This space has been migrated to the CTS Confluence instance: http://jircflpr-labc01.ds.dtvops.net:8090/display/gcs/Home / https://confluence.dtvops.net/display/gcs/Home . Permissions are restricted to viewing and exporting only. Please note that old link will be depreciated soon **Q**-Q DIRECTV Spaces ▼ People ⑦ ▼ Create Pages / Home 🔒 🛭 Watch Share Tools • Global Cybersoft The Training Program Pages Created by Khuong Thi Lien Nguyen, last modified on Jun 03, 2014 3 Blog TRAINING PROGRAM CHILD PAGES Туре Training Courses 범 Home GCS Internal Multithread The Training Program HDMI - Consumer Electronics C ... **IPC** iTV/HTML Engine Socket Programming PPV OSD changes Java Native Interface Recordings Linux GDB Introduction to DirecTV & related services **DIRECTV Training** STB Basics CVS & Mercurial Flashing and starting up STB Debugging Techniques on STB APG Fundamental Introduction to bitstream & usage of bitstream player HDG Architecture **DRUID Fundamentals** Middleware Fundamentals Widget Genie Architecture BSL Bitstream Builder TRAINING COURSES Course Objectives Material Linux Programming **IPC** Read Linux Programming books and do exercises Understand what IPC is & the mechanisms used in IPC: Sempahore, MessageQueue, Shared Memory, Pipe Be able to use APIs to transfer data among processes MultiThread Understand difference between process & thread Understand thread and its life cycle Understand what a Zombie process is Understand Thread-Specific Data Understand thread synchronization using mutex, semaphore,... Be able to use POSIX thread API Socket Understand networking concepts like OSI Programming model, TCP/IP, Client/Server model,... Understand the difference between TCP & UDP Understand the process of initiating a connection from TCP/UDP socket client & accepting the connection from TCP/UDP server socket Be able to use BSD Socket API GDB Understand the difference between debug & non-debug builds. Understand how to build a debug version which could be used with GDB Know how to use basic GDB commands such as setting breakpoint, examining stack, source file, thread, memory.. Be able to use GDB to debug an application Be able to analyze the core dump file Linux Be familiar with basic Linux Commands related file system, network, process, memory. Be able to understand and develop shell scripts JNI Understand what JNI is and its purpose Know how to develop a java native function and compile it successfully Know how to call a native function from Java and call a Java function from native Know how to handle different data types in JNI, such as primitive types, user-defined types... DirecTV & DTVU Class D25 -Intro to HD DVR STB Software 10-28-11 Services www.directv.com Know what DirecTV is and their primary business Which services & products DirecTV provides Understanding the importance of quality of the provided service in DirecTV (how critical it is when there are boxes crashed in mass) **STB Basics** DTVU Class D25 -Intro to HD DVR STB Software 10-28-11 DTV_HD_DVR_ComboGuide.pdf Read the User Guide and practice with real STBs Be able to set up a STB as an end-user Know features and how to use them. The included (but not limited to) features are: iTV, Trickplay, Parental Control, RID, Remote Control Pairing, Playlist, VOD, Ratings, DirecTV Central, Channel Tuning, Record, PPV, CAM Pairing, SWM, Multiswitch CVS & Mercurial CVS Basics Understand features of CVS, Mercurial and common terms Mercurial Basics Be able to use basic functions such as check out, commit, tag a version, roll back a change Understand the usage of CVS, Mercurial in DirecTV Bitstream Understand elements of a bitstream player Introduction to Bitstream set & how they work Know how to configure/start a bitstream player with different bitstreams Know how