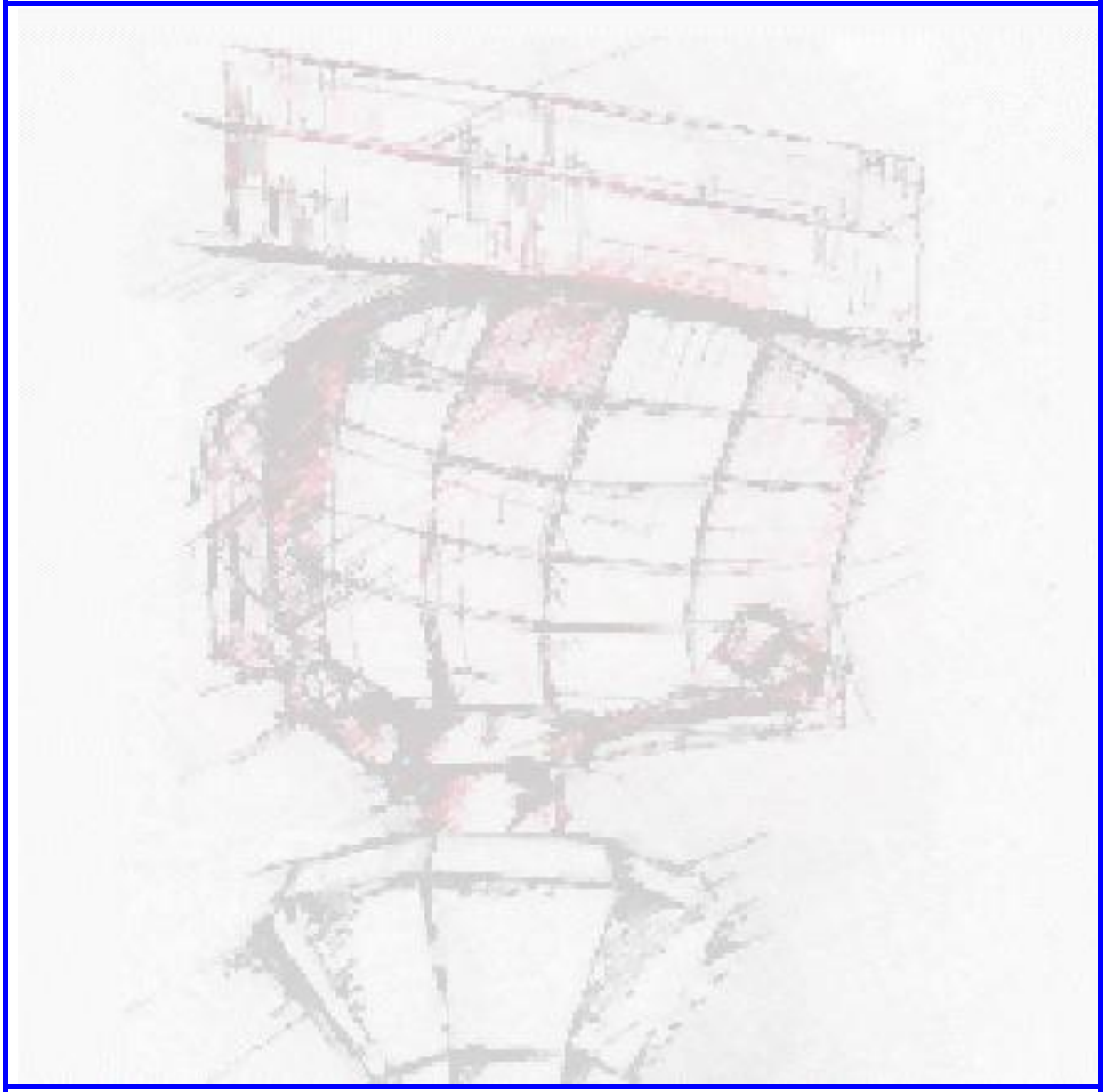
IE-Proxy



User Manual

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INTERSOFT ELECTRONICS

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Abstract

The IE-Proxy is an Intersoft tool acting as bridge for Inter Application Communication within the different RASS-R software modules. More important, the IE-Proxy is also a SNMPv1 gateway to connect a scalable RASS-R system with a 3rd party SNMP-manager. In ATC Centres where RASS-R is installed as 'Recording and Replay'-system, MIB-II and Intersoft's private MIB messages are exchanged with the ATC Centre SNMP-Manager.

Keywords

Inter Application Communiation IAC	SNMPv1	MIB-II	Intersoft Private MIB
SNMP agent	SNMP manager	Network Management Station	RASS-R

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ELECTRONIC BACKUP

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Windows XP Pro	Type : Hard disk	Word 2003
	Media Identification :	

INTERSOFT ELECTRONICS

DOCUMENT APPROVAL

The following table identifies all authorities who have successively approved the present issue of this document.

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DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION	DATE	REASON FOR CHANGE	SECTIONS PAGES AFFECTED
1	05/11/08	New document compatible with software release IE-Proxy v1.0.1 (available from RASS-R v.3.4.0) And with IE REG.MIB revision 0809040000Z IE PROXY.MIB revision 0809040000Z IE DHM.MIB revision 0809040000Z	All
2	16/04/09	New document compatible with software release IE-Proxy v1.2.0 (available from RASS-R v.3.5.0)	All
3	11/05/09	User manual compatible with v1.2.1 and IE REG.MIB revision 0905060000Z IE PROXY.MIB revision 0905060000Z IE DHM.MIB revision 0905060000Z	All
4	03/06/13	User manual compatible with v1.2.2 and IE REG.MIB revision 0905060000Z IE PROXY.MIB revision 0905060000Z IE DHM.MIB revision 0905060000Z Logo updated	None

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CONVENTIONS USED IN THIS MANUAL

The following conventions are used in this manual:

 ***Note: This icon to the left of bold italicized text denotes a note, which alerts you to important information.***

 ***Caution: This icon to the left of bold italicized text denotes a caution, which alerts you to the possibility of data loss or a system crash.***

 ***Warning: This icon to the left of bold italicized text denotes a warning, which alerts you to the possibility of damage to you or your equipment.***

1. Introduction

The IE-Proxy is a RASS-R software that performs 2 major tasks:

- **Inter Application Communication (IAC) bridge**: it acts as a bridge for the IAC between the different RASS-R modules.
  For example when the DHM sends (.D6) data by means of a RadarOutput module to the MRD3, this communication is established and maintained by means of IAC with the IE-Proxy working as gateway or bridge.
  This IAC runs on the background of the computer. You even do not need to be aware of its functioning. Suppose that the IE-Proxy is not running, IAC will fall back on the classic RPC method (Remote Procedure Call).

