

Developing SNMP managed production structures

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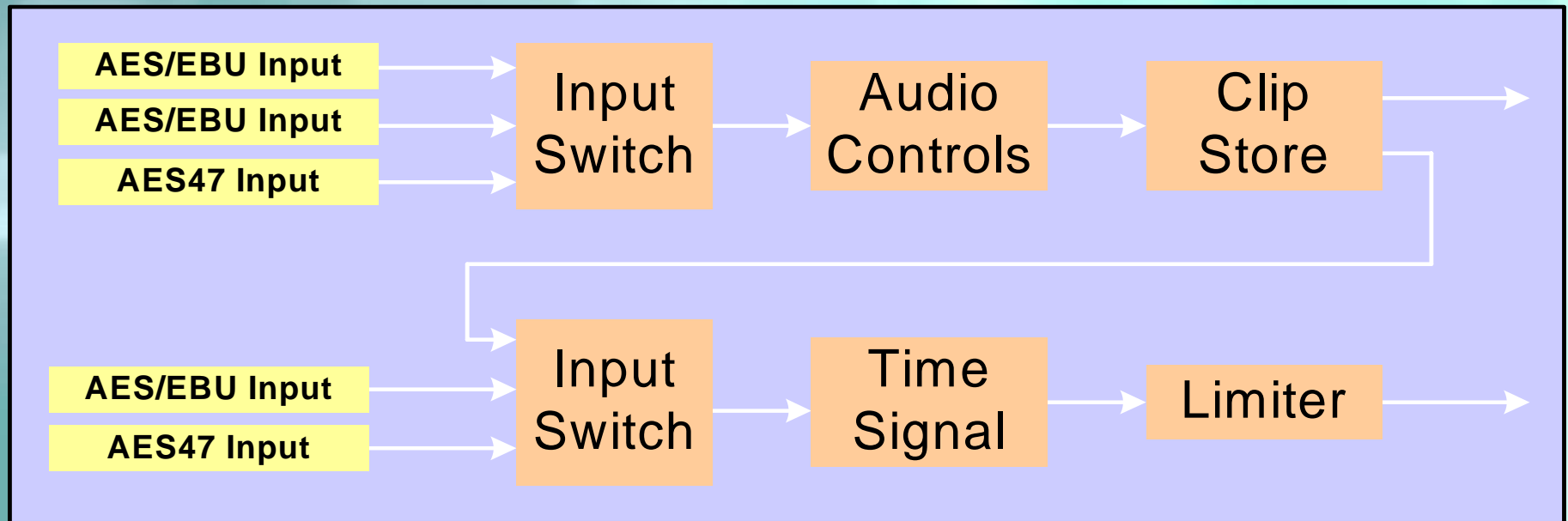
19th June 2006

Why use SNMP?

