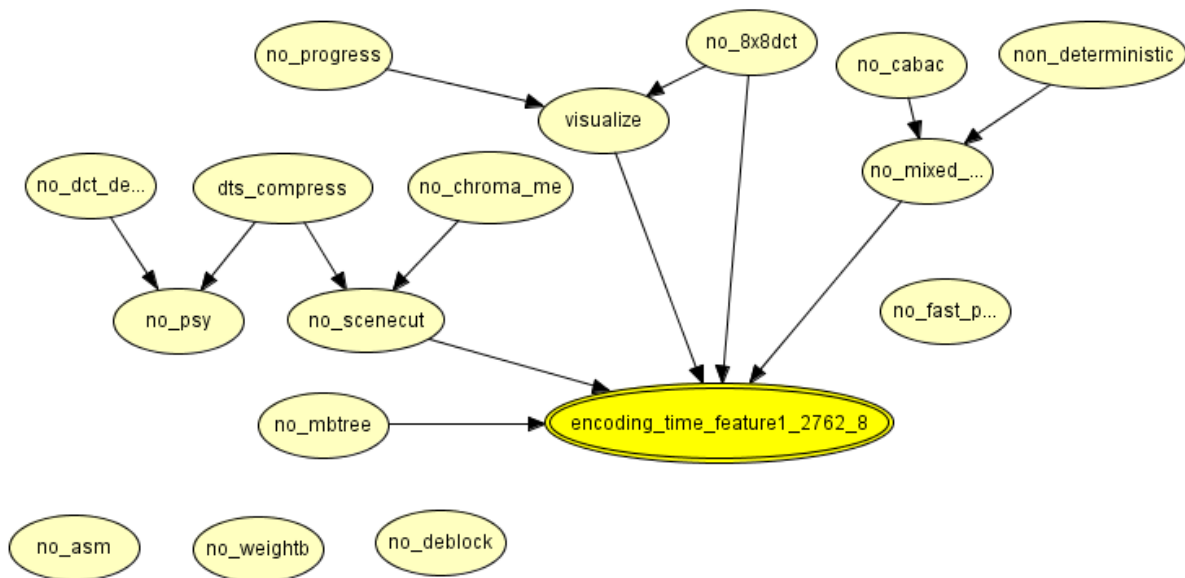
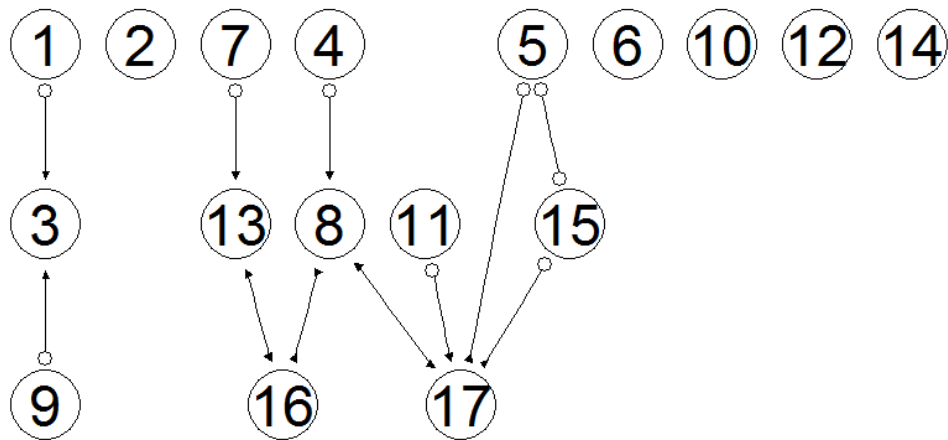
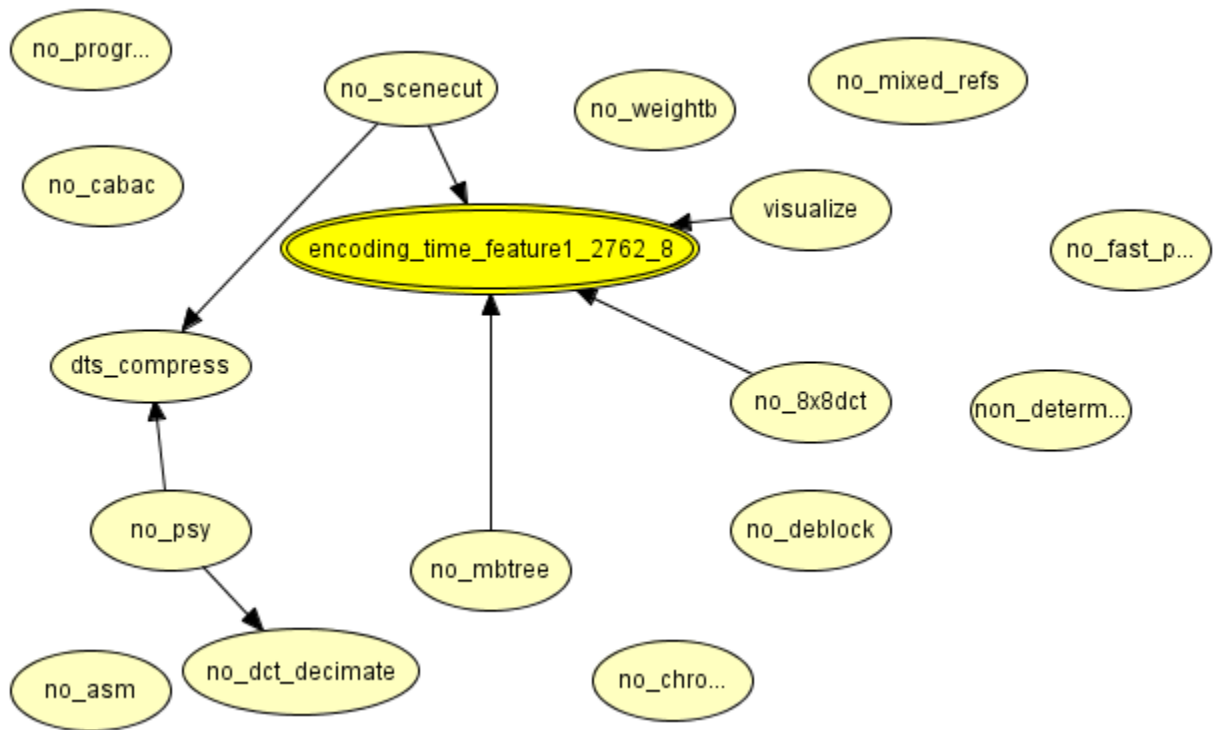
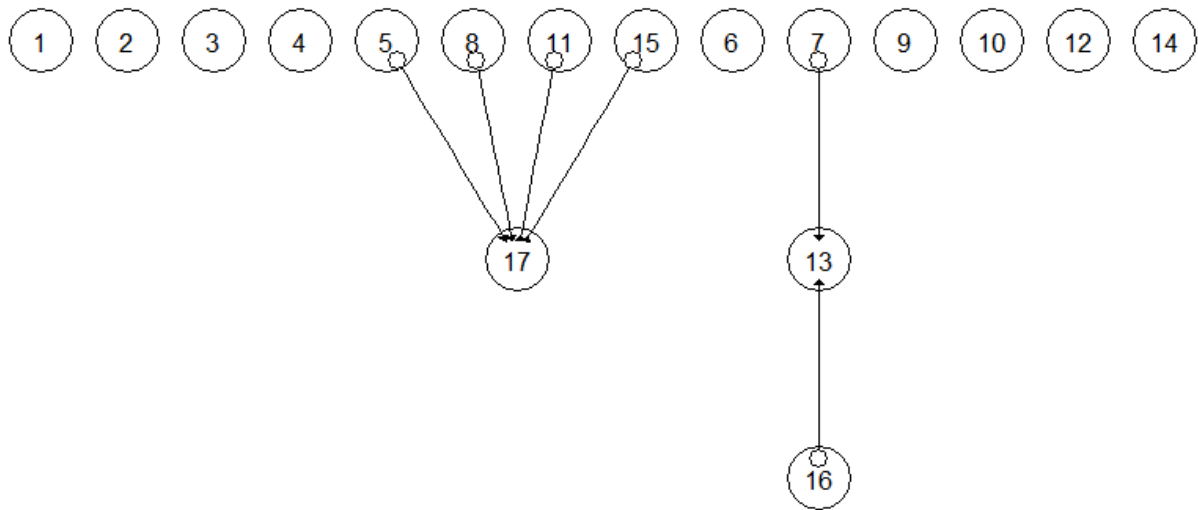


X264-1

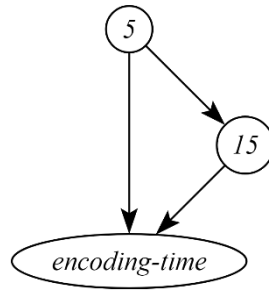
[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature1_2762_8"	



p-value .01



Identifiability



1

$$P_{15}^*(\text{encoding} - \text{time}) = \sum_5 P^*(\text{encoding} - \text{time} | 15, 5) P^*(5)$$



Load

Estimation

Derivation

Remove

Simplified Obtained by Adjustment with admissible set {5}

Derivation in Do-Calculus

Expand All Collapse All

$\neg P_{15}^*(\text{encoding} - \text{time})$ (1)

$\neg \sum_5 P_{15}^*(\text{encoding} - \text{time}, 5)$

Summing over: 5 (2)

$\neg \sum_5 P_{5,15}^*(\text{encoding} - \text{time}) P_{15, \text{encoding} - \text{time}}^*(5)$

C-Component Form (3)

$\neg P_{5,15}^*(\text{encoding} - \text{time})$ (4)

$P^*(\text{encoding} - \text{time} | 15, 5)$

Rule 2: $(15, 5 \perp \text{encoding} - \text{time})_{G_{135}}$ (5)

$\exists P_{15, \text{encoding} - \text{time}}^*(5)$ (6)

$P^*(5)$

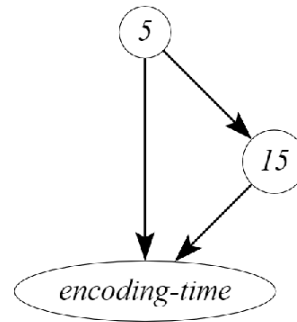
Rule 3: $(15, \text{encoding} - \text{time} \perp 5)_{G_{15, \text{encoding} - \text{time}}}$ (7)

Finally we get: $\sum_5 P^*(\text{encoding} - \text{time} | 15, 5) P^*(5)$

Subgraph:

