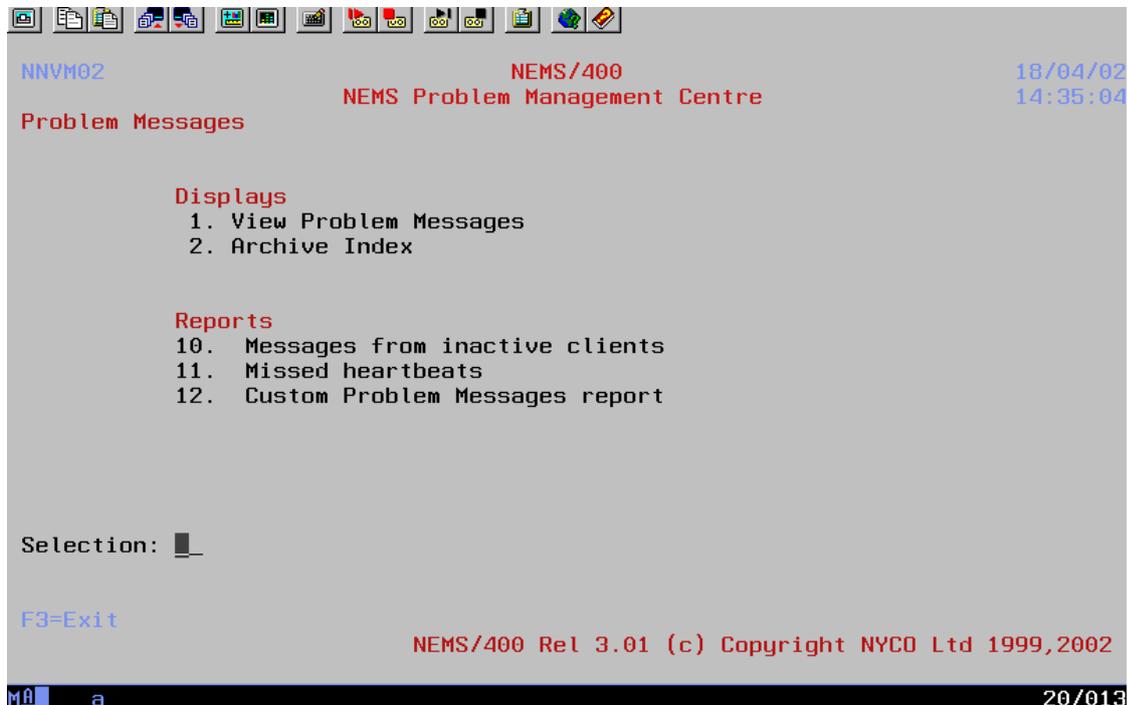
NNV020                                NEMS/400                                18/04/02
NEMS Problem Management Centre         12:15:18
Central Console                        View: Hide Heartbeats
Client                                System                                Refresh rate: 600 (secs)
Id      System Name      Date      Message
NYCOLTD NYCOC    16APR02  PB NO:0206358855 DSR signal connection failed.
NYCOLTD NYCOC    16APR02  PB NO:0206357859 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0206358856 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0206357860 DSR signal connection failed.
NYCOLTD NYCOC    16APR02  PB NO:0206056568 DSR signal connection failed.
NYCOLTD NYCOC    16APR02  PB NO:0206056567 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0206055362 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0206055361 DSR signal connection failed.
NYCOLTD NYCOC    16APR02  PB NO:0205839189 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0205837334 Line failed. Probable local
NYCOLTD NYCOC    16APR02  PB NO:0205837333 DSR signal connection failed.
NYCOLTD NYCOC    16APR02  PB NO:0205839190 DSR signal connection failed.

Key: Blue=Not Active Red=Unknown <=Client >=Machine +=Both
F3=Exit F5=Refresh F10=Alarm Off F12=Cancel F14=Change View F15=Current Status
NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002

```

The Central Console is our first and main point of viewing incoming messages. All new problem messages as well as heartbeats are shown here. The messages that appear will indicate whether or not the client/machine is “active” or not. We can also employ view changes to hide “heartbeats, see “all” or just “problem” messages.

Problem Messages



```

NNVM02                                NEMS/400                                18/04/02
NEMS Problem Management Centre         14:35:04
Problem Messages

Displays
1. View Problem Messages
2. Archive Index

Reports
10. Messages from inactive clients
11. Missed heartbeats
12. Custom Problem Messages report

Selection:

F3=Exit

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```

This menu allows you to view the problem messages and review the archived messages that have been stored. Also available from here are the special reports which include search facilities.

