

Advant[®] OCS
with Master software

**Advant Station 500 Series
with AdvaCommand for UNIX
Version 1.8/6**

Release Notes

3BSE 016 043D8 Rev -



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Chapter 1 Introduction

1.1 General Information

This document is intended for information that are not described in the ordinary manuals, sales information or any other kind of product information.

ABB Master Advant Station 500 Series with AdvaCommand Software consists of:

- Advant Station 500 hardware
- AdvaCommand Software version 1.8

1.1.1 Software Version Designation

The new software for the ABB Master Advant Station 500 Series is distributed on tape or CD with the following description and designation:

AdvaCommand Software
Version:1.8/6
Art.no: 3BSE 038 667R1 - Tape
Art.no: 3BSE 038 666R1 - CD

1.1.2 Release History

Version 1.5	Group Alarm Display Transfer Object Reference Maintenance Improved performance Node Broker
Version 1.6	AdvaCommand X Workplace Server
Version 1.7	AdvaCommand with 3 X Workplace Servers New trend functionality Native Language Support NLS On-line Builder 2.3 Extended system status New hardware and HP-UX 10.20

Version 1.8
New Event- and Alarm Handling
System Status for redundant S100 I/O bus
and for redundant AF100 bus
Object to Display
AdvaCommand for Drives Integration

Software options that may be used together with version 1.8/1
AdvaInform History
On-line Builder 2.5
AdvaCommand Extended Display Element Library
AdvaCommand for Drives Integration - Support for
ACS 600 with Standard application and System
application

Software options that may be used together with version 1.8/2
AdvaBuild Display Distribution Services
On-line Builder 2.6

In AdvaCommand 1.8/3 support for new technology is added.

- The operator keyboard is modified to support USB. AdvaCommand 1.8/3 supports both the ‘old’ HP-HIL operator keyboard and the USB operator keyboard.
- A new PCI based RTA-Board is introduced. Version 1.8/3 has support for both the ‘old’ ISA-RTA-Board and the new PCI-RTA-Board.

In ‘AdvaCommand 1.8/4’ support for the workstation models HP B2000 and HP B2600 is added.

In ‘AdvaCommand 1.8/4 - DVD Support’, support for a DVD-ROM Drive is added.

In ‘AdvaCommand 1.8/5’ support for the UPS model PW9120 is added.

In ‘AdvaCommand 1.8/6’ full support for PCI-RTA Board PU515A is added.

1.1.3 Revision Record

Table 1-1. Revision Record

Revision	Date
Advant Station 510/515/520/520i Operator Station 1.5/0	1995-11-06
Advant Station 510/515/520/520i Operator Station 1.6/0	1996-01-30
Advant Station 510/515/520/520i Operator Station 1.6/1	1996-05-28
Advant Station 510/515/520/520i Operator Station 1.6/2	1996-09-23
Advant Station 510/515/520/520i Operator Station 1.6/3	1997-01-24
Advant Station 510/515/520/520i withAdvaCommand 1.7/0	1997-07-04
Advant Station 510/515/520/520i withAdvaCommand 1.7/1	1997-08-22
Advant Station 510/515/520/520i withAdvaCommand 1.8/0	1998-02-06
Advant Station 510/515/520/520i withAdvaCommand 1.8/1	1998-07-03
Advant Station 510/515/520/520i withAdvaCommand 1.8/2	1998-12-22
AdvaCommand 1.8/3	1999-10-15
AdvaCommand 1.8/4	2000-12-20
AdvaCommand 1.8/4 - DVD Support	2003-02-05
AdvaCommand 1.8/5	2003-06-30
AdvaCommand 1.8/5 Rev A	2003-09-18
AdvaCommand 1.8/6	2004-12-17

1.1.4 Hardware requirements

- 2 Gbyte hard disk. When using AdvaInform History 4 Gbyte hard disk is required. All new HP B2600 workstations are now delivered with 72 Gbyte hard disk or more.
- The RTA board must have 16 Mbyte RAM.
- RAM required in an Advant Station is dependent on which software options are used. A basic system with no software options requires min. 64 Mbyte. Then following software options need additional RAM compared to the min. requirement 64 Mbyte:
 - Tag Addition for AdvaCommand from 1601 up to 3200 tags - 16

Mbyte extra

- Tag Addition for AdvaCommand from 3201 up to unlimited no. of tags - 16 Mbyte extra
- AdvaCommand X workplace Server for one X workplace - 16 Mbyte extra
- Addition to AdvaCommand X workplace Server up to two X workplaces - 16 Mbyte extra
- Addition to AdvaCommand X workplace Server from two to three X workplaces - 16 Mbyte extra
- AdvaInform History - 32 Mbyte extra
- AdvaBuild Display Distribution Services - 32 Mbyte extra

New Advant Stations (HP B2600) are delivered with 512 Mbyte RAM which normally is quite enough for good performance. The recommendations above is a help more for upgrading of 'older' Advant Stations.

- AdvaInform History requires an Advant Station 520 based on HP B132L/B132L+ work station or newer models.
- A new key was added in the operator keyboard for the new function 'Object to Display' in version 1.8/0. An upgrade kit for existing mechanical keyboards is available. An earlier version of the operator keyboard is working together with AdvaCommand 1.8 with one exception - the new function 'Object to Display' started from this key. However this function may be invoked from 'old' keyboards with the keys CTRL and Display Menu or from the Object to Display item in the pop-up menu Object Handling on the screen.
- The operator keyboard uses Universal Serial Bus -USB. AdvaCommand 1.8/4 supports both the 'old' HP-HIL operator keyboard and the new/modified USB operator keyboard. The USB keyboard **can not** be used to boot up the workstation HP B180L. Instead a PS/2 keyboard must be used. (Delivered together with the B180L Advant Station). After the boot sequence the keyboard may be changed to the USB operator keyboard. (The workstation model HP B2000 and HP B2600 have USB bootsupport and therefore no PS/2 keyboard is needed.)

1.2 Related Documentation

Table 1-2. Related Documentation

Document	Identity
Product Guide - Advant Operator Workplace AdvaCommand for UNIX	3BSE 015 880R801
Price List - AdvaCommand 1.8 for Unix	3BSE 014 312
Advant Station 520/B2600 Hardware, User's Guide	3BSE 025 712R101
Installation Rules, User's Guide	3BSE 009 178R0001
AdvaCommand Basic Functions, User's Guide	3BSE 001 976R0401
AdvaCommand User Interface, Ref. Manual	3BSE 001 962R0301
AdvaCommand Process Sectioning, User's Guide	3BSE 001 963R0201
AdvaCommand Status List, User's Guide	3BSE 001 964R0001
AdvaCommand X Workplace Server	3BSE 008 338R0201
AdvaCommand Localization Version 1.7, User's Guide	3BSE 009 666R0001
Netstation 8.07.1 Manual Set	3BSE 011 784R0001
AdvaBuild Display Builder, User's Guide	3BSE 001 968R0201
AdvaBuild Central Backup, User's Guide	3BSE 001 971R0201
AdvaBuild On-line Builder OS, User's Guide	3BSE 001 970R0201
AdvaBuild On-line Builder, Ref. Manual	3BSE 001 974R0401
AdvaBuild Display Distribution Services	3BSE 007 959R0001
MasterNet, User's Guide	3BSE 003 839R0201
AdvaInform History Ver 2.4 User's Guide	3BUF 000 549R1
AdvaInform Object Types Reference Manual.	3BSE 004 008R0301
Functional Unit Part 1. Common Properties, User's Guide	3BSE 003 849R0001
Functional Unit Part 2. AI, AO, DI, DO, User's Guide	3BSE 003 850R0001
Functional Unit Part 3. SEQ, GROUP, User's Guide	3BSE 003 851R0001
Functional Unit Part 4. PID,RAT, MAN, User's Guide	3BSE 003 852R0001
Functional Unit Part 5. GENXXX, User's Guide	3BSE 003 853R0001
Functional Unit Part 6. MOTCON, VALVECON, User's Guide	3BSE 003 854R0001
Functional Unit Part 7. PIDCONA, User's Guide	3BSE 002 433R0001

Table 1-2. Related Documentation (Continued)

Document	Identity
Functional Unit Part 8. DRICONS, User's Guide	3BSE 012 570R0101
Functional Unit Part 9. DRICONE, User's Guide	3BSE 013 947R0001

Chapter 2 Functionality

2.1 New

2.1.1 AdvaCommand 1.8/0

- New Event- and Alarm Handling
- System Status for redundant S100 I/O bus and for redundant AF100 bus
- Object to Display
- AdvaCommand for Drives Integration - Support for ACS 600 with Standard application

2.1.2 AdvaCommand 1.8/1

Software options added

- AdvaInform History 2.2
- On-lineBuilder 2.5
- AdvaCommand Extended Display Element Library
- AdvaCommand for Drives Integration - Support for ACS 600 with Standard application and System application

2.1.3 AdvaCommand 1.8/2

Software options added

- AdvaBuild Display Distribution Services - Server Part
- AdvaBuild Display Distribution Services - Client Part

2.1.4 AdvaCommand 1.8/3

Software options added

- On-line Builder 2.6 (included in the AdvaCommand tape)

Support for new technology is added.

- The operator keyboard is modified to support USB. AdvaCommand 1.8/3 supports both the 'old' HP-HIL keyboard and the USB keyboard.
- A new PCI based RTA-Board is introduced. Version 1.8/3 has support for both the 'old' ISA-RTA and the new PCI-RTA

2.1.5 AdvaCommand 1.8/4

Software options added

- AdvaInform History 2.4.
- On-line Builder 2.7 (included in the AdvaCommand tape and CD).
- AdvaCommand for Switchgear Integration (included in the AdvaCommand tape and CDs).

New technology

- Support for new workstation models HP B2000 and HP B2600.

