

1. Introduction

INFplus monitors recordings in progress and saves the EPG information associated with those recordings into a separate data file for later retrieval prior to or during playback.

As a standard part of its operation, the PVR will retain the EPG information for the recordings that it makes, however, when a recording spans several programmes, the standard method is limited to saving the details for only one programme.



INFplus overcomes this limitation by tracking and storing all of the individual programmes that occur during a recording and displaying them before or during playback.



2. Operation

2.1 Running INFplus

Normally, INFplus is located in the `/ProgramFiles/AutoStart` folder so that it is always running. Whilst running, it performs 2 main tasks:

1. Monitoring recordings and saving extended EPG information.
2. Intercepting the "Info" button during playback of recordings made with INFplus active and displaying the extended EPG information previously saved replacing the standard extended information window.

2.2 Viewing INFplus Extended EPG Information

There are currently two ways to view the extended EPG information stored by INFplus:

1. During playback of a completed recording or chase-playing a recording in progress, press the "Info" button.
2. Use TMSArchive¹ 4.6a or later and press-and-hold the "Info" button from the file list when highlighting the required recording.

2.3 Jumping Near a Programme

Whilst the INFplus extended EPG information is displayed, the user has the option to jump near² to the scheduled start of a selected programme by using the left and right buttons to navigate to the programme and pressing the "OK" button.

2.4 Remembering

If playback is paused, the user also has the option to "remember" the current playback location. This is similar to the standard PVR bookmark, however, only one location can be remembered for each programme. Programmes that have a location remembered show a small red triangle in the top right corner of the EPG programme block.

2.5 Forgetting

To remove a remembered location, pause playback, select the required programme, press "remember" and then select the "Forget" button.

2.6 Preparing for Archive

By default, INFplus stores the extended EPG information in a separate database file. When a recording is copied onto external media, the extended EPG information is lost. By preparing a recording for archive prior to copying, the additional EPG information is preserved³ and can be recalled when the recording is played from that external medium.

Warning: Preparing for archive is irreversible.

¹ For more details on TMSArchive and how to customise its integration with INFplus see section 6.

² See "Why aren't jumps exact?" in the troubleshooting section.

³ Provided that the inf and nav files are copied with the mpg (rec in Europe) file.

3. Screen Layout

The INFplus screen is divided into 5 separate areas:



3.1 Recording Information

This area shows details that relate to the entire recording such as the file name, service name, date, time and duration. This area will also display an archive box icon if the extended EPG information has been sourced from a recording that has been prepared for archive.

3.2 Progress Bar

This area represents the duration of the recording. For recordings in progress, the bar is hollow after the current recorded position. For recordings being played back, a red bar indicates the current location.

3.3 EPG Programme Block

This area shows all of the programmes that occurred whilst the recording was in progress. When padding is used, the first and last programmes are normally only partially covered and indicated by a light gray block. Programmes fully covered by the recording are shown with a dark gray block, the programme for which the details are shown in area 4 is highlighted in yellow and the current programme shows a red border at the top of the block.

3.4 Individual Programme Details

The details for each individual programme such as the name, date, time, classification, genre and description are provided. If the recording has snapshots, they will be shown in his area.

3.5 Key Legend

This area describes the active keys and their function.

4. Installation

4.1 Prerequisites

In order for this TAP to operate correctly, the following packages are required:

FirmwareTMS.dat

FirmwareTMS.dat is included in the "INFplus" package via TAPtoDate as well as the "DSTConfig" package.

WARNING: If FirmwareTMS.dat is not found, a log entry will be made and INFplus will not load.

DSTConfig

DSTConfig can be obtained via TAPtoDate from the "DSTConfig" package.

Calibri suite of Unicode fonts

Fonts can be obtained via TAPtoDate from the "SmartEPG FontPack" package and should be located in /ProgramFiles/Settings/Fonts. Specifically, this TAP uses the following Unicode fonts:

- Calibri_12.ufnt
- Calibri_14.ufnt
- Calibri_16.ufnt
- Calibri_18.ufnt

4.2 Automatic Installation via TAPtoDate

Under the EPG category, select the "INFplus" package.