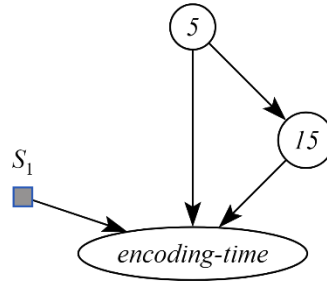
G

☐ Show non active nodes/edges



☐ ☐ ☐

Transportability



1
$$P_{15}^*(encoding-time) = \sum_5 P^*(encoding-time|15,5) P^*(5)$$



Load

Derivation

Remove

Simplified Obtained by Adjustment with admissible set $\{5\}$

Derivation in **Do-Calculus**

Expand All Collapse All

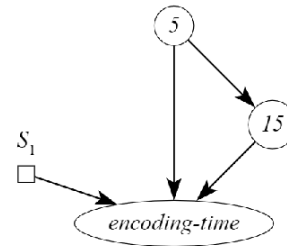
$$\begin{aligned}
 & \dots \vdash P_{15}^*(encoding-time) & (1) \\
 & \vdash \sum_5 P_{15}^*(encoding-time, 5) & \text{Summing over: } 5 \quad (2) \\
 & \vdash \sum_5 P_{5,15}^*(encoding-time) P_{15,encoding-time}^*(5) & \text{C-Component Form} \quad (3) \\
 & \vdash P_{5,15}^*(encoding-time) & (4) \\
 & \vdash P^*(encoding-time|15,5) & \text{Rule 2: } (15, 5 \perp encoding-time)_{G_{135}} \quad (5) \\
 & \vdash P_{15,encoding-time}^*(5) & (6) \\
 & \vdash P^*(5) & \text{Rule 3: } (15, encoding-time \perp 5)_{G_{13,encoding-time}} \quad (7) \\
 \end{aligned}$$

Finally we get: $\sum_5 P^*(encoding-time|15,5) P^*(5)$

Subgraph:

G

☐ Show non active nodes/edges



Recoverability

1
$$P_5(encoding-time) \text{ is not identifiable from } P(15, encoding-time, 5).$$



Load

Remove

2
$$P_{15}(encoding-time) \text{ is not identifiable from } P(15, encoding-time, 5).$$



Load

Remove

3
$$P_{15}(encoding-time) \text{ is not identifiable from } P(15, encoding-time, 5).$$



Load

Remove

4
$$P_5(encoding-time) \text{ is not identifiable from } P(15, encoding-time, 5).$$

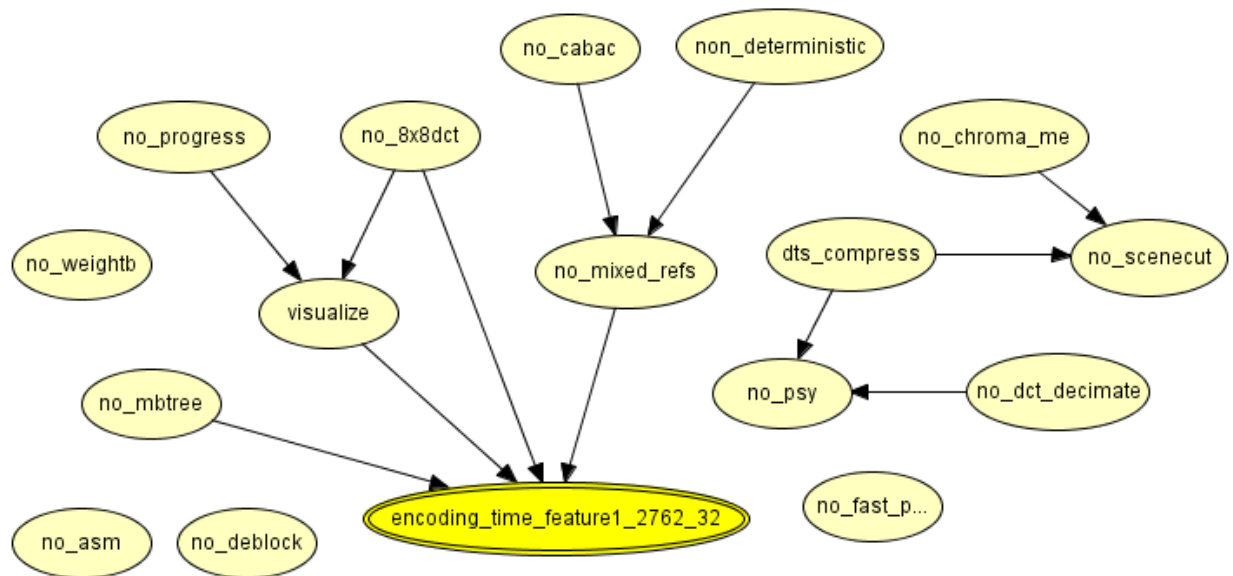
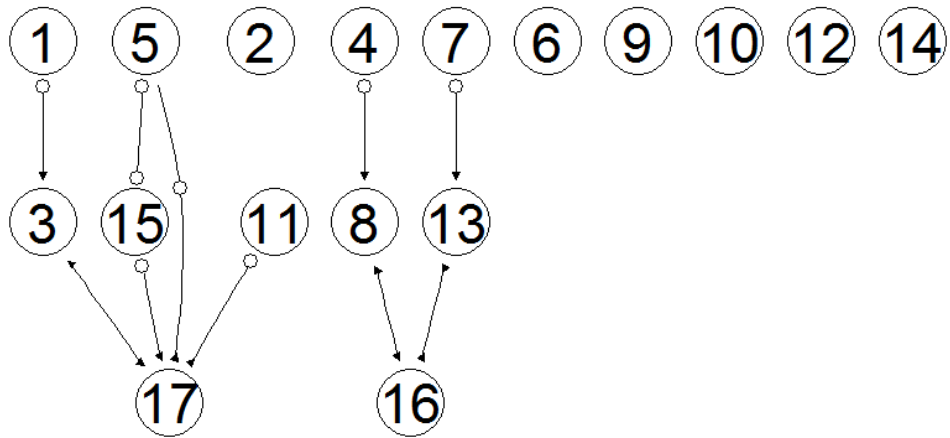


Load

Remove

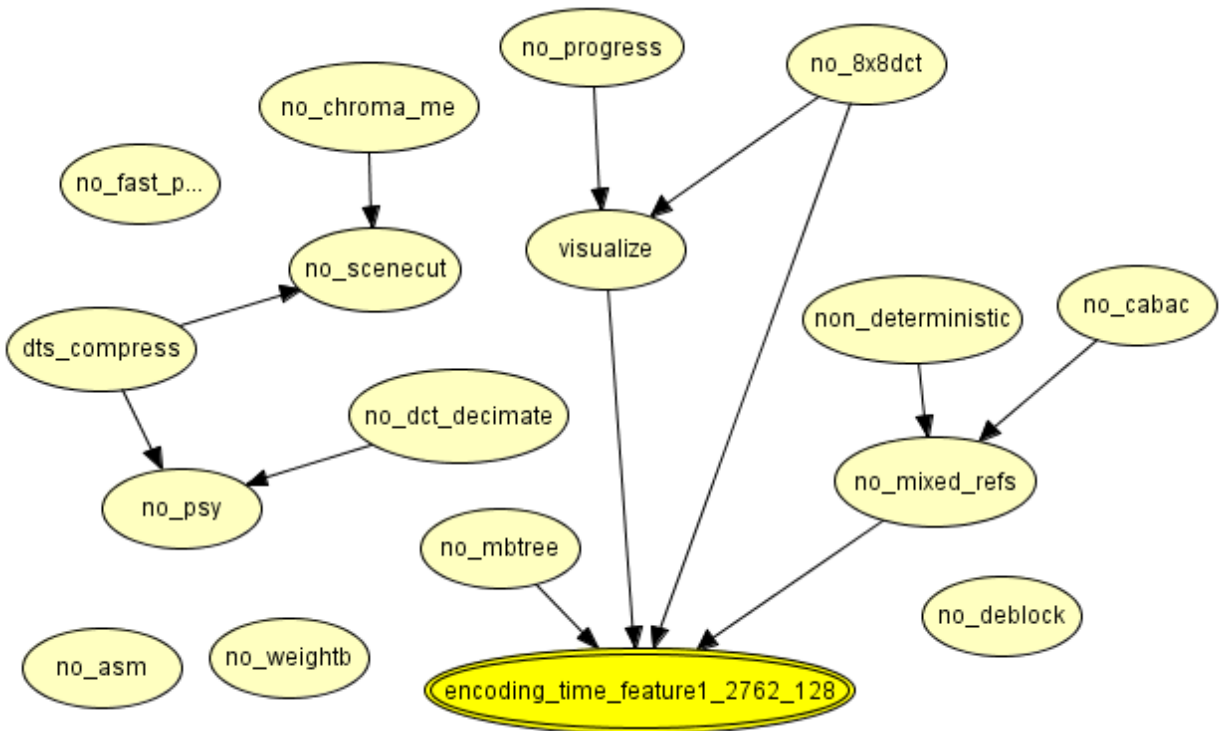
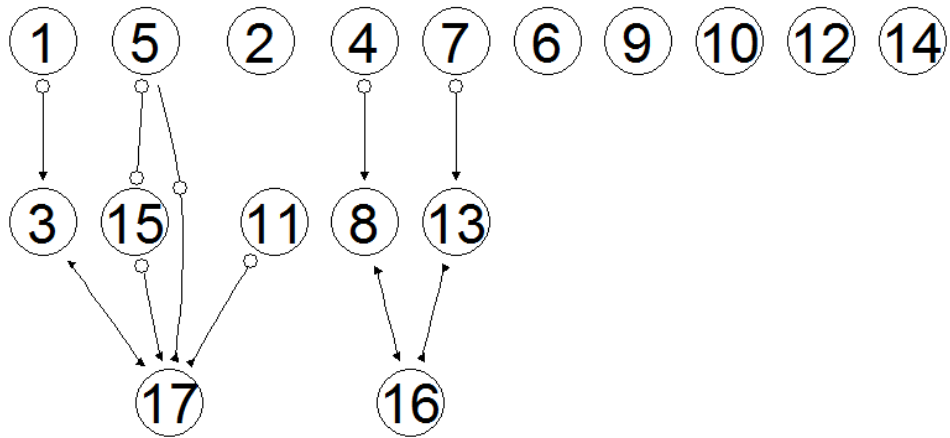
X264-2

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature1_2762_32"	