2.1.6 AdvaCommand 1.8/4 - DVD Support

New technology

- Support for new DVD-ROM Drive.

From October 2002 all HP workstations B2600 are delivered with a DVD drive. At delivery the workstations are loaded with AdvaCommand 1.8/4 and a separate patch with a software driver for the DVD drive. If a customer after delivery wants to reload the system from the AdvaCommand tape or CD, the separate patch will be overwritten and the boot of the system may not work since the DVD drive is no longer recognized by the HP-UX software. The error is dependent upon timing conditions present during boot and may not always occur.

The solution is to load a patch delivered on a separate CD from HP (hp workstations HP-UX DVD Patches A8068-91001). This CD is delivered together with all B2600 workstations from October 2002.

2.1.7 AdvaCommand 1.8/5

- Full support for DVD-ROM Drive. The software driver delivered as a separate patch in AdvaCommand 1.8/4 - DVD support is now included in AdvaCommand 1.8/5. No separate patch is needed.
- Support for new UPS model PW9120.
- Preventive maintenance restart added. It is a well known fact in the computer industry world wide that regular preventive maintenance should be carried out on modern computer based systems including personal computers and workstations, in order to maintain long term stability and performance. Preventive maintenance for the Advant Station 500 Operator Station includes a restart of the Operator Station in 6-8 months interval, at a for the customer suitable occasion. After 8 months since last Function

Restart a remainder/warning box will pop up on the main screen with the message that a restart of the Advant Station will be performed in 10 days, as a preventive maintenance action. The warning box will give the customer the opportunity to perform a manual Function Restart when it best suits him, during the coming 10 days. In addition to the warning box a system message will appear in the System List. Both the warning box and the system message have to be acknowledged by the operator/system engineer. If the customer does not perform a Function Restart a second warning box will pop up on the main screen and a second system message will appear in the System List with the message that a Function Restart will be performed in 3 days. If the customer despite the warning boxes does not perform a Function Restart the Advant Station will restart automatically 3 days after the second warning box.

2.1.8 AdvaCommand 1.8/6

New technology

- Full support for PCI-RTA Board PU515A.
Functionality added which makes it possible to replace an RTA-board PU515 with an RTA-board PU515A without reloading the AdvaCommand software from tape or CD. Reloading was necessary in AdvaCommand 1.8/5.

2.1.9 AdvaBuild On-line Builder

The software option AdvaBuild On-line Builder version 2.7 is included on the AdvaCommand 1.8 CD and tape. AdvaBuild On-line Builder version 3.0 is available on a separate CD or tape.

2.2 Improvements

2.2.1 Configuration of the disk in the Advant Station

New Advant Stations 520 are delivered with a 72 GB hard disk or bigger. We have chosen not to allocate all available disk space by default since AdvaCommand 1.8 shall be possible to run in Advant Stations with a smaller disk. We leave to the customer to increase the size of the defined logical volumes when needed e.g. **/home** for Advainform History data and **/disk2** for AdvaCommand application data (process displays etc.) Normally default settings can be used.

Increasing logical volumes can be done during the initial installation or by means of the HP system tool System Administration Manager (SAM) in an already installed system.

Configure the disk during installation

How to increase logical volumes during installation is described in chapter 4.1.2

Configure the disk in an already installed system

How to increase logical volumes in an already installed system is described in chapter 5.6.

2.3 Restrictions

General

- For hardware restrictions, see chapter 1 hardware requirements.
- For communication between an Operator Station on the MB300 Plant Network and the Control Network the MasterGate **must** be upgraded to software version 4.2/8 (or later versions).
- If the TCP/IP network is not connected the TCP/IP connector must be terminated with a terminator.
- For HP B180L stations the USB operator keyboard can not be used during installation of the system. A PS/2 standard keyboard must be used for input during this phase. This PS/2 keyboard is delivered together with the Advant Station. The PS/2 keyboard must be connected when a Station Restart is performed. Otherwise the Operator Station restart may fail.
- HP supports Universal Serial Bus (USB) with its new workstation model B2000. It is now possible to use either an HP USB standard keyboard only or an ABB USB operator keyboard only to boot and run AdvaCommand for UNIX software. In the latter case you connect the ABB USB Operator keyboard directly to the USB connector in the HP station. See Advant Station 520/B2600 Hardware User's guide for recommended connections. During the boot phase, we have unfortunately seen some problems using the ABB operator keyboard only. Typing too fast may hang the keyboard. In this case, restart the station (power cycle) and type the necessary input again (slowly).
If this still does not solve the problem, it is necessary to connect an HP USB standard keyboard during the boot phase. After the boot phase is finished you can switch back to the ABB USB Operator keyboard
Note: We have encountered this problem only during the boot phase when you load the system from a CD or tape. The ABB USB Operator keyboard works fine during run-time and when doing a Station- or Function restart.

- If you want to connect a DAT tape drive to a AS 520 workstation, you have to switch the power off and reboot the station to get the tape drive to work. If you can not get the tape drive (DAT) working, make a station shut down and check the SCSI address on the tape drive (use SCSI 3). Connect the tape driver again and power up. Start up the Advant Station.
- Deactivation of Alarm- and Event printers. In systems without the option AdvaCommand Process Sectioning the configuration of alarm and event printers is done from the event printer tool. After a deactivation of an alarm- or event printer a Function restart has to be performed.
- Automatic Display Exchange or Printout. Some text fonts in a display can be somewhat modified when the display is printed on the postscript printer. E.g. FC-Helvetica Bold will be somewhat modified but if FA-Helvetica medium is used there is no modification on the printout.
- In Station Backup and Central Backup it is possible to define a timer when the backup shall execute. One of the possible choices is 'LAST' to select the last day of the month. This alternative is not possible to use in version 1.8. (Of course you may choose 30 or 31 as the date instead to have the last day of the month).
- Interactive restore, if you select a large number of files for one restore sequence it may be aborted and indicates by an error box. You can get around this by dividing these files into several restore sequences.

X Workplace

- A maximum of 3 X-workplaces can be connected to one operator station. The basic operator station needs 64 Mbyte of primary memory, and then an additional 16 Mbyte per connected X-terminal.
- The OS window on the X Workplace does not work exactly as on the console workplace, where it is always the most lower window. It works just as any other window. This means that other windows may be placed behind it and can be covered. Do "Lower" on the OS window to make it the lowermost.
- When Personal Computer (PC) is used as an X Workplace, keep in mind that the PC is considerable less powerful and not included in our product line. Consequently entailing controlling a process from PC should be restricted but it can anyhow very well be used for viewing of the process.
- Only 2 overlap displays per X-terminal, and a maximum of 1000 objects distributed over 1 - 3 X-terminals are allowed. The recommendation is not to use more than approximately 100 objects per display, even the base

display, if all three X Workplaces are used.

- If Advainform History is used only Advacommand X Workplace Server for one X Workplace may be used.

Display elements

- If you have problems with own designed display elements which origin from standard display elements in OS*1.6 or earlier. Please, compare them with the standard display elements in this release. It might be necessary to update them.
- If you upgrade from Advacommand 1.6 do not copy dcObjectTable.dat from customer to Advacommand 1.8. If you do that the object displays will not work.
- From Advacommand 1.7 display elements are shared. Display element sharing reduces the size of the displays by not copying the display elements into the displays. To make a display element sharable the program “uiRunTimeConverter” must be used instead of “gm2”.

Example:

```
uiRunTimeConverter <name>.de  
Make a Function Restart
```

For sharable display elements a .ci file is created in the element directory. Type “man rtc” in a terminal window to get more information about uiRunTimeConverter.

Dialogs

- If you have problems with own designed dialogs which origin from standard dialogs in Advacommand 1.6 or earlier. Please, compare them with the standard dialogs in this release. It might be necessary to update them.

Printer

- If the printer runs out of paper or goes off-line the print requests will be queued in the print spooler. Filling up the spooler may cause a restart of the Operator Station. But there is a warning in System Status and as a system alarm that the spooler is filling up or approaches capacity limitations. In such situations you must terminate the ongoing subscription to the printer. Print requests already queued up can be cancelled using the printer configuration tool.

If you disconnect or power down the printer the print requests will not be queued and will therefore be lost permanently.

- In the Operator Station, there are normally two functions that use a parallel interface connected printer.
 - Hardcopy printout (issued by pressing **HARDCOPY** key)
 - Display printout (issued by **AMPL** element **REPORT**)

These two functions use different printer queues (**Hardcopy** and **Postscript**), but may use the same physical printer. When the same physical printer is used, problems may arise. If a printout is submitted to one of the queues (Hardcopy for instance) while the other queue (Postscript) is busy, the first queue (Hardcopy) gets disabled. This is never notified to the operator and to get it working again, the queue has to be manually enabled in **Printer Config**. These problems are avoided if you do like this:

- Use **Printer Config**. to remove the queue **Postscript**
- Use **Printer Config**. to add the queue **Postscript** again using the **PostAndHard** printer model.
- Use **Hardcopy Config**. to change the printer queue to the **Postscript** queue.

System Status

- In the NET status display both MB300 and MB300E are presented as MB300.
- In the NET status display own node is not presented.

Display Building/Installation/transfer

- Some static shapes, like shaded tubes and tanks, consume a lot of memory and therefore influence display exchange performance. Such static shapes should be defined as static display elements. In version 1.6 and later versions it is possible to choose the static shapes both as graphic symbols and as static display elements.
 - Choose Get Graphic Symbols from the Tools Menu in Advabuild Display Builder. The Get Graphic symbols box is displayed with static shapes as graphic symbols
 - Choose Display Element Palette from the Tools Menu in Advabuild

Display Builder. The Display Element Palette is displayed. Select Static Display Element and click OK. The Static Display Element box is displayed with static shapes as static display element.

Display elements can not be built of other display elements. So it is not possible to group static display elements and save as a new static display element or as a new graphic symbol.