- **SNMP-agent**: the IE-Proxy also acts as SNMP-agent. It receives and sends SNMP messages. To let it work as SNMP-agent, you need to license the IE-Proxy! Otherwise a message of 'demonstration only' will appear in the tray manager (The Tray Manager is a RASS-R software tool that appears as icon in the Windows systray).
  For registration of the IE-Proxy, the **`IE-Proxy_licence_request.txt`** file need to be compiled in a registry file by Intersoft.
  (Refer to the RASS-R Installation manual: **`IE_RASS-R_InstallationManual-vxx.pdf`**)

The figure below represents a standard configuration: multiple RASS-R servers are connected over LAN with multiple RASS-R computers. Typically, a RASS-R server will run the RASS-R DHM server software, while the RASS-R computers run other RASS-R software tools like the DHM Configuration Manager, the Multi Radar Display MRD3, TRACKAN etc. All computers also run the same software module, which is the IE-Proxy. This SNMP-agent makes it possible to exchange SNMP-Messages with a (3rd party) Network Management System.

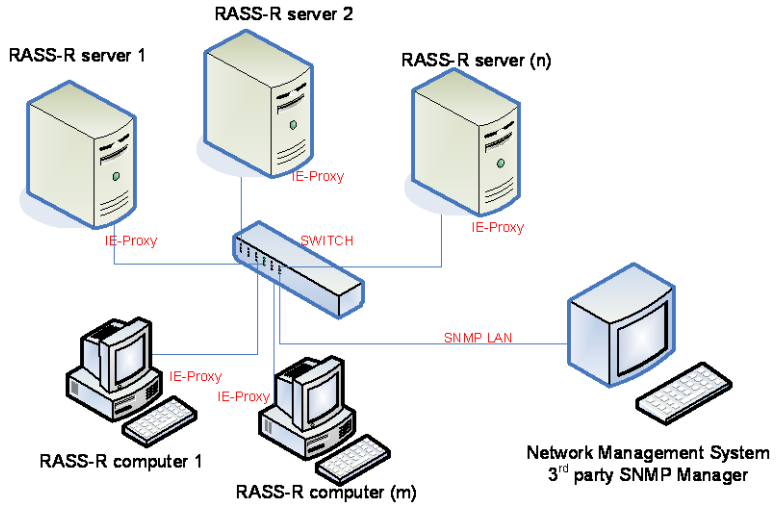

Figure 1-1: Basic SNMP controlled network

In the next chapters, it will be explained how the IE-Proxy works as SNMP-agent and which implementation need to be done on any 3rd party SNMP-management system.

2. IE-Proxy as SNMP-agent

2.1 Installation of the IE-Proxy

The IE-Proxy can be installed by using the RASS-R installer DVD. Refer to the RASS-R installer manual that can be found on the installer DVD. (**`IE_RASS-R_InstallationManual-vxx.doc`**)

Upon completion of the installation, the IE-Proxy is installed in the following path:

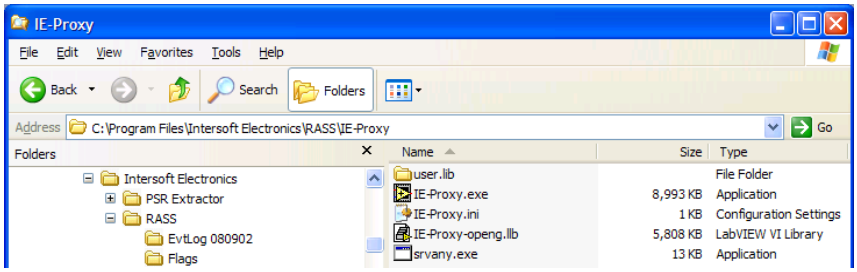

Figure 2-1: IE-Proxy installation path

The IE-Proxy is installed as a Windows service, so no user interface is available. The start-up type is set to “automatic”:

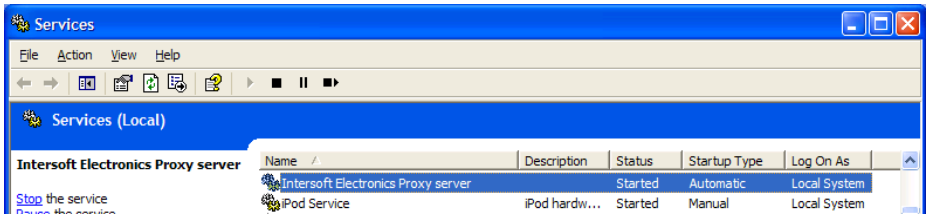

Figure 2-2: IE-Proxy service

It will be visible in Windows Task Manager as “IE-Proxy.exe”.

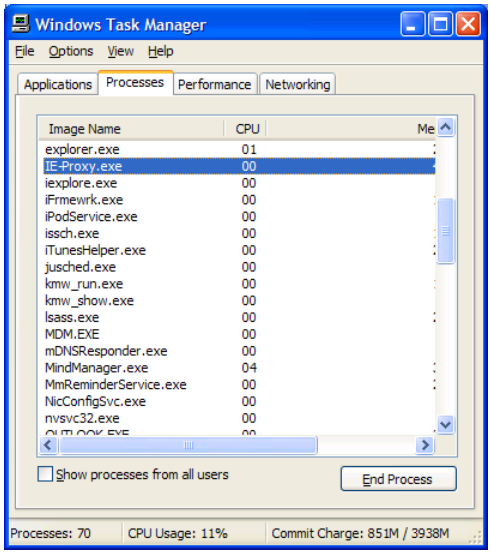

Figure 2-3: IE-Proxy.exe in Windows Task Manager

2.2 Support of SNMPv1 MIB-II

The IE-Proxy supports SNMPv1 MIB-II according specification RFC1213.
See on http://tools.ietf.org/html/rfc1213#section-3.10 for specifications.
From this MIB-II, it supports 2 groups:

- System Group
- SNMP Group

Information for the System Group can be filled in the IE-Proxy.ini file.
`C:\Program Files\Intersoft Electronics\RASS\IE-Proxy\IE-Proxy.ini`

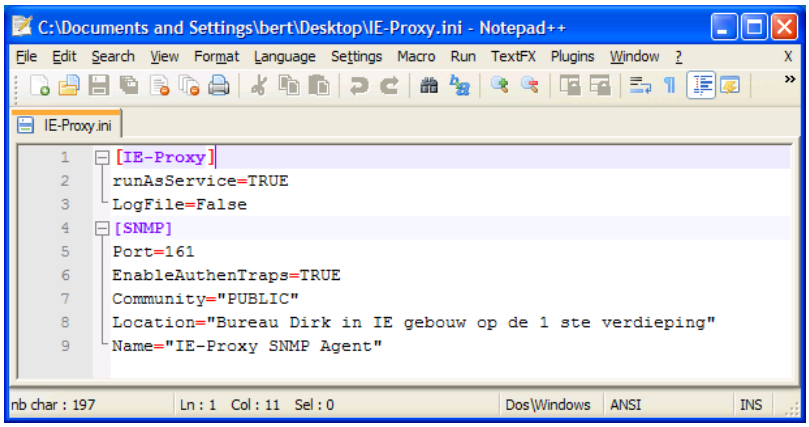

Figure 2-4: IE-Proxy.ini-file

The following items can be changed:

- Port: this is the port number where the IE-Proxy listens on for SNMP-messages. If the SNMP-Manager is sending messages on another port number, you have to change this here.
- EnableAuthenTraps (True/False): enable or disable the Trap-PDU used in the SNMP Group
- Community= Change here the community name used in the SNMP-messages
- Location= string that will be used in the System Group
- Name= string that will be used in the System Group