4.3 Manual Installation

Download the zip file from <http://deltamikecharlie.yolasite.com/#INFplus> and copy the files contained into the following locations:

- /ProgramFiles/INFplus.tap
- /ProgramFiles/Settings/epg-genre-descriptions.lng
- /ProgramFiles/Settings/epg-parental.lng
- /ProgramFiles/Settings/INFplus/INFplus.lng
- /ProgramFiles/Settings/Fonts/Calibri_12.ufnt
- /ProgramFiles/Settings/Fonts/Calibri_14.ufnt
- /ProgramFiles/Settings/Fonts/Calibri_16.ufnt
- /ProgramFiles/Settings/Fonts/Calibri_18.ufnt

It is recommended that INFplus is run from the AutoStart folder once it has been tested for stability and compatibility on your PVR hardware model and firmware revision.

5. Configuration

The configuration screen for INFplus can be activated by the TMSCommander "Menu" function or by pressing "Menu" when the INFplus details screen is displayed.



5.1 Scanning Frequency

INFplus works by checking for recordings in progress from time to time and saving EPG programme information when a programme changes within a particular recording. The "Scanning Frequency" configuration parameter controls how often this check is performed.

Valid scanning frequency options are: 10 Sec, 20 Sec, 30 Sec, 40 Sec, 50 Sec, 1 Min, 2 Min, 3 Min, 4 Min and 5 Min.

The more frequent scans are conducted, the higher theoretical load on the PVR. The longer between scans the higher the likelihood that a short programme will be missed.

5.2 Housekeeping Frequency

The extra EPG information is saved separately to the normal PVR recording data files. Once a recording has been deleted, this extra EPG information also needs to be deleted. This configuration setting determines how often the extra EPG information is deleted.

Compared to the size of a recording, the extra EPG information is miniscule and will generally not significantly impact system storage capacity. However, the extra EPG information is still deleted as a matter of good housekeeping practise.

Valid housekeeping frequency options are: 15 Min, 30 Min, 45 Min, 1 Hour, 2 Hours and 3 Hours.

5.3 Logging Level

INFplus has the ability to track its activity into a log file. To an average user, this activity is of little interest, however, it may be useful for troubleshooting purposes.

Setting	Logging Behaviour
None	No logging.
Basic	Basic startup and shutdown.
Detailed	Important events.
Exhaustive, no polling	Everything excluding each scan for recordings in progress.
Exhaustive, with polling	Everything including each scan for recordings in progress.

As the log file can become quite large, it is recommended that this option remains set to "None" unless requested to change it for troubleshooting purposes.

5.4 Activation Sequence

The activation sequence controls when INFplus is displayed during playback or chase-playing.

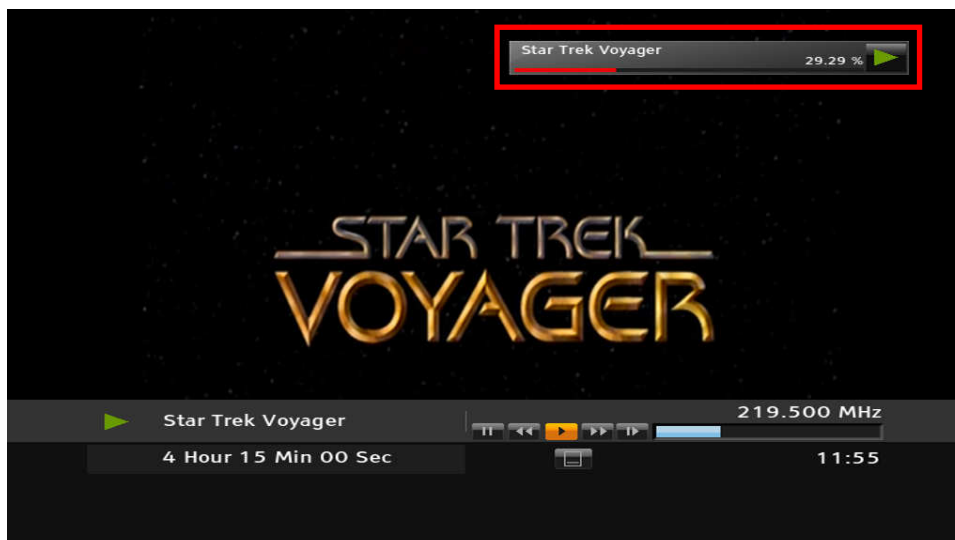
Setting	Activation Behaviour
Immediate	Pressing "Info" causes INFplus to be displayed immediately.
Second press	Pressing "Info" causes the standard PVR information footer to be displayed. A second press of "Info" will display INFplus.



