

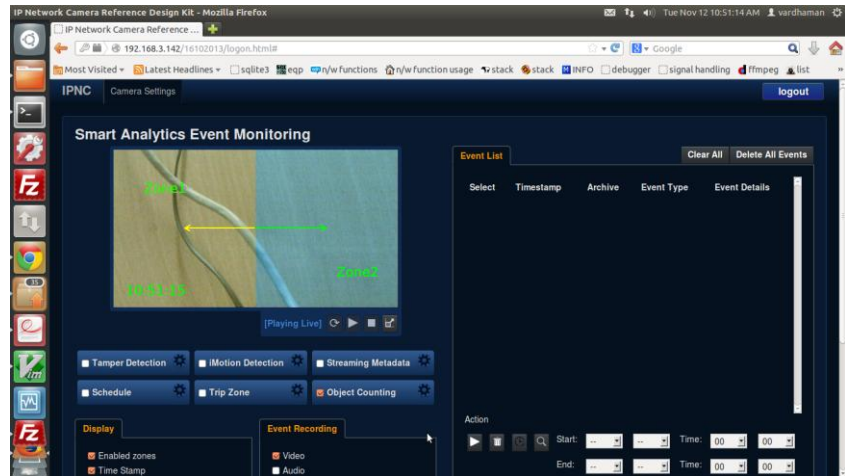


Browser Agnostic Multiplatform Application

Background

The IP based network Camera (IPNC) and applications are under constant transformation due to emerging application needs. Vayavya Labs has developed a browser based solution for Texas Instruments DaVinci based IPNC solution that helps in smooth playback of multimedia streams over multiple browsers like Safari, Firefox, Chrome and IE (Internet Explorer).

So far most of the applications were fine tuned only for Internet Explorer. However with the shift in IPNC applications to variety of devices/platforms making a solution that works across browsers was one of the primary requirements.



Vayavya's browser base solution also addresses the other challenges like:

- Need for large video buffering
- Support for 1080p60
- Portability / extensibility of UI and controls parameters

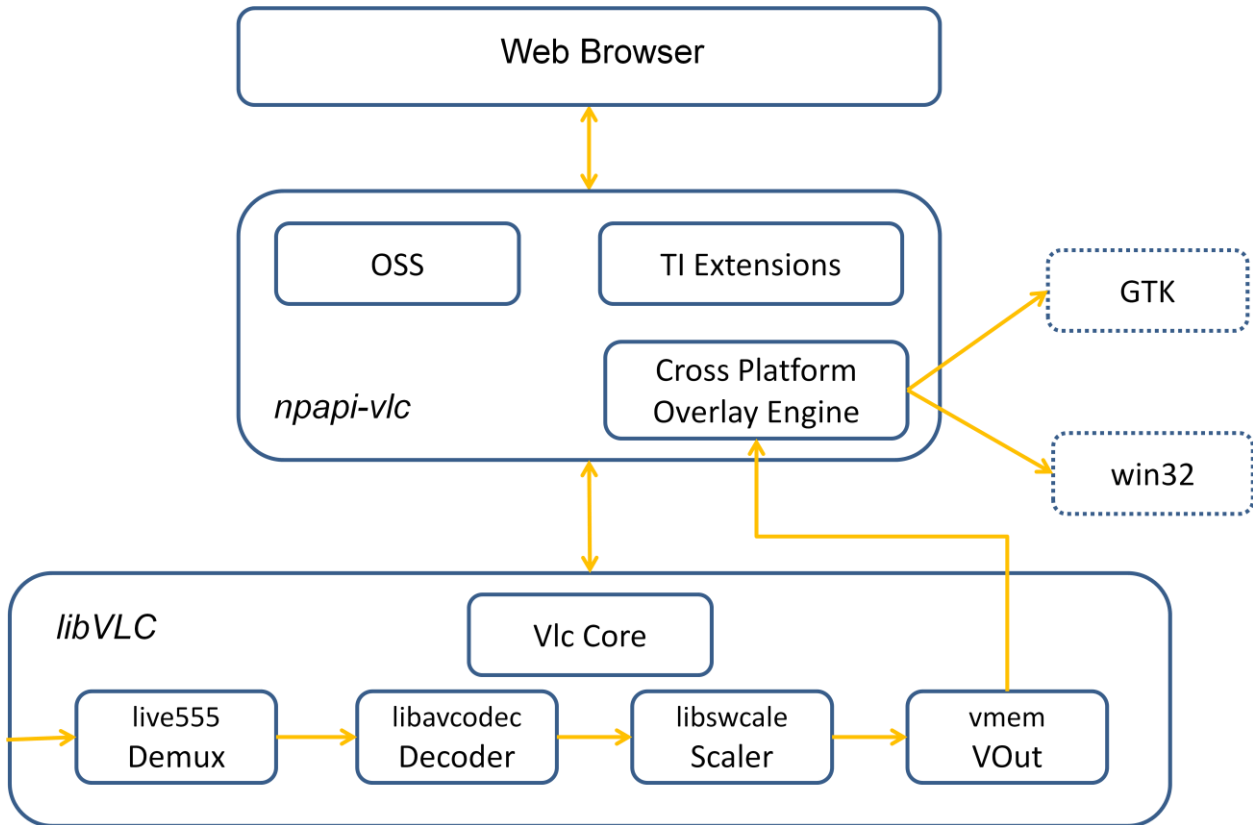
Vayavya's solution for IPNC

Vayavya labs have developed multiplatform browser agnostic application for TI platform based IP network camera. This application enables

- Play back of multimedia streams on Safari, Firefox, Chrome, Internet Explorer on Windows and Linux, with capability to extend the port on Mac OS as well.
- Portability across platforms by offering HTML based user interface & control
- Application is highly scalable and customizable as it is based on open source technologies

Existing application uses technology based on layered ActiveX controls whereas Vayavya's application leverages HTML, JavaScript and Ajax technologies for UI giving the benefits of quicker re-skinning, customization and portability. Application uses VLC as the video plug-in.