- Important
- Single protocol
- Flexible
- Network agnostic
- Standardised

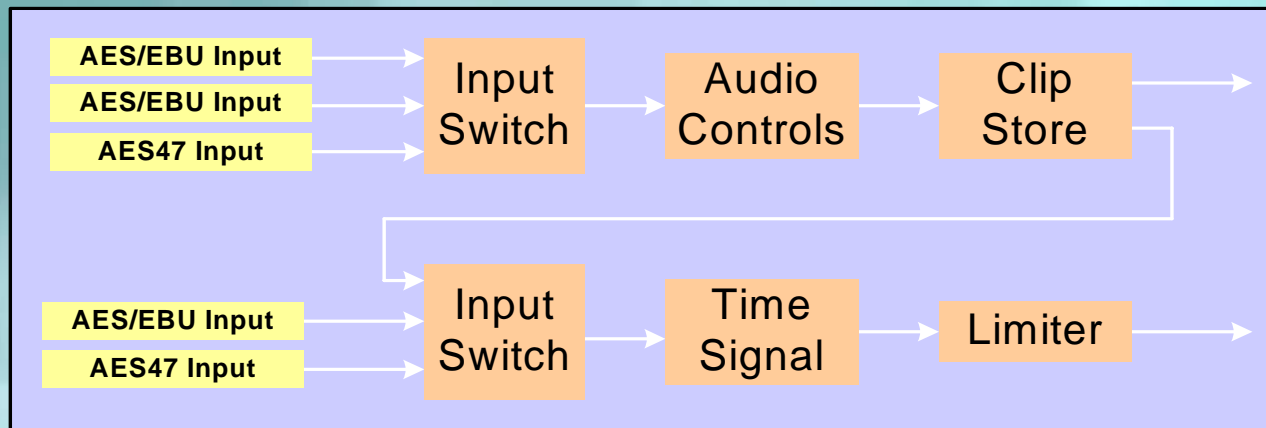
Example project

Radio transmission stream manager





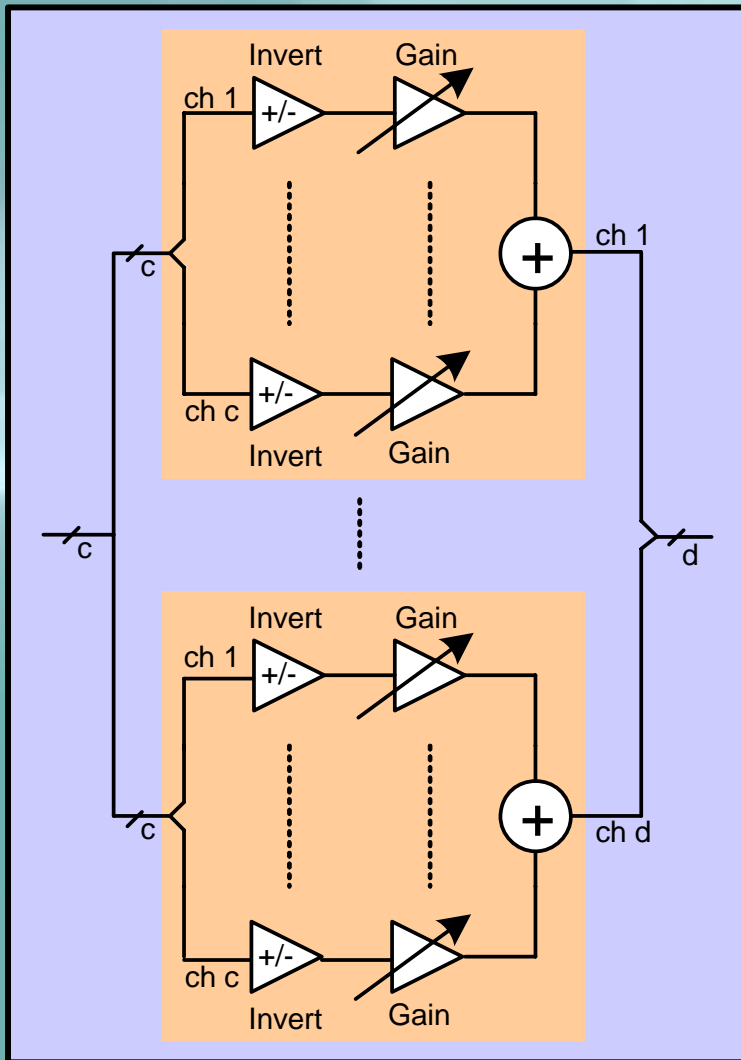
Mapping to the control structure



Number	Identifier
1	AES/EBU input
2	AES/EBU input
3	AES47 input
4	Input Switch
5	Audio Controls
6	Clip Store
...	...