Note: If you are using iBox or SmartEPG with INFplus, ensure that you set this item to "Second press".

5.5 Hide Information Bar

As standard, when the "Info" button is pressed, an information bar appears in the top right hand corner of the screen indicating the current recording and/or playback status. Setting this option to "Hide" will prevent these icons from being displayed when INFplus exits. Setting this option to "Do not hide" forces these icons to remain on screen before being removed by the PVR after a predefined period. Setting this option to "Do nothing" will allow the PVR to use either its default setting or the settings made by another TAP.



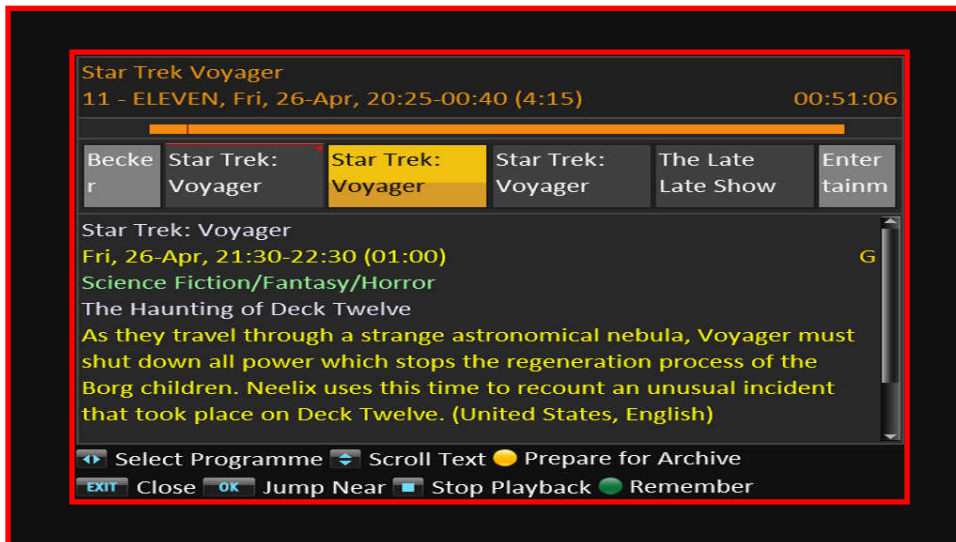
Please Note: Hiding icons only takes effect when INFplus is activated during playback or chase-playing. Icons are not hidden when INFplus is activated by an external file manager such as TMSArchive.

5.6 Font Size

This option adjusts the size of the display font. Options are: Tiny, Small, Medium and Large.

5.7 Top Border / Bottom Border / Left Border / Right Border

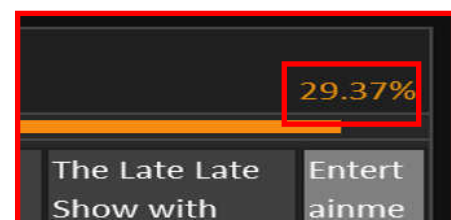
These options adjust the amount of blank screen area surrounding the INFplus display. These settings are useful for adjusting the display to suit your monitor, especially where your monitor is configured to overscan. The maximum value for any border is 50 pixels. Borders can be adjusted in single pixel increments by using the left/right keys and in 10 pixel increment by using the rewind/forward keys.