Suggestion: Use static display element and use a display as a 'clip board' with grouped static display elements.

Using Advant Operator Station 1.8 with Advant Engineering Station 2.8 or earlier.

- If you have an Engineering Station version 2.8 or earlier versions, an additional step is required when transferring display from the Engineering Station to the Operator Station.

When the display transfer is completed, do the following:

1. Open a terminal window on the Operator Station.
2. Change directory to the display source directory. (customer, adaption, standard)
3. In the terminal window, type `convertDisplayFrom1_6` followed by the display(s) transferred, including the display directory.

Example:

```
/users/customer> cd  
/products/data/customer/OS/display  
  
/users/customer> convertDisplayFrom1_6  
overview/DISPLAY1 groupdisplays/*
```

It is not possible to transfer a display from an Operator Station version 1.8 to an Engineering Station version 2.8 or earlier.

Log Database Configuration

- When running this tool from the plant network the nodes on the control networks will not be found initially. All nodes containing logs that supplies data to Trend must be added, otherwise Trend will not function properly.
- If you have redundant networks always give the lowest netnumber when you configure the Log Database.

TTD Configuration

- First time you edit a secondary log in a log group:
If you are going to edit a secondary log you have to begin with the object name for the primary log, press return and after that select the secondary log. Note! This procedure must not be done in AdvaCommand 1.6.
- Use of Composite log typical towards TTD logs:

For the Master function of TTD, the concept of Composite log is limited to the use in the configuration interface. The chaining of log groups is only done in the TTD Configuration interface and is not performed in e.g. MasterPiece nodes. **BUT** changes for a log defined in a Composite log will affect all log groups, e.g. in a MasterPiece, defined in the Composite log. This means, that you must only use a Composite log typical towards a station it was intended for.
When using more than one composite log typical towards a specific node they must not overlap in terms of log group numbers. Composite log is a powerful configuration tool towards TTD logs but you have to use it with care.
- If you reconfigure a log in a MasterPiece/Advant Controller from one Operator Station everything works fine in that Operator Station. But other Operator Stations will have this log configured and created for the old log. As a result you may get the wrong object presented in the display. Consequence: If you change /edit a log you must change the log in all Operator Stations which use this log.

Trend

- A new Trend format was introduced in version 1.7. Note, that the trend displays (singleTrend, multiTrend and singleHistory) are then not automatically converted to the new Trend format during the Restore of the Station Backup from a 1.6 system. All trends will remain in the old format, but can be converted manually to the new format with scripts at later occasion. The only exception to this is that we will always convert the trend elements in the processDisplays. The new trend element has a slightly different configuration needed. Log Database Configuration is required to be run. See AdvaCommand Basic Functions.

To convert displays at later occasions following scripts can be used:

- `trendConvert` Is used to convert singleTrend, singleHistory and multiTrend displays to the new Trend format.

Synopsis:

```
trendConvert <library>/<display>
```

Converts the specified display.

Examples:

1. trendConvert TRENDS/TREND01

converts the display TREND01 in the library
TRENDS

2. trendConvert /products/data/customer/OS
/display/examples/*

converts all the trend displays in the library
examples

Synopsis:

```
trendConvert -a
```

Converts all singleTrend, singleHistory and
multiTrend displays found in the OS.

To be used when processDisplay with TRPD01 display element is
copied from an 1.5 or 1.6 version OS node to an 1.8 version node.

dcUseTRPD02 Is used when a processDisplay containing an old
trend element, that is TRPD01 or HSTD01, shall be converted.

Synopsis:

```
dcUseTRPD02 /products/data/customer  
/OS/display/<library>/<display>.ds
```

Example:

When a process display has been transferred with Display
Transfer from a Operator Station running older version of Trend a
conversion of that display must be done.

- Converted singleTrend displays have TTD log names defined as data
source. This gives the new trend the same behaviour as a singleTrend with
the exception that Select Object cannot be done from the display. If
multiTrend behaviour is preferred these definitions can easily be changed
in run-time. The object that the log is logging is presented in the Log
Information window and by using that object name and the Trace

Configuration each trace can be re-configured very easily.

- Converted singleHistory Trend displays will be converted with the assumption that the singleHistory is configured using the “Data Source” as ObjectName. When configuring the singleHistory Trend display, in the Display Builder, three different ways of configuring are supported. First way is to use the “Access Name” used in the IMS and defining it in the ObjectName entry field. Second way is to divide the “Access Name” into the attribute and the object name. Third and last way supported is to, in the ObjectName entry field, specify the IMS log, that is \$HSAccessName-1-o.

Depending of the usage of the Access Name in the IMS when configuring the logs, the conversion of the singleHistory Trend displays will be more or less successful. If the converted singleHistory display, that is the new trend display received has red marks the display must be reconfigured to operate properly. The source in the trend display must be either an object or a log. Use the IMS to verify the correct source to use for the display.

- When starting your Advacommand 1.8 the first time after loading a backup tape with more than 4000 mapped TTD logs from version 1.6, the station may loop 1 - 3 times before starting up properly.
- When building trend displays towards unique specific logs in the display builder you must use the redundant network number, that is you must use 10 instead of 11, 12, 13 ... and 20 instead of 21, 22 ... and so on. When you upgrade your system conversion is done automatically.
- To be able to present logs from other control networks in an operator station placed in a control network the log database must be copied, from one operator station within each control network, to the operator station that shall present the logs. Therefore we recommend that the log database is generated in, and updated from an OS on the plant network, hereafter called serverOS, and then copied to all other OS's in the system. Then by always doing the log database update, when needed, in the serverOS the system will have consistent log databases. To make these “configurations” we have provided a script that will do this “distribution” of the log database from the serverOS to other OS's in the system. The script distLogDb takes a file as input, which define the OS's that are receiver of the log database.

Example:

use an editor to create a file containing the names of the OS's that shall receive the log database. Start a terminal window (press System Config - Station... Terminal Window).

- Give the following commands in the terminal window:

- `$su -`
- `Password: vm-guld`
- `#cd /products/components/ALM/bin`
- `#vuepad`

The file could then look like:

```
as15
as88
as33
as12
```

After finishing to create the file type `#exit`

Before distribution of the log databases, delete all locally generated log databases, if there are any. Then to distribute the log database to those nodes write the following in the terminal window:

```
$cd $ALM_HOME/bin ; 11
```

```
$distLogDb <file>
```

- Archived logs in the IMS can not be displayed in the new trend display. The old singleTrend display is still needed for that presentation.
- Seamless retrieval can in certain situations get hung. The Trend display will then not show any data. The problem can be solved by choosing another Time Scope which will lead to that Trend will try to get data from another log than the one not responding.
- Note! The Operator Station may restart, if you during a long time, are accessing TTD values, for presentation in a trend display, from a MasterPiece or an Advant Controller that are in configuration mode.

On-line Builder

- The node type must be set before starting up the On-line Builder. The On-line Builder does not have IMS or AEH as a node type, but if you want to connect the On-line Builder to an IMS or AEH you can use AS 500OS as node type instead.
- The On-line Builder **only** supports Postscript printers, not line printers.

AdvaInform History* 2.4

- History in an operator station supports collection and storage (on the hard disk) of process data in synchronous numerical logs. This historical data can then be displayed as trend curves using AdvaCommand.
- AdvaInform History requires an Advant Station 520 based on HP B132L work station or newer models.
- Memory: An additional 32Mbyte RAM and 4 Gbyte hard disk is required.
- In combination with AdvaInform History only AdvaCommand X Workplace Server for one X Workplace may be used.
- Data Collection: Data source to a History log can be either a process object directly or a TTD log in an Advant Controller. For performance reasons the recommendation is to use TTD logs in an Advant Controller as primary logs and then use these TTD logs as data source for long-term storage in AdvaInform History. If a process object is used directly as data source it is not supported to have faster sample time than 30 s.
- It is not recommended to exceed about 100 TTD requests/minute. Use the stagger function in the \$HS_HOME/bin/hsDBMaint function to check whether this limit has been exceeded. Alter the sample blocking rate and set different activation times on groups of primary logs to reduce the number of TTD requests and spread them out over a period of time to avoid peaks of requests. This can be altered manually or by using the stagger function. A function restart is required after the stagger function has been used to make the changes take effect.
- If a process object is used directly the data source shall for an AI or DI be given as NAME, VALUE. For other object types see 3BSE 004 008R0301 AdvaInform Object Types Reference Manual.
- The History Backup function in Station Backup doesn't work with a remote tape drive.
- It is only guaranteed that a complete History Backup is created with the Station Backup function if file-based storage is used and the default size of the log data base (200MB) hasn't been extended. The number of tapes required, if the default size of the log data base is changed, is dependent on type of tape driver as well as the tape length and 'end of tape' is not reported as an error in the Station Backup window. Please use the hsBAR function (see AdvaInform History User's Guide) whenever you suspect the History backup to require more than one tape.

Chapter 3 Start-up of pre-installed AdvaCommand

An Advant Operator Workplace is delivered from the feeder factory with pre-installed **AdvaCommand** software. Before delivery to end customer some default settings must be changed and the software options ordered from the specific customer must be installed.

This chapter describes how to change date, time, timezone, TCP/IP address and hostname in an Advant Operator Workplace with pre-installed AdvaCommand software and how to install relevant ABB software options.

WARNING: *The Advant Station programs are protected by copyright law and international treaties. Before you install any of the options on your station, you must verify that you have acquired the right to use that particular option on your station and have received the Software Certificate authorization for such use.*

3.1 Default settings

The Advant Station is delivered with default station name *as1* and TCP/IP address *192.36.66.1*. To avoid conflicting addresses you should not connect the station to a TCP/IP network before you have changed the hostname and TCP/IP address on the station, unless you are sure that you don't have the same address in the network.