2.3 Support of Intersoft private MIB

The IE-Proxy supports the Intersoft private MIB, that consists of 3 subfiles:

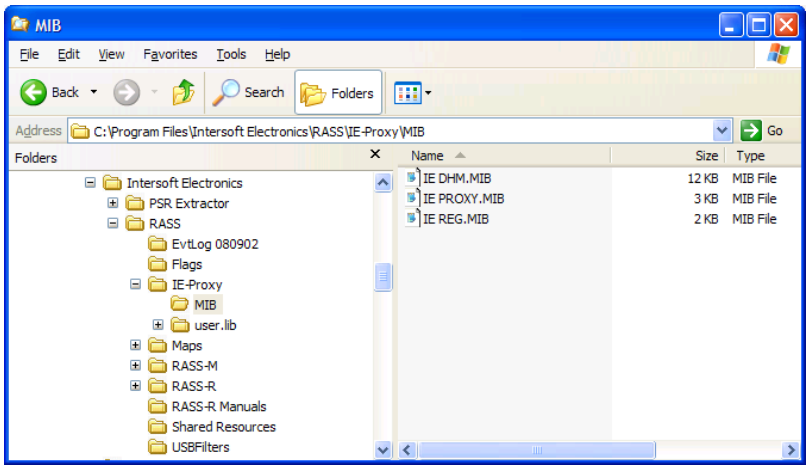

Figure 2-5: Intersoft private MIB files

- **IE REG.MIB**: General MIB-file; this file describes the hierarchical structure for the Intersoft private MIB.
- **IE DHM.MIB**: Data Handler Manager MIB-file; this file describes the MIB for the RASS-R Data Handler Module (DHM)
- **IE PROXY.MIB**: IE-Proxy MIB-file; this file describes the MIB for the IE-Proxy.

These files needed to be saved in the MIB-list on the Network Management Station (NMS). (The Intersoft private MIB is implemented in the IE-Proxy.exe, so the files need not to be present on the SNMP-agent.)

Other MIB files can be added in future releases of the IE-Proxy (for example for the RASS-R MRD3, TRACKAN)

Important information:

- The IE-Proxy does not send any <TRAP_PDU> for the MIB's above.
- The IE-Proxy does not support the <SET_REQUEST_PDU>
- Intersoft has enterprise number 30524.

In the next paragraphs, you can read detailed information about all MIB-files.

2.3.1 General MIB file (IE REG.MIB)

2.3.1.1 Structure

By using a MIB browser, the following structure of the MIB is visible:

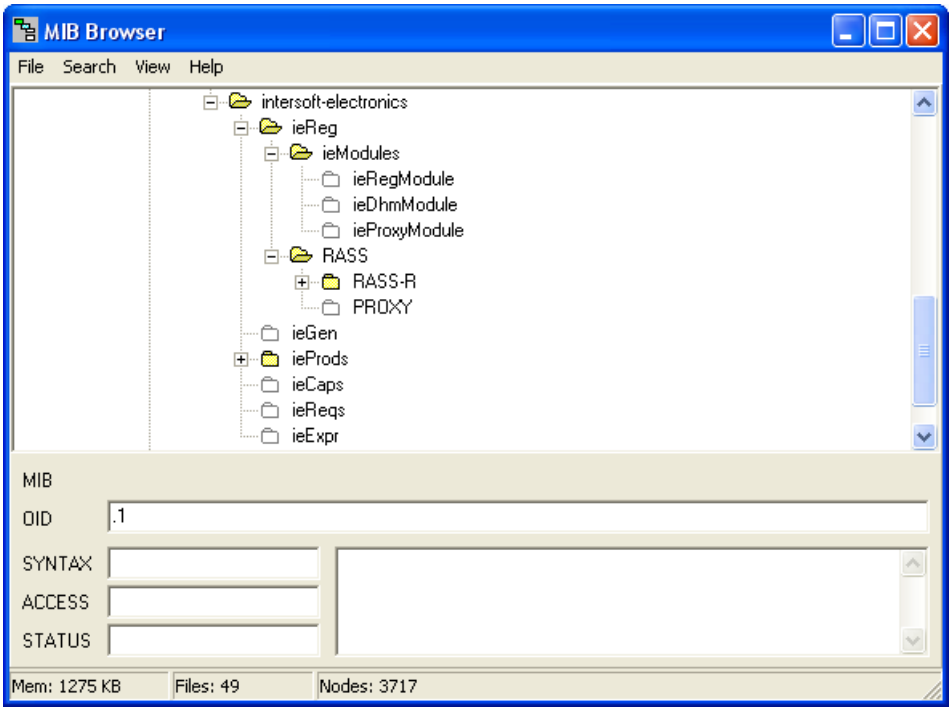

Figure 2-6: MIB tree view IE REG.MIB

2.3.1.2 File content

```
IE-REG DEFINITIONS ::= BEGIN

IMPORTS
          MODULE-IDENTITY, OBJECT-IDENTITY,
          enterprises
                    FROM SNMPv2-SMI;

ieRegModule MODULE-IDENTITY
          LAST-UPDATED        "0905060000Z"
          ORGANIZATION        "Intersoft Electronics"
          CONTACT-INFO
                    "Dirk De Bal
                    email: dirk.de.bal@intersoft-electronics.com"
          DESCRIPTION
                    "Revision 1.1 of this module"
          REVISION            "0905060000Z"
          DESCRIPTION
                    "The Intersoft-Electronics central registration module"
          ::= {ieModules 1}

intersoft-electronics         OBJECT IDENTIFIER ::={enterprises 30524}

ieReg                                         OBJECT IDENTIFIER ::= {intersoft-electronics 1}
          ieModules                   OBJECT IDENTIFIER ::= {ieReg 1}

ieGen                                         OBJECT IDENTIFIER ::= {intersoft-electronics 2}

ieProds                                       OBJECT IDENTIFIER ::= {intersoft-electronics 3}

ieCaps                                        OBJECT IDENTIFIER ::= {intersoft-electronics 4}

ieReqs                                        OBJECT IDENTIFIER ::= {intersoft-electronics 5}

ieExpr                                        OBJECT IDENTIFIER ::= {intersoft-electronics 6}

END
```

2.3.2 Data Handler Manager MIB file (IE DHM.MIB)

2.3.2.1 Structure

By using a MIB browser, the following structure of the MIB is visible:

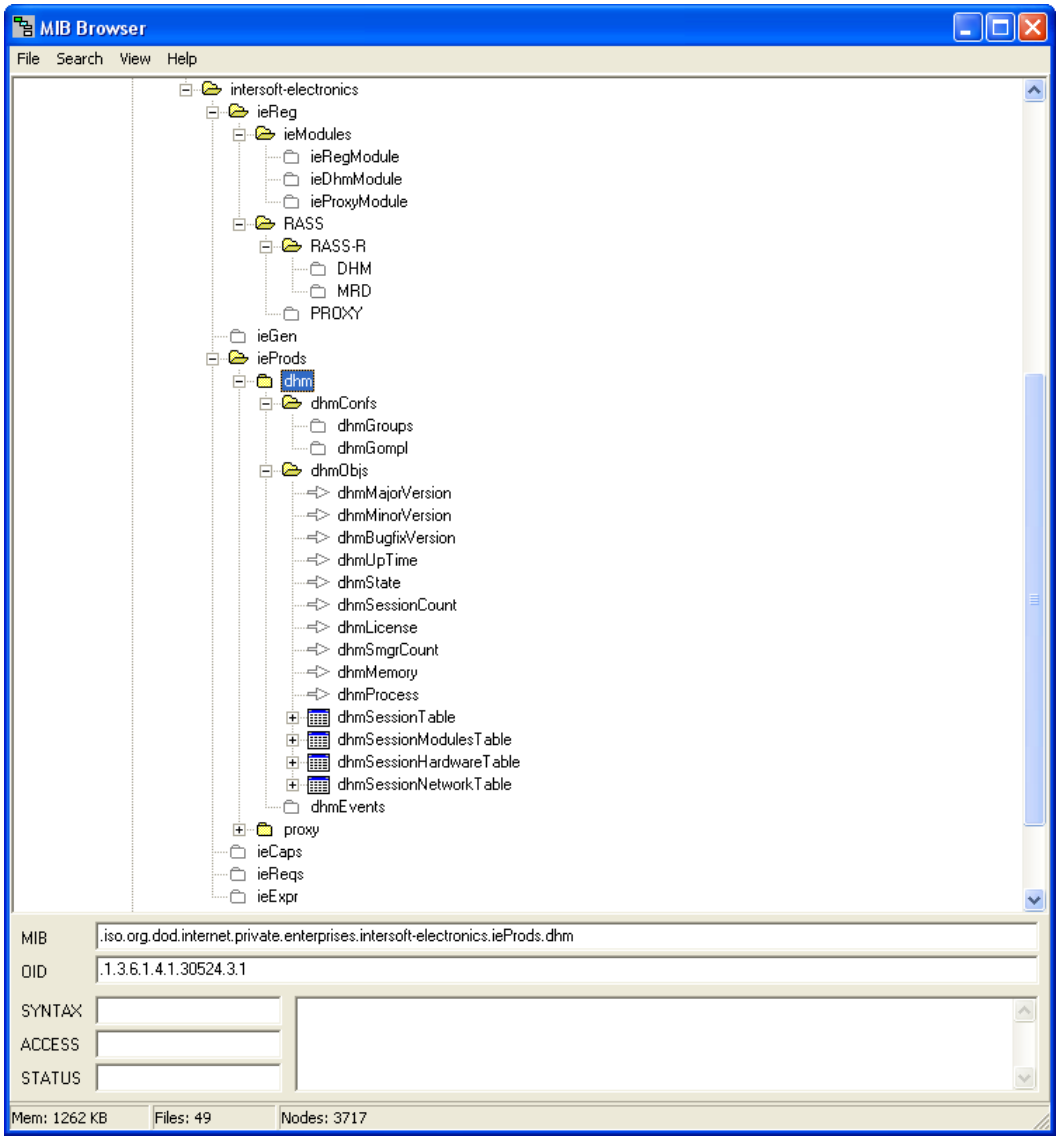

Figure 2-7: MIB tree view IE DHM.MIB

2.3.2.2 Information about the DHM

According to the file structure as pasted in the next paragraph, the following information about the DHM is available:

To understand the meaning of all object-types, it is necessary to read the manual about the DHM first! (IE-UM-00025-007 DHM.pdf or higher)

Table 1: IE DHM.MIB

OBJECT-TYPE	DESCRIPTION/values/explanation
DHMMajorVersion	**Description**: "The major release number of the DHM SRV software" Values: **Explanation**: this value can be seen in the DHM Conf. Manager title bar.
DHMMinorVersion	**Description**: "The minor release number of the DHM SRV software" **Explanation**: this value can be seen in the DHM Conf. Manager title bar.
DHMBugfixVersion	**Description**: "The bugfix release number of the DHM SRV software" **Explanation**: this value can be seen in the DHM Conf. Manager title bar.
DHMUpTime	**Description**: "The time (in hundredths of a second) since the DHM SRV was last re-initialised" **Explanation:** Re-initializing can be done by restarting the DHM server manually (See IE-DHM-UM-v15.pdf paragraph 3.1) or after a restart of the PC where the DHM server runs on.
DHMState	**Description**: "The current state of the DHM SRV" **Values**: started(1), stopped(2), failed(3)
DHMSessionCount	**Description**: "The current number of sessions managed by DHM SRV" **Explanation**: Equals the number of sessions visible in the DHM Conf. Manager. Maximum 10 sessions can be loaded. (See IE-DHM-UM-v15.pdf paragraph 4.2.3)
DHMLicense	**Description**: "The current license status of the DHM SRV **Values**: demo(1), registered(2)
DHMSmgrCount	**Description**: "The current number of SMGR connected to DHM SRV" **Explanation:** Multiple DHM Configuration Managers can be connected to the same DHM server.
DHMMemory	**Description**: "The current memory occupied by DHM SRV in Kbytes" **Explanation**: The DHM server is visible as YARDIOS_SRV.exe in Windows Task Manager. (See IE-DHM-UM-v15.pdf figure 4-17)
DHMProcess	**Description**: "The current processor load on one CPU core used by the DHM SRV in %". In multiple core computers it is possible this looks strange, because the windows task manager will divide the processor load by the number of cores. It will look like the reported processing load is not correct. **Explanation:** The DHM server is visible as YARDIOS_SRV.exe in Windows Task Manager. (See IE-DHM-UM-v15.pdf figure 4-17)

DHMSessionTable	
→DHMSessionIndex	**Description**: "A unique value for each session"
→DHMSessionName	**Description:** "The name of the session" **Explanation:** this is the name of the session as visible in the DHM Configuration Manager. (See IE-DHM-UM-v15.pdf paragraph 4.2.3)
→DHMSessionState	**Description**: The current state of the session" **Values**: running(1), stopped(2), loading(3), error(4) **Explanation:** See IE-DHM-UM-v15.pdf paragraph 4.2.3, table 3.
→DHMSessionMemory	**Description**: "The current memory occupation of the session in Kbytes" **Explanation:** Each session is visible as YARDIOS_SESSION_ENGINE_#.exe in Windows Task Manager (See IE-DHM-UM-v15.pdf figure 4-17)
→DHMSessionProcess	**Description**: "The current processing load on one CPU core created by the session" In multiple core computers it is possible this looks strange, because the windows task manager will divide the processor load by the number of cores. It will look like the reported processing load is not correct. If you accumulate the load of all sessions it could be higher than100%. **Explanation:** Each session is visible as YARDIOS_SESSION_ENGINE_#.exe in Windows Task Manager (See IE-DHM-UM-v15.pdf figure 4-17)
→DHMSessionAutoLoad	**Description**: "The current autoLoad property of the session" **Values**: no (1), yes (2) **Explanation:** See IE-DHM-UM-v15.pdf paragraph 5.2.7.
→DHMSessionAutoRun	**Description**: The current autoRun property of the session" **Values**: no (1), yes (2) **Explanation:** See IE-DHM-UM-v15.pdf paragraph 5.2.7.
→DHMSessionPersistent	**Description**: The current Persistent property of the session" **Values**: no (1), yes (2) **Explanation:** See IE-DHM-UM-v15.pdf paragraph 5.2.7.