View Problem Messages

```
NNV061                                NEMS/400                                19/04/02
                                NEMS Problem Management Centre        09:04:09
View Problem Messages
                                View: Hide Heartbeats
1=Client Details Enquiry 2=Machine Details Enquiry 5=Display 6=Print
Client System
Opt Id      Name      Date      Message
- NYCOLTD   NYCOC    16APR02   PB NO:0206358855 DSR signal connection failed
- NYCOLTD   NYCOC    16APR02   PB NO:0206357859 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0206358856 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0206357860 DSR signal connection failed
- NYCOLTD   NYCOC    16APR02   PB NO:0206056568 DSR signal connection failed
- NYCOLTD   NYCOC    16APR02   PB NO:0206056567 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0206055362 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0206055361 DSR signal connection failed
- NYCOLTD   NYCOC    16APR02   PB NO:0205839189 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0205837334 Line failed. Probable local
- NYCOLTD   NYCOC    16APR02   PB NO:0205837333 DSR signal connection failed
- NYCOLTD   NYCOC    16APR02   PB NO:0205839190 DSR signal connection failed

Key: Blue=Not Active Red=Unknown <=Client >=Machine +=Both
F3=Exit F5=Refresh F12=Cancel F14=Change View F15=Current Status F17=Filter
                                NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002

Mâ a                                08/003
```

When viewing the Problem Message file, altering the view can change the quantity of information shown. Three views are available, Hide Heartbeats, All Messages or Problems Only. By default we show the “Hide Heartbeat” view, because it is felt that the heartbeat message is of less significance as it is telling you that the associated machine is active.

Client Maintenance

```
NNVM03                                NEMS/400                                22/04/02
                                NEMS Problem Management Centre        10:09:06
Client Maintenance

Display and Update
  1. Client registry
  2. Machine registry
  3. Mode Schedules

Reports
  10. Licences pending to expire in 30 days
  11. Custom client/machine report

Selection: 1

F3=Exit F12=Cancel
                                NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002

Mâ a                                MW                                20/013
```

It is from this screen that we begin the process of entering the details of our new customers and machines. By selecting option 1 we can go to the Client Registry which allows us to enter or view the existing details on file.

Client Registry

NNV002 NEMS/400 22/04/02
NEMS Problem Management Centre 10:56:50
Client Registry
 2=Work with Client Details 5=Machine Registry

Opt	Client Id	Client Name	Status	Machines	
				Act	Not
-	NYCOLTD	NYCO company like this	N Not Active	1	0
-	PLEASE	DELETE ME	N Not Active	0	0
-	TEST	Test name	A Active	0	0

F3=Exit F6=Add New Client F12=Cancel F13=Machine Registry
 NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002

Here we add a new client to the system. We select option F6 and load a client id along with the client name. From here we can also select the status of that client, we have a couple of options either Active or Not. The reason for the status is that whilst the Problem Management Centre receives details coming in from a number of iSeries and AS/400s, at any given time a client may be “out of contract”. Until the product on their iSeries or AS/400 is switched off, messages will continue to be sent. Therefore if a client is marked as “Not Active” any problems relating to that iSeries or AS/400 can still be highlighted, but may not be sent out.

Work with Client Details

NNV0021 NEMS/400 3/05/02
NEMS Problem Management Centre 13:35:58
Work with Client Details