3.2 Start-up the Operator Station

1. When the Operator Station has been started, the “*Network Configuration*” window will appear. Fill in the fields and then press **OK**.
 - *Network address 1:* (E.g. **21**)
 - *Network address 2:* (E.g. **22**) The Network address 2 need only to be filled in if the Operator Station is connected to a redundant control network
 - *Network node:* (E.g. **7**)
 - *Network node description:* (E.g. **BOILER 1**)
 - *Network node type:* **OS**
2. When the window “*Workstation mode*” appears on the screen you should select ‘**Backup Restore mode**’ and then press **OK**.

3.3 Change Settings

1. Double-click on the hpterm icon and enter the command:
su - (password: vm-guld)
Then give the command **set_parms initial**. Then the questions will appear.
2. *Are you ready to link this system to a network?:* Press **Yes**
3. *Required Information?:* If you have all information press **Yes, Continue**.
Otherwise you can run the command "**set_parms initial**" later as *root* user.
4. *Hostname?:* Correct the hostname if it is not correct, Then press **OK**. Confirm by pressing **Yes**.
5. *Time Zone?:* Select your **location** and press **OK**. Then select your **time zone** and press **OK**. Default value is Middle European Time. Confirm by pressing **Yes**.
6. *Time?:* Correct the time if it is not correct. Then press **Yes**. Confirm by pressing **Yes**.
7. *Internet address?:* Correct the internet address if it is not correct. Then press **OK**. Confirm by pressing **Yes**.
8. *Do you want to configure additional network parameters?:* Press **No**.
9. *Do you want to configure the system as a font server?:* Press **No**
10. If you should install any software options you should press **No**, otherwise press **Yes, Reboot** and the station will now reboot.

3.4 Install software options

Below follows a table with all the software option you can load.

Table 3-1.

Option	Description
ABB--AB-CEN-BACK	AS 500 Central Backup SW
ABB--AB-ON-LINEB	AS 500 On-line Builder
ABB--DISP-BUILD	AdvaBuild Display Builder
ABB--EX-DE-LIB	AdvaCommand Extended Display Element Lib
ABB--OS-BATCH	AdvaCommand MasterBatch Additions
ABB--OS-CHINA	AdvaCommand with Chinese Language

Table 3-1.

Option	Description
ABB--OS-DRIVES	AdvaCommand Drives Integration
ABB--OS-INSUM	AdvaCommand Switchgear Motor Controller
ABB--OS-GERMAN	AdvaCommand with German Language
ABB--OS-SWEDISH	AdvaCommand with Swedish Language
ABB--PROC-SECT	AdvaCommand Process Sectioning
ABB--SAFEGUARD	AdvaCommand for Advant Safety System
ABB--STAT-LIST	AdvaCommand Status List
ABB--TAGS-0800	AdvaCommand 800 tags
ABB--TAGS-1600	AdvaCommand 1600 tags
ABB--TAGS-3200	AdvaCommand 3200 tags
ABB--TAGS-UNLIM	AdvaCommand Unlimited tags
ABB--TREND1-6	AdvaCommand Trend package from AdvaCommand version 1.6
ABB--XWP-1	AdvaCommand X Workplace Server for one workplace
ABB--XWP-2	AdvaCommand X Workplace Server for two workplace
ABB--XWP-3	AdvaCommand X Workplace Server for three workplace
ABB-AI-HISTORY	AdvaInform History
ABB--DDS-SERVER	AdvaBuild Display Distribution Services - Server part
ABB--DDS-CLIENT	AdvaBuild Display Distribution Services - Client part
HP--ENWARE	HP Netstation SW

One or several options can be installed by using the swinstall command in HP-UX. First you insert the AdvaCommand tape or the CD.

E.g.: If you want to install the Display Builder and the Status List options:

Tape:

- Open a Terminal window (**System Config - Station - Terminal Window**)
- **\$su - <CR>**
password: **vm-guld <CR>**
- **# swinstall -s /dev/rmt/0m -x autoreboot=true ABB--DISP-BUILD ABB--STAT-LIST<CR>**

CD:

- Open a Terminal window (**System Config - Station - Terminal Window**)
- **\$su - <CR>**
password: **vm-guld <CR>**
- **# /usr/local/bin/cdon <CR>**
- E.g.: If you want to install the Display Builder and the Status List options:
swinstall -s /cdrom -x autoreboot=true ABB--DISP-BUILD ABB--STAT-LIST<CR>
/usr/local/bin/cdoff <CR>

Tape and CD:

When swinstall is finished you shall restart the station. Give the following commands in the terminal window

- **cd / <CR>**
- **shutdown -r 0 <CR>**

Some of the options will cause the station to do an automatic reboot, in that case you do not need to reboot the station again.

Chapter 4 Installation

This chapter describes the installation and upgrading of the Advant Station 500 Series Operator Station software.

- 4.1 - Initial installation.
- 4.2 - Upgrading from version 1.6,1.7 or 1.8/x (x = 0,1,2,3,4,5) to version 1.8/6.

4.1 Initial Installation

The AdvaCommand tape or CDs contain everything you need to load the system.

CAUTION: Installation of a new system will erase the data you have on your disks. If you want to save data stored on the disks, e.g displays, back-up all your data to a tape before installing new system software.

4.1.1 Hardware dependencies

B180L

Two different keyboards are used together with B180L.

- A PS/2 keyboard and PS/2 mouse during start up.
- A USB operator keyboard and trackball or USB mouse during operation, when the station is loaded.

Connect the two keyboards to the workstation. The USB keyboard is connected to the RTA-Board and the PS/2 keyboard to the workstation itself. See Advant Station 500/B180L Startup Guide for more information.

When the Advant Station starts up the PS/2 keyboard is used. The USB operator keyboard **can not** be used at this time. You must keep both the USB operator keyboard and the PS/2 keyboard connected all the time since the PS/2 keyboard must be used if/when the Advant Station is restarted.

B2000 and B2600

B2000 and B2600 supports only USB keyboards. Connect the ABB USB Operator keyboard directly to the rear side of the workstation. A standard QWERTY USB keyboard may be connected in series with the ABB operator keyboard. See Advant Station 500/B2600 Startup Guide for more information.

During the boot phase, we have unfortunately seen some problems using the ABB operator keyboard only. Typing too fast may hang the keyboard. In this case there are different alternatives to solve the problem:

- Alt 1. Turn the keyboard key for the 'Max Dialog' back and forth a few times.
- Alt 2. Restart the station (power cycle) and type the necessary input again (slowly).
- Alt 3. If the alternatives above still does not solve the problem, it is necessary to connect an HP USB standard keyboard during the boot phase. After the boot phase is finished you can switch back to the ABB USB Operator keyboard.

Note: We have encountered this problem only during the boot phase when you load the system from a CD or tape. The ABB USB Operator keyboard works fine during run-time and when doing a Station- or Function restart.

4.1.2 Configure the disk and load HP-UX and the AdvaCommand software

In the step by step instruction below most of the steps shall be done regardless if you load from tape or CD. The steps which are specific for tape and CD are marked **Tape** or **CD**. Some steps are only valid for certain workstation models. These steps are marked with actual model name.

To install or reinstall, perform the following steps:

1. **Tape:** Check that the SCSI address of your DDS tape drive is set to 3. The address is set using the selector on the rear side of the drive.
2. **Tape:** Connect the DDS tape drive, with power off, to the Operator Station using a SCSI cable. Check that you have a SCSI terminator connected to the other SCSI connector on the DDS tape drive.
3. **Tape:** Switch on the power to the DDS tape drive. When the lights on the tape drive stops blinking, insert the AdvaCommand 1.8 system tape.
4. Switch on the power on the Operator Station if the power is off. Otherwise restart the Operator Station by pressing **System Config - Station - Station Restart**. Press intermittent on the ESC-button directly after power on to interrupt the boot sequence from internal hard disk. The central unit is faster to power up than the monitor, so you can't see any messages on the screen. After a while you get the menu for selecting device.
5. **CD:** Insert AdvaCommand software CD in the CD-ROM drive.
6. After approximately 5 - 60 seconds you will see the text '*Selecting a system to boot. To stop selection, press and hold the ESCAPE key*' on the screen. When this text appears press and hold down the "ESC" key until you see one of the alternatives a, b, c, d, e or f below depending on the HP workstation model. (On a B2000 or B2600 station the text above will come so fast that you must press ESC as soon as you see any text on the screen)
 - a. **For HP 720, HP 715/50 and HP 747i:**
a small menu and the text '*Select from menu:*'
Then type *Select from menu:* **b scsi.3.0** <CR>
 - b. **For HP 715/64/100:**
the text '*Boot Admin>*'.
Then type *Boot Admin>* **b scsi.3.0** <CR>
 - c. **For HP B132L, B132L+ or B180L**
the text *Main Menu: Enter command >*
If you load a two screen station, you should check that the console path is GRAPHICS(0), otherwise run the commands:
Main Menu: Enter command >

pa con GRAPHICS(0) <CR>

Main Menu: Enter command > reset <CR>

Then press “**ESC**” key until the following menu appears again:

Main Menu: Enter command >

Tape: If you have a DDS tape drive connected to the normal SCSI port: Then type *Main Menu: Enter command > b scsi.3.0 <CR>*

Tape: If you have a DDS tape drive connected to the fast wide SCSI port: Then type *Main Menu: Enter command > b fwscsi.3.0 <CR>*

CD: *Main Menu: Enter command > b scsi.2.0 <CR>*

On the question “*Do you want to interact with IPL*”, answer N.

d. **For B2000:**

the text *Main Menu: Enter command >*

If you load a two screen station, you should check that the console path is GRAPHICS(0), otherwise run the commands:

Main Menu: Enter command >

pa con GRAPHICS(0) <CR>

Main Menu: Enter command > reset <CR>

Then press “**ESC**” key until the following menu appears again:

Main Menu: Enter command >

Tape:*Main Menu: Enter command > b PCI2.3.0 <CR>*

CD: *Main Menu: Enter command > b ide <CR>*

On the question “*Interact with IPL (Y,N,Q)?*”, answer N.

e. **For B2600:**

the text *Main Menu: Enter command >*

If you load a two screen station, you should check that the console path is GRAPHICS(1), otherwise run the commands:

Main Menu: Enter command >

pa con GRAPHICS(1) <CR>

Main Menu: Enter command > reset <CR>

Then press “**ESC**” key until the following menu appears again:

Main Menu: Enter command >

Tape:*Main Menu: Enter command > sea <CR>*

Searches for the devices. Then boot from the Tape device e.g. p2

Main Menu: Enter command > **b p2** <CR>

CD: Main Menu: Enter command > **b ide** <CR>

On the question “Interact with IPL (Y,N,Q)?”, answer N.

f. **For HP 748i:**

the text *Main menu:*

If you want to change the monitor display update frequency from standard 72 Hz to 50 or 60 Hz, do as described at d1 below, otherwise proceed with d2 below.