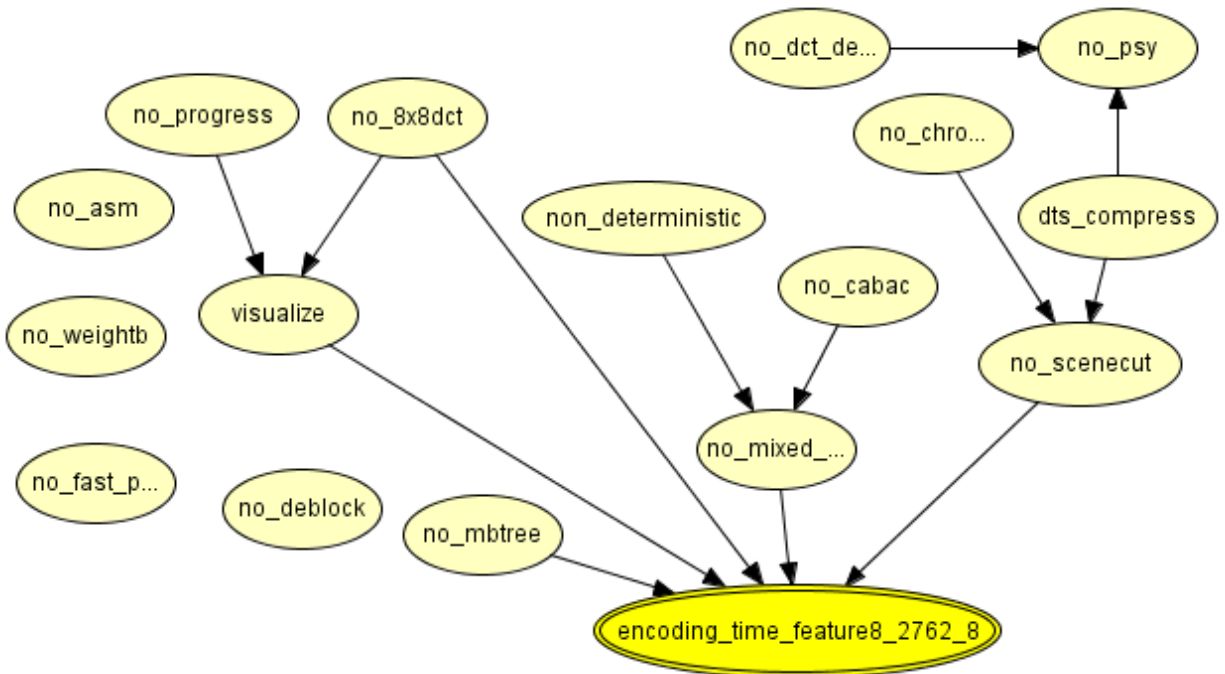
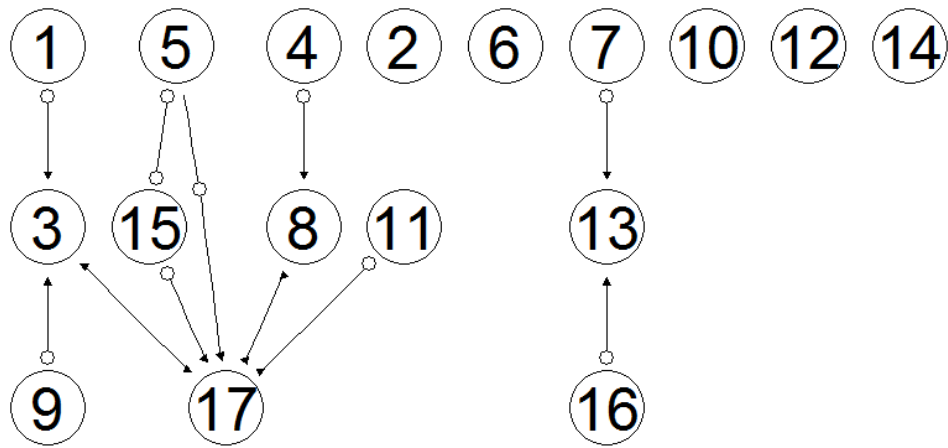
X264-3

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature1_2762_128"	



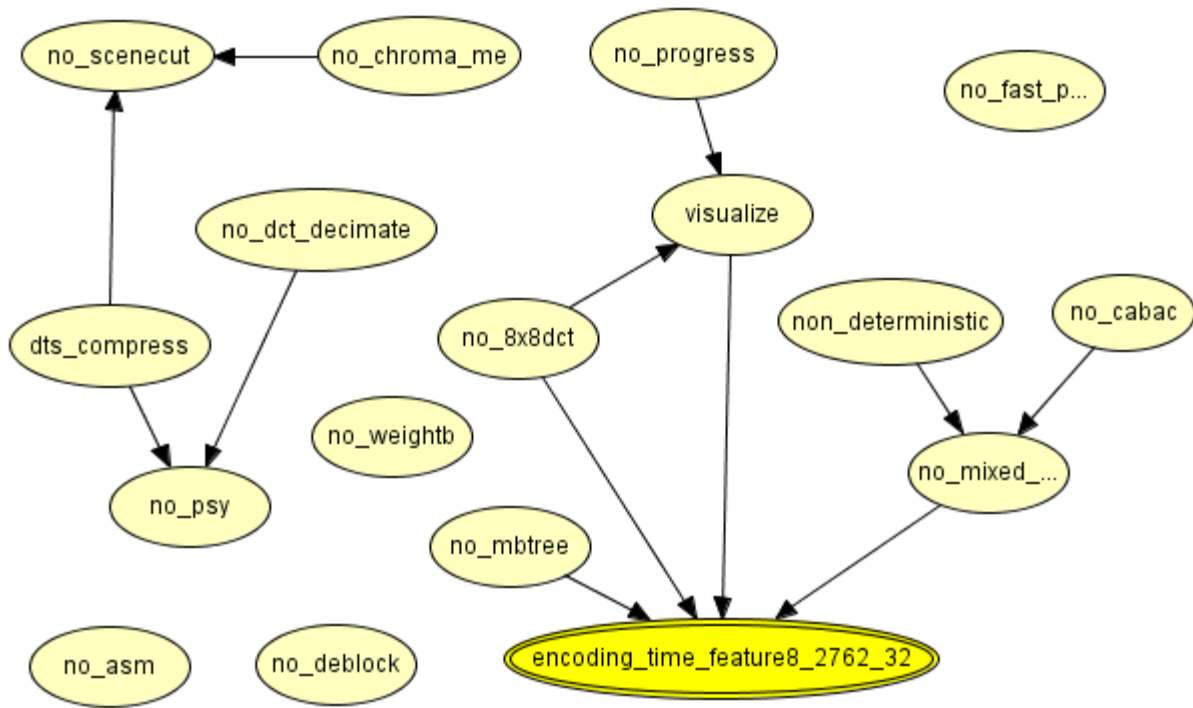
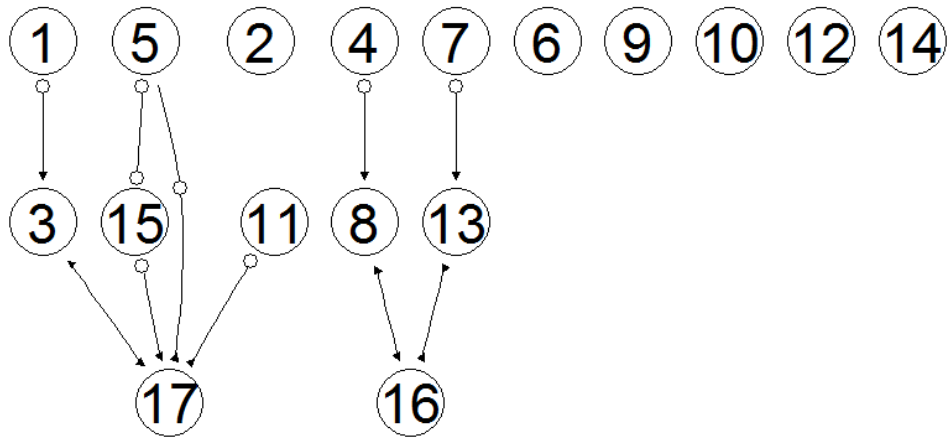
X264-4

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature8_2762_8"	



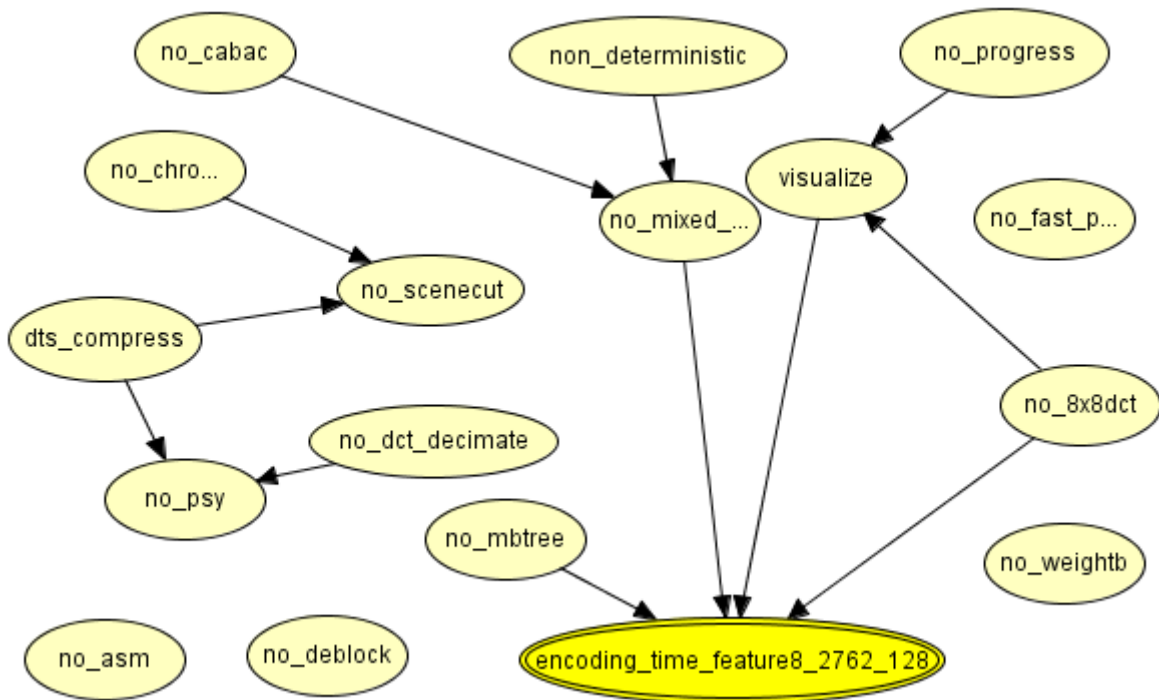
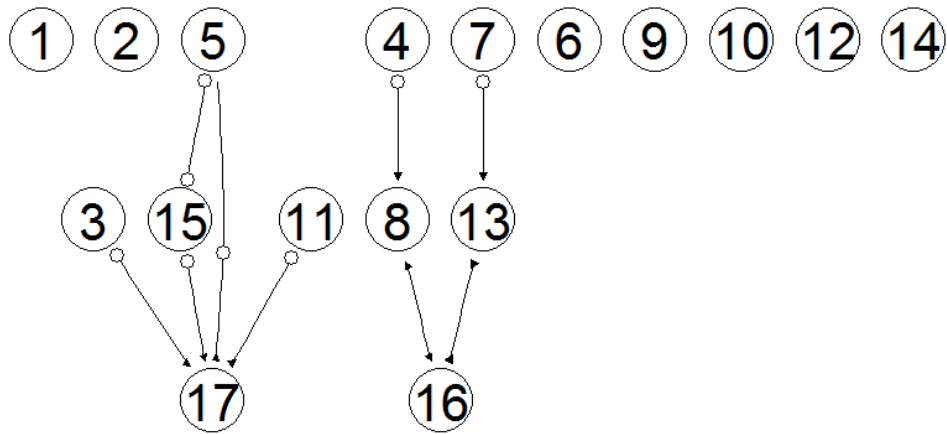
X264-5

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature8_2762_32"	