Client Id.....: NYCOLTD
 Client Name....: NYCO Ltd
 Client status...: A Active

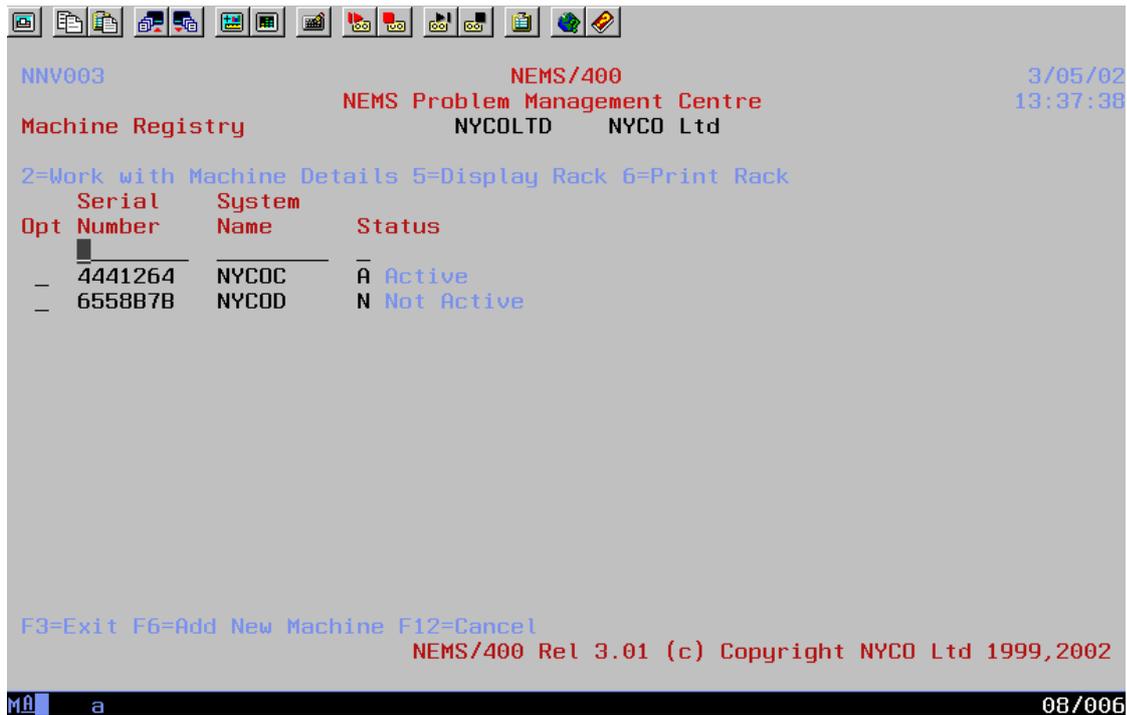
Street.....: Equitable House, Lyon Road
 Town.....: Harrow
 City, County...: Middlesex
 Postcode.....: HA1 2EW
 Fax Number.....: 020 8861 0929
 E-Mail.....: support@nyco.co.uk
 Contact 1 + Tel: Sheila Scott 020 8861 4969
 Contact 2 + Tel:

Comments.....: Office hours 9 - 5 .

F3=Exit F10=Update F12=Cancel
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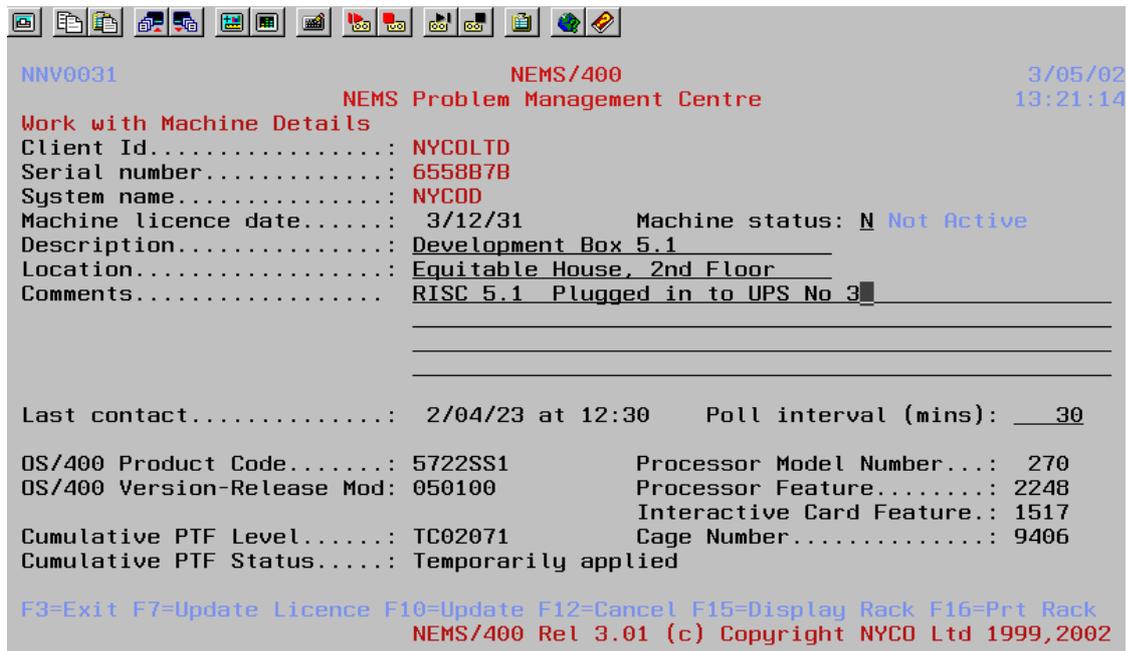
This screen will appear when a new client is to be added to the system. Here you can put your client details along with any special notes which could range from contact names, specific location of machines, building entry points or known times when staff are unavailable.