5.8 Show Progress As

The progress text in the top right hand corner can be selected to be displayed in one of the following formats:

- Percentage complete;
- Percentage remaining;
- Time elapsed;
- Time remaining.



All progress is time-based, that is, INFplus takes the disk block-based progress data provided by the PVR and converts that into an approximate time-based figure. See section 11.10 for more information.

5.9 Show Progress For

The progress text can be shown for either the entire recording, or the programme currently in progress based on the calculated elapsed playback time. The text to be shown is defined by the previous setting.

5.10 Time Format

INFplus can display times in either 24 hour or 12 hour format. The values and spacing used for the "AM" and "PM" descriptors can be controlled by customising `INFplus.lng`.

5.11 Programme Descriptions

INFplus shows the genre description for all of the programmes that it records where one has been provided by the broadcaster. There are 3 modes for determining which type of genre description to display:

"Automatic" will try to determine if the PVR is an Australian model, if it is an Australian PVR, the EPG source flag will be used to determine whether to display an Australia-only description (free-to-air) or the global standard descriptions (ICE TV). If the PVR is not Australian, the description displayed will be based on the global standard only.

"Use standard descriptions" will enforce the use of the global standard descriptions.

"Use Australian descriptions" will force the use of the Australian non-standard descriptions.

Warning: The last 2 options are provided for situations where the automatic mechanism does not correctly identify an Australian PVR or the EPG source flag. Incorrectly selecting either of these two options may result in incorrect programme genre descriptions being displayed.

5.12 Auto "Prepare for Archive"

When enabled, INFplus will automatically perform a "Prepare for Archive" (as per section 2.6) when a recording stops. At startup, INFplus will also check for recordings what should have been processed but were skipped due to the scanning frequency and process them.

5.13 Hide Thumbnail Images

When enabled, the thumbnail images that appear at the bottom of the "Individual Programme Details" area (section 3.4) will be hidden.

5.14 Display Logos

INFplus is able to display the channel logo for the channel where a logo is available. The 3 options for displaying logos are as follows:

Setting	Logo Source
No	Do not display logos.
TransBlack -> JPEG	Use the "TransBlack" logo from the LogoManager logo collection. If one is not found, search for a JPEG.
3PG -> JPEG	Use the "3PG" logo from the LogoManager logo collection. If one is not found, search for a JPEG.

The "LogoManager" is the system used by SmartEPG. If you already have the SmartEPG logos loaded, INFplus will search these logos.

In the event that a LogoManager logo is not found, INFplus will search the following locations for a JPEG logo: "/ProgramFiles/Settings/Logos"; "/PhotoFiles/Logos" and "/PhotoFiles/Settings/Logos".

INFplus will search the locations listed above for the following logo file names: <Channel ID>.jpg; <Channel Name>.jpg; <channel name>.jpg and <LCN>.jpg