to insert CAPs / objects Understand the development model using bitstream Know how to use TSA to analyze bitstream Know how to read bitstream test specification Build, Flash & Boot STBs Understand available models & Overview of Build System manufacturers of STBs in DirecTV http://172.31.59.94/wiki/display/HR20Tricks/Integration+Lab+New+Hire+STB+Training+Manual Understand different kinds of STB images (NFS, SQUASHFS, BSL) Know how to download a pre-built STB image from CVS Know how to flash an image Know how to boot a STB from flash and Know how to use dt commands Troubleshoot some popular problems on STB Debugging on STB Know how to use gdb on the box Hand-on practice under experienced engineers's instruction Know how to use gdb on the host to analyze coredump Know how to use and configure syslog Know how to use and configure java level log Know how to use UI level debug (search keywords) Know how to use dt script Know how to use signal to force component log APG Booting Understand the architecture of APG APG Documents: component APG_Architecture.ppt · DTV APG Build Guide.ppt Understand APG terms and concepts APG_ICD_4.2.pdf · apgtutorial-2-0.pdf Understand APG boot process APG_Fundamental.ppt Understand APG objects APGLIB_API_2.61.pdf DIRECTV Boot Camp 1 - Intro.ppt Understand APG source code structure DIRECTV Boot Camp 2 - APG.ppt . DIRECTV Boot Camp 3 - CA.ppt Know how to build APG · DIRECTV Boot Camp 4 - A3.ppt Know how to run APG test using bitstream DTVU Class D39 - Advanced Program Guide (APG) for STB HDG Architecture Overview of HDG architecture HDG Architecture Overview Changes compared to the SD architecture Middleware Understand Middleware architecture MW Training http://172.31.59.94/wiki/display/MWDESIGN/Home Understand Middleware components Understand Middleware IPC Understanding which middleware components are involving in the booting process Understand the 4 majors component of DirecTV settop box Know how to build each component in middleware Druid DTVU20-HDUI Overview.ppt Know how to build DRUID independently SD Druid HDG Druid Understand DRUID architecture Druid Architecture Understand DRUID workflow Understand DRUID screen and how to implement a new screen Understand DRUID widget and how to implement a widget Widget Understand new widget architecture Widgets Overview Widgets Overview v2 Widget drawing flow Widget Technical Approach How to implement a new widget HMC Architecture Overview of HMC architecture HDG HMC SD HMC Changes compared to the HDG architecture SPECIALIZED TRAINING Course Objectives Material Core Dump Analysis UPNP/DLNA/Mediashare UI Design for Sports on STB My Sports Overview STB Requirements for Sports 2. Requirements MySports document Architecture 3.1 Major Classes in componen Use Cases 4.1 Load Menu Item 4.2 Load Poster 4.3 Add Team 4.4 Remove Team Centrals Overview Centrals Screen Design Requirements DtvSectionImageGrid UI centrals http://172.31.59.94/wiki/display/GE/Centrals Architecture http://172.31.59.94/wiki/display/CLD/STB+Cloud+VOD+design APG for centrals Clutter.ppt Clutter Overview on Clutter component Understand how Clutter works Understand: ClutterActor, ClutterStage, ClutterBackEnd Know detail of Clutter changes inside DTV stack (Hx2x & Genie) Recordings Record Definition Recordings Overview 3. Mechanism of Scheduling - Scheduler 4. Sequence Diagram 5. Reference VOD Broadband Video On http://172.31.59.94/wiki/display/mutliroomdvr/Collaborations+-+Broadband+Video+On+Demand Demand http://172.31.59.94/wiki/display/mutliroomdvr/Class+Diagram+-+Broadband+Video+on+Demand Removal of legacy CDNWriter and **ICDNWriterListener** classes dvr_core will handle download New BBVODActivity class handles acquiring resources · Needs input, output, tschannel, rasp, remux, contigmem, and