Note! Be sure that the monitor(s) you use can synchronize to the selected frequency. Otherwise you will not get in contact with the system after restart.

d1.

Press **2** <CR> to get the Path Configuration menu.

Press **3** <CR> to get the Console Path menu.

Press **2** <CR> for the second graphical channel. Always start with this one.

Select the key for the appropriate parameters for your monitor (key 5 for 60 Hz or key 13 for 50 Hz) and then <CR>

Type **55** <CR> to save parameters and return to Console Path

Press **1** <CR> for the first graphical channel.

Select the key for the appropriate parameters for your monitor (key 5 for 60 Hz or key 13 for 50 Hz) and then <CR>

Type **55** <CR> to save parameters and return to Console Path

Press **0** <CR> two times to return to Main Menu.

If the system already is booted, then type **77** <CR> to restart the system else proceed with d2. below

d2.

Press **1** <CR> and scanning of Boot devices will start.

Then type **n** <CR>, where n=number for scsi.3.0 tape device

7. The install function will now boot from tape or CD.

A warning sound starts and goes on for about 2-3 minutes, but just ignore it.

Use the <tab> key to navigate between fields and the arrow keys within fields below. Use the <CR> <space-bar> to pop-up a choices list. If the menus are not clear, select the 'help' item for more information.

8. **For HP 715/64/100, 748i, B132L, B132L+, B180L, B2000 or B2600:**
Select keyboard language.
Confirm the selection by pressing <CR>
(for other HP-models go to next step)
9. From the "Welcome to the Ignite-UX" display,
select [**Install HP-UX**] and press <CR>
10. In the "User Interface and Media Options" display,
- under Source Location Options select the **Media only installation**
- under User Interface Options select the **Advanced Installation**.
Then continue by selecting [**OK**] and press <CR>
11. The display "/opt/ignite/bin/itool" has several tabs, or sections. Select the different sections by using tab and <CR>. Fill in all sections mentioned below before pressing <GO>
 - a. In the section **Basic**, Environment shall be **AdvaCommand 1.8-6 Image with English HP-UX 10.20 CDE**. (Other default installations can be accepted.)
 - b. In section **Software** you shall select the category **ABB** by using the arrow keys. Use the <tab> key to move to option/product table. To select the options you have bought use the <space-bar>
WARNING: The Advant Station programs are protected by copyright law and international treaties. Before you install any of the options on your station, you must verify that you have acquired the right to use that particular option on your station and have received the Software Certificate authorization for such use.

Only one of the options ABB-OS-BATCH and ABB-SAFEGUARD shall be installed. Normally none of them shall be installed.

Swedish, German or Chinese language is installed in the same way as options. Only one of the options ABB-OS-GERMAN, ABB-OS-SWEDISH and ABB-OS-CHINA shall be installed. If none of them is installed, English is default.
 - c. In section **System** enter your network data:
- Hostname: e.g. **as1**, max eight characters.
- IP Address: e.g. **192.36.66.1**

- Time and Date (**Note!** Set time and date to current time. It is for the further installation important that the date is later than Nov. 1997. When changing the time you should start with changing the year).

- d. Highlight [**Network Services**] and press <**CR**>

In the subdisplay “*Network Services*” enter:

- Destination: **default**
- Gateway: Default gateway is the same as the IPAddress, except for the last number group: e.g. **192.36.66.254** or **138.221.22.254**
- Destination Hop Count: **1**

If something has been added or modified, highlight **Add** or **Modify** and press <**CR**>

Exit the [**Network Services**] subdisplay by selecting [**OK**] and press <**CR**>

- e. Configure the disk. New Advant Stations are delivered with a 36GB disk (or bigger). We have chosen not to allocate all available disk space by default since AdvaCommand 1.8 shall be possible to run in Advant Stations with a smaller disk. We leave to the customer to increase the size of the defined logical volumes when needed. E.g. **/home** for Adva Inform History data. and **/disk2** for AdvaCommand application data, e.g. process displays. But note that normally default settings can be used.

In section **File System** mark the logical volume you want to change. The system will provide you with information about the current size of the chosen volume and with the available size. Change the disk space to the size you want to allocate for the chosen volume. Mark option **Modify** next to the disk information and press **Enter** to make the change

- f. If your system has a 36 Gbyte harddisk or bigger, (default in all Advant Stations delivered since autumn 2002), you have to configure the system for this

Enter the “*File System*” configuration.

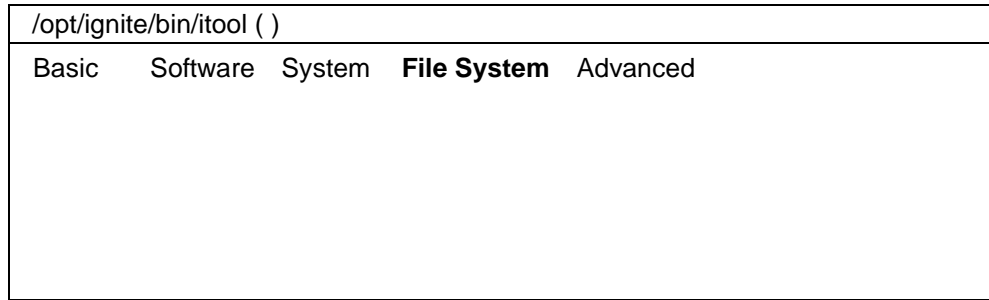


Figure 1 Enter the File System Tab

Then click on the --- Additional Tasks --- scroll down menu. This will show you four selections. Select the last, “*Volume Group Parameters...*”.

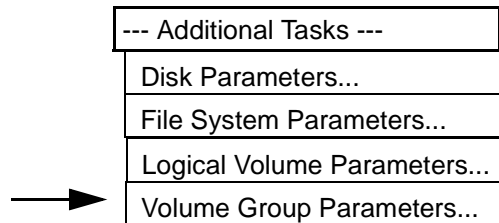


Figure 2 Select Volume Group Parameters

This will show you the physical settings for your volume.

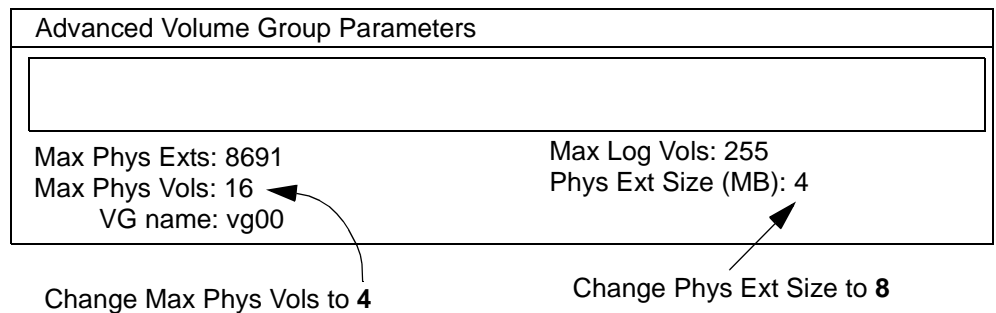


Figure 3 Enter the File System Tab

If you have a **36 Gbyte** harddisk make the following changes:

- Max Phys Vols: Change from 16 to 4
- Phys Ext Size (MB): Change from 4 to 8

With these changes the system will be able to handle up to 40 Gbyte boot disks.

If you have a **73 Gbyte** harddisk make the following changes:

- Max Phys Vols: Change from 16 to 4
- Phys Ext Size (MB): Change from 4 to 8
- Max Phys Exts: Change from 8691 to 16000

With these changes the system will be able to handle up to 73 Gbyte boot disks.

Highlight **OK** and press **<CR>**

12. Highlight **Go!** and press **<CR>**.

13. Confirm the warnings by highlighting [**Go!**] and pressing **<CR>**

Now the operator station software is loaded into the station. The time for loading is dependent on the workstation model used. For an HP B2600 it will be less than 1 hour.

14. When the Operator Station has been booted, the “*Network Configuration*” window will appear. Fill in the fields and then press **OK**.

- *Network address 1:* (E.g. **21**)
 - *Network address 2:* (E.g. **22**) The Network address 2 need only to be filled in if the Operator Station is connected to a redundant control network
 - *Network node:* (E.g. **7**)
 - *Network node description:* (E.g. **BOILER 1**)
 - *Network node type:* **OS**
15. If you want to restore a backup tape, this must be done in a 'Backup Restore mode' that can be selected at start-up. When the window "Workstation mode" appears on the screen you must select '**Backup Restore mode**' and then press **OK**. Select Restore according to the Backup tape you have. After Restore you must update RTA board database with changed standard data and install all displays as described in chapter 4.2.1. if you restore a backup from version 1.6, chapter 4.2.2 if you restore a backup from version 1.7 and chapter 4.2.3 if you restore a backup from version 1.8.
If you do not want to restore a backup tape then just press **OK** and the Operator Station will be up and running after 5-10 minutes.
16. **HP 715 and HP 720.** For some 'older' HP models, (720, 715), the last reboot ends with the prompt "*Console login:*". If so, logon as **root** and give the command **shutdown -r 0**. The station will now be rebooted and the screen will then turn into gray and reboot as an Operator Station.