DHMSessionModulesTable	**Description**: "A list containing the modules present in a session."
→DHMSessionIndex	**Description**: "A unique value for each session"
→DHMSessionName	**Description**: "The name of the module" **Explanation:** this is the name of the session as visible in the DHM Configuration Manager. (See IE-DHM-UM-v15.pdf paragraph 4.2.3)
→DHMSessionModulesIndex	**Description**: "A unique value for each module"
→DHMSessionModulesName	**Description**: "The name of the module" **Explanation**: the name of modules as described in IE-DHM-UM-v15.pdf Chapter 6.
→DHMSessionModulesState	**Description**: "The current state of the module" **Values**: stopped(1), running(2), idle(3), error(4) **Explanation**: See IE-DHM-UM-v15.pdf paragraph 5.2.5 ('idle' represents a yellow colored DHM module as in Figure 5-6 of the manual above.)
→DHMSessionModulesUpTime	**Description**: "The time (in hundredths of a second) since the module was last re-initialised"
→DHMSessionStatusProbe	**Description**: "The current content of the status probe of the module" **Explanation**: probes as described in IE-DHM-UM-v15.pdf paragraph 5.2.6. Everytime a DHMSessionStatusProbe is asked, a snapshot of probe data is sent.
DHMSessionHardwareTable	**Description**: "A list containing the Hardware present in a session."
→DHMSessionIndex	**Description**: "A unique value for each session"
→DHMSessionName	**Description**: "The name of the session" **Explanation:** this is the name of the session as visible in the DHM Configuration Manager. (See IE-DHM-UM-v15.pdf paragraph 4.2.3)
→DHMSessionHardwareIndex	**Description**: "A unique value for each Hardware module"
→DHMSessionHardwareName	**Description**: "The name of the Hardware module" **Explanation**: the name of modules as visible in the DHM modules, as described in IE-DHM-UM-v15.pdf Chapter 6. (Example figure 6-160 right: UDR2[81]) Possible hardware devices are: UDR2[xx], TMD[x], ADSBonRIM[x],RVR[xx/xx/xxx], EDR[xx/xx/xxx] with between [x] its serial number.
→DHMSessionHardwareState	**Description**: "The current state of the Hardware module" **Values**:stopped(1), running(2), idle(3), error(4) **Explanation**: See IE-DHM-UM-v15.pdf paragraph 5.2.5
→DHMSessionHardwareConfig	**Description**: "The current configuration of the Hardware module" **Explanation:** string with input, output, protocol

DHMSessionNetworkTable	**Description**: "A list containing the Network modules present in a session."
→DHMSessionIndex	**Description**: "A unique value for each session"
→DHMSessionName	**Description**: "The name of the session" **Explanation:** this is the name of the session as visible in the DHM Configuration Manager. (See IE-DHM-UM-v15.pdf paragraph 4.2.3)
→DHMSessionNetworkIndex	**Description**: "A unique value for each Network module"
→DHMSessionNetworkName	**Description**: "The name of the Network module" **Explanation**: the name of modules as described in IE-DHM-UM-v15.pdf Chapter 6. Possibilities are: UDPinput, UDPoutput, TCPinput, TCPoutput, PCAP, PCAPoutput Remark that the name is not unique! You should use this in combination with the local and remote IP-address.
→DHMSessionNetworkState	**Description**: "The current state of the Network module" **Values**:Stopped(1), running(2), idle(3), error(4) **Explanation**: See IE-DHM-UM-v15.pdf paragraph 5.2.5
→DHMSessionNetworkLocalIP	**Description**: "The current LocalIP configuration of the Network module" **Explanation:** the local IP address as described in IE-DHM-UM-v15.pdf Chapter 6.
→DHMSessionNetworkRemoteIP	**Description**: "The current RemoteIP configuration of the Network module" **Explanation:** the remote IP address as described in IE-DHM-UM-v15.pdf Chapter 6.
→DHMSessionNetworkPacket	**Description**: "The current number of packets processed since last reset of the Network module" **Explanation**:
→DHMSessionNetworkUpTime	**Description**: "The time (in hundredths of a second) since the network module was last re-initialised"
→DHMSessionNetworkProbe	**Description**: "The current content of the probe of the Network module" **Explanation**: probes as described in IE-DHM-UM-v15.pdf paragraph 5.2.6. Everytime a DHMSessionNetworkProbe is asked, a snapshot of probe data is sent.