Input Switch		Clip Store	
Input	Block	Input	Block
1	1	1	5
2	2		
3	3		

Generic crosspoint block



`aCrosspointBlockTable (1)`

└ `aCrosspointBlockEntry (1)`

└ **`aCrosspointBlockId (1)`**

└ `aCrosspointConfigured (2)`

`aCrosspointPathTable (2)`

└ `aCrosspointPathEntry (1)`

└ **`aCrosspointPathBlockId (1)`**

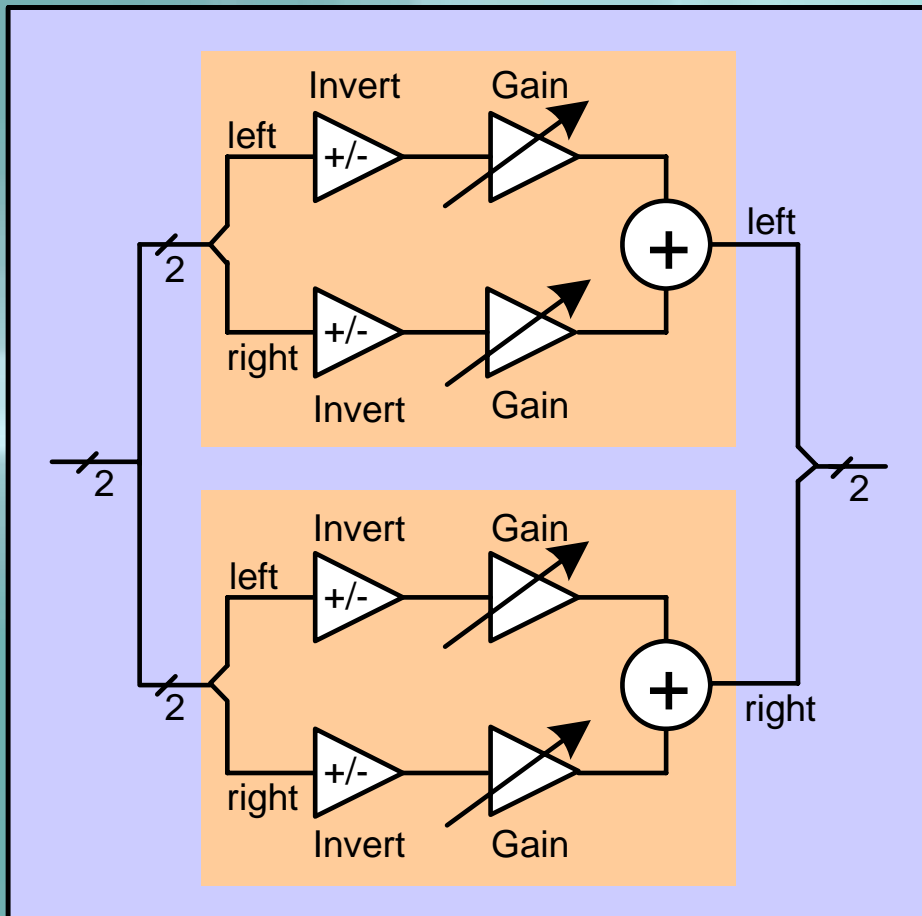
└ **`aCrosspointPathSrc (2)`**

└ **`aCrosspointPathDest (3)`**

└ `aCrosspointPathGain (4)`

└ `aCrosspointPathInverts (5)`

Stereo crosspoint



aCrosspointPathTable (2)

└ aCrosspointPathEntry (1)

└─ aCrosspointPathBlockId (1)

└─ aCrosspointPathSrc (2)

└─ aCrosspointPathDest (3)

└─ aCrosspointPathGain (4)

└─ aCrosspointPathInverts (5)

Src	Dest	stereo	swap	mono
left	left	0	-200	-6
right	left	-200	0	-6
left	right	-200	0	-6
right	right	0	-200	-6

Some other blocks

Alarm block

Loss Threshold
Loss Warning Time
Loss Failure Time
Loss Counter
Loss Reset Counter
Low Level Threshold
Low Level Warning Time
Low Level Failure Time
Low Level Counter
Low Level Reset Counter
Phase Warning Time
Phase Failure Time
Phase Counter
Phase Reset Counter

Limiter Block

Limit Threshold
Limit Attack Time
Limit Gain Makeup
Limit Recovery Time
Limit Recovery Mode

Mixer block

Fade Duration
Fade Now
Input Level
Input Delay

Time signal block

Insert
Level
Delay

If you have ideas for ‘standard’ blocks please join the EBU N/CNCS or IEC 62379 working groups!

Some other blocks

Alarms block

aAlarmsTable (1)

└ aAlarmsEntry (1)

- └ **aAlarmsBlockId (1)**
- └ *aAlarmsLossThreshold (2)*
- └ *aAlarmsLossWarningTime (3)*
- └ *aAlarmsLossFailureTime (4)*
- └ *aAlarmsLossCounter (5)*
- └ *aAlarmsLossResetCounter (6)*
- └ *aAlarmsLowLevelThreshold (7)*
- └ *aAlarmsLowLevelWarningTime (8)*
- └ *aAlarmsLowLevelFailureTime (9)*
- └ *aAlarmsLowLevelCounter (10)*
- └ *aAlarmsLowLevelResetCounter (11)*
- └ *aAlarmsPhaseWarningTime (12)*
- └ *aAlarmsPhaseFailureTime (13)*
- └ *aAlarmsPhaseCounter (14)*
- └ *aAlarmsPhaseResetCounter (15)*

Limiter block

aLimiterTable (1)

└ aLimiterEntry (1)

- └ **aLimiterBlockId (1)**
- └ *aLimiterThreshold (2)*
- └ *aLimiterAttackTime (3)*
- └ *aLimiterGainMakeup (4)*
- └ *aLimiterRecoveryTime (5)*
- └ *aLimiterRecoveryMode (6)*

Time signal block

aTimeSignalTable (1)

└ aTimeSignalEntry (1)

- └ **aTimeSignalBlockId (1)**
- └ *aTimeSignalInsert (2)*
- └ *aTimeSignalLevel (3)*
- └ *aTimeSignalDelay (4)*