Work with Machines



The Work with Machines screen is where a machine is added to the client record. Enter the serial number and system name of the iSeries or AS/400 that will be monitored.

Work with Machine Details



Upon adding a new machine to be polled, the detail screen as shown will appear. From this screen you determine the intervals at which you are expecting a “poll” or “heartbeat”. In this instance we are looking to receive contact from the iSeries or AS/400 every 30 minutes. If no contact is registered within that time period a warning message will be generated to inform the operator that there is a potential problem. Upon receipt of the first “contact”, the fields which are currently blank will be updated automatically, i.e. Processor Model Number, Cage Number etc. with information from the client system.

Mode Schedules

Opt Id	Client	Serial Number	System Name	Schedule Frequency	Start Day	Start Time	End Day	End Time	M
-	*ALL	*ALL	*ALL	ONCE	01/03/01	12:00	02/05/02	17:00	A
-	*ALL	*ALL	*ALL	ONCE	10/10/10	0:00	11/11/11	0:00	A
-	TEST	*ALL	*ALL	ONCE	01/01/01	0:00	06/07/08	12:00	A
-	TEST	TESTSR01	*ALL	DAILY	EVERYDAY	10:00	SAMEDAY	11:00	A
-	*ALL	*ALL	*ALL	MONTHLY	3RD THU	10:00	SAMEDAY	13:00	S
-	NYCOLTD	*ALL	*ALL	DAILY	EVERYDAY	11:00	SAMEDAY	12:30	S
-	NYCOLTD	4441264	*ALL	WEEKLY	FRI	23:00	MON	7:00	S
-	NYCOLTD	4441264	NYCOC	DAILY	EVERYDAY	11:30	SAMEDAY	13:00	S
-	TEST	*ALL	*ALL	ONCE	01/05/02	1:00	03/05/02	12:00	S

The Client Maintenance main screen has an interesting option: 3 - Mode Schedules. In this function we are able to designate the clients' machines to scheduling patterns. This will allow whatever machine is set up to be constantly "active" or not due to machine closures or planned backups. You can allocate machines' specific periods for "inactivity" which means that the PMC will not check for missing heartbeats. If a machine is deemed to be in a sleep mode for a given period of time any "problem" message it sends will still be received and acted on as normal.

Now that we have our client and their machines set up, we can look at the General Enquiries Menu, which will provide much of the information received.

General Enquiries

Category	Option
Display Registries	1. Client Enquiry
Display Registries	2. Machine Enquiry
Display Problem Messages	20. View Problem Messages Log
Display Problem Messages	21. Archive Index
Reports	10. Custom Client/Machine Report
Reports	30. Messages from inactive clients
Reports	31. Missed heartbeats
Reports	32. Custom Problem Log Report

The General Enquiries Menu is used to access much of the received problem and heartbeat messages. From here we can see archived logs relating to all the problems that have been received, those relating to specific clients' machines, inactive clients/machines, as well as all the machines that have failed to send us a "heartbeat". Shown below is an example of the information received on the "Archive Index" screen.

Archive Index

```

NNV060                                NEMS/400                                3/05/02
                                NEMS Problem Management Centre        13:46:02

Archive Index

1=Client Details 2=Machine Details 5=Display Problem 6=Print Problem

  Client      Serial      System      Problem      Problem      Message      Problem
  Opt Id      Number      Name        Date         Time         Id           Id
- NYCOLTD    4441264    NYCOC      4/03/02     17:09:06    CPI8FC1     0206358855
5 NYCOLTD    4441264    NYCOC      4/03/02     17:08:56    CPA5817     0206358856
 NYCOLTD    4441264    NYCOC      4/03/02     16:52:53    CPA5817     0226357372
- NYCOLTD    4441264    NYCOC      4/03/02     16:52:34    CPI8FC1     0256357555
- NYCOLTD    4441264    NYCOC      1/03/02     16:29:03    CPI8FC1     0206056568
- NYCOLTD    4441264    NYCOC      1/03/02     16:28:54    CPA5817     0206056567
- NYCOLTD    4441264    NYCOC      1/03/02     16:08:10    CPI8FC1     0206055361
- NYCOLTD    4441264    NYCOC      1/03/02     16:07:57    CPA5817     0206055362
- NYCOLTD    4441264    NYCOC      27/02/02    11:25:23    CPA5817     0295835486
- NYCOLTD    4441264    NYCOC      27/02/02    11:25:17    CPI8FC1     0205834561
- NYCOLTD    4441264    NYCOC      27/02/02    10:53:17    CPA5817     0205836432
- NYCOLTD    4441264    NYCOC      27/02/02    10:53:02    CPI8FC1     0205834664

Key: Blue=Not Active Red=Unknown <=Client >=System +=Both
F3=Exit F5=Refresh F12=Cancel F15=Historical Status F17=Filter
                                NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002
  