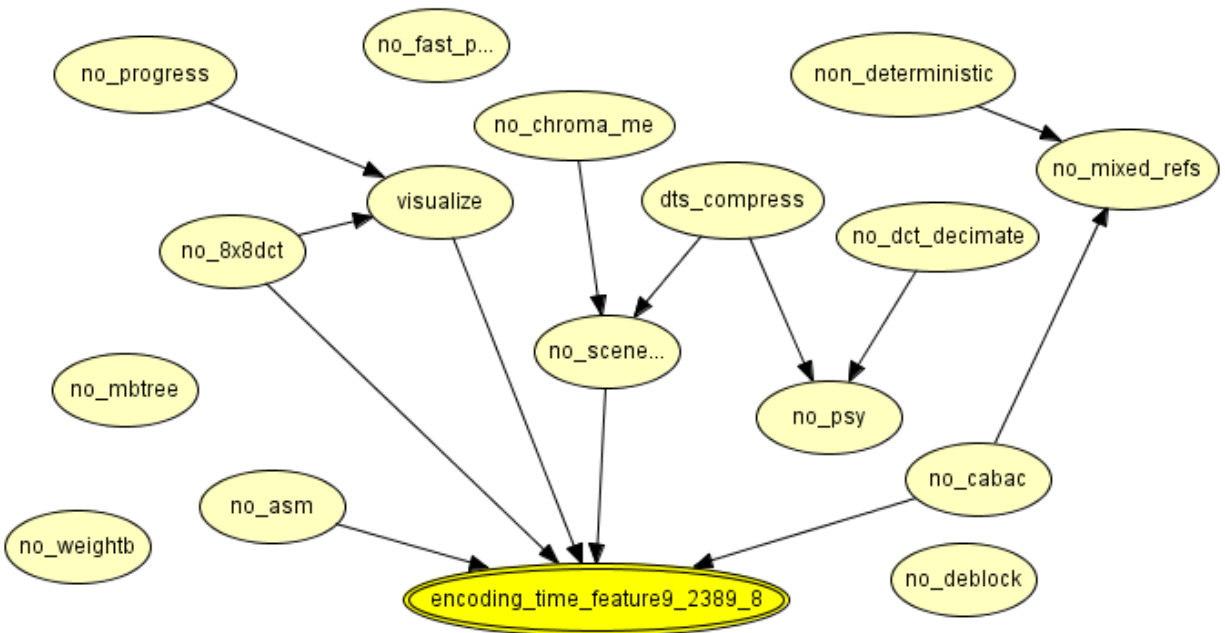
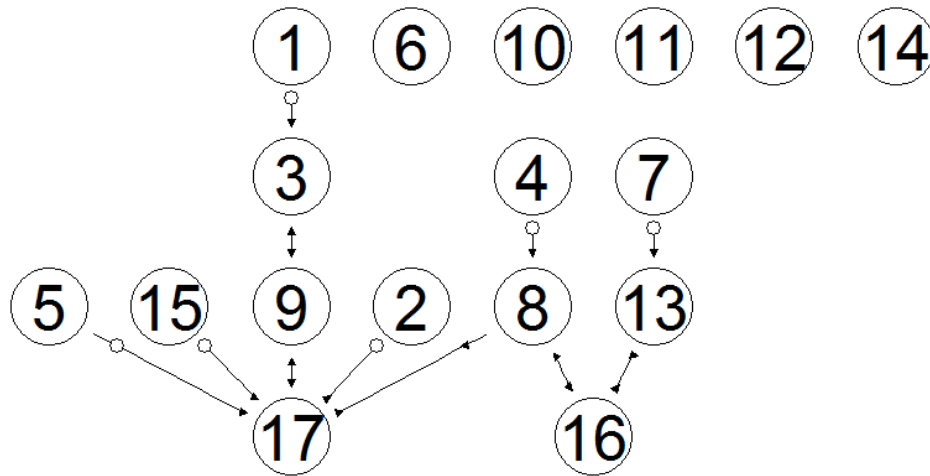
X264-6

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature8_2762_128"	



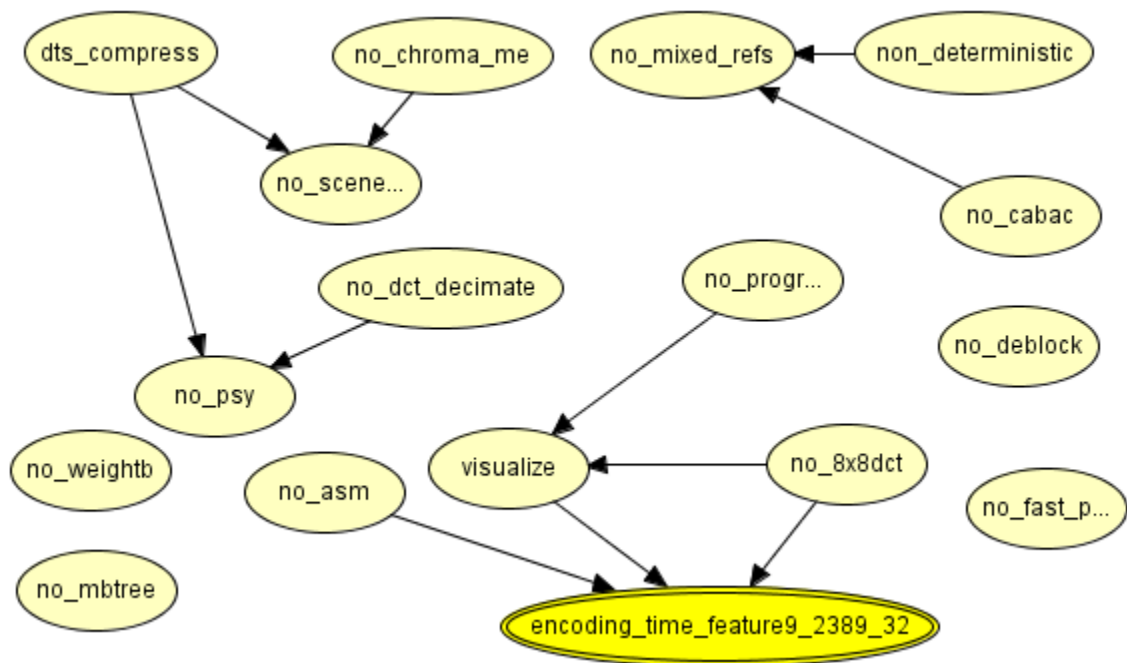
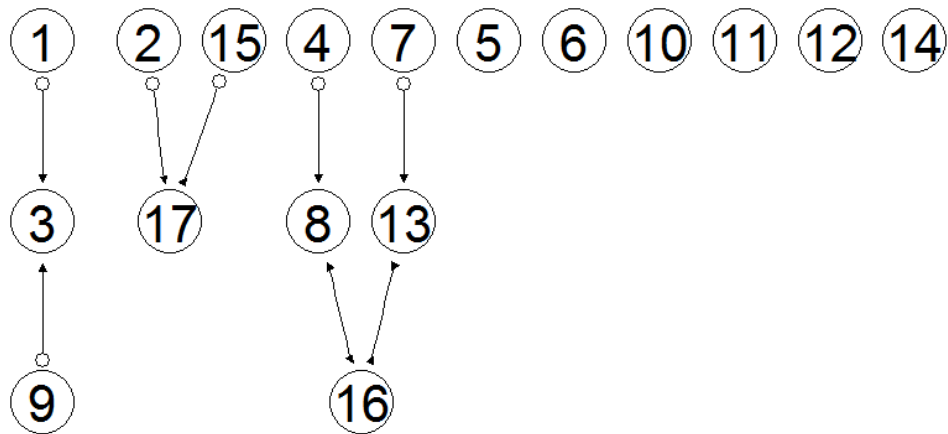
X264-7

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature9_2389_8"	



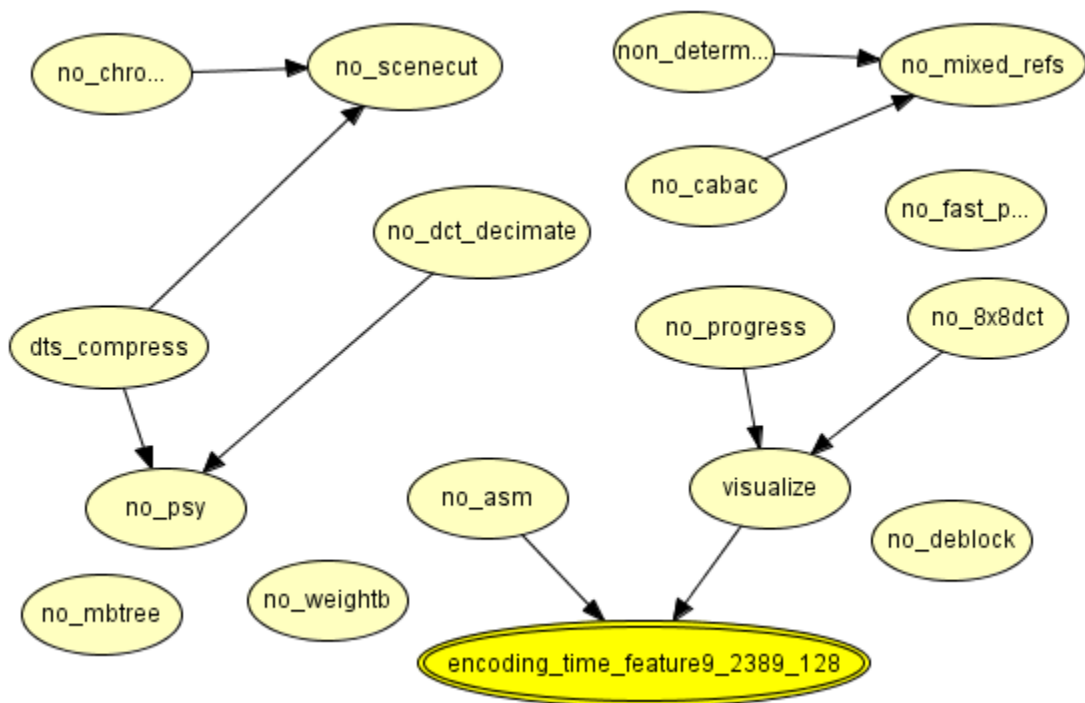
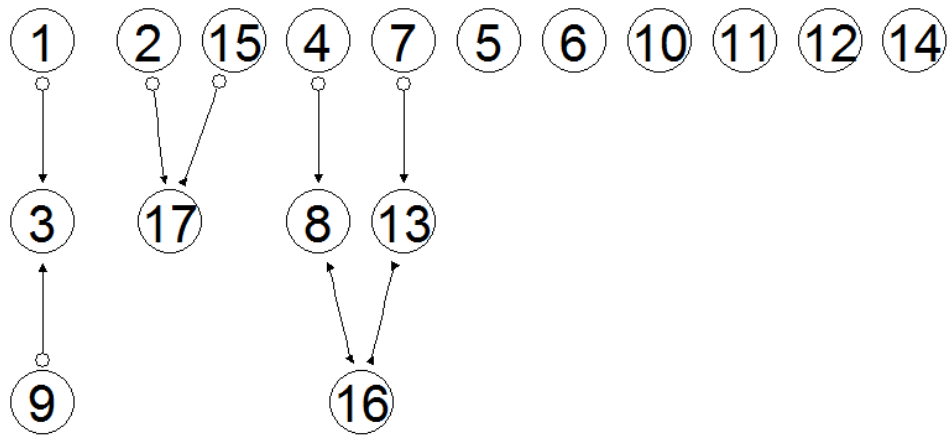
X264-8

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature9_2389_32"	