Mixer block

aMixerTable (1)

└ aMixerEntry (1)

- └ **aMixerBlockId (1)**
- └ *aMixerFadeDuration (2)*
- └ *aMixerFadeNow (3)*

aMixerInputTable (2)

└ aMixerInputEntry (1)

- └ **aMixerInputBlockId (1)**
- └ *aMixerInputNumber (2)*
- └ *aMixerInputCurrentLevel (3)*
- └ *aMixerInputNewLevel (4)*
- └ *aMixerInputCurrentDelay (5)*
- └ *aMixerInputNewDelay (6)*

If you have ideas for 'standard' blocks please join the EBU N/CNCS or IEC 62379 working groups!











Status page broadcasts

Status Page Receiver				
Current state: connected!		Received pages: 556		Selector byte: 60
Page Type 1	Power supplies AC1:no, AC2:ok, DC:no	Ext WCIk status 0	153.6k status 0	Time call present 0
Time call data status 0	Reference Rate 0	Unit uptime 3027	Resource Status 0	A - DPort 1 - Input 1
A - DPort 2 - Input 5	B - DPort 1 - Invert LL 1; RL 0; LR 1; RR 0	B - DPort 1 - LL Gain 0 dB	B - DPort 1 - RL Gain -200 dB	B - DPort 1 - LR Gain -200 dB
B - DPort 1 - RR Gain 0 dB	B - DPort 2 - Invert LL 1; RL 0; LR 1; RR 0	B - DPort 2 - LL Gain -6 dB	B - DPort 2 - RL Gain -6 dB	B - DPort 2 - LR Gain -6 dB
B - DPort 2 - RR Gain -6 dB	B - DPort 3 - Input1 Rate 48000	B - DPort 3 - Input2 Rate 48000	B - DPort 3 - Output Rate 48000	B - DPort 3 - Input1 Sync 0
B - DPort 3 - Input2 Sync 0	C - DPort 3 - Input 1	D - ALD Status Ok	D - ALD Warning Count 0	D - ALD Failure Count 0
E - Clip Playback Status Stopped	E - Clip Playlist Status Playlist error	E - Clip Current File □□□□□□□□	E - Clip Time Left 0	E - Main Fader Level 0 dB
E - Clip Fader Level -200 dB	F - DPort 4 - Input 2	F - DPort 4 - Int Input False	F - DPort 5 - Input 1	F - DPort 5 - Int Input True
G - DPort 4 - Invert LL 1; RL 0; LR 1; RR 0	G - DPort 4 - LL Gain 0 dB	G - DPort 4 - RL Gain -200 dB	G - DPort 4 - LR Gain -200 dB	G - DPort 4 - RR Gain 0 dB
G - DPort 5 - Invert LL 0; RL 0; LR 0; RR 0	G - DPort 5 - LL Gain -6 dB	G - DPort 5 - RL Gain -6 dB	G - DPort 5 - LR Gain -6 dB	G - DPort 5 - RR Gain -6 dB
G - DPort 6 - Input1 Sync 0	G - DPort 6 - Input2 Sync 0	H - DPort 6 - Input 1	J - PIPs Status 2	J - Next PIPs 0 0 0 0 0 0
K - Limiter Threshold -5 dB	L - Headroom 0 dB	M - SRC Status False	M - SRC From 48000	M - SRC To 48000
N - Delay 0	ALD Threshold -8000	ALD Warning 30	ALD Failure 60	