4.2 Upgrading

Chapter 4.2 describes the upgrading to version 1.8.

- Chapter 4.2.1 describes how to upgrade one Operator Station from version 1.6 to version 1.8.
- Chapter 4.2.2 describes how to upgrade one Operator Station from version 1.7 to version 1.8.
- Chapter 4.2.3 describes how to upgrade one Operator Station from revision 1.8/x (x=0,1,2,3,4,5) to revision 1.8/6.
- If you have several identical Operator Stations in a control network, i.e. containing same process displays and display elements, you can upgrade the first one in the way it is described below and then take a backup of this Operator Station and restore it in the other Operator Stations. The upgrading of Operator Station number 2, 3 and so on will take less time if you work in this way.
How this is done is described in Chapter 4.2.4.

4.2.1 Upgrading from version 1.6 to version 1.8

4.2.1.1 Save the RTA board database.

Note! The action described below shall only be performed in the 1.6 system.

The RTA board database has to be saved as dump files on the OS disk in order to be included in the Station Backup.

Note! Caution! Logical file 218 (concept CLOCK_SYNCH) is not possible to load in version 1.8. This gives the result that the dump file that contains logical file 218 is not possible to load in version 1.8. That dump file also includes the logical files 134, 187, 188, 189, 190, 191, 219 and 348 (concepts NODE_DESCR, NETW_LAYER, TRANSP_LAYER, DSX_TRANCEIVER, BUFFER_MANAGER, NETW_MANAGEMENT, SYSMES_DESCR and IID_TABLE).

This can be treated in two ways.

Alt.1. Create a new dump file that doesn't include logical file 218. (Gives default setting in logical file 218 and saves all settings in the other logical files)

Alt.2. Accept that the affected logical files will not be loaded in version 1.8. (Gives default setting in all logical files)

If you chose:

Alt.1. do like this:

- Start a terminal window (press **System Config - Station... - Terminal Window** keys).

A terminal window will start.

- Give the following commands in the terminal window:

- `$su - <CR>`
- `Password: vm-guld <CR>`
- `#vuedpad /products/nodes/PU510/cxINIT/DUCN.CF <CR>`

A text editor will start.

- Do the following in the text editor:

- Remove “218 , ” from line 6.
- Save the file (choose **Save** in the **File** menu).
- Exit the text editor (choose **Exit** in the **File** menu).

The text editor will close.

- Give the following commands in the terminal window:

- # **exit**
- \$ **exit**

The terminal window will close.

- Do a RTA Board Backup (press **System Config - Maintenance... - RTA Board Backup** keys).

If you choose:

Alt.2. do like this:

- Do a RTA Board Backup (press **System Config - Maintenance... - RTA Board Backup** keys) if you haven't already done so.

4.2.1.2 Take a Station Backup of OS Configurable data to tape

Note! Before you take the backup you should remove old not relevant files from your system. E.g. central backups in the directory /products/nodes. Otherwise these old backups will be transferred to the 1.8 system. And if you have too many old backups there is a risk for filling the disk with irrelevant data. In worst case the 1.8 system start will fail with an error code 'file system full'.

- Put a tape into the DDS tape drive.
- Press **System Config - Maintenance - Station Backup**
- Enter password
- Choose the alternative **Backup of OS*1.6 configurable data.**

4.2.1.3 Load version 1.8

- Next step in the upgrade sequence is to load version 1.8 from tape. How this is done is described in Chapter 4.1. **Note!** Restore of data from tape must be done in a 'Backup Restore mode' that can be selected at start-up. When the window 'Workstation mode' appears on the screen you must choose '**Backup Restore mode**'

4.2.1.4 Restore the Station Backup from version 1.6

In this chapter it is described how you restore your backup from the OS 1.6 system into the bare OS 1.8 system you just loaded. It is important to make a backup when the upgrade is finished.

Restore the backup from tape

- Put the backup tape into the DDS tape drive.
- Select the alternative **Restore of OS 1.6 Configurable Data** in the Station Backup window.
- Select the **Start Program** item from the **Action** menu.
- Don't do exit until the yellow mark has turned green and definitely not because of the flashing on the DDS tape drive stops. If you do exit before, you have to reload the system from the basic OS 1.8 system tape.
- The restore is finished when the yellow mark has turned to green. When the restore is finished you shall select the **Exit** item from the **File** menu to exit the Station Backup function. The system will then continue with the start up.
- There are log files in the directory /products/log that you may check. **dupFiles** contains a list of all duplicated files (displays and display elements). If you have made changes in standard displays or standard display elements and stored the changed displays/display elements with the same names under /adaption or /customer, these will be in this list. If you have made such changes in standard data you have to do these changes once more in version 1.8.

Update the RTA board database with changed standard data

- Start RTA Board Config (press **System Config - Maintenance... - RTA Board Config.** keys).
- In the RTA Board Config window, give one of the following commands (depending on the version from which the backup is taken and the language):

If the backup is from version 1.6/0

EXECFILE INIT:UPDT030E (if you run english language)
EXECFILE INIT:UPDT030S (if you run swedish language)
EXECFILE INIT:UPDT030G (if you run german language)
EXECFILE INIT:UPDT037Z (if you run chinese language)

If the backup is from version 1.6/1 or later

EXECFILE INIT:UPDT031E (if you run english language)
EXECFILE INIT:UPDT031S (if you run swedish language)
EXECFILE INIT:UPDT031G (if you run german language)
EXECFILE INIT:UPDT037Z (if you run chinese language)

- If required enter your changes in the affected logical files.

Alt.1. Logical file 218 has got default settings.

Alt.2. All logical files mentioned in has got default settings.

- Exit RTA Board Config window.

- Make a RTA Board Backup (press **System Config - Maintenance... - RTA Board Backup** keys).

Note! Detailed description of what is loaded when you do what is described in this chapter, is described in the README files on the OS disk:

```
/opt/advant/RTA/INIT/UPDT030.README  
/opt/advant/RTA/INIT/UPDT031.README  
/opt/advant/RTA/INIT/UPDT037.README
```

Read by using the **more** command in the terminal window

4.2.1.5 Restart the Operator Station

- Press **System Config - Station - Station Restart**

4.2.1.6 Install all displays.

- If you have built your own, or use other than standard display elements see section 2.3 Restrictions, Display Elements
- Compile the display elements before installing them.
- Press **System Config - AdvaBuild - Display Installer**

4.2.1.7 Activate AdvaCommand Process Sectioning

If you don't have the option AdvaCommand Process Sectioning go directly to Chapter 4.2.1.8

- After the restore from version 1.6 the selected Delegation has to be activated.
 - Press **System Config - AdvaCommand - Process Sectioning**
 - Select **File - Open** and **Actions - Activate** item from the menus
 - Note! First activate a Delegation different from the one you want to have active and then go back and activate the Delegation you want to have active.

4.2.1.8 Prepare for use of the AdvaBuild On-line Builder

If you don't have the option AdvaBuild On-line Builder go directly to Chapter 4.2.1.9

- Open the On-line Builder and set Node Type for preparing of use of the On-line Builder in the system.
 - Press **System Config - AdvaBuild - On-line Builder**
 - Select Node
 - From **Menu** select **Edit - Change Node**, write and select all information for the node
 - Continue with selecting and editing all nodes.

4.2.1.9 Check if there are any unresolved object (references)

- Before making Station Backup you shall check if there are any unresolved object (references). Press **System Config - Maintenance - Object References**. List object references

4.2.1.10 Take a Station Backup

- When all object references in all displays are ‘solved’, you shall take a backup of the Operator Station that you have upgraded to version 1.8.
 - Put a tape into the DDS tape drive.
 - Press **System Config - Maintenance - Station Backup**
 - Enter password
 - Choose the alternative **Backup of OS 1.8 Configurable Data**.

4.2.2 Upgrading from version 1.7 to version 1.8

4.2.2.1 Save the RTA board database.

Note! The action described below shall only be performed in the 1.7 system.

The RTA board database has to be saved as dump files on the OS disk in order to be included in the Station Backup.

- Do a RTA Board Backup (press **System Config - Maintenance... - RTA Board Backup** keys) if you haven't already done so.

4.2.2.2 Take a Station Backup of OS Configurable data to tape

Note! Before you take the backup you should remove old not relevant files from your system. E.g. central backups in the directory /products/nodes. Otherwise these old backups will be transferred to the 1.8 system. And if you have too many old backups there is a risk for filling the disk with irrelevant data. In worst case the 1.8 system start will fail with an error code 'file system full'.

- Put a tape into the DDS tape drive.
- Press **System Config - Maintenance - Station Backup**
- Enter password
- Choose the alternative **Backup of OS*1.7 configurable data**.

4.2.2.3 Load version 1.8

- Next step in the upgrade sequence is to load version 1.8 from tape. How this is done is described in Chapter 4.1. **Note!** Restore of data from tape must be done in a 'Backup Restore mode' that can be selected at start-up. When the window 'Workstation mode' appears on the screen you must choose '**Backup Restore mode**'

4.2.2.4 Restore the Station Backup from version 1.7

In this chapter it is described how you restore your backup from the OS 1.7 system into the bare OS 1.8 system you just loaded. It is important to make a backup when the upgrade is finished.

- Put the backup tape into the DDS tape drive.