dma Overview Architechture · QueueInfoScreen and QueueDownloadManager QueueManager & Queueltems MW Events Trailers CDN Diagram and Functions Pay Per View 1. Overview of Pay Per PPV.ppt View (PPV) http://172.31.59.94/wiki/display/mutliroomdvr/PPV http://172.31.59.94/wiki/display/GSL/PPV+Monitor Ordering Progress http://172.31.59.94/wiki/display/HR20Tricks/Test+PPV 3. Tips PPV OSD Changes 4. UI requirement OpenGL Overview of OpenGL & OpenGL_Overview.ppt OpenGL ES specification How OpenGL ES is implemented inside DTV Understand how OpenGL ES cooperate with other component Understand how OpenGL ES work in Hx2x & Genie platform **DTV IPC mechanisms** Overview of IPC usage http://172.31.59.94/wiki/display/STI/uConnect inside DirecTV STB http://172.31.59.94/wiki/display/HR20Doc/10_Middleware_Communication_Mechanisms Overview of some existing IPC inside DTV STB http://172.31.59.94/wiki/display/DirectvUA/IPC+Mechanism lwipc http://172.31.59.94/wiki/download/attachments/45126451/Communicating%20Processes%20Diagram. ump version=2&modificationDate=1381541996087&api=v2 uconnect binaryipc Debug / Flow of those above SHEF 1. SHEF commands: http://172.31.59.94/wiki/display/shef/SHEF+Design+Document http://172.31.59.94/wiki/display/TEST/WebSockets+and+SHEF+Test+Tool 1.1 Introduce about SHEF commands - DVR Functionality. - TV Functionality. - REMOTE Functionality. - INFO Functionality. 1.2 How to start SHEF on STB. 1.3 How to run SHEF commands by web browsers or SHEF tools. 1.4 Web browser cookie problems/expected. 2. General code structure of SHEF: 2.1 SHEF starting. 2.2 SHEF Processing HTTP Request & Response. Relationship with Serial Killer on data port commands. 3.1 Introduce data port and its features. 3.2 Serial data port commands. 3.3 Tutorial to run data port commands by web browsers, tools, or Linux terminal. 3.4 Code Diagram when sending user data port commands between SHEF and Serial Killer. **GDB GDB** Overview GDB with running box GDB with crash box GDB with deadlock Overview of Genie feature http://172.31.59.94/wiki/display/GE/Genie#Genie-SequenceDiagram%3ADisableGenie Genie/Recommendation on HR34/HR44 platform Overview of Recommendation feature on HR34/HR44 platform APG What is APG object? Common APG Objects: CO, BDE SO, PO. How search function works, multi session search. How APG parses and stores an object. How an Object is updated. How to create a bitstreams? bitstreams with Condition Access, Row Ads, Insert files. How Cloud bitstreams works? iTV/HTML Engine http://172.31.59.94/wiki/display/ITV/Webkit%2C+iTV%2C+DSMCC+Documents - What is an app? how the app is painted on STB? http://172.31.59.94/wiki/pages/viewpageattachments.action?pageId=22577780&metadataLink=true - Process of iTV/HTML Engine loading/starting/stopping app when the itv app channel tuned. - Communication between itv/mw, itv/dvrplayer... DVR Player / DVR Core DvrPlayer overview. http://172.31.59.94/wiki/display/HR20Doc/dvrplayer DvrPlayer functionality. http://172.31.59.94/wiki/display/mutliroomdvr/DVRCore · IPC in DvrPlayer and Dvr Core. Windows Manager / Window Manager With the introduction of OpenGL and webkit into the stack, the graphics rendering piece has mostly be DTVWM disabled. The DTVWM is, essentially, a proxy for handling CDI like requests. For a server session, the Overview. · Window Manager, AV request is generally converted to IOCTL calls down to the driver. For RVU sessions, the requests are converted to RVULIB calls. Output Manager, DVR Core vs DvrPlayer. IPC in WindowManager component. - What is tuner ? What does **Tuner Dispatcher** tuner do ? Number of tuner in STB and classify tuner. Understand tuning info (frequency, network...), Tuner state, Tuner mode, Dish type and switch control, Tuner power on/off support. - How to watch the tuner