Technology Group

<div><div>RADIO 1</div><div>RADIO 2</div><div>RADIO 3</div><div>RADIO 4</div><div>FIVE LIVE</div><div>6 music</div><div>BBC 7</div><div>1Xtra</div><div>FIVE LIVE SPORTS EXTRA</div><div>ASIAN NETWORK</div></div>										Uploads	Summary												
R1 FM P	433889		Test						Optimod		-5	R1 FM Q	433889		Test						Optimod		-5
R1 Scot P	433889		Test						Optimod		-5	R1 Scot Q	433889		Test						Optimod		-5
R1 DVB P	433861		Main						Internal		-8	R1 DVB Q	433861		Main						Internal		-8
R1 DAB P	433889		Test						Optimod		-5	R1 DAB Q	433861		Main						Internal		-8
R2 FM P	27575...		Other						Optimod		-10	R2 FM Q	433889		Test						Optimod		-5
R2 DVB P	27575...		Other						Optimod		-10	R2 DVB Q	433861		Main						Internal		-8
R2 DAB P	433861		Main						Internal		-8	R2 DAB Q	27575...		Other						Optimod		-10
R3 FM P	27575...		Other						Optimod		-10	R3 FM Q	433861		Main						Internal		-8
R3 DVB P	433889		Test						Optimod		-5	R3 DVB Q	433861		Main						Internal		-8
R3 DAB P	433889		Test						Optimod		-5	R3 DAB Q	433861		Main						Internal		-8
4FM P	433889		Test						Optimod		-5	4FM Q	433889		Test						Optimod		-5
4FM DVB P	27575...		Other						Optimod		-10	4FM DVB Q	433889		Test						Optimod		-5
4FM DAB P	27575...		Other						Optimod		-10	4FM DAB Q	27575...		Other						Optimod		-10
4LF P	433889		Test						Optimod		-5	4LF Q	27575...		Other						Optimod		-10
4LF DVB P	433889		Test						Optimod		-5	4LF DVB Q	433861		Main						Internal		-8
4LF DAB P	433861		Main						Internal		-8	4LF DAB Q	433889		Test						Optimod		-5
R5 MF P	433889		Test						Optimod		-5	R5 MF Q	433861		Main						Internal		-8
R5 DVB P	433861		Main						Internal		-8	R5 DVB Q	433889		Test						Optimod		-5
R5 DAB P	433889		Test						Optimod		-5	R5 DAB Q	27575...		Other						Optimod		-10
R5 BP P	27575...		Other						Optimod		-10	R5 BP Q	433889		Test						Optimod		-5
6M DVB P	433861		Main						Internal		-8	6M DVB Q	27575...		Other						Optimod		-10
6M DAB P	433861		Main						Internal		-8	6M DAB Q	433861		Main						Internal		-8
7 DVB P	27575...		Other						Optimod		-10	7 DVB Q	433861		Main						Internal		-8
7 DAB P	433889		Test						Optimod		-5	7 DAB Q	433889		Test						Optimod		-5
1X DVB P	27575...		Other						Optimod		-10	1X DVB Q	433861		Main						Internal		-8
1X DAB P	27575...		Other						Optimod		-10	1X DAB Q	27575...		Other						Optimod		-10
SX DVB P	433861		Main						Internal		-8	SX DVB Q	433861		Main						Internal		-8
SX DAB P	433889		Test						Optimod		-5	SX DAB Q	27575...		Other						Optimod		-10
AN DVB P	27575...		Other						Optimod		-10	AN DVB Q	433889		Test						Optimod		-5
AN DAB P	433889		Test						Optimod		-5	AN DAB Q	433861		Main						Internal		-8
AN MF P	433861		Main						Internal		-8	AN MF Q	27575...		Other						Optimod		-10

☐ Verbose



UploadsSummary

4FM P4FM DVB P4FM DAB P4LF P4LF DVB P4LF DAB P4FM Q4FM DVB Q4FM DAB Q4LF Q4LF DVB Q4LF DAB Q

Name: dCSLocation: KWVersion: ATM [01.33] CB [01.33]
Unit address: 47.000580FFE1000000F21A3756.303230303633.00

Get infoDisconnect

Control978 Status578 StatusUploadTest

Switching

Switch inputs on 0301

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Switch inputs on 0302

☒ Management: exisitng ▼ Delay: 10 Number of requests: 2

Switch inputs on 0303

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Switch inputs on 0304

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Switch inputs on 0305

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Switch inputs on 0306

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Crosspoints

Cycle through crosspoint presets on 0301

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Cycle through crosspoint presets on 0302

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Cycle through crosspoint presets on 0304

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Cycle through crosspoint presets on 0305