```

The Archive Index is the record of all the problems from all the machines that have been received. On this screen you can see a lot of information that is collected about a given problem message. The Client Id shows us who sent the problem, the Serial Number/System Name gives the specific machine, the Problem Date and Time shows when the message arrived, along with the specific Message Id and the unique system generated Problem Id. From this screen you can determine a great deal about the problems. You will notice that I have selected (with a 5) problem Id 0206358856. I am able to display full details about this problem which will include information such as the last 5 problems associated with this machine, full system details, first and second level text relating to CPA5817, rack configuration, cage number along with other details. From this very detailed view of the message, the engineer should now be in a position where he/she can make the right decision to ensure the problem is correctly rectified. To ensure that the problem is escalated to the correct department within the Maintenance Company, we automatically print the full problem details and also send it via e-mail, text or SMS to the relevant people.

In the following three screens, I have shown a selection of the detailed information that we are able to capture and display, to ensure the engineers are given the greatest possible chance of being able to identify the problem. Screen 1 shows us the customer name and machine serial number along with the processor type and cage number. We can also see the OS/400 release level. Screen 2 is able to display a history of the last 5 problems that the machine has generated. This type of information could be very valuable to the engineer in trying to understand why a particular fault occurs. Screen 3 allows us to look at a very detailed description of the iSeries or AS/400's rack configuration, again important information for the engineer to know. All of the information we are giving to the engineer is helping him/her be better "armed and prepared" for any site visit required.

Screen 1

```

Position to line . . . . . █
Line .....1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11.....12.....
NNR0000006
000001 The ITM Group Ltd (2.11) Date: 18
000002 Time: 13
000003 Customer Details Machine Details
000004 -----
000005 Number.: NYCO System Name.....: NYCO Serial: 444126
000006 Name....: NYCO Limited 2.11 Cage Number.....: 9401
000007 Comments: Processor Model Number....: 150
000008 Processor Feature.....:
000009 Interactive Card Feature..:
000010 OS/400 Product Code.....: 5716SS1
000011 OS/400 Version-release-mod: 030700
000012 Cumulative PTF Level....: TC97056
000013 Cumulative PTF Status....: Temporarily applied
000014 Address.: Equitable House
000015 : Lyon Road
000016 : Harrow
000017 : HA1 2EW
000018 Fax.....: 020 8861 0929
000019 E-Mail...:
Contact 1: Sheila Scott
Telephone: 020 8861 4969
Contact 2:
Telephone:
F3=Exit F12=Cancel F19=Left F20=Right F21=Split F22=Width 80 More...

```

Screen 2

```

Position to line . . . . . █
Line .....1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11.....12.....
NNR0000006
000058 Reporting Device Type: 27
000059 CPF ID..: CPI8FC1 First Level: PB NO:0206357860 DSR signal connection failed.
000060 -----
000061 Date: 4/03/02 Problem number.....: 0206357859 Hardware device:
000062 Time: 16:52:53 Problem Function.....: 1 Model.....: 001
000063 System Reference Code: 5A58B003 Frame ID.....:
000064 Sequence Number.....: 01 Card Position..:
000065 Reporting Device Type: 27
000066 CPF ID..: CPA5817 First Level: PB NO:0206357859 Line failed. Probable local hardware problem. (C G R)
000067 -----
000068 Date: 1/03/02 Problem number.....: 0206056568 Hardware device:
000069 Time: 16:29:03 Problem Function.....: 1 Model.....: 001
000070 System Reference Code: 5A58B003 Frame ID.....: 1
000071 Sequence Number.....: 01 Card Position..: 1B
000072 Reporting Device Type: 27
000073 CPF ID..: CPI8FC1 First Level: PB NO:0206056568 DSR signal connection failed.
000074 -----
000075 Date: 1/03/02 Problem number.....: 0206056567 Hardware device:
000076 Time: 16:28:54 Problem Function.....: 1 Model.....: 001
F3=Exit F12=Cancel F19=Left F20=Right F21=Split F22=Width 80 More...