state from command line. Key Dispatcher / BSP Key Dispatcher key_dispatcher.ppt · Data structures stores bsp Key. Kinds of File Descriptor (FD) of a Key in Key Мар. Dispatching Rule. · Repeat Keys. · Dump Key Map. · Key Dispatcher, BSP and ITV communication. BSP Introduction Stack diagram CDI user input BSP DRUID combination key Buildroot Overview of DTV buildroot How to build toolchain How to build kernel How to build a component How to add new component Watchdog How to handle watchdog WatchDog issues How to read logs Case Study: Typical issues VDM VDM(VideoDownloadManager) is a new component that will replace FDM (FileDownloadManager) as interface between dvr_core/cdnwriter and dhttp. It will handle legacy progressive download, segmente vod download, and plugin over CDN. C3 / Start Over Segmented VOD HDMI HDMI: High-Definition http://172.31.59.94/wiki/display/CEC/Software+Design#SoftwareDesign-AVOutputManager Multimedia Interface HDMI_CEC HDMI - Consumer Electronics Control **CEC**: Consumer Electronics Control (CEC) · CEC commands: Physical Address Discovery Logical Address Allocation CEC messages CEC Software design Voice Voice is a rendering/animation engine to display the search results of a Voice Search query that is generated by the DVR Schedule Mobile App. CA http://172.31.59.94/wiki/display/HR20Doc/08_6_CA_Manager_and_Verifier CA Manager Interface Control Document: MW-CAManagerICD-080917-LF.doc Wireless Video Bridge Controls the detection, configuration and control of any Wireless Video Bridges on the network. Responsible for all configuration and control of WVBs. Detects WVBs on the network using SSDP and configures them with the network credentials (SSID, WPA2 passphrase and client white list) and other settings. Controls the Wireless Client Addition process driven from the Add a Client screen. Also monit connection to any WVBs and triggers OSDs when WVBs are detected and if they subsequently go missing. Provides WVB diagnostics as part of Video Bridge Status, More System Info and hidden engineering diagnostics screens, WVB elements of System Test, and Whole Home log. Downloads log from WVBs on SENDREPORT/WRITEREPORT. Sysmonitor Cloud VOD Universal Profile Memory Leak Analysis http://172.31.59.94/wiki/display/ARCH/Memory+Profiling CDN simulator Overview of CDN simulator Guideline to setup and use CDN sim: component http://172.31.59.94/wiki/display/CLD/How+to+use+CDN+Simulator+version+4.0 Know how to setup and Setup C3/start over in CDN and STB configure CDN simulator for development http://172.31.59.94/wiki/pages/viewpage.action?pageId=40732588 Know how to troubleshoot http://172.31.59.94/wiki/pages/viewpage.action?pageId=43977264 issue with CDN simulator Public server CDN: To use public server CDN, edit /var/vdm_data/vdm.config and /etc/hostsfollow below: #vdm.config CDNHost=172.19.7.246 CDNPort=4389 PGWSHost=172.19.7.246 #For http: PGWSPort=4389 PGWSScheme=http #For https: PGWSPort=4392 #hosts 172.19.7.246:4389 cmd.dtvce.com BSL 4K VOD Dynamic Plugin http://172.31.59.94/wiki/display/SPO/Dynamic+Plugin+Loader+-+Architecture Turbo IV Pandora WLAN Manager Manages the UI flow for connecting STBs to the internet using WiFi. Provides diagnostics and monitori via the system info screen, front panel diagnostics, and system monitor. http://172.31.59.94/wiki/display/MWPorting/HR44+Wireless+LAN Recommend reviewing them in this order: Hr44 Wifi_Update8.pdf (white paper) 2. wifi concept review_final_b.pptx wlan_design_review_ppt_v1.0.pptx 4. WLANSetupUserInterfaceDesign_v0.5.pdf WLANMiddlewareCoreDesign_v0.5.pdf WLANDiagnosticsUIDesign_v0.3.pdf 7. dwlan_api_1.3.8.pdf Like Khuong Nhat Ninh likes this No labels / Powered by Atlassian Confluence 5.6.5, Team Collaboration Software · Report a bug · Atlassian News XAtlassian