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

Pips and clips

Pips 24

☒ Management: exisitng ▼ Delay: 10 Number of requests: 2

Start and stop clip store

☐ Management: exisitng ▼ Delay: 20 Number of requests: 0

Cycle through different limiter settings

☐ Management: exisitng ▼ Delay: 10 Number of requests: 0

978 Status Connector

☐ Management: exisitng ▼ Delay: 20 Number of requests: 0

☐ Verbose

Network 1

Network 2

Network 3

Network 4

Network 5

Network 6

Network 7

Network 8

Network 9

Network 10

Network 11

Network 12

Network 2 FM

P

Q

Network 2 DVB

P

Q

Network 2 DAB

P

Q

P

Q

Network 2 MW

P

Q

P

Q

P

Q

P

Q

Network 2 FM - P

TCP Comms

ATM Comms

PSU 1

PSU 2

Ext DC PSU

Ext Wordclock

153.6 kHz i/p

Shelf Resource

Active Shelf

OK

OK

OK

OK

Fail

Fail

Fail

OK

Active Shelf

PSU 1

PSU 2

Ext DC PSU

CN 12

CN 13

CN 14

Ext Wordclock

Digital i/p

Sample Rate

Active o/p

EBC i/p

Passive Shelf

Fail

Fail

Fail

Fail

Fail

Fail

Fail

Unlocked

Free-Run

Normal

Analogue

Passive Shelf

Destination Port 1

11 Input **Main**
21 Routing **Stereo**
31 Invert L **Normal**
41 Invert R **Normal**

Destination Port 2

12 Input **Test**
22 Routing **Stereo**
32 Invert L **Normal**
42 Invert R **Normal**

Destination Port 3

13 Input **Dest Port 1**
51 xFade T **500**
61 i/p 1 rate **48000**
62 i/p 2 rate **48000**
63 o/p rate **48000**
71 i/p 1 status **In Sync**
72 i/p 2 status **In Sync**
19 Signal o/p **Main**

DCS Port 1

81 Aud status **OK**
82 Warn count **0**
83 Fail count **0**
84 cur warn thld **30**
85 cur fail thld **60**
86 cur com thld **-8000**
87 Inhibit Clip **Indeterminate**
88 In warn thld **150**
89 In fail thld **300**
90 In com thld **-4100**
91 Clip status **Stopped**
92 Clip file
93 Playlist **OK**
94 Rem Time **0**
98 En warn thld **31**
99 En fail thld **61**
100 En com thld **-4100**

Source Port 1

52 Prog fade T **0**
53 EClip fade T **0**
101 Prog fade Lvl **0**
102 Clip fade Lvl **-20000**
103 xFade status **Prog**
105 xFade action **0**
106 Prog>Clip T **0**
107 Clip>Prog T **0**

Destination Port 4

14 Input **Internal**
17 Internal i/p? **Yes**
23 Routing **Stereo**
33 Invert L **Normal**
43 Invert R **Normal**

Destination Port 5

15 Input **Internal**
18 Internal i/p? **Yes**
24 Routing **Stereo**
34 Invert L **Normal**
44 Invert R **Normal**

Destination Port 6

16 Input **Dest Port 4**
51 xFade T **500**
71 i/p 1 status **In Sync**
72 i/p 2 status **In Sync**
20 Signal o/p **Internal**

Destination Port 7

111 Pips status **Never**
112 Pips next
113 Due time **0;0;0**
114 Due date **0;0;0**
115 Ins time
116 Ins date
121 Threshold **-1000**
122 Headrm Lvl **300**

Destination Port 8

64 i/p 1 rate **48000**
65 i/p 2 rate **48000**
66 SRC status **0**

Source Port 2

123 Delay **0**

Source Port 1

52 Prog fade T **0**
53 EClip fade T **0**
101 Prog fade Lvl **0**
102 Clip fade Lvl **-20000**
103 xFade status **Prog**
105 xFade action **0**
106 Prog>Clip T **0**
107 Clip>Prog T **0**

105 Crossfade Action

Prog to EClip 1	Prog to EClip 2
EClip to Prog Now	EClip to Prog Eot

Adjust

Colledia schematic

Colledia Network

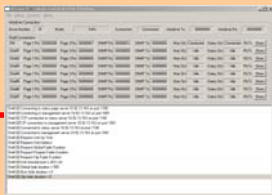
Colledia Workstation

Colledia Touchscreen Panel



Colledia Workstation

Colledia dCS 978 driver



Ethernet

TCP/IP
Command and
Status links

Linux Server

ATM card

Low-Level ATM
drivers
and
TCP/IP to ATM
Interface

Ethernet

Colledia dCS 978 Shelf
Starter



ATM Command
and Status Links

ATM Switch

dCS 978 TX Stream Manager

Shelf 0

Shelf 1

Shelf 2

Shelf 3

Shelf 4

Shelf 5

Shelf 6

Shelf 7

dCS.exe 31 Colledia Control dCS 978/578 Driver

File Debug Counters About

Infodriver Connection

Driver Number: 31

Mode: TxRx

Connection: Connected

Infodriver Tx: 00000089

Infodriver Rx: 00000000

Shelf Connections

FM	Page 1 Rx: 00000288	Page 3 Rx: 00000067	SNMP Rx: 00000012	SNMP Tx: 00000000	Man Skt: Connected	Status Skt: Connected	RUTs	Show
Shelf1	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf2	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf3	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf4	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf5	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf6	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show
Shelf7	Page 1 Rx: 00000000	Page 3 Rx: 00000000	SNMP Rx: 00000000	SNMP Tx: 00000000	Man Skt: Idle	Status Skt: Idle	RUTs	Show