```

Screen 3

Display Report

Position to line █
 Line 1 2 3 4 5 6 7 8 9 10 11 12

Report width : 132
 Shift to column : █

000096 MP01 2269-000 53-7978010 0000045H2391 1 1 System Processor Card
 000097 SP01 6756-001 53-7978010 1 1 Service Processor Card
 000098 BCC01 00-0000000 00-0000000 Bus Extender
 000099 MS01 00-00000 1 1V Next Level Main Storage Card
 000100 Display Hardware Resources
 000101 5716SS1 V3R7M0 961108 NYCO 15/03/02 Page 15
 000102
 000103 Communications Resources List
 000104 -----Location-----
 000105 Resource Type Serial Part Frame Card
 000106 CHB01 6756 53-7978010 0000045H2391 1 EIA 1 Pos
 000107 LIN03 605A 00-6284104 1 1A
 000108 LIN05 605A 00-8343527 1 1C
 000109 LIN01 2724 10-6284104 0000044H7572 1 1A
 000110 CHN01 2724 10-6284104 0000044H7572 1 1A
 000111 LIN02 2721 53-7975125 0000021H8100 1 1B
 000112 CHN02 2721 53-7975125 0000021H8100 1 1B
 000113 CHN03 2721 53-7975125 0000021H8100 1 1B
 000114 LIN04 2723 53-8343527 0000023L4193 1 1C
 Text
 000106 Combined function IOP
 000107 Virtual Controller
 000108 Virtual Controller
 000109 LAN Adapter
 000110 Token-Ring Port
 000111 Comm Adapter
 000112 V.24 Port Enhanced
 000113 Comm Port
 000114 LAN Adapter

F3=Exit F12=Cancel F19=Left F20=Right F21=Split F22=Width 80 More...

MA a MW 03/032

Global Settings

NNVM50 NEMS/400 22/04/02
 NEMS Problem Management Centre 14:32:21

Global Settings

System Values Problem Filter Maintenance
 1. Work with NEMS data areas 20. Configure Problem Filter
 2. Configure Purge Settings

Housekeeping Tools
 10. Purge old message log entries 30. Comms. status
 11. Purge clients and machines 31. Monitor status

Selection: █

F3=Exit F12=Cancel

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MA a MW 20/013

The Global Settings allows us to “clear” existing records and perform associated housekeeping tasks. Problem filter configuration is also performed from this option.

Work with Comms Status

```

NNV300                                NEMS/400                                10/04/02
                                NEMS Problem Management Centre                09:34:21

Work with comms status

Work with line, controller or TCP profile....: █ (L, C or P)

F3=Exit                                NEMS/400 Rel 2.11 (c) Copyright NYCO Ltd 1999,2002
  
```

The Work with Comms Status screen allows you to view the Line, Controller or TCP/IP profile that are associated with NEMS/400. It is a menu driven way of being able to find your system information without having to resort to command line instructions.

Work with Comms Status (Line Option)

```

                                Work with Configuration Status                NYCOD
                                10/04/02                                09:42:48
Position to . . . . . _____ Starting characters

Type options, press Enter.
1=Vary on    2=Vary off    5=Work with job    8=Work with description
9=Display mode status    13=Work with APPN status...

Opt  Description      Status      -----Job-----
█    HMS400           VARIED OFF
_    HMS40NET         VARIED OFF
_    HMS40TCP         VARIED OFF

Parameters or command
==> _____
F3=Exit  F4=Prompt  F12=Cancel  F23=More options  F24=More keys

Bottom

Mâ a                                10/002
  
```

We can see from here the details associated with the line configuration.

Custom Client/Machine Report

```

NNV081                                NEMS/400                                3/05/02
                                NEMS Problem Management Centre                14:34:49

Record Selection

Report Title.....: NEMS: Custom Client/Machine Report
Client Id.....: *ALL Name, *generic*
Client Status....: * A=Active, N=Not Active, *=All
Serial Number....: *ALL Name, *generic*
System Name.....: *ALL Name, *generic*
Machine Status...: * A=Active, N=Not Active, *=All

Compare licence in 30 days time OR Compare Date: 0/00/00 (ddmmyy)
Option: 4 1=Valid only, 2=Pending to expire, 3=Expired, 4=Ignore date

F3=Exit F12=Cancel F13=Submit to batch F14=Run F15=Add to Job Schedule
                                NEMS/400 Rel 3.01 (c) Copyright NYCO Ltd 1999,2002
  
```

As a final example of the powerful features that NEMS/400 provides, you can see here a reporting option (11 from the Client Maintenance Menu), which allows you to run interactive or batch reports for all clients and their machines, whose license code is due to expire 30 days from the report run date. This is a facility for tracking the “accounts” that are coming up to contract renewal. The report can be added to your job scheduler to be included, for example, to run weekly.