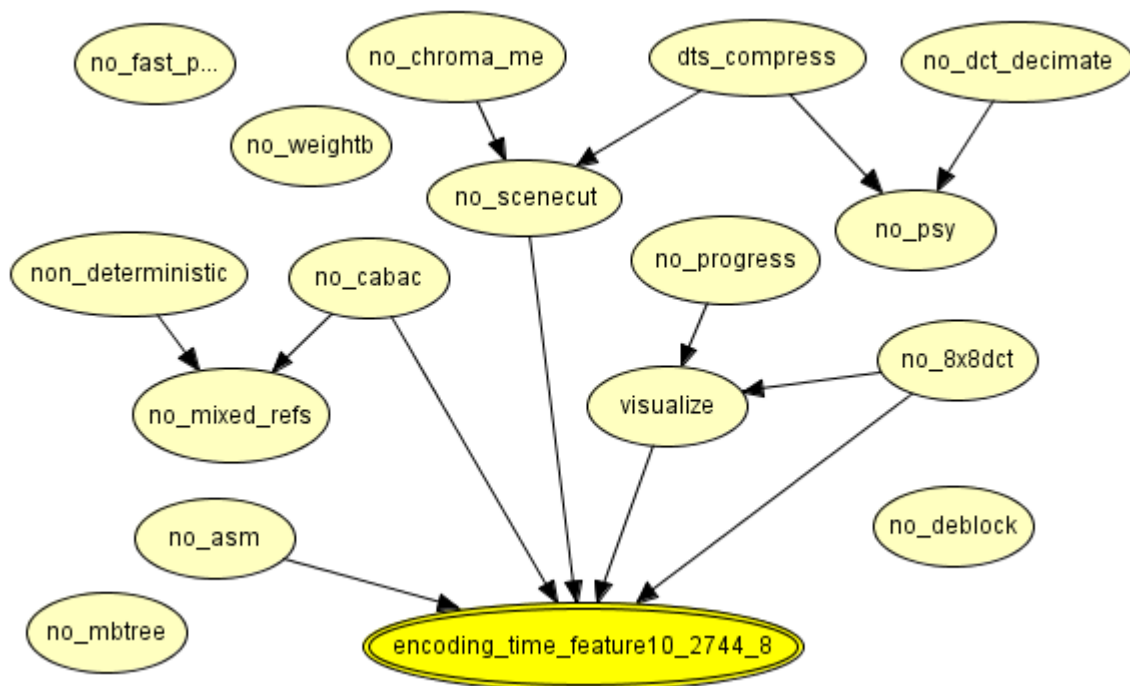
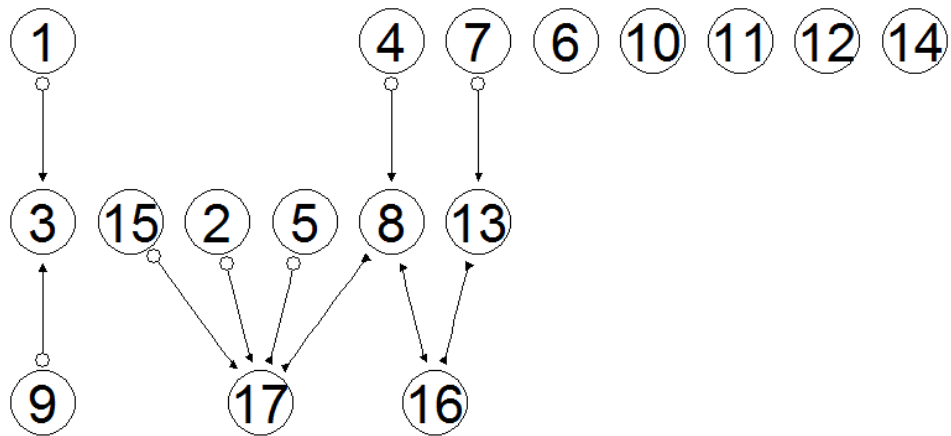
X264-9

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature9_2389_128"	



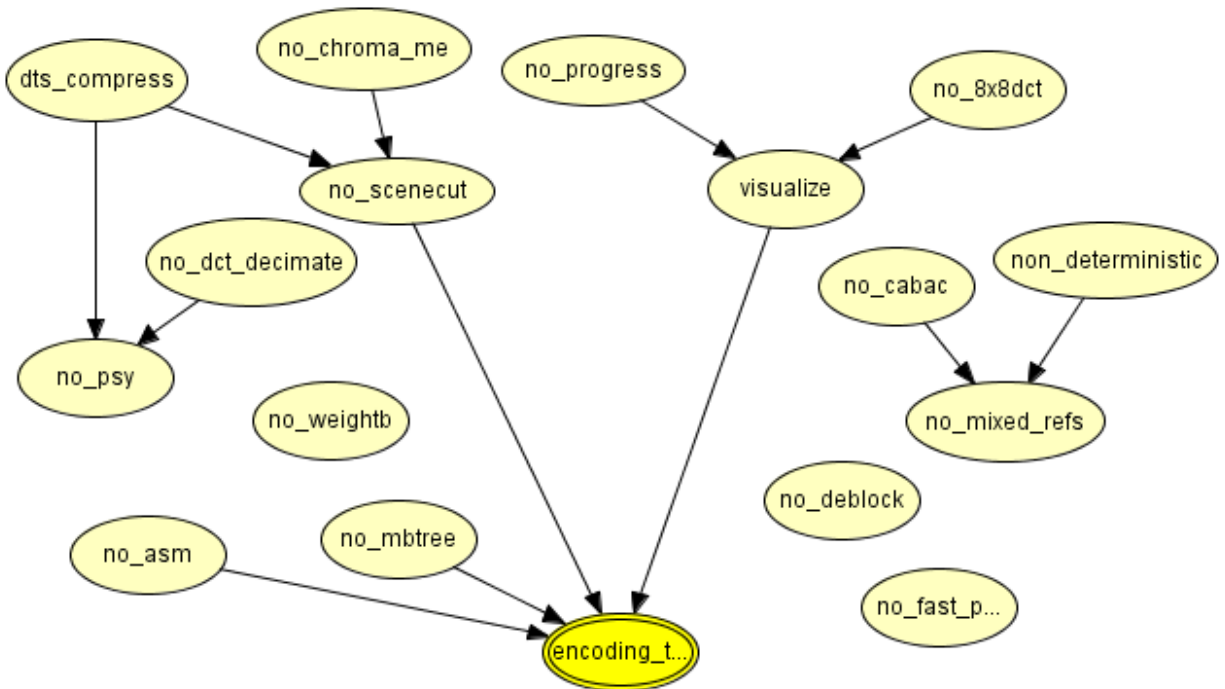
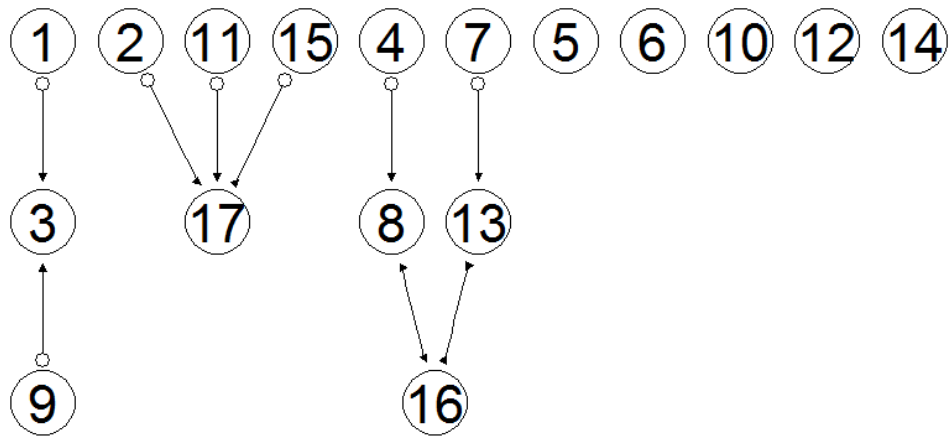
X264-10

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature10_2744_8"	



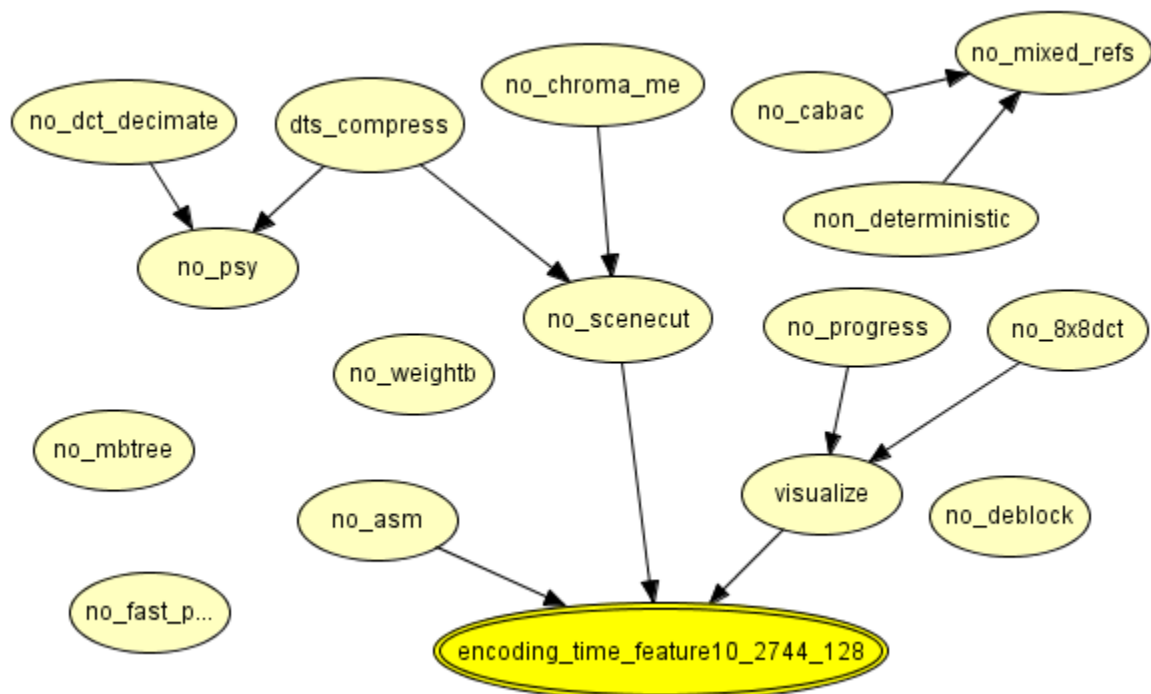
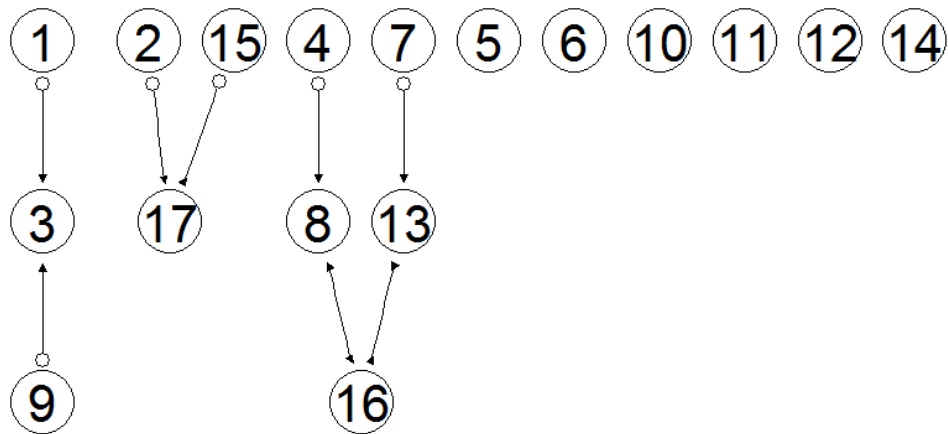
X264-11

