

aCSTV — antiX Khawtlang TV awlsam tak Starter

Thawhna:

He program hi bial chhunga television channel awmte chu Internet kaltlangin data stream anga awlsam taka dawn theihna atan hman a ni. Program slot hrang hrang station thlan leh assignment hi zalen takin a configure theih a ni.

Internationally receivable station pawh dah belh theih a ni a, chu chu service provider-in ram sawi tur *GeoIP* hmanga a block loh phawt chuan a ni.

Channel te dawng tur chuan internet connection a ngai a ni.

- Start reception:

TV reception start tur chuan station button pakhat (left mouse button click) hmet la.

Note: TV thlalak a lan theih nan second 12 vel a la ngai thei. Analogue television nen a danglamna chu, program pakhat atanga program danga inthlak chu second tlemte chhungin a thleng a, historical tube set-ah pawh, digital reception hmang hian transmission service provider-te server hrang hrangah Internet kaltlangin connection siam hmasak a ngai a ni. Chu bakah, incoming data chu second engemaw zat buffer a ngai a, chu chu trouble-free playback a nih theih nan a ni a, hei hian image playback tak tak tan hun a tikhawtlai bawh. Hun rei zawng hi thil tam takah a innghat a, chung zingah chuan transmission service provider hrang hrang server-in a chhanna hun leh PC- in a processing speed te pawh a tel.

- Station

thlak danglam: Program dang pan tur chuan station dang button hmet la.

- TV reception tihtawp:

Channel hman mek off tur chuan »*Stop*« button kha hmet la.

- program:

aCSTV atanga chhuah tur chuan »*Exit*« (or "b") key kha hmet la.

- Program preview:

Tuna program preview awm mek hi browser ah »*Program preview*« button hmangin a lang thei ang. Service provider duh chu settings ah zalen takin configure theih a ni.

- Scene photo:

»Scene photo« button hian TV thlalak awm mek scene photo a siam a. Thlalak hi file hming *Scene photo-<Sender>-<Date>-<Time>.png* hnuaia settings-a dah folder-ah dah a ni. Entirnan: *Scene thlalak-Arte-03.10.2021-17:14:22.png*

- Recording function:


Program hman mek chu »*Video recording*« button hmangin record tan rawh . Status bar ah hian recording control symbol sen a rawn lang ang. - aCSTV recording icon click chuan information dialog a rawn inhawng ang. Running time a liam rualin information dikna chu a pung zel a ni.

Recording chu Settings hnuaia folder tarlan ah

file hming *Broadcast Recording-<Sender>-<Date>-<Time>.ts* hnuaiah save a ni. File format *.ts* hi *mpv* hmangin kan play thei a , entirnan . Entirnan: *Broadcast recording-Phoenix-03.10.2021-16:02:31.ts*

»Stop recording« button hmangin recording chu titawp rawh. Hei hian recording a titawp a, tuna program awm mek chu a dawng chhunzawm zel a ni. Technical lam avang hian tunah hian recording

tan leh *tihtawp* hian screen-a program hman mek display chu second engemaw zat chhung a titawp a ni. File format dang a inthlak duh chuan »*Miscellaneous*« *tih hi en la*.

- thlak danglam
Main dialog box-a station button-te button assignment chu  button hmangin tihdanglam theih a ni a, station list buatsaih dang chhiarin Station list hrang hrangte tana default directory chu `~/.config/aCSTV` a ni a, mahse file pakhat chu write permission nei directory eng atang pawhin chhiar theih a ni. Ram hrang hranga sample file te chu directory `/usr/local/lib/aCSTV/Stations` listen ah hmuh theih a ni a, chuta tang chuan aCSTV configuration directory ah manual in copy theih a ni baw. He list-a station thenkhat hi khawvel pumah dawn theih a ni a, thenkhat chu geo-blocked niin ram hrang hrangah चाह dawn theih a ni. Tuna channel list chhiar mek hi Settings menu ah automatic in update theih a ni.