Custom Client/Machine Report (Pending Licence Expiry)

```

File . . . . . : NNR071                                Display Spooled File                                Page/Line 1/1
Control . . . . :                                     Columns 1 - 130
Find . . . . . :
*.....1.....2.....3.....4.....5.....6.....7.....8.....9.....0.....1.....2.....3
NNR071                                NEMS/400                                Date: 10/04/02
                                NEMS Problem Management Centre                Time: 12:24:38
                                Page: 0001

Report Title: NEMS: Custom Client/Machine Report
Record Selections:
Client Id.....: *ALL Serial Number.....: *ALL
Client Status.....: * System Name.....: *ALL
System Status.....: * System Status.....: *
Compare Licence Date: 0/00/00
Notes: Ignore licence expiry date

Client   Client  Serial  System  System  System
Id       Status  Number  Name    Status  Licence
-----  -
BERT1   N        123SM321  BERTA  N        26/05/02
BERT1   N        234TR567  THE    A        26/05/02
BLOGGS  A        123AB45  BLOGGS1 A       21/05/02
BLOGGS  A        123CD45  BLOGGS2 A       25/05/02
EASTER  N        0000000  BUNNY1 A        2/05/02
EASTER  N        0000001  BUNNY2 N       12/05/02

F3=Exit F12=Cancel F19=Left F20=Right F24=More keys
More...
  
```

This screen is the result of our search for all machine licences which are going to expire within the next 30 days. You can see that we show the clients id, with the current status of the client, whether they are an active customer or not, the serial number of the clients’ machines, the system name and its status, and finally the licence expiry date.

CLIENT SYSTEM

Having seen the type of information sent over to the Problem Management Centre, we will now look at how that information is gathered and transmitted. The Client System resides on the customer's iSeries or AS/400 and is a data collection and transmission agent. We have 2 versions of the Client System, firstly the Client Hub and secondly the Client Network. The difference is that the Client Hub has a transmission facility built in to it, where by it can send out information via an IP connection using FTP or a modem to the Problem Management Centre located at the Maintenance Companies Operations Centre. The Client Network will only send its information to a "networked" iSeries or AS/400 from where it is redirected using the Client Hub to the Maintenance Company. For any site with multiple iSeries and AS/400s the use of a Hub and Network version of the product can be a great benefit. The Client Hub and Network versions are both installed by the local engineer whose task is to set up a number of parameters to ensure that transmission routines are running correctly, and that information about the system configuration can be sent out correctly and accurately. To install the product the engineer will need to have QSECOFR rights.

Client System - Main Screen

```

NMO10R                                NEMS/400                                10/04/02
                                      NEMS Client Hub                          12:03:00

Main Menu

1. Configure NEMS
2. NEMS Network
3. Start/End NEMS Monitors
4. Send Rack Configuration
5. Enter authorisation code

90. SIGNOFF

Selection: █

F3=Exit

NEMS/400 Rel 2.11 (c) Copyright NYCO Ltd 1999,2002
```

The Client System monitors the problem log and using a problem filter selects the messages that would be transmitted to the Problem Management Centre system. The Client System uses its own line, controller and device descriptions with the contact number of the Problem Management Centre hard coded into the line and controller descriptions. Communications with the Problem Management Centre are via IP using FTP or an asynchronous modem attached to a V24 line on the AS/400. The Client System software is protected by an authorisation code that is serial number specific.

Client System Configuration Screen

Open	Close	Copy	Paste	Print	About	Dup	Clear	Erase	Altn	Sysreq	Help	Hex
------	-------	------	-------	-------	-------	-----	-------	-------	------	--------	------	-----

```
NNV500                                NEMS/400                                10/04/02
                                      NEMS Client Hub                            12:00:56

Configure NEMS

Client Id.....: NYCO                  Client Name..: NYCO Ltd
Serial Number...: 4441264              Install Date.: 3/01/02
System Name.....: NYCOC                Subsystem....: NEMSITM
System Type (H/N): H Client Hub        Data Queue...: NEMS1

Monitor Values
Data Queue Monitoring Frequency.....: 10 (mins)
NEMS Log Monitoring Frequency.....: 10 (mins)

Heartbeat Values
Heartbeat Frequency.....: 000:12 (hhhh:mm)
Heartbeat Start Date.....: 6/03/02 (dd/mm/yy)
Heartbeat Start Time.....: 12:10:00 (hh:mm:ss)

Next Heartbeat
Next Heartbeat Date.....: 10/04/02 (dd/mm/yy)
Next Heartbeat Time.....: 12:04:00 (hh:mm:ss)

F3=Exit F5=Refresh F10=Update F12=Cancel
Update of NEMS configuration is not possible when monitors are active
```