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature10_2744_32"	



X264-12

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_feature10_2744_128"	



X264-13

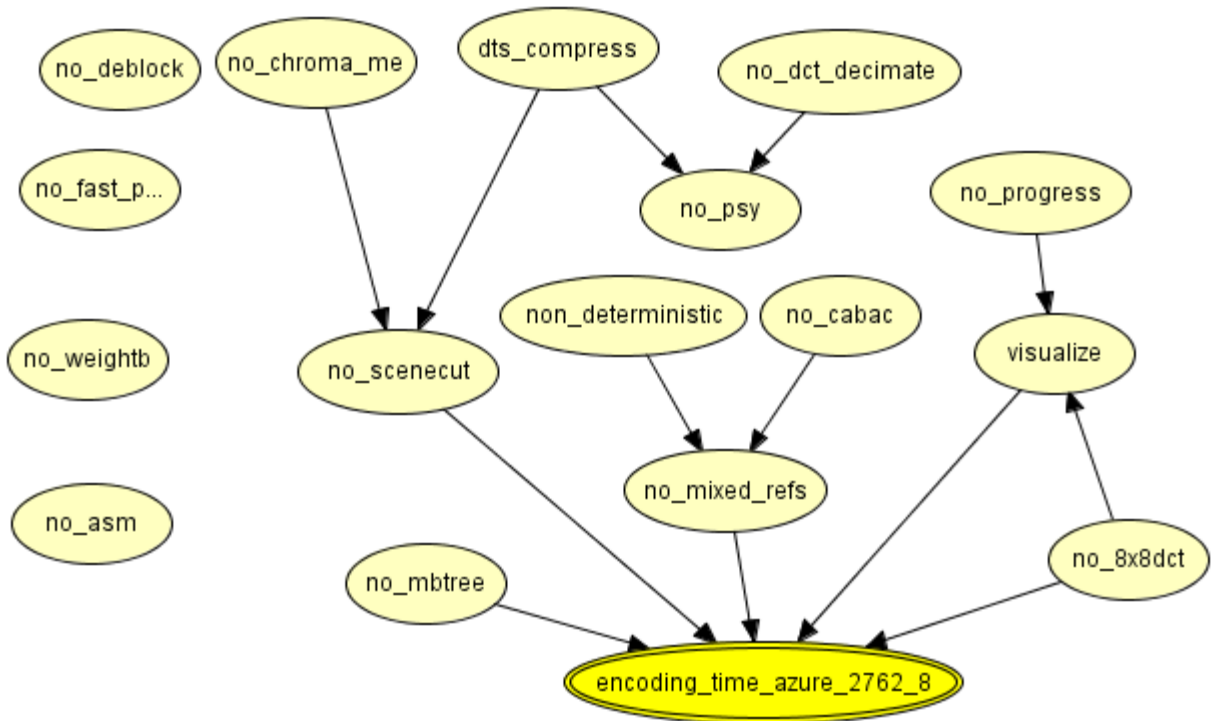
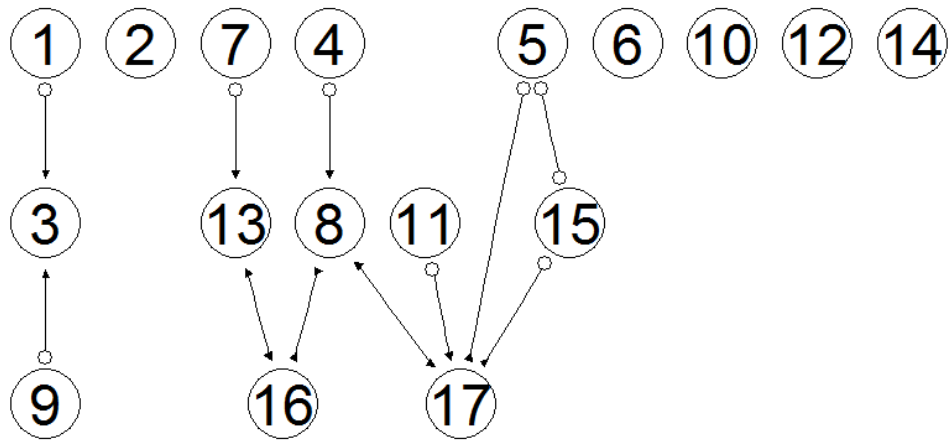
[1] "non_deterministic" "no_asm" "no_mixed_refs" "no_chroma_me"

[5] "no_8x8dct" "no_fast_pskip" "no_dct_decimate" "no_scenecut"

[9] "no_cabac" "no_deblock" "no_mbtree" "no_weightb"

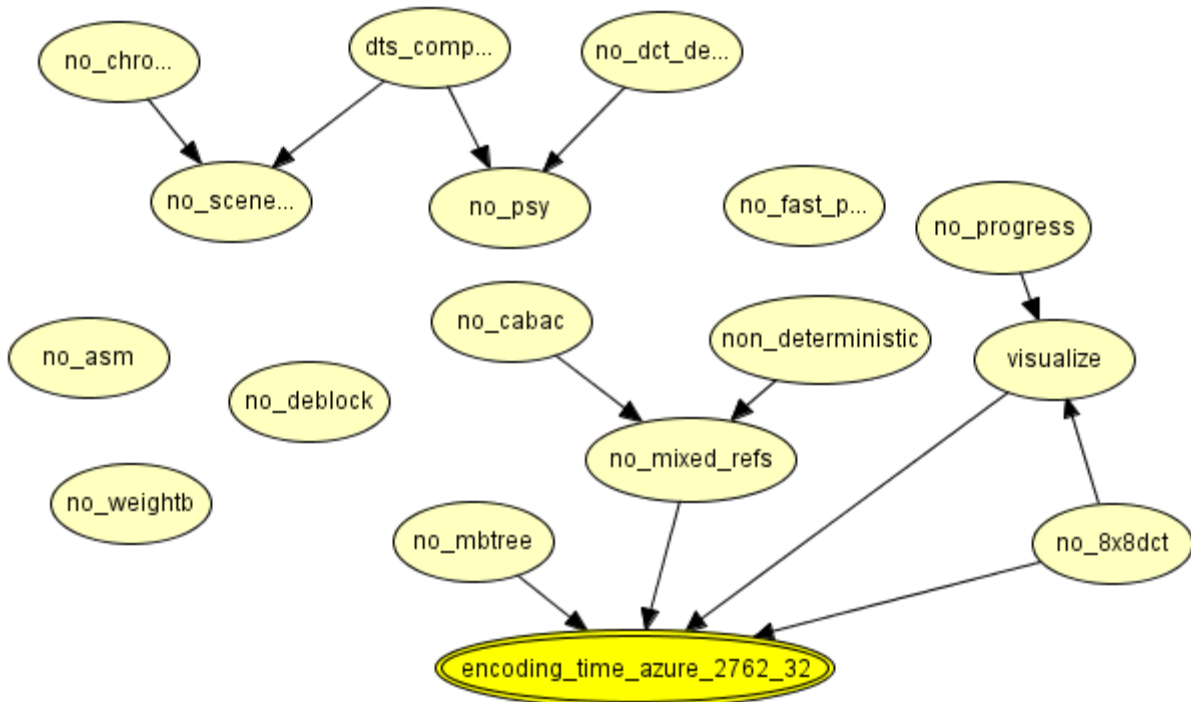
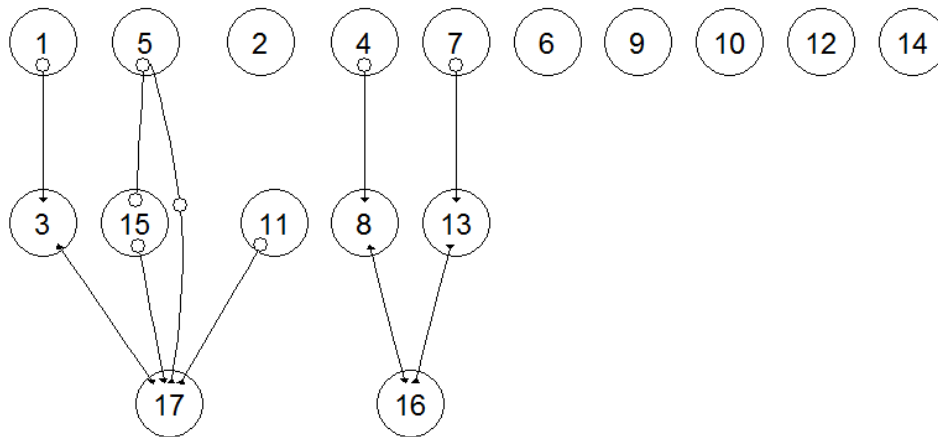
[13] "no_psy" "no_progress" "visualize" "dts_compress"

[17] "encoding_time_azure_2762_8"



X264-14

[1] "non_deterministic" "no_asm" "no_mixed_refs" "no_chroma_me"
 [5] "no_8x8dct" "no_fast_pskip" "no_dct_decimate" "no_scenecut"
 [9] "no_cabac" "no_deblock" "no_mbtree" "no_weightb"
 [13] "no_psy" "no_progress" "visualize" "dts_compress"
 [17] "encoding_time_azure_2762_32"