2.3.2.3 File content

```
IE-DHM DEFINITIONS ::= BEGIN
IMPORTS
          MODULE-IDENTITY, OBJECT-TYPE, TimeTicks, IpAddress
                    FROM SNMPv2-SMI
          ieProds, ieModules
                    FROM IE-REG;

ieDhmModule MODULE-IDENTITY
          LAST-UPDATED        "0905060000Z"
          ORGANIZATION        "Intersoft-Electronics"
          CONTACT-INFO
                    "Dirk De Bal
                    email: dirk.de.bal@intersoft-electronics.com"
          DESCRIPTION
                    "The revision 1.1 of this module"
          REVISION            "0905060000Z"
          DESCRIPTION
                    "The initial revision of this module"
          REVISION            "0903200945Z"
          DESCRIPTION         "The Intersoft-Electronics DHM MIB"

          ::={ieModules 2}

dhm                                                   OBJECT IDENTIFIER ::= {ieProds 1}

dhmConfs                                  OBJECT IDENTIFIER ::= {dhm 1}
          dhmGroups                       OBJECT IDENTIFIER ::= {dhmConfs 1}
          dhmGompl                        OBJECT IDENTIFIER ::= {dhmConfs 2}

dhmObjs                                             OBJECT IDENTIFIER ::= {dhm 2}

dhmEvents                                 OBJECT IDENTIFIER ::= {dhm 3}

dhmMajorVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The major release number of the DHM SRV software"
          ::= {dhmObjs 1}

dhmMinorVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The minor release number of the DHM SRV software"
          ::= {dhmObjs 2}

dhmBugfixVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The bugfix release number of the DHM SRV software"
          ::= {dhmObjs 3}

dhmUpTime OBJECT-TYPE
          SYNTAX              TimeTicks
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The time (in hundredths of a second) since the DHM SRV was last re-initialised"
          ::= {dhmObjs 4}

dhmState OBJECT-TYPE
          SYNTAX              INTEGER {
                                                started(1),
                                                stopped(2),
                                                failed(3)
                                                }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The current state of the dhm SRV"
          ::= {dhmObjs 5}

dhmSessionCount OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The current number of sessions managed by DHM SRV"
          ::= {dhmObjs 6}

dhmLicense OBJECT-TYPE
          SYNTAX              INTEGER {
                                                demo(1),
                                                registered(2)
                                                }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                              "The current license status of the DHM SRV"
          ::= {dhmObjs 7}

dhmSmgrCount OBJECT-TYPE
```

```
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current number of SMGR connected to DHM SRV"
          ::= {dhmObjs 8}

dhmMemory OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current memory occupied by dhm SRV in Kbytes"
          ::= {dhmObjs 9}

dhmProcess OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current processor load used by the DHM SRV in %"
          ::= {dhmObjs 10}

dhmSessionTable OBJECT-TYPE
          SYNTAX              SEQUENCE OF DhmSessionEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "A list containing information about the current loaded sessions."
          ::= {dhmObjs 11}

dhmSessionEntry OBJECT-TYPE
          SYNTAX              DhmSessionEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "Entry containing information about the current loaded sessions"
          INDEX {dhmSessionIndex}
          ::= {dhmSessionTable 1}

DhmSessionEntry ::=
          SEQUENCE {
                    dhmSessionIndex
                              INTEGER,
                    dhmSessionName
                              OCTET STRING,
                    dhmSessionState
                              INTEGER,
                    dhmSessionMemory
                              INTEGER,
                    dhmSessionProcess
                              INTEGER,
                    dhmSessionAutoLoad
                              INTEGER,
                    dhmSessionAutoRun
                              INTEGER,
                    dhmSessionPersistent
                              INTEGER
                              }

dhmSessionIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each session"
          ::= {dhmSessionEntry 1}

dhmSessionName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the session"
          ::= {dhmSessionEntry 2}

dhmSessionState OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                    running(1),
                                                    stopped(2),
                                                    loading(3),
                                                    error(4)
                                                    }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the session"
          ::= {dhmSessionEntry 3}

dhmSessionMemory OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current memory occupation of the session in Kbytes"
          ::= {dhmSessionEntry 4}

dhmSessionProcess OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
```

```
                                        "The current processing load created by the session"
          ::= {dhmSessionEntry 5}

dhmSessionAutoLoad OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                                  no(1),
                                                                  yes(2)
                                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current autoload property of the session"
          ::= {dhmSessionEntry 6}

dhmSessionAutoRun OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                                  no(1),
                                                                  yes(2)
                                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current autoRun property of the session"
          ::= {dhmSessionEntry 7}

dhmSessionPersistent OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                                  no(1),
                                                                  yes(2)
                                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current persistent property of the session"
          ::= {dhmSessionEntry 8}

dhmSessionModulesTable OBJECT-TYPE
          SYNTAX              SEQUENCE OF DhmSessionModulesEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "A list containing the modules present in a session."
          ::= {dhmObjs 12}

dhmSessionModulesEntry OBJECT-TYPE
          SYNTAX              DhmSessionModulesEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "Entry in the dhmSessionModulesTable"
          INDEX {dhmSessionModulesSessionIndex, dhmSessionModulesIndex}
          ::= {dhmSessionModulesTable 1}

DhmSessionModulesEntry ::=
          SEQUENCE {
                    dhmSessionModulesSessionIndex
                              INTEGER,
                    dhmSessionModulesSessionName
                              OCTET STRING,
                    dhmSessionModulesIndex
                              INTEGER,
                    dhmSessionModulesName
                              OCTET STRING,
                    dhmSessionModulesState
                              INTEGER,
                    dhmSessionModulesUpTime
                              TimeTicks,
                    dhmSessionModulesStatusProbe
                              OCTET STRING
                              }

dhmSessionModulesSessionIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each session"
          ::= {dhmSessionModulesEntry 1}

dhmSessionModulesSessionName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the Session"
          ::= {dhmSessionModulesEntry 2}

dhmSessionModulesIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each module"
          ::= {dhmSessionModulesEntry 3}

dhmSessionModulesName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the module"
          ::= {dhmSessionModulesEntry 4}
```

```
dhmSessionModulesState OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                                  stopped(1),
                                                                  running(2),
                                                                  idle(3),
                                                                  error(4)
                                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the module"
          ::= {dhmSessionModulesEntry 5}

dhmSessionModulesUpTime OBJECT-TYPE
          SYNTAX              TimeTicks
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The time (in hundredths of a second) since the module was last re-initialised"
          ::= {dhmSessionModulesEntry 6}

dhmSessionModulesStatusProbe OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current content of the status probe of the module"
          ::= {dhmSessionModulesEntry 7}

dhmSessionHardwareTable OBJECT-TYPE
          SYNTAX              SEQUENCE OF DhmSessionHardwareEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "A list containing the Hardware present in a session."
          ::= {dhmObjs 13}

dhmSessionHardwareEntry OBJECT-TYPE
          SYNTAX              DhmSessionHardwareEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "Entry in the dhmSessionHardwareTable"
          INDEX {dhmSessionHardwareSessionIndex, dhmSessionHardwareIndex}
          ::= {dhmSessionHardwareTable 1}

DhmSessionHardwareEntry ::=
          SEQUENCE {
                    dhmSessionHardwareSessionIndex
                              INTEGER,
                    dhmSessionHardwareSessionName
                              OCTET STRING,
                    dhmSessionHardwareIndex
                              INTEGER,
                    dhmSessionHardwareName
                              OCTET STRING,
                    dhmSessionHardwareState
                              INTEGER,
                    dhmSessionHardwareConfig
                              OCTET STRING
                              }

dhmSessionHardwareSessionIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each session"
          ::= {dhmSessionHardwareEntry 1}

dhmSessionHardwareSessionName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the session"
          ::= {dhmSessionHardwareEntry 2}

dhmSessionHardwareIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each Hardware module"
          ::= {dhmSessionHardwareEntry 3}

dhmSessionHardwareName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the Hardware module"
          ::= {dhmSessionHardwareEntry 4}

dhmSessionHardwareState OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                                  stopped(1),
                                                                  running(2),
                                                                  idle(3),
                                                                  error(4)
                                                                  }
```

```
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the Hardware module"
          ::= {dhmSessionHardwareEntry 5}

dhmSessionHardwareConfig OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current configuration of the Hardware module"
          ::= {dhmSessionHardwareEntry 6}

dhmSessionNetworkTable OBJECT-TYPE
          SYNTAX              SEQUENCE OF DhmSessionNetworkEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "A list containing the Network modules present in a session."
          ::= {dhmObjs 14}

dhmSessionNetworkEntry OBJECT-TYPE
          SYNTAX              DhmSessionNetworkEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "Entry in the dhmSessionNetworkTable"
          INDEX {dhmSessionNetworkSessionIndex, dhmSessionNetworkIndex}
          ::= {dhmSessionNetworkTable 1}

DhmSessionNetworkEntry ::=
          SEQUENCE {
                    dhmSessionNetworkSessionIndex
                              INTEGER,
                    dhmSessionNetworkSessionName
                              OCTET STRING,
                    dhmSessionNetworkIndex
                              INTEGER,
                    dhmSessionNetworkName
                              OCTET STRING,
                    dhmSessionNetworkState
                              INTEGER,
                    dhmSessionNetworkLocalIP
                              IpAddress,
                    dhmSessionNetworkRemoteIP
                              IpAddress,
                    dhmSessionNetworkPacket
                              INTEGER,
                    dhmSessionNetworkUpTime
                              TimeTicks,
                    dhmSessionNetworkProbe
                              OCTET STRING
                              }

dhmSessionNetworkSessionIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each session"
          ::= {dhmSessionNetworkEntry 1}

dhmSessionNetworkSessionName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the session"
          ::= {dhmSessionNetworkEntry 2}

dhmSessionNetworkIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each Network module"
          ::= {dhmSessionNetworkEntry 3}

dhmSessionNetworkName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the Network module"
          ::= {dhmSessionNetworkEntry 4}

dhmSessionNetworkState OBJECT-TYPE
          SYNTAX              INTEGER   {
                                                              stopped(1),
                                                              running(2),
                                                              idle(3),
                                                              error(4)
                                                              }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the Network module"
          ::= {dhmSessionNetworkEntry 5}

dhmSessionNetworkLocalIP OBJECT-TYPE
          SYNTAX              IpAddress
```

```
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current LocalIP configuration of the Network module"
          ::= {dhmSessionNetworkEntry 6}

dhmSessionNetworkRemoteIP OBJECT-TYPE
          SYNTAX              IpAddress
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current RemoteIP configuration of the Network module"
          ::= {dhmSessionNetworkEntry 7}

dhmSessionNetworkPacket OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current number of packets processed since last reset of the Network module"
          ::= {dhmSessionNetworkEntry 8}

dhmSessionNetworkUpTime OBJECT-TYPE
          SYNTAX              TimeTicks
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The time (in hundredths of a second) since the network module was last re-
initialised"
          ::= {dhmSessionNetworkEntry 9}

dhmSessionNetworkProbe OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current content of the probe of the Network module"
          ::= {dhmSessionNetworkEntry 10}

END
```