Shelf [0] Connecting to status page server 10.92.13.163 on port 1100

Shelf [0] Connecting to management server 10.92.13.163 on port 1001

Shelf [0] TCP connection to status server 10.92.13.163 on port 1100

Shelf [0]TCP connection to management server 10.92.13.163 on port 1001

Shelf [0] Connected to status server 10.92.13.163 on port 1100

Shelf [0] Connected to management server 10.92.13.163 on port 1001

Shelf [0] Request Unit Up Time

Shelf [0] Request Unit Address

Shelf [0] Request Global Fader Duration

Shelf [0] Request Program Fader Duration

Shelf [0] Request Clip Fader Duration

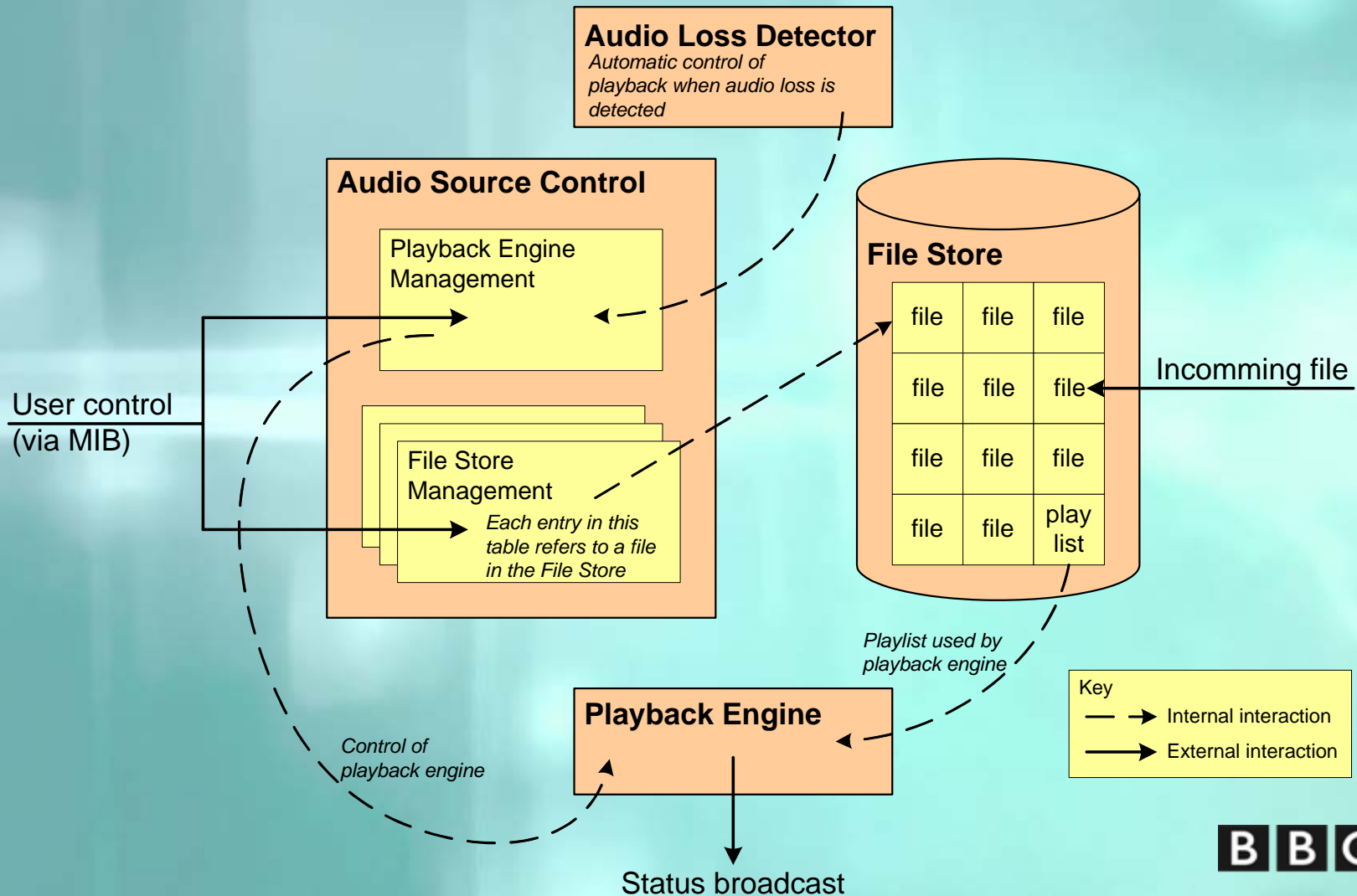
Shelf [0] Unit manufacturer is dCS Ltd

Shelf [0] Global fade duration = 500

Shelf [0] Now fade duration = 0

Shelf [0] Clip fade duration = 0

Audio clip store & uploads



[Uploads](#)[Summary](#)