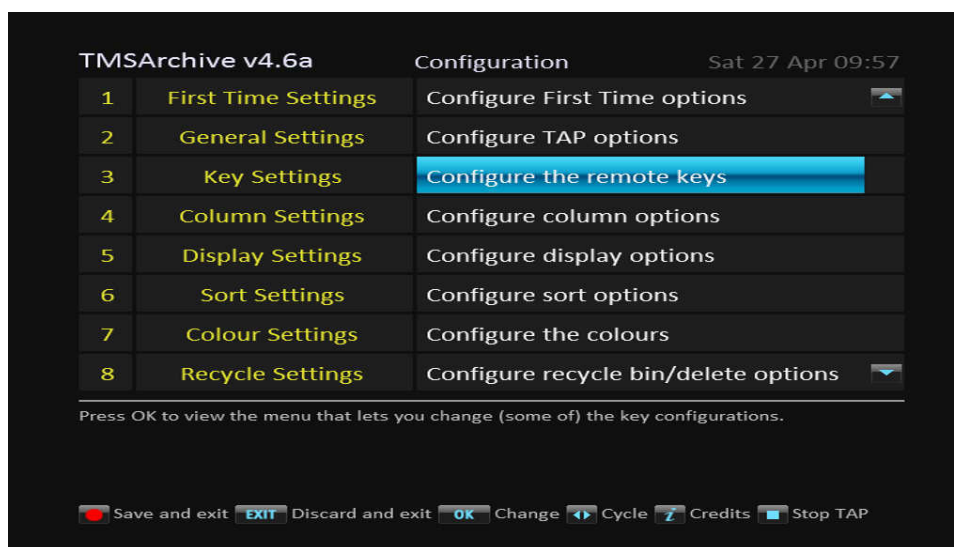
6. Optional Integration with TMSArchive

Commencing with TMSArchive version 4.6a, the author of TMSArchive has provided a mechanism whereby TMSArchive can work seamlessly with INFplus to display the extended EPG programme information saved by INFplus during the recording process.

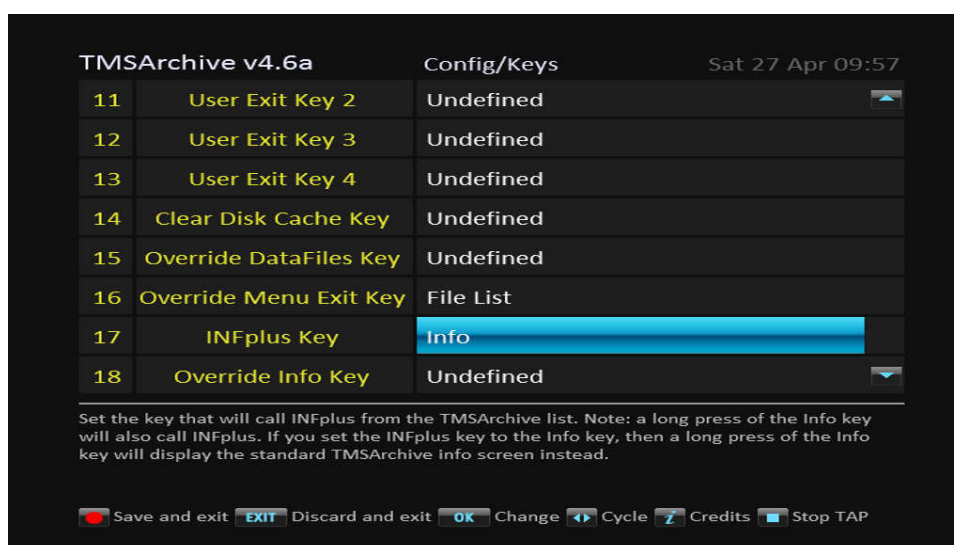
By default, from the TMSArchive file list, pressing "Info" will display the TMSArchive information window and a long press of "Info" will display the INFplus information window. Pressing "Sat" will also display INFplus.

This behaviour can be customised to suit user preferences as follows:

From the TMSArchive file list, press "Menu" to display the configuration screen.



Select the "Key Settings" option and scroll to the bottom of the list.



There are two settings that affect the way that TMSArchive interacts with INFplus.

Setting		Activation Sequence	
INFplus Key	Override Info Key	TMSArchive Info Window	INFplus Info Window
Undefined	Undefined	Normal press of "Info"	Long press of "Info"
<Key>	Undefined	Normal press of "Info"	Long press of "Info" or "<Key>"
Info	Undefined	Long press of "Info"	Normal press of "Info"
Info	<Key>	Long press of "Info" or "<Key>"	Normal press of "Info"

If there is no INFplus information to display, or INFplus is not running, TMSArchive will display its normal information window.

Using TMSArchive, it is also possible to prepare multiple recordings for archive (see section 2.6) in a single batch. Simply use the red button to select the required recordings and press the INFplus activation key as configured in TMSArchive.