- Shortcuts leh mouse control:
MPV-a key leh mouse control hmanga playback laiin a hnuaia function te hi pek a ni:

Thupek tlangpui

- Keypad entir leh thup -
- Full-screen mode leh window mode inkara inthlak:
video image kal lai chu double click rawh. (chuan: f) .
Video frame size dik tak (border dum): Alt + Alt - .
Audio/video inthlauhna dik tak: Ctrl + Ctrl - .
Playback volume siamrem: 9 0
- Mute/unmute: m
- Gamma siamthatna video thlalak: 6 5
- Brightness video thlalak: 4 3. A rilru a hah lutuk chuan a rilru a buai em em a
- Video thlalak inthlauhna: 2 1
- Color saturation video thlalak: 8 7. A rilru a hah lutuk chuan a rilru a buai em em a
- video image kha right click la .
(chuan: p leh space bar) (data rate
minute 30 thleng a zirin, local buffer a khat dan a zirin)
- Hma lam / hnunglam hawia chak taka kal (1 sec): Shift ← Shift →
- Hma lam pan chak / hnunglam (5 sec): ← →
- Hma lam / hnunglam hawia chak taka kal (1 min): ↑ ↓
(Buffer chhungah fast forward leh rewind theih a ni a, a bik takin pause function hman hnua)
- Scene thlalak: aCSTV control panel-a button emaw s
(Stil photo chu aCSTV settings-a folder tarlan ah dah a ni)
- Tuna program hman mek video recording: aCSTV control panel-a button
Playback ti chak/tikhawtlai (10%): [] .
(limited capability, wrong
-speed, encoded dik lo movie siam thatna atana tangkai
, play rang lutuk a cache run out, emaw, a segment
te chu play slow lutuk a retrieved hmaa expire thin)

- Playback speed pangngai: backspace a ni
- Loop tawp nei lo (AB) set leh cancel: l

Video stream dang (a awm chuan) ah switch rawh: Shift - .

Audio stream dang (a awm chuan) ah switch rawh: #

Thu hriatna hnathawh hrang hrang:

- Stream leh playback chungchang chipchiar zawk Shift i
- Buffer fill level leh buffer memory-a playback position: Shift emaw a ang chi emaw
- Stream URL F8 en rawh
- Audio, video leh subtitle F9 atan stream information entir

Subtitle features (a awm chuan) .

Subtitle enable/disable: v

Subtitle hrang hrang inthlak danglam: j J

Subtitle leh video image inthlunzawm: z Z

Settings te chu:

aCSTV setting zawng zawng hi »Settings« button i hmet hnuah a siam rem vek thei.

- Video data rate tihtlem:

Playback rate sang ber kbps-a dah a nih chuan server-in data stream a dil chu computer hman leh Internet line-a processing theihna angin a inmil thei a ni.

1. PC performance a zirin limitation a awm. Experience atanga a lan dan chuan single-core 32-bit Pentium-M 1.7 GHz hian a tam berah 3000 kbps vel chu interference awm lovin a reproduce thei a ni. Chuvangin chutiang PC ah chuan he value vel ah hian set a tha. aCSTV hian service provider atanga data stream awm tha ber chu set maximum value aia hniam a thlang thin. Computer chak zawk tan chuan value sang zawk a lut thei a, a chak lo zawk tan chuan a hniam zawk a lut thei bawh.
2. Internet connection-a transmission capacity awm dan azirin tihkhawtlai. Internet connection quality (or WLAN pawh a ni thei) a zirin PC performance hnuai lam value te chu tihtlem a ngai mai thei, e.g. to 1800) .make possible. Value hniam chuan image resolution a hniam a, value sang chuan constant dropout a thlen thung. German public television broadcaster-te broadcast tam zawk hi tunah hian
325k , 581k, 635k, 969k, 1020k, 1130k, 1790k, 1807k, 2120k, 3256k, 3544k, 3990k, 7290k rate-in an pe chhuak
a,
mahse channel zawng zawng hi a awm vek lo. Service provider a zirin private broadcaster thenkhat chuan transmission laiin peak time-ah harsatna an tawh fo thin a, data rate dik taka set a nih pawhin. Ni khat chhunga hun dangah chuan heng station-te lo dawnawn dan hi a tha famkamin a thawh leh thin.

- TV screen thlan dan

TV picture output tur screen chu settings ah configure theih a ni. Entirnan, TV set chu PC-ah second screen anga connect a, chutiang anga configure a nih chuan, TV image chu a screen number inmil tur tarlanna hmangin TV-

ah a lang thei a ni. Fimkhur tur: Count hi zero atanga tan a ni a, chu chu »0« chu screen hmasa ber a ni a, »1« a pahnihna etc. A tam berah screen 32 address theih a ni.