The screen shot seen here is used by the engineer to configure the system to provide the maximum performance coupled to the minimum overhead. The product has two monitors that run, the Data Queue Monitor and the Nems Log Monitor. The Data Queue Monitor looks for new problem messages that have been generated, whilst the Nems Log Monitor sends that information out. In the example that we have here, every 2 minutes the data queue is being monitored for new messages, whilst every 10 minutes the Send Monitor will look to see if there is anything new to send out. You can also see that the “heartbeat” is set from here. The frequency of the heartbeat can be set to any time that is required, ranging from minutes to hours. Once a heartbeat has been sent, at the bottom of the screen you will see there is an indicator telling you when the next one is due. The other fields that have been entered are mainly there for information purposes only, i.e. the system name and client name. As you have probably noticed, the product does not monitor a message queue, (the standard route of most iSeries and AS/400 monitoring) instead we are looking at a data queue. The whole of the Client System product is not a “general display” item. So unless a level of authority is given, the screens will not be generally available.

Client Network System

The Client Network is only available for a machine that has been set up as part of the network. For multi-machine sites it is a preferable way to go, as the costs involved with the supply of additional modems and phone lines can be avoided. It is worth noting that Client Network Systems may only be set up on machines that are part of an APPN network. At the point of install, values specific to the client's network configuration will be set up.

Client Network System

```
NMO04D
NEMS/400
NEMS Client Hub
10/04/02 12:04:21
NEMS Network 2=Change 4=Delete 5=Display

Option Remote Location Serial No. Remote Net ID Network MSG Route
- NYCOB 44E9228 APPN N
- NYCOC 4441264 APPN N
- NYCOD 6558B7B APPN 1

F3=Exit F6=Add F12=Previous
NEMS/400 Rel 2.11 (c) Copyright NYCO Ltd 1999,2002
ONLINE 8.3 M
```

Note the Network MSG Route column. It is here that the “host” route for the messages to be sent is configured. We can determine which machine is to be the “primary” client host, which one is the secondary and so on. When “N” is used as a marker in the column, this indicates that the machine is not designated to receive messages. This could be because the machine has a Client Network System currently loaded on it. If you have a network of many iSeries and AS/400s, to cater for the occasional system shut down or restricted state routines, you designate a second Client Host machine to send out your messages should your primary “host” be unavailable. The switching between machines is completed by the Client System product and does not require any operator intervention.

Problem Management Centre - Menu Structure

NEMS/400 - PMC

Main Menu

|

1	2	3	4	5	6	7
Central Console	Problem Messages	General Enquiries	Client Maintenance	Archives	Start/End Monitors	Global Settings
:	:	:	:	:	:	:
Displays	Display Registries	Display and Update	Archive Index Derived	Problem Message Monitor	System Values	
1. View Problem Messages	1. Client Enquiry	1. Client registry	1. Archive Index	1. Start Problem	1. Work with NEMS	
2. Archive Index	2. Machine Enquiry	2. Machine registry	:	Log Monitor	data areas	
:	:	3. Mode Schedules	:	2. End Problem	2. Configure Purge	
:	:	:	:	Log Monitor	Settings	
:	:	:	:	:	:	
Reports	Reports	Reports	Generated Listings Derived	Last Contact Monitor	Housekeeping	
10. Messages from inactive clients	10. Custom Client /Machine Report	10. Licences pending to expire in 30 days	10. Archived clients	3. Start Last Contact Monitor	10. Purge old message log entries	
11. Missed heartbeats	:	11. Custom client /machine report	11. Archived machines	4. End Last Contact Monitor	11. Purge clients and machines	
12. Custom Problem Messages report	:		12. Archived problem messages		:	
	:					
	Display Problem Messages				Problem Filter Maintenance	
	20. View Problem Message Log				20. Configure Problem Filter	
	21. Archive Index				:	
	:				Tools	
	Reports				30. Comms. status	
	30. Messages from inactive clients				31. Monitor status	
	31. Missed heartbeats					
	32. Custom Problem Log Report					