7. Optional Integration with iBox

Commencing with iBox version 1.9, the author of iBox has provided a mechanism whereby iBox can work seamlessly with INFplus to display the extended EPG programme information saved by INFplus during the recording process.

For this integration to work correctly, the "Activation Sequence" configuration setting in INFplus should be set to "Second press". This will allow iBox to show its first information screen before displaying the INFplus extended information screen if required. No configuration changes are required for iBox.

8. Integration with SmartEPG_TMS

Commencing with SmartEPG_TMS version 6.2, if INFplus is running and the current playback recording contains extended EPG programme information saved by INFplus, SmartEPG will display the INFplus screen instead of its own extended programme information box.

For this integration to work correctly, the "Activation Sequence" configuration setting in INFplus should be set to "Second press". This will allow SmartEPG to show its first information screen before displaying the INFplus extended information screen if required. No configuration changes are required for SmartEPG.

9. Parental Classification Codes

The default classification codes use the Australian rating system.

Internally, the PVR stores the classification code as a number, these numbers are translated to classification codes as per the table provided.

Classification codes for numbers from 0 to 21 can be customised by modifying `/ProgramFiles/Settings/epg-parental.lng` with a standard text editor on a PC (see section 11.8). Numbers greater than 21 can only show the number.

Number	Code
7	C
9	G
11	PG
12	PG
13	M
15	MA
17	AV
18	R

10. Programme Genre Descriptions

INFplus uses descriptions supplied in `/ProgramFiles/Settings/epg-genre-descriptions.lng`. In Australia, the PVR uses two different overlapping sets of genre descriptions depending upon the source of its EPG information, either free-to-air or ICE TV.

The "content identifier" flag broadcast with the EPG data consists of 2 characters. For example, the content identifier for a news broadcast is "20". Normally, identifiers beginning with zero are classified as "undefined content", however, some broadcasters do use codes starting with a zero. When INFplus detects a code commencing with a zero, it will reverse the two characters and provide that description. For example, both "20" and "02" will display as "News".

INFplus also allows for a new genre description to be added. If a programme shows a description of "Genre AB" (or similar wording), for example, the `epg-genre-descriptions.lng` file can be edited and the new genre description added.

The global standard ETSI genre descriptions are as follows:

Movie/Drama

- Detective/Thriller
- Adventure/Western/War
- Science Fiction/Fantasy/Horror
- Comedy
- Soap/Melodrama/Folkloric
- Romance
- Serious/Classical/Religious/Historical Movie/Drama
- Adult Movie/Drama

News/Current Affairs

- News/Weather Report
- News Magazine
- Documentary
- Discussion/Interview/Debate

Show/Game Show

- Game Show/Quiz/Contest
- Variety Show
- Talk Show

Sports

- Special Events
- Sports Magazines
- Football/Soccer
- Tennis/Squash
- Team Sports (Excluding Football)
- Athletics
- Motor Sport
- Water Sport
- Winter Sports
- Equestrian
- Martial Sports

Children's/Youth Programmes

- Pre-School Children's Programmes
- Entertainment Programmes for 6 to 14
- Entertainment Programmes for 10 to 16
- Informational/Educational/School Programmes
- Cartoons/Puppets

Social/Political Issues/Economics

- Magazines/Reports/Documentary
- Economics/Social Advisory
- Remarkable People

Leisure Hobbies

- Tourism/Travel
- Handicraft
- Motoring
- Fitness and Health
- Cooking
- Advertisement/Shopping
- Gardening

Arts/Culture (Without Music)

- Performing Arts
- Fine Arts
- Religion
- Popular Culture/Traditional Arts
- Literature
- Film/Cinema
- Experimental Film/Video
- Broadcasting/Press
- New Media
- Arts/Culture Magazines
- Fashion

Music/Ballet/Dance

- Rock/Pop
- Serious Music/Classical Music
- Folk/Traditional Music
- Jazz
- Musical/Opera
- Ballet

Education/Science/Factual Topics

- Nature/Animals/Environment
- Technology/Natural Sciences
- Medicine/Physiology/Psychology
- Foreign Countries/Expeditions
- Social/Spiritual Sciences
- Further Education
- Languages

Special Characteristics

- Original Language
- Black and White
- Unpublished
- Live Broadcast

11. Questions / Troubleshooting

11.1 Why won't INFplus Start

INFplus needs the file `FirmwareTMS.dat` to function properly. If this file is not found on start up, INFplus exits immediately after writing an error to its log file.