2.3.3 IE-Proxy MIB file (IE PROXY.MIB)

2.3.3.1 Structure

By using a MIB browser, the following structure of the MIB is visible:

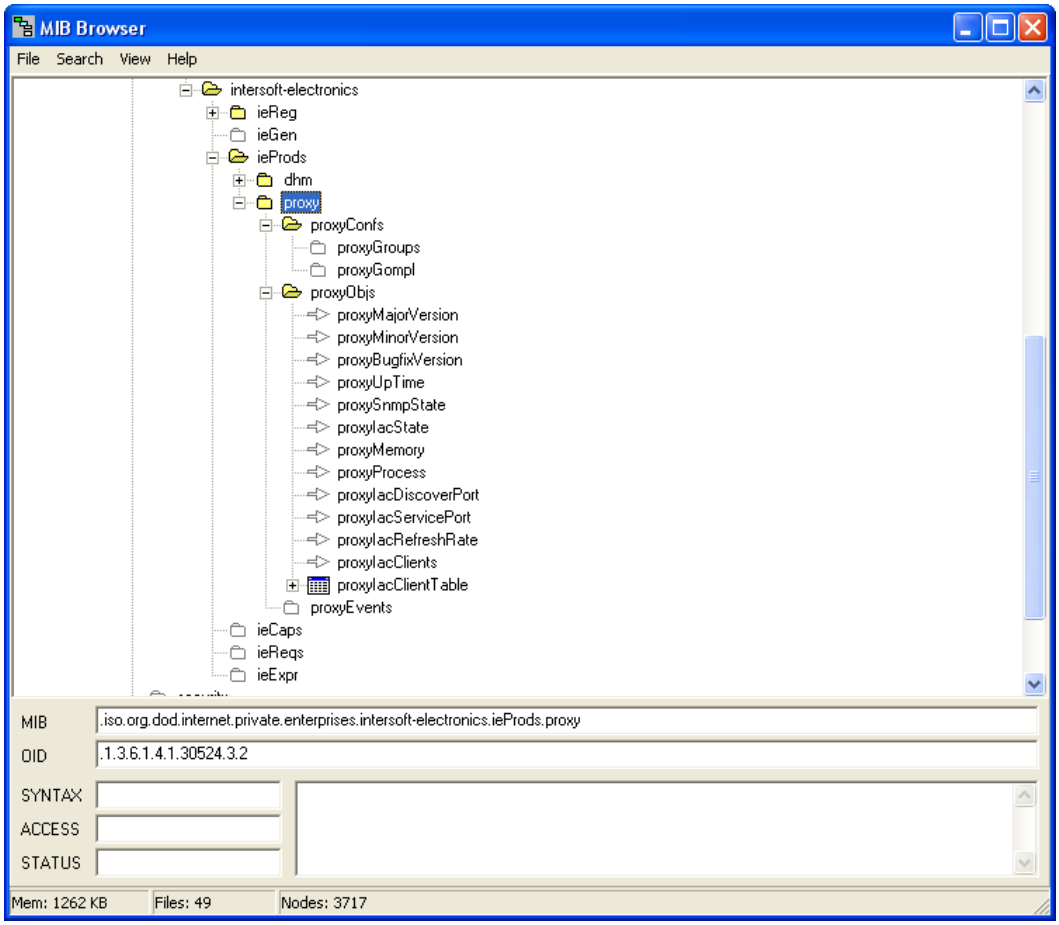

Figure 2-8: MIB tree view IE PROXY.MIB

2.3.3.2 File content

```
IE-PROXY DEFINITIONS ::= BEGIN
IMPORTS
          MODULE-IDENTITY, OBJECT-TYPE, TimeTicks, IpAddress
                    FROM SNMPv2-SMI
          ieProds, ieModules
                    FROM IE-REG;

ieProxyModule MODULE-IDENTITY
          LAST-UPDATED        "0905060000Z"
          ORGANIZATION        "Intersoft-Electronics"
          CONTACT-INFO
                    "Dirk De Bal
                    email: dirk.de.bal@intersoft-electronics.com"
          DESCRIPTION
                     "Revision 1.1 of this module"
          REVISION            "0905060000Z"
          DESCRIPTION
                    "The IE-Proxy MIB"
          ::={ieModules 3}

proxy                                          OBJECT IDENTIFIER ::= {ieProds 2}

proxyConfs                                     OBJECT IDENTIFIER ::= {proxy 1}
          proxyGroups                          OBJECT IDENTIFIER ::= {proxyConfs 1}
          proxyGompl                           OBJECT IDENTIFIER ::= {proxyConfs 2}

proxyObjs                                 OBJECT IDENTIFIER ::= {proxy 2}

proxyEvents                                    OBJECT IDENTIFIER ::= {proxy 3}

proxyMajorVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The major release number of the proxy software"
          ::= {proxyObjs 1}

proxyMinorVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The minor release number of the proxy software"
          ::= {proxyObjs 2}

proxyBugfixVersion OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The bugfix release number of the proxy software"
          ::= {proxyObjs 3}

proxyUpTime OBJECT-TYPE
          SYNTAX              TimeTicks
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The time (in hundredths of a second) since the proxy was last re-initialised"
          ::= {proxyObjs 4}

proxySnmpState OBJECT-TYPE
          SYNTAX              INTEGER {
                                                  started(1),
                                                  stopped(2),
                                                  failed(3)
                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the proxy SNMP Engine"
          ::= {proxyObjs 5}

proxyIacState OBJECT-TYPE
          SYNTAX              INTEGER {
                                                  started(1),
                                                  stopped(2),
                                                  failed(3)
                                                  }
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current state of the proxy IAC Engine"
          ::= {proxyObjs 6}

proxyMemory OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current memory in Kb occupied by the proxy"
          ::= {proxyObjs 7}

proxyProcess OBJECT-TYPE
```

```
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current processor load occupied by the proxy"
          ::= {proxyObjs 8}

proxyIacDiscoverPort OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current UDP discover port of the proxy"
          ::= {proxyObjs 9}

proxyIacServicePort OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current TCP service port of the proxy"
          ::= {proxyObjs 10}

proxyIacRefreshRate OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current keep alive refresh rate in milliseconds of the proxy"
          ::= {proxyObjs 11}

proxyIacClients OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current number of IAC clients of the proxy"
          ::= {proxyObjs 12}

proxyIacClientTable OBJECT-TYPE
          SYNTAX              SEQUENCE OF ProxyIacClientEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "A list containing information about the current IAC clients."
          ::= {proxyObjs 13}

proxyIacClientEntry OBJECT-TYPE
          SYNTAX              ProxyIacClientEntry
          MAX-ACCESS          not-accessible