X264-15

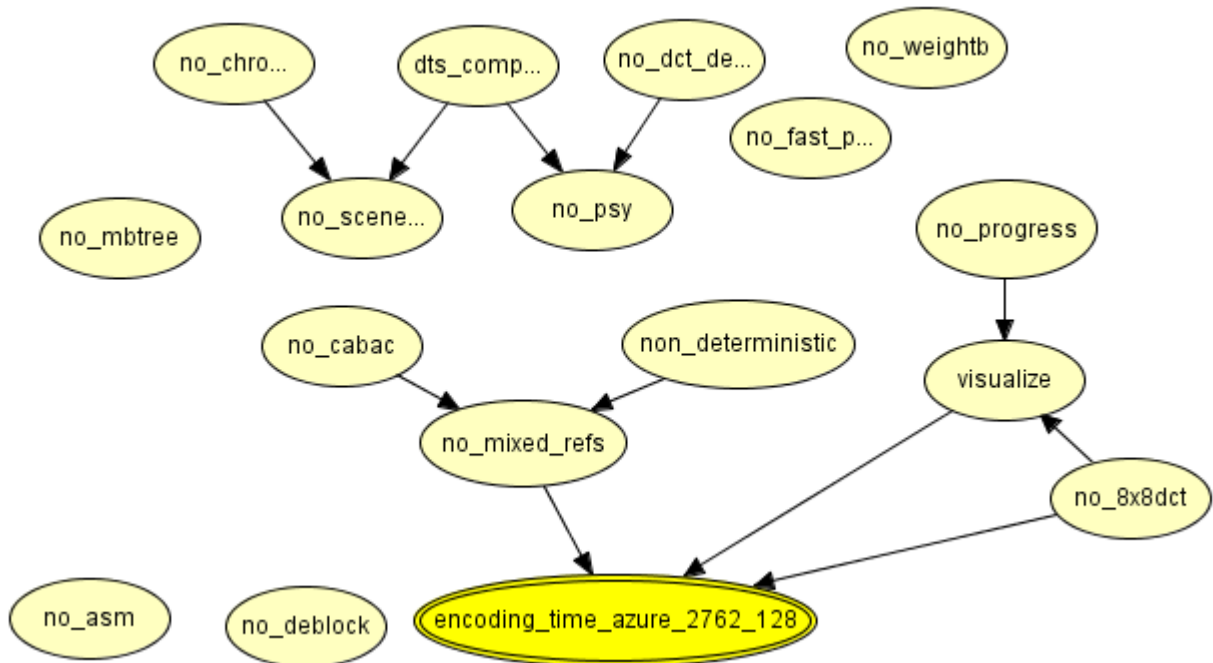
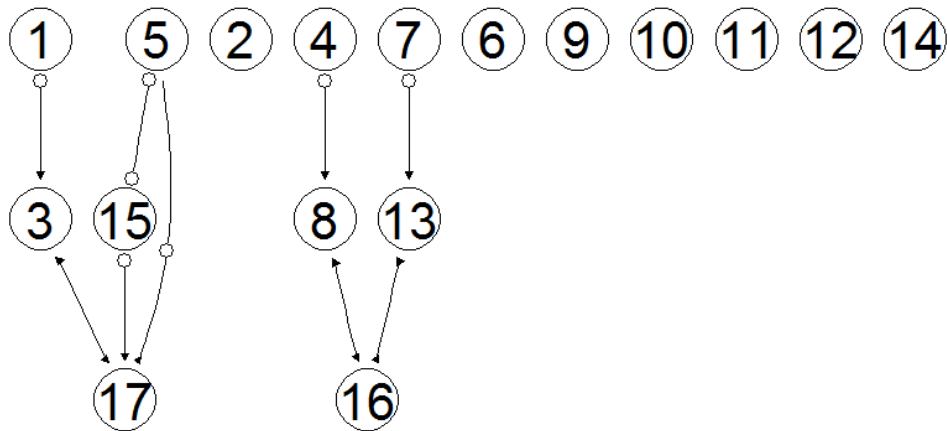
[1] "non_deterministic" "no_asm" "no_mixed_refs" "no_chroma_me"

[5] "no_8x8dct" "no_fast_pskip" "no_dct_decimate" "no_scenecut"

[9] "no_cabac" "no_deblock" "no_mbtrees" "no_weightb"

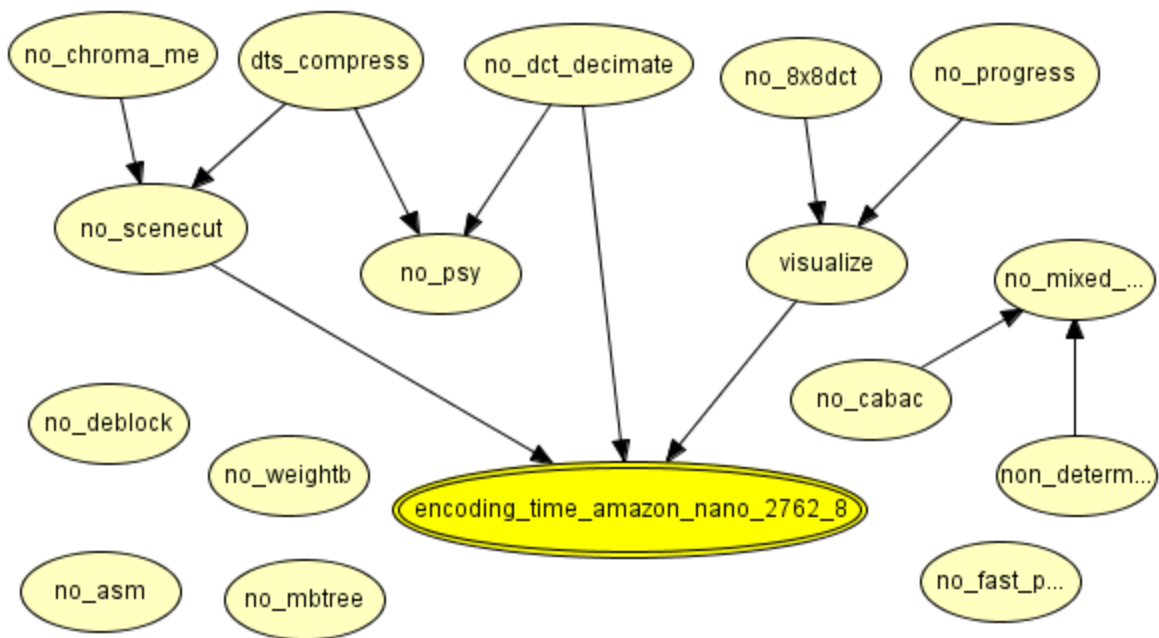
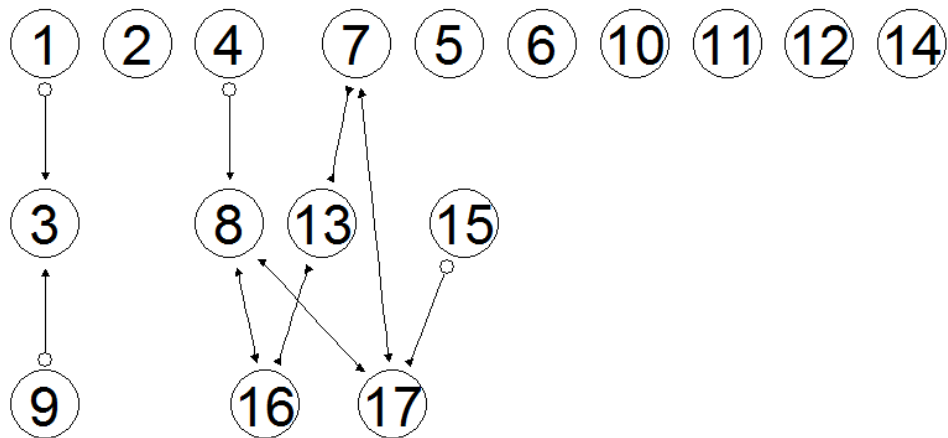
[13] "no_psy" "no_progress" "visualize" "dts_compress"

[17] "encoding_time_azure_2762_128"



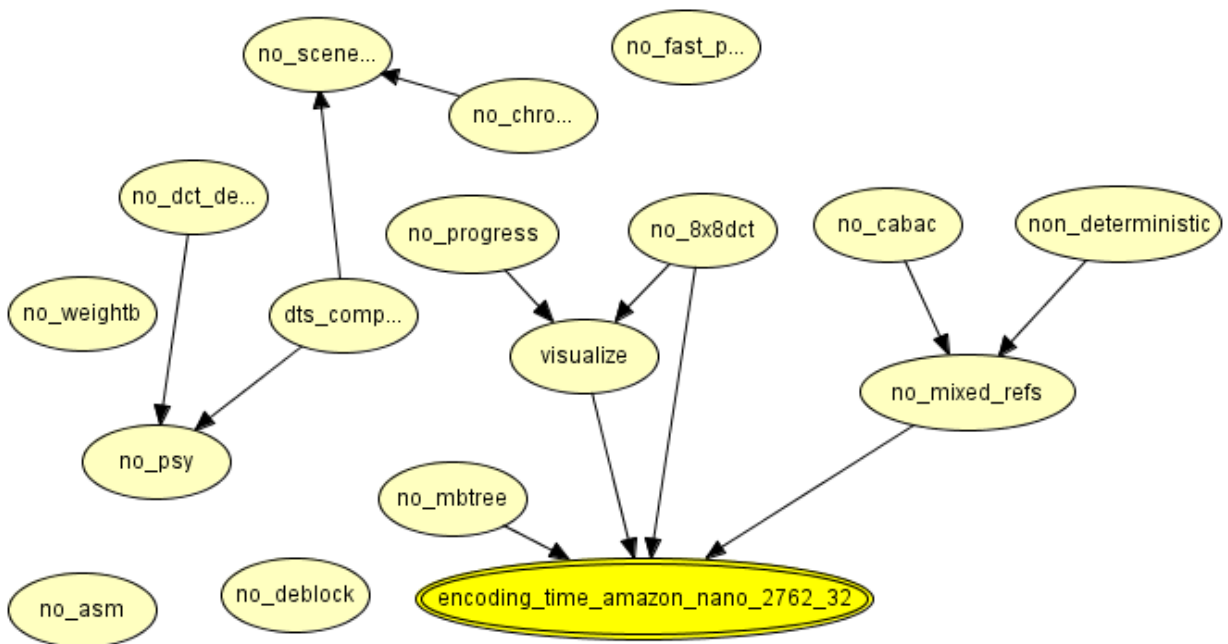
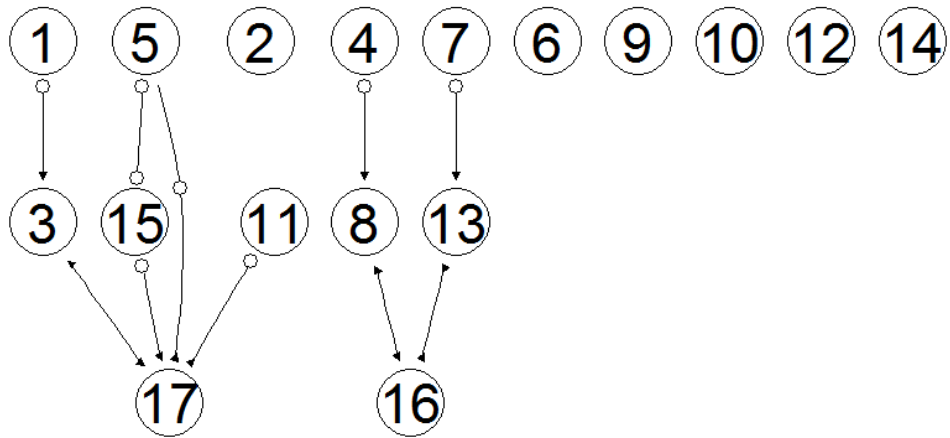
X264-16

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_amazon_nano_2762_8"	