11.2 Why aren't jumps exact?

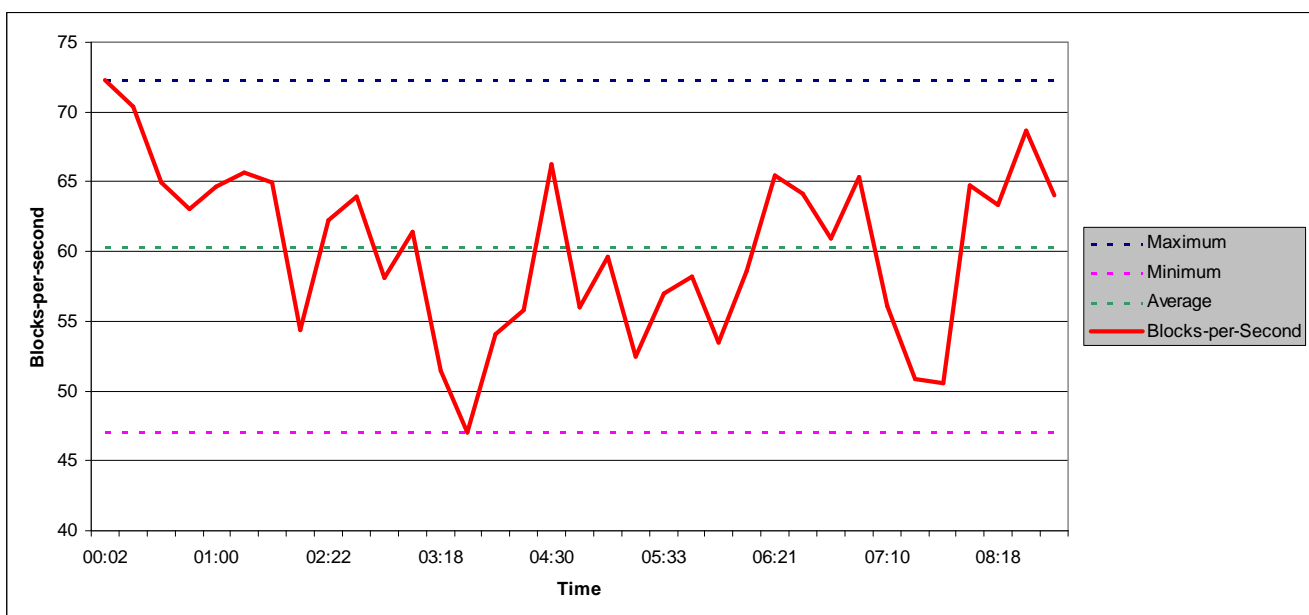
Jumps performed by INFplus can only ever be approximate. This is because the EPG entries that INFplus displays are based on time (hours and minutes) whereas the ability for the PVR to jump to arbitrary locations within a recording is based on blocks of data stored on disk.

Because the number of disk blocks used by a recording for each second is variable, it is not possible to predict exactly which disk block contains which second of a recording without decoding the whole recording file. It is only possible to calculate an average block to time ratio over a selected section of the recording where INFplus has stored this additional information.

So for a 2 hour recording spanning 100,000 blocks, jumping to block 50,000 should be approximately half way through. However, this may not necessarily be the case if the first half of the recording contains more or less than half of the data blocks. In Australia each "block" on disk averages to approximately 9,024 bytes of data and in Europe appears to be 9,028 bytes.