- Select the alternative **Restore of OS 1.7 Configurable Data** in the Station Backup window.
- Select the **Start Program** item from the **Action** menu.
- Don't do exit until the yellow mark has turned green and definitely not because of the flashing on the DDS tape drive stops. If you do exit before, you have to reload the system from the basic OS 1.8 system tape.
- The restore is finished when the yellow mark has turned to green. When the restore is finished you shall select the **Exit** item from the **File** menu to exit the Station Backup function. The system will then continue with the start up.
- There are log files in the directory /products/log that you may check. **dupFiles** contains a list of all duplicated files (displays and display elements). If you have made changes in standard displays or standard display elements and stored the changed displays/display elements with the same names under /adaption or /customer, these will be in this list.

Update the RTA board database with changed standard data

- Start RTA Board Config (press **System Config - Maintenance... - RTA Board Config** keys).

- In the RTA Board Config window, give one of the following commands (depending on language):

EXECFILE INIT:UPDT032E (if you run english language)

EXECFILE INIT:UPDT032S (if you run swedish language)

EXECFILE INIT:UPDT032G (if you run german language)

EXECFILE INIT:UPDT037Z (if you run chinese language)

-Make a RTA Board Backup (press **System Config - Maintenance... - RTA Board Backup** keys).

Note! Detailed description of what is loaded when you do what is described in this chapter, is described in the README files on the OS disk:

/opt/advant/RTA/INIT/UPDT032.README

/opt/advant/RTA/INIT/UPDT037.README

Read by using the **more** command in the terminal window

4.2.2.5 Restart the Operator Station

- Press **System Config - Station - Station Restart**

4.2.2.6 Install all displays.

- Press **System Config - AdvaBuild - Display Installer**

4.2.2.7 Activate AdvaCommand Process Sectioning

If you don't have the option AdvaCommand Process Sectioning go directly to Chapter 4.2.2.8

- After the restore from version 1.7 the selected Delegation has to be activated.
 - Press **System Config - AdvaCommand - Process Sectioning**
 - Select **File - Open** and **Actions - Activate** item from the menus
 - Note! First activate a Delegation different from the one you want to have active and then go back and activate the Delegation you want to have active.

4.2.2.8 Prepare for use of the AdvaBuild On-line Builder

If you don't have the option AdvaBuild On-line Builder go directly to Chapter 4.2.2.9

- Open the On-line Builder and set Node Type for preparing of use of the On-line Builder in the system.
 - Press **System Config - AdvaBuild - On-line Builder**
 - Select Node
 - From **Menu** select **Edit - Change Node**, write and select all information for the node
 - Continue with selecting and editing all nodes.

4.2.2.9 Check if there are any unresolved object (references)

- Before making Station Backup you shall check if there are any unresolved object (references). Press **System Config - Maintenance - Object References**. List object references

4.2.2.10 Take a Station Backup

- When all object references in all displays are 'solved', you shall take a backup of the Operator Station that you have upgraded to version 1.8.
 - Put a tape into the DDS tape drive.
 - Press **System Config - Maintenance - Station Backup**
 - Enter password
 - Choose the alternative **Backup of OS 1.8 Configurable Data**

4.2.3 Upgrade from revision 1.8/x (x=0,1,2,3,4,5) to revision 1.8/6

The principal for an upgrade is to do an initial installation of the new AdvaCommand 1.8/6 system and then restore the station backup from the previous 1.8 revision. Follow the steps below.

1. Save the RTA board database in the running 1.8/x system.

The RTA board database has to be saved as dump files on the OS disk in order to be included in the Station Backup.

- a. - Do a RTA Board Backup (press **System Config - Maintenance...** - **RTA Board Backup** keys) if you haven't already done so.

2. Take a Station Backup of OS Configurable data to tape.

Note! Before you take the backup you should remove old not relevant files from your system. E.g. central backups in the directory /products/nodes. Otherwise these old backups will be transferred to the new 1.8 system. And if you have too many old backups there is a risk for filling the disk with irrelevant data. In worst case the 1.8 system start will fail with an error code 'file system full'.

- a. Put a tape into the DDS tape drive.
- b. Press **System Config - Maintenance - Station Backup**
- c. Enter password
- d. Choose the alternative **Backup of OS*1.8 configurable data**.
- e. If you have the software option AdvaInform History take a backup of the History data. Choose the alternative **Backup of History data**. (use another tape than the one used in alternative d. above)

3. Load revision AdvaCommand 1.8/6

Next step in the upgrade sequence is to load version 1.8/6 from tape or CD. How this is done is described in Chapter 4.1. **Note!** Restore of data from tape must be done in a 'Backup Restore mode' that can be selected at start-up. When the window 'Workstation mode' appears on the screen you must choose '**Backup Restore mode**'

4. Restore the Station Backup from version 1.8/x

- a. Put the backup tape into the DDS tape drive.
- b. Select the alternative **Restore of OS 1.8 Configurable Data** in the Station Backup window.
- c. Select the **Start Program** item from the **Action** menu.

- d. Don't do exit until the yellow mark has turned green and definitely not because of the flashing on the DDS tape drive stops. If you do exit before, you have to reload the system from the basic OS 1.8 system tape.
 - e. The restore is finished when the yellow mark has turned to green. When the restore is finished you shall select the **Exit** item from the **File** menu to exit the Station Backup function. The system will then continue with the start up.
 - f. There are log files in the directory /products/log that you may check. **dupFiles** contains a list of all duplicated files (displays and display elements). If you have made changes in standard displays or standard display elements and stored the changed displays/display elements with the same names under /adaption or /customer, these will be in this list.
 - g. If you have the software option AdvaInform History you must make a conversion of History data from History 2.2 used in AdvaCommand 1.8/1, 1.8/2 or 1.8/3 to History 2.4 used in AdvaCommand 1.8/6. This is done by performing following steps.
 - Insert the tape with the History backup in a tape drive connected locally to the Advant Station. (Remote connection is not possible. If remote connection is needed the upgrade script UpgradeHistory220 must be changed)
 - Open a terminal window by using the right mouse button.
 - Run the upgrade script
\$ /products/components/History/bin/UpgradeHistory220
5. Update the RTA database with changed standard data
- a. Start RTA Board Config (press **System Config - Maintenance... - RTA Board Config.** keys).
 - b. In the RTA Board Config window, give one of the following commands (depending on the version from which the backup is taken and the language):

If the backup is from version 1.8/0 or 1.8/1

EXECFILE INIT:UPDT033E (if you run english language)

EXECFILE INIT:UPDT033S (if you run swedish language)

EXECFILE INIT:UPDT033G (if you run german language)

EXECFILE INIT:UPDT037Z (if you run chinese language)

If the backup is from version 1.8/2

EXECFILE INIT:UPDT034E (if you run english language)

EXECFILE INIT:UPDT034S (if you run swedish language)

EXECFILE INIT:UPDT034G (if you run german language)

EXECFILE INIT:UPDT037Z (if you run chinese language)

If the backup is from version 1.8/3

EXECFILE INIT:UPDT035E (if you run english language)

EXECFILE INIT:UPDT035S (if you run swedish language)

EXECFILE INIT:UPDT035G (if you run german language)

EXECFILE INIT:UPDT037Z (if you run chinese language)

If the backup is from version 1.8/4

EXECFILE INIT:UPDT036E (if you run english language)

EXECFILE INIT:UPDT036S (if you run swedish language)

EXECFILE INIT:UPDT036G (if you run german language)

EXECFILE INIT:UPDT037Z (if you run chinese language)

- c. -Make a RTA Board Backup (press **System Config - Maintenance...** - **RTA Board Backup** keys).

Note! Detailed description of what is loaded when you do what is described in this chapter, is described in the README files on the OS disk:

/opt/advant/RTA/INIT/UPDT033.README

/opt/advant/RTA/INIT/UPDT034.README

/opt/advant/RTA/INIT/UPDT035.README

/opt/advant/RTA/INIT/UPDT036.README

/opt/advant/RTA/INIT/UPDT037.README

Read by using the **more** command in the terminal window

6. If you have Swedish or German language in your system you shall do this step. (If you have American-English as 'System Language' go directly to step 7 below.)
To have the correct language on printouts you have to set System Language twice under 'Station Settings'
- a. Press **System Config - Settings...** - **Station Settings** keys

- b. Choose American-English as System language, even if you shall have e.g. Swedish in your system when the upgrade is finished.
 - c. Press **System Config - Station - Function Restart**
 - d. When the system has started up again press **System Config - Settings... - Station Settings** keys
 - e. Choose the language you shall have in the system (German or Swedish) as System language
7. Restart the Advant Station by pressing **System Config - Station - Function Restart**
8. Install all displays (including own built alarm lists).
Note! this step is important to do to secure that all corrections in the revision concerning display elements are included.
Press **System Config - AdvaBuild - Display Installer**
9. Activate AdvaCommand Process Sectioning
If you don't have the option AdvaCommand Process Sectioning go directly to 10.
After the restore the selected Delegation has to be activated.
- a. Press **System Config - AdvaCommand - Process Sectioning**
 - b. Select **File - Open** and **Actions - Activate** item from the menus
 - c. **Note!** First activate a Delegation different from the one you want to have active and then go back and activate the Delegation you want to have active.
10. Prepare for use of the AdvaBuild On-line Builder
If you don't have the option AdvaBuild On-line Builder go directly to 11
Open the On-line Builder and set Node Type for preparing of use of the On-line Builder in the system.
- a. Press **System Config - AdvaBuild - On-line Builder**
 - b. Select Node
 - c. From **Menu** select **Edit - Change Node**, write and select all information for the node
 - d. Continue with selecting and editing all nodes.
11. Check if there are any unresolved object (references)

Before making Station Backup you shall check if there are any unresolved object (references). Press **System Config - Maintenance - Object References**. List object references

12. Take a Station Backup

When all object references in all displays are 'solved', you shall take a backup of the Operator Station that you have upgraded to version 1.8.