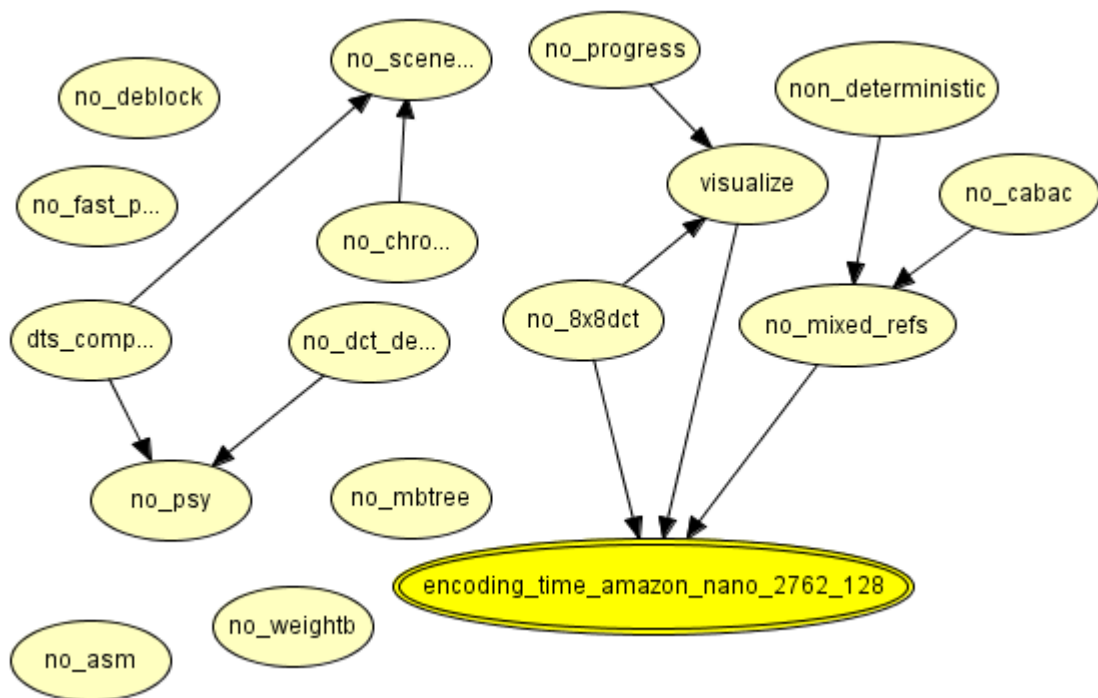
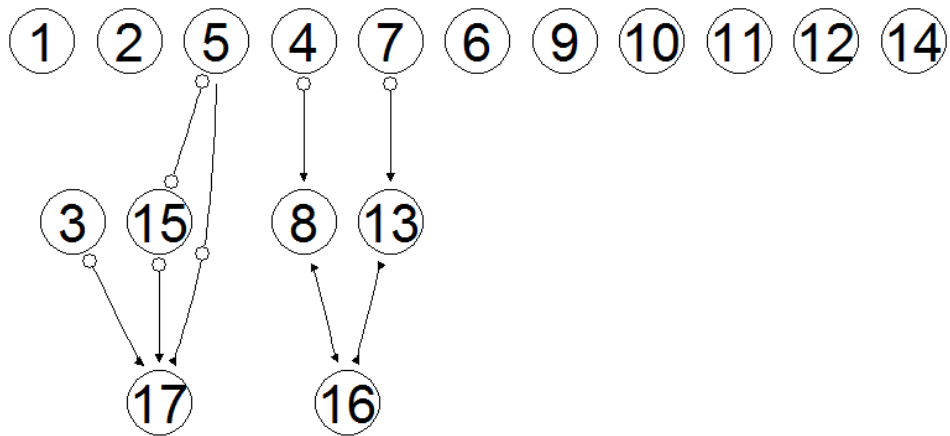
X264-17

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_amazon_nano_2762_32"	



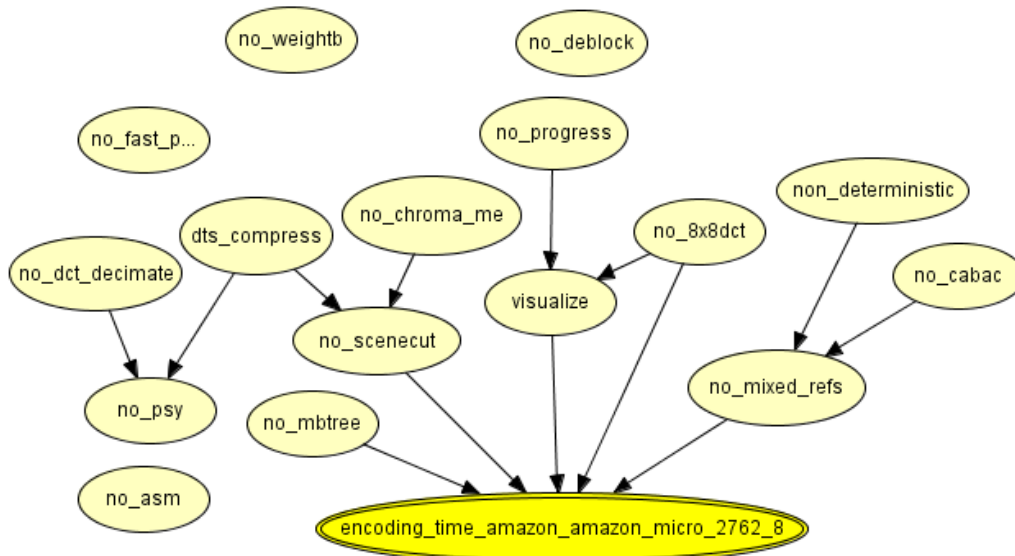
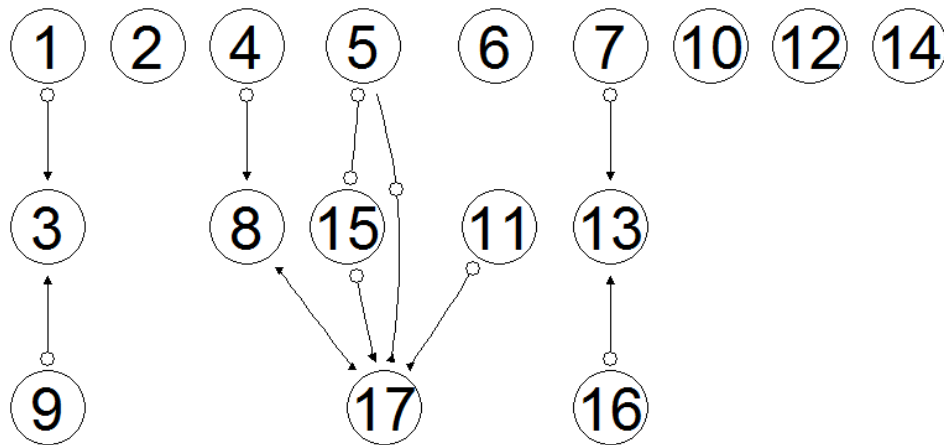
X264-18

[1] "non_deterministic"	"no_asm"	"no_mixed_refs"
[4] "no_chroma_me"	"no_8x8dct"	"no_fast_pskip"
[7] "no_dct_decimate"	"no_scenecut"	"no_cabac"
[10] "no_deblock"	"no_mbtrees"	"no_weightb"
[13] "no_psy"	"no_progress"	"visualize"
[16] "dts_compress"	"encoding_time_amazon_nano_2762_128"	



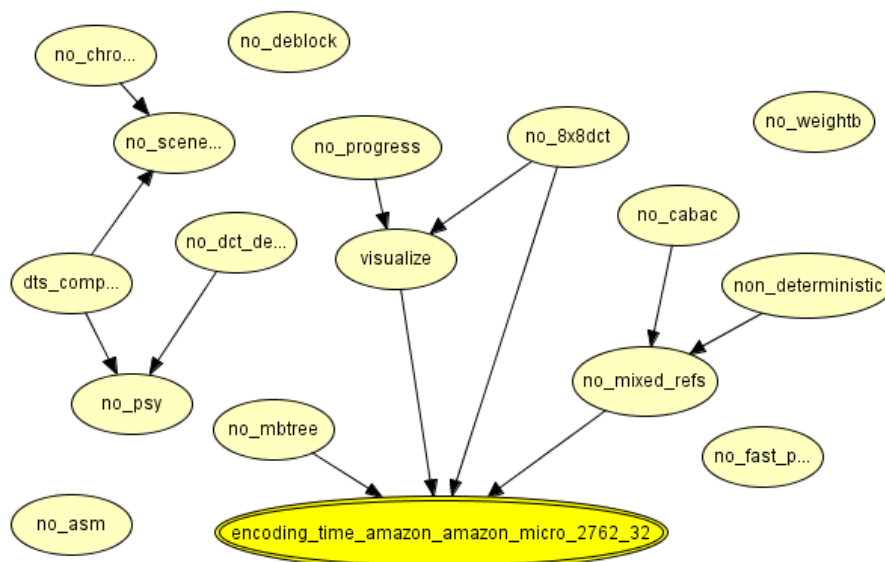
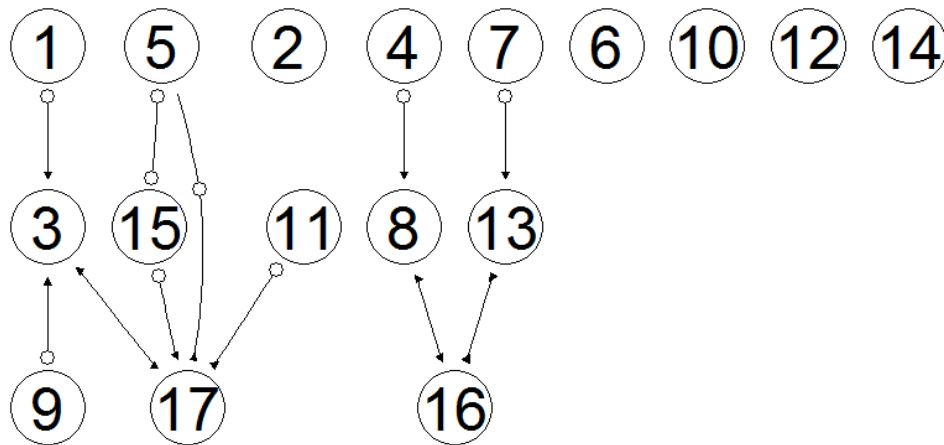
X264-19

- | | |
|---|-----------------|
| [1] "non_deterministic" | "no_asm" |
| [3] "no_mixed_refs" | "no_chroma_me" |
| [5] "no_8x8dct" | "no_fast_pskip" |
| [7] "no_dct_decimate" | "no_scenecut" |
| [9] "no_cabac" | "no_deblock" |
| [11] "no_mbtrees" | "no_weightb" |
| [13] "no_psy" | "no_progress" |
| [15] "visualize" | "dts_compress" |
| [17] "encoding_time_amazon_amazon_micro_2762_8" | |



X264-20

- | | |
|--|-----------------|
| [1] "non_deterministic" | "no_asm" |
| [3] "no_mixed_refs" | "no_chroma_me" |
| [5] "no_8x8dct" | "no_fast_pskip" |
| [7] "no_dct_decimate" | "no_scenecut" |
| [9] "no_cabac" | "no_deblock" |
| [11] "no_mbtrees" | "no_weightb" |
| [13] "no_psy" | "no_progress" |
| [15] "visualize" | "dts_compress" |
| [17] "encoding_time_amazon_amazon_micro_2762_32" | |



X264-21

- | | |
|---|-----------------|
| [1] "non_deterministic" | "no_asm" |
| [3] "no_mixed_refs" | "no_chroma_me" |
| [5] "no_8x8dct" | "no_fast_pskip" |
| [7] "no_dct_decimate" | "no_scenecut" |
| [9] "no_cabac" | "no_deblock" |
| [11] "no_mbtrees" | "no_weightb" |
| [13] "no_psy" | "no_progress" |
| [15] "visualize" | "dts_compress" |
| [17] "encoding_time_amazon_amazon_micro_2762_128" | |