Unit selection

- | | | | |
|---|---|---|---|
| <input checked="" type="checkbox"/> R1 FM P | <input checked="" type="checkbox"/> R1 Scot P | <input checked="" type="checkbox"/> R1 DVB P | <input checked="" type="checkbox"/> R1 DAB P |
| <input checked="" type="checkbox"/> R2 FM P | <input checked="" type="checkbox"/> R2 DVB P | <input checked="" type="checkbox"/> R2 DAB P | <input checked="" type="checkbox"/> R3 FM P |
| <input checked="" type="checkbox"/> R3 DVB P | <input checked="" type="checkbox"/> R3 DAB P | <input checked="" type="checkbox"/> 4FM P | <input checked="" type="checkbox"/> 4FM DVB P |
| <input checked="" type="checkbox"/> 4FM DAB P | <input checked="" type="checkbox"/> 4LF P | <input checked="" type="checkbox"/> 4LF DVB P | <input checked="" type="checkbox"/> 4LF DAB P |
| <input checked="" type="checkbox"/> R5 MF P | <input checked="" type="checkbox"/> R5 DVB P | <input checked="" type="checkbox"/> R5 DAB P | <input checked="" type="checkbox"/> R5 BP P |
| <input checked="" type="checkbox"/> 6M DVB P | <input checked="" type="checkbox"/> 6M DAB P | <input checked="" type="checkbox"/> 7 DVB P | <input checked="" type="checkbox"/> 7 DAB P |
| <input checked="" type="checkbox"/> 1X DVB P | <input checked="" type="checkbox"/> 1X DAB P | <input checked="" type="checkbox"/> SX DVB P | <input checked="" type="checkbox"/> SX DAB P |
| <input checked="" type="checkbox"/> AN DVB P | <input checked="" type="checkbox"/> AN DAB P | <input checked="" type="checkbox"/> AN MF P | |

- | | | | |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| <input type="checkbox"/> R1 FM Q | <input type="checkbox"/> R1 Scot Q | <input type="checkbox"/> R1 DVB Q | <input type="checkbox"/> R1 DAB Q |
| <input type="checkbox"/> R2 FM Q | <input type="checkbox"/> R2 DVB Q | <input type="checkbox"/> R2 DAB Q | <input type="checkbox"/> R3 FM Q |
| <input type="checkbox"/> R3 DVB Q | <input type="checkbox"/> R3 DAB Q | <input type="checkbox"/> 4FM Q | <input type="checkbox"/> 4FM DVB Q |
| <input type="checkbox"/> 4FM DAB Q | <input type="checkbox"/> 4LF Q | <input type="checkbox"/> 4LF DVB Q | <input type="checkbox"/> 4LF DAB Q |
| <input type="checkbox"/> R5 MF Q | <input type="checkbox"/> R5 DVB Q | <input type="checkbox"/> R5 DAB Q | <input type="checkbox"/> R5 BP Q |
| <input type="checkbox"/> 6M DVB Q | <input type="checkbox"/> 6M DAB Q | <input type="checkbox"/> 7 DVB Q | <input type="checkbox"/> 7 DAB Q |
| <input type="checkbox"/> 1X DVB Q | <input type="checkbox"/> 1X DAB Q | <input type="checkbox"/> SX DVB Q | <input type="checkbox"/> SX DAB Q |
| <input type="checkbox"/> AN DVB Q | <input type="checkbox"/> AN DAB Q | <input type="checkbox"/> AN MF Q | |

Audio uploads

Name Rights ☐ from playlist☐ repeat

Software uploads

Playlist uploads

Name

Directory enquiries

Name

Progress & information

6M DVB P	file not found
6M DAB P	file not found
7 DVB P	ok
7 DAB P	ok
1X DVB P	ok
1X DAB P	ok
SX DVB P	file not found
SX DAB P	ok
AN DVB P	ok
AN DAB P	ok
AN MF P	file not found

☐ Verbose



Conclusions

- Standard generic blocks
- Flexibility for specialised blocks
- Status pages reduce load
- Importance of testing
- Standardised allowing interoperability