- Full screen mode/window mode
He check box hmanh hian TV thlalak hi full screen anga start nge window ang tih hriat theih a ni. Full-screen leh window mode inkarah engtik lai pawhin i inthlak leh thei (TV thlalak awm mek chu double- *click emaw "F" key hmet emaw*).
- Foreground-a playback
He check box hmanh hian TV thlalak chu foreground-ah a lang reng tur nge window dangin a khuh thei tih i hre thei ang. Display hi engtik lai pawhin taskbar → Layer a context menu hmangin a thlak theih a , chubakah key combination "*Shift T*" hmangin a thlak theih bawk.
- Scene thlalak leh video
recording atana target folder Recording leh scene thlalak dahna tur folder te chu input field dik takah ziaak lut rawh. AntiX operating system-a standard folder inmil chu preset a ni a, \$XDG_PICTURES_DIR/ leh \$XDG_VIDEOS_DIR/ te hian an reference a ni.
Logged in user chuan folder tarlan te ah write access a nei tur a ni.
- Station list chu manual -in edit
Tuna station list import tawh chu manual-in edit theih a ni. Entry thar dah belh theih a ni a, entry awmsa chu delete emaw tihdanglam theih a ni bawk. Station hming leh a kaihnhawih server address te pawh edit theih a ni. Hash (#) hmanga intan line te chu disable a ni a, keypad ah a lang lo.
- Station list automatic-a update
Tuna station list chhiar mek hi "*Update*" button hmangin automatic-in update theih a ni . Chumi atan chuan internet connection awmsa a ngai a ni. Ram hrang hranga channel directory te hi *IPTV.org project atanga* volunteer ten update chhunzawm zel an ni. Station list automatic-a i update hian "Check connection to station" setting hmangin i awmna hmuna station dawng thei lote chu i paih chhuak thei a ni. Hetiang tih hian hun a duh rei thei hle (a bik takin channel list lian tak takah chuan), channel tin tan server atanga chhanna nghah a ngai a ni. A bo emaw, a dik lo emaw a nih chuan, hnawlna dik tak awm lovin, a tisuatu thawntu chu paih chhuah theih a nih hmangin connection chu time out phalsak tur a ni.


Thildang:

Utilities Utilities

socat , feh, buffer, mpv, yd-dlp, sed, xdotool, wmctrl te hi install a ngai a ni. Hei hi Debian installation package hmanga install hunah automatic in a tichiang a ni. Heng components te hi a awm loh chuan, eg manual install laiin aCSTV hian hna a thawk dawn lo.

Channel list hrang hrangte huam chin

Channel list lian tak tak, channel 40-50 chuang nei a nih avangin aCSTV hmanga processing pawh a tlahniam chho zel a ni. Fast leh resource-saving functioning atan chuan channel list chu entry mamawh tak takte chauh i tikhawtlai a ngai a, "*Edit channel list*" settings-a superfluous entry zawng zawng i deactivate (comment out) emaw, i paih vek emaw tur a ni. Key pek theih zat tam ber chu

approx.264 a ni a, chu chu hming entry khata character awm zat a zirin a ni. Hetiang size keypad hi monitor tenauah chuan sensib takin a lang thei tawh lo mai thei. Chutiang list tam lutuk active entry dang zawng zawng chu ngaihthah vek a ni. Channel list lian tak tak chu text editor hmangin file hrang hrangah then theih a ni a, chu chu *Geany* emaw *Leafpad* , keypad-a “Change channel list ” button (icon: ) hmangin thlan theih a ni.

File format leh conversions

.ts format a file save te chu antiX ah *MPV* hmangin direct in play back theih a ni. Duh chuan *ffmpeg* hmangin program recording saved te chu *.ts* format atanga file format dang ah i convert thei ang . Recording laiin conversion hi system chak tak takah chauh a awm thei a, chuvangin aCSTV tan ruahman a ni lo. Station pakhatin eng format nge a thawn dawn tih pawh sawi theih a nih loh avangin, a hnua convert hunah experiment tlem a ngai a ni. Format dawn chu target format nen a inmil lo a nih chuan a chhunga video emaw audio data stream emaw, a pahnih emaw chu encode leh tur a ni a, chutiang a nih loh chuan target format duh ang anga thlak loha repackege chu a tawh a ni.

Entirnan:

- to *Matroska* , encode leh lovin
ffmpeg -i './filename.ts' -map 0 -c copy './filename.mkv'.
- to *mp4* , encode leh lovin
ffmpeg -i './filename.ts' -map 0 -c copy './filename.mp4'.
- Broadcaster-in a thawn chhuah leh .ts file-a a save data stream chu target format thlan (eg *mp4*) nen a inmil lo a nih chuan he conversion hian hna a thawk dawn lo va, error message chauh a siam ang. Hetiang a nih chuan video hi encode leh theih a ni:
ffmpeg -i './filename.ts' -c:v libx264 -c:a copy './filename.mp4'.
- A nih loh leh video leh audio encode leh rawh:
ffmpeg -i './filename.ts' -c:v libx264 -c:a aac './filename.mp4'.

PC computing power, file size leh re-encoding chi hrang hrang a zirin processing hian hun engemaw chen a la ngai thei.