- a. Put a tape into the DDS tape drive.
- b. Press **System Config - Maintenance - Station Backup**
- c. Enter password
- d. Choose the alternative **Backup of OS 1.8 Configurable Data**

4.2.4 Upgrading of an identical Operator Station

How to upgrade one Operator Station to version 1.8 has been described. If you have several identical Operator Stations within a control network, i.e. containing same process displays and display elements, you can upgrade the first one in the way that has been described and restore the backup in the other Operator Stations. How this is done is described below.

Note! It's only allowed to use the 'Restore of OS 1.8 Independent Config Data' within the same control network as the backup was taken. The node in which the backup is restored must be connected to the same type of data link (MasterBus 300 or MasterBus 300E) as the node where the backup was taken.

- Load version 1.8 from tape in the Operator Station you want to upgrade. How this is done is described in Chapter 4.1. **Note!** Restore of data from tape must be done in a 'Backup Restore mode' that can be selected at start-up. When the window 'workstation mode' appears on the screen you must choose '**Backup Restore mode**'
- Restore of the backup from the upgraded Operator Station.
 - Put the backup tape with the backup from the upgraded Operator Station into the DDS tape drive.
 - Select the alternative **Restore of OS 1.8 Independent Config Data** in the Station Backup window.
 - Select the **Start Program** item in the **Action** menu.
 - When the restore is finished you shall select the **Exit** item in the **File** menu to exit the Station Backup function. The system will then continue with the start up.
- If the Operator Station shall be connected to a TCP/IP network or if you have changed communication protocol from MB300, you have to request a Station Restart.
 - Press **System Config - Station - Station Restart**

Chapter 5 Miscellaneous

5.1 How to change hostname and TCP/IP address

All Advant Stations that are to be connected to a local TCP/IP network must be given unique hostnames in the range “as1” - “as200”.

For a station delivered from ABB Automation Technologies AB with the software already installed the default name is “as1”.

When a station is loaded from a tape this setting of hostname is a step in the loading procedure, see Chapter 3.1.

This name can be modified to any name (by the system administrator) according to the following procedure:

- Open a terminal window. (**System Config - Station... - Terminal Window**)
- Give the following commands in the terminal window:
 - **su -**
 - password **vm-guld** (if you haven't changed the root password)
 - **cd /etc**
- If you use another name than “as1” - “as200” you have to edit the ‘host file’ /etc/hosts and add your new host name and host address
- Change hostname with the following command
set_parms hostname
and follow the instructions on the screen. Max eight characters in the host name.
Answer “y” to the question about rebooting the system.
- Change TCP/IP address
set_parms ip_address

5.2 How to change Time zone

Time Zone must be set to have the daylight saving working properly.

The default location is Europe and the default Time Zone is Middle European Time.

- Open a terminal window. (**System Config - Station... - Terminal Window**)
- Give the following commands in the terminal window:
 - **su -**
 - password **vm-guld** (if you haven't changed the root password)
 - **cd /etc**
- **set_parms timezone**

5.3 How to change Network and Node number in an Advant Station

Procedure to change Network and Node number:

1. Restart the Operator Station, press **System Config - Station - Station Restart**.
2. Change Network and Node number when the 'Control Network Configuration Data' window appears on the screen.
3. When 'Start up mode' window is displayed, choose **Coldstart** and let the system continue with the start up.

NOTE: Coldstart will result in un-installation of all displays and unmapping of all TTD objects.

5.4 How to Set Communication Parameters for Printers

Set communication parameters for printers using the printer interface scripts called models. These models are located in the directory /usr/spool/lp/model. Many of the models have names that match the model numbers of Hewlett Packard printers such as PaintJet or a special printer format such as postscript. Within these models, set the communication parameters using the HP-UX command **stty**. The settings are valid for the current output device.

If you are going to change any of the standard models, copy the standard first and then change the copy. Only user root has permission to change these models.

The models are used when a printer queue is configured in the system.

5.4.1 The stty Command

The HP-UX command **stty** sets the options for a device connected to a serial port. A subset of all options, mainly those related to a printer, are described below.

Options

The **stty** command recognizes the following options and arguments:

parenb (-parenb)

Enable (disable) parity generation and detection. If **parenb** is used, a parity bit is added to each character. Also see option **parodd (-parodd)** below.

parodd (-parodd)

Select odd (even) parity. This option is only valid if the option **parenb** is set. Default value is even parity.

cs5 cs6 cs7 cs8

Select character size. This size does not include the parity bit, if any.

**50 75 110 134.5 150 200 300 600 900 1200 1800 2400 3600 4800 7200 9600
19200 38400**

Set baud rate to the number given, if possible (some hardware interfaces do not support all of the speeds listed here).

cstopb (-cstopb)

Use two (one) stop bits per character. One stop bit is the default.

cllocal (-cllocal)

Assume a line without (with) modem control.

istrip (-istrip)

Strip (do not strip) input characters to seven bits.

ixon (-ixon)

Enable (disable) START/STOP output control. Output is stopped by sending an ASCII DC3 and started by sending an ASCII DC1.

opost (-opost)

Post-process output (do not post-process output; ignore all other output modes). When **opost** is set, output characters are post-processed as indicated by the options **onlcr** or **tabn**, see below.

onlcr (-onlcr)

Map (do not map) new-line character to a carriage-return/new-line character sequence on output.

tab0 tab3

Select style of delay for horizontal tabs.

tab0: No delay.

tab3: Expand tabs into spaces.

raw (-raw)

Enable (disable) raw output (no output post-processing).

Example:

To set up the following communication parameters:

Baudrate = 9600.

Character size = 8 bit.

No parity.

XON/XOFF protocol.

Do not strip characters to seven bit.

No output processing of characters.

Use the command:

```
stty raw 9600 -parenb cs8 ixon -istrip clocal
```

5.5 Monitor and graphic card

For monitor synchronization two different ways are used:

1. The sync signal is superimposed on the Green video signal (called sync on green)
2. In addition to the three wires for Red, Green, and Blue video signals there are two extra wires, one for horizontal sync and one for vertical sync, total five wires.

Since the workstation generates the video and sync signals, you have to choose a monitor that fits your specific workstation. Different workstations models may generate different type of synchronization:

- The following old HP workstations only generate sync on the Green video signal (three wires needed for video extension):
 - HP 715/50, 715/50R, 720/50, 747i/50

- The following old HP workstations generate both sync on green and separate sync signals:
 - HP 715/64/100, B132L, B132L+, B180L, 748i/64/100
- The following HP workstations only generate separate sync signals (five wires needed for video extension):
 - HP B2000, B2600

Setting monitor type on HP 715/64/100, B132L, B132L+, B180L, 748i/64/100

The workstation generates the video signals, including the sync signals. Therefore, the monitor settings in the workstation must fit the connected monitor.

If you use the RGB outputs to the monitor, you have to define the sync signal on the green signal cable. Do as follows:

- Stop the Operator Station at start up by pressing **Esc** key
- Under Main Menu: Enter the command **configuration**
- Select the monitor type valid for size: 1280x1024, freq. 72 Hz and class: not VESA. For most workstation models the monitor type is 12. In the Configuration Menu: Enter command **monitor graphics(0) 12** and **monitor graphics(1) 12**
- Return to main menu and restart the Operator Station

If the graphic card has been installed after first start up, you must restart the station and stop it by pressing **Esc**. Write in the Configuration Menu: **pa con GRAPHICS(1)** and then restart again.

5.6 Configuration of the disk in the Advant Station

New Advant Stations 520 are delivered with a 36 GB harddisk or bigger. We have chosen not to allocate all available disk space by default since AdvaCommand 1.8 shall be possible to run in Advant Stations with a smaller disk. We leave to the customer to increase the size of the defined logical volumes when needed e.g. **/home** for Adva Inform History data and **/disk2** for AdvaCommand application data (process displays etc.). But note that normally default settings can be used.

Increasing logical volumes can be done during the initial installation (or installing options) described in chapter 4.1.2 or by means of the HP system tool

System Administration Manager (SAM) in an already installed system, described below.

NOTE All actions to increase logical volumes should be done by an experienced person.

To increase a logical volume you must close the AdvaCommand for UNIX application. Do **Function Restart** and stop the start-up procedure in **Backup Restore mode**. Move the “Workstation mode window” to the right of the screen to avoid interference in the presentation later on. Open the appearing **hpterm** and login as **root** (type: **su -**, press Enter, give password: **vm-guld**). Go to **root** directory (**cd /**) and then type **shutdown now**. The system will now start in single user mode and prompt with **<hostname>:/home/root#**. Type **exit** and go to **root** directory (**cd /**). Type **umount <logical volume name>**, where logical volume name is the volume you want to increase, e.g. **/home** or **/disk2**. Type **sam** to start the System Administration Manager. Accept the default values for the following questions by pressing **Enter**:

- Do you want to proceed using the terminal version of sam? (yes or no) (yes)
- Do you want to proceed in setting your TERM value and running sam? (yes or no) (yes)
- Input the correct value for your terminal or press “return” to set the default TERM value=hp. TERM=(hp)

Press Return (Enter) to continue. Use Arrow keys to move cursor. Mark **Disks and File Systems** and press **Enter**. Move cursor to **Logical Volumes** and press **Return** (Note, this action will take some time). Move cursor to the logical volume you want to increase (e.g. **/home** or **/disk2**) and press **Space** to select it. Now press **TAB**, use arrow keys to move to **Actions** menu and press **Enter**. Choose **Increase Size...** Press Enter. Enter the new value for the increased size, mark **OK** by moving the cursor (TAB key) and press **Enter**. Exit Logical Volumes dialog by pressing **TAB** then **Enter**. In the **File** menu choose **Exit** and press **Enter**. Exit sam by pressing **TAB** then **Enter**. In the **File** menu choose **Exit SAM** and press **Enter**. Type **init 3** to restart your workstation.