INFplus does keep track of the recorded seconds and disk blocks each time it records an EPG entry and this data is used to refine the accuracy of jumps, but they still can never be 100% accurate.

The graph below shows that for a real life 9 hour recording, the blocks-per-second varied from a high of 72 to a low of 47.



11.3 Why aren't jumps exact (Part Two)?

Another reason that jumps are not exact is because the start times specified by the broadcaster in the EPG information provided are not always aligned with the actual time that the transmission of the event in question begins.

If a programme actually starts being broadcast at 20:34, but the EPG data broadcast states the starting time as 20:30, then INFplus will attempt to jump to 20:30, not 20:34.

11.4 Why does the wrong event often show as the current one?

As above.

11.5 Why doesn't the progress bar always line up with the EPG?

The blocks that form the EPG area are slightly smaller than the actual duration of the programme to allow for a visible gap between the blocks and a small border.

11.6 Does INFplus work with trimmed recordings?

Probably not. No extensive testing has been performed with recordings that have been trimmed, however, it is expected that changes made to the recording file and potentially the INF file will result in INFplus displaying unpredictable results.

11.7 How do I integrate INFplus with other file management TAPs?

As with TMSArchive, INFplus can be integrated with other recording/file management TAPs. These TAPs will have to be modified by their authors to facilitate integration with INFplus. A sample TAP and source code is available, please contact DeltaMikeCharlie on the European Topfield forum for more details.

11.8 How do I change the parental classification codes?

INFplus defaults to using the Australian classification codes as implemented for free-to-air and ICE TV EPG feeds in Australia. Parental classification codes are represented in the EPG data by a number between 0 - 255.

The "ETSI EN 300 468" standard states that this number should represent "the recommended minimum age in years of the end user" where "minimum age = rating + 3 years". From this, the number "4" means that the event is suitable for children at least 7 years old. The Australian standard does not adhere to this convention. For example, number 17 = "AV" for "Adult Violence".

The classification codes for numbers 0 - 21 can be modified as follows:

- Locate the file called `/ProgramFiles/Settings/epg-parental.lng` on your PVR and copy it to a PC.
- Edit the file with a standard text editor locating the parental classification settings for the language code that your PVR is using.
- Enter a maximum of 6 characters for the classification code.
- Save the file.
- Copy the file back to the PVR.

11.9 Can the INFplus information be copied with a recording to an external drive?

Yes. Use the "Prepare for Archive" function. Provided that you copy the INF and NAV files along with the recording, the INFplus information will be retained.

11.10 Why is the "percent complete" different from the PVR's?

The PVR shows progress according to the number of disk blocks that the recording occupies. INFplus uses timing hints that it created whilst a recording was in progress to estimate the time elapsed and displays a percentage based on time, not disk blocks.

11.11 Why does my programme duration sometimes show an asterisk *?

Sometimes the duration of a programme as stated by the broadcaster in their EPG information does not match the duration calculated by comparing the start and finish times for that programme. When this occurs, INFplus calculates the duration and shows an asterisk to highlight the conflict.

11.12 Does INFplus support DVB Radio?

Yes, INFplus stores extended EPG information for both TV and Radio DVB channels.

11.13 Why are my programme descriptions wrong?

In the configuration screen, if your "Programme Descriptions" is set to "Automatic" then it is possible that your PVR is identifying itself as an Australian model when it is not. Try setting to "Programme Descriptions" to "Use standard descriptions".

If the programme description is showing something like "Genre D4", then a broadcaster in your area is using a programme description that INFplus is unaware of. Locate the appropriate entry for your language in the `epg-genre-descriptions.lng` file and add the description that you require.

It is also possible that your `epg-genre-descriptions.lng` file is missing or in the wrong location on the PVR.

11.14 Why can I jump "After" a programme

Rarely, EPG data is not available for a programme in the middle of a recording leading to a gap. Jumping after the programme prior to a gap will effectively jump to programme at the start of the gap.