          STATUS              current
          DESCRIPTION
                                        "Entry containing information about the current IAC clients"
          INDEX {proxyIacClientIndex}
          ::= {proxyIacClientTable 1}

ProxyIacClientEntry ::=
          SEQUENCE {
                    proxyIacClientIndex
                              INTEGER,
                    proxyIacClientName
                              OCTET STRING,
                    proxyIacClientTcpServicePort
                              INTEGER,
                    proxyIacClientIpAddress
                              IpAddress
                              }

proxyIacClientIndex OBJECT-TYPE
          SYNTAX              INTEGER (1..2147483647)
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "A unique value for each IAC client"
          ::= {proxyIacClientEntry 1}

proxyIacClientName OBJECT-TYPE
          SYNTAX              OCTET STRING
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The name of the IAC client"
          ::= {proxyIacClientEntry 2}

proxyIacClientTcpServicePort OBJECT-TYPE
          SYNTAX              INTEGER
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current TCP service port of the IAC client"
          ::= {proxyIacClientEntry 3}

proxyIacClientIpAddress OBJECT-TYPE
          SYNTAX              IpAddress
          MAX-ACCESS          read-only
          STATUS              current
          DESCRIPTION
                                        "The current IP address of the IAC client"
          ::= {proxyIacClientEntry 4}

END
```

3. Case study 1

The configuration below represents a basic setup:

- A DHM server (also called “Processing pc” because it’s main task is data recording and preprocessing for the MRD3)
- 2 RDR803’s are connected over a separate USB-cable with the Processing pc. (more information about the RDR803 can be found in the manual IE-RDR803-UM-v12.pdf or higher)
- A Monitoring Station (main task is running the DHM Configuration Manager and viewing the data on the MRD3 or TRACKAN)

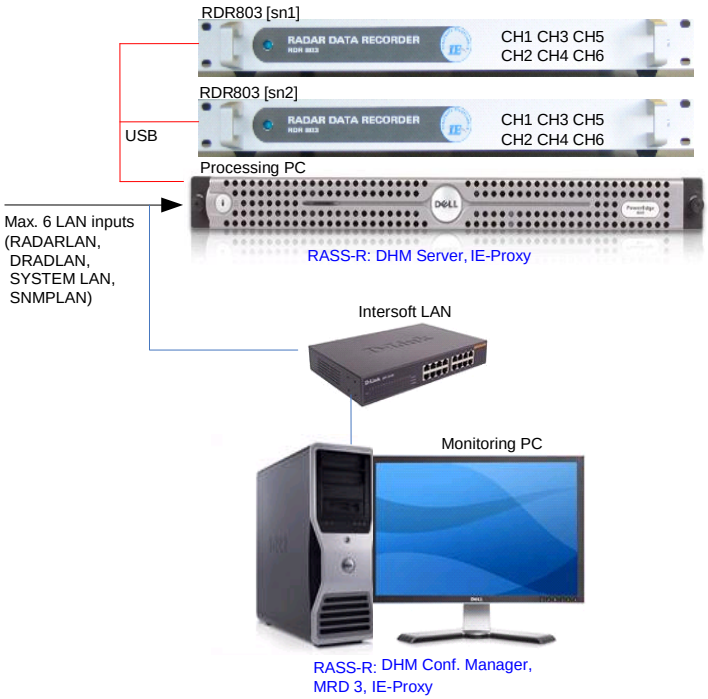

Figure 3-1: Case study 1 configuration

This configuration can be extended to a multi-server and multi-monitoring pc configuration. Also the RDR803 can be exchanged by any other Intersoft hardware. (For example a RIM782, UDR600)

Example of a representation on an SNMP-manager:

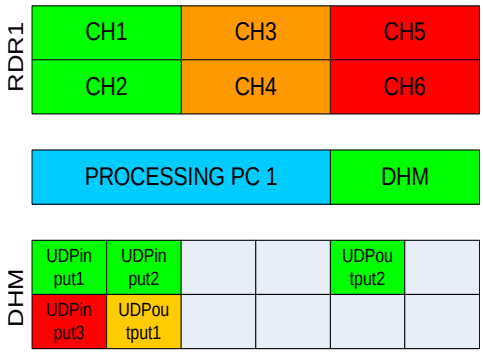

Figure 3-2: SNMP-manager HMI

RDR1: this name represents the name of the RDR803

- CH1 till CH6 represents the different serial channels on the RDR803. As you can see, due to the hardware design of the RDR803, the channels are paired. Its status can be displayed in color according {DHMSessionHardwareEntry5} of "IE DHM.MIB". (green=running, amber=idle, red=error, gray=stopped).

- Per channel, you can also display the following useful information:
  - Channel number of the UDR (The relation between channel number, UDR2 serial number and RDR803 serial number can be seen in the DHM Configuration Manager Modules list (see manual DHM figure 6-1)).
  - Input or output? This information can be obtained from {DHMSessionHardwareEntry6}.

PROCESSING-PC1 DHM: the DHM software is running on the Processing PC1. You can display the following information:

- Identity of the DHM server by its unique IP-address
- {DHMObjs5} with color representation
- {DHMObjs6/9/10}

DHM: The block below the Processing PC1 represents session content from sessions running on the DHM background server. You can display the following information about network modules (i.e. UDPinput and UDPoutput):

- {DHMSessionNetworkEntry2-10} where {DHMSessionNetworkEntry5} can be represented with different colors again.

4. References

- Sean Harnedy, *Total SNMP, Exploring the Simple Network Management Protocol* (second Edition), Prentice Hall - New Jersey, 1998
- David Perkings – Evan McGinnis, Understanding SNMP MIBs, Prentice Hall – New Jersey, 1997
- MIB Browser, http://www.ks-soft.net/hostmon.eng/mibbrowser/index.htm
- PowerSNMP Manager, http://www.dart.com/psnet_free.aspx