Data and Control Flow of Application





Key Feature of Application

- **Views**
 - 1080p 60 Video playback from browser
 - A maximum of 230ms lag from frame capture to frame render
 - Concurrent playback of multiple streams (max 3)
 - Cross platform (Windows and Linux), Cross browser (Chrome, Safari, Firefox, Internet Explorer)

- **Smart Analytics**
 - Event Monitoring
 - Trip Zone identification
 - Motion detection
 - Object count
 - Metadata streaming
 - DMVA Scheduling

- **Settings**
 - Video / Image
 - Advanced video
 - Camera
 - Alarm
 - Audio
 - Network
 - User

- **Support Video Overlays**
 - Configuration for Analytic algorithms
 - Display live events

Key Implementation Specific Details

- **Overlay system (Single drawing code for multiple platforms)**
 - Developed a cross platform framework for Video overlays
 - APIs / SDK for the plug-in for UI development

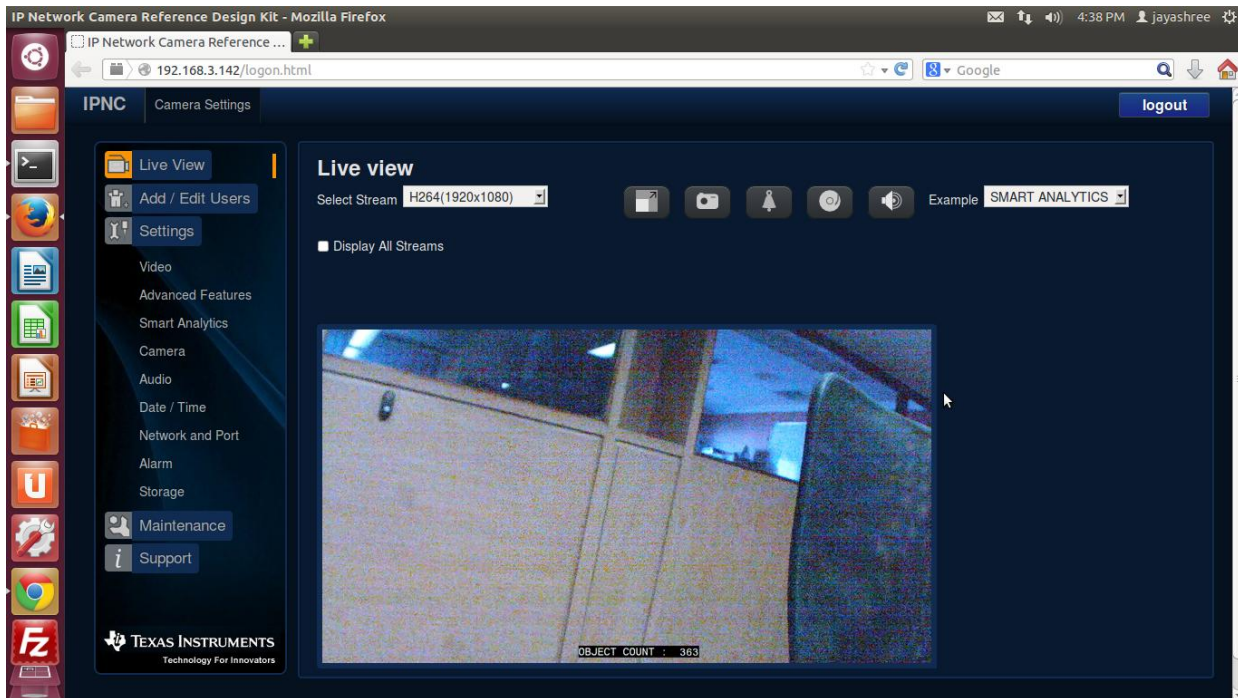
- **Browser quirks**
 - Use of modern Web toolkits like Twitter Bootstrap to develop the User Interface.
 - Developed JavaScript SDK to interact with the video plug-in.
 - Application supported on IE7 upwards and on Chrome, Firefox and Safari, across Windows and Linux.

- **VLC tuning and customization for**
 - Low Latency RTP playback
 - Smooth playback of live streams
 - Smooth streaming under poor network conditions.
 - Improved video load times.
 - Reduced overall size of libVLC and its plug-in for this application to accommodate in low flash memory cameras.



- Plug-in installation independent of VLC application installation.
- Supporting in-stream metadata.

Screenshots



IP Network Camera Reference Design Kit - Mozilla Firefox

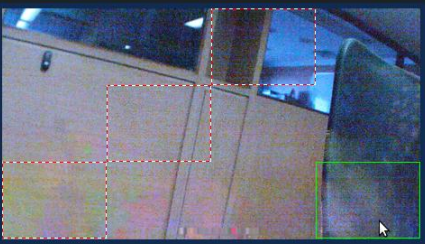
192.168.3.142/login.html#

IPNC Camera Settings logout

Live View
Add / Edit Users
Settings
Video
Advanced Features
Smart Analytics
Camera
Audio
Date / Time
Network and Port
Alarm
Storage
Maintenance
Support

Advanced Features

Motion Detection



Select All Clear All Restore

Sensitivity MEDIUM Customized Threshold 50

Ok Cancel

TI_IPNC
Configure
Detecting
DETECT Configure
X 0 Y 0 W 0 H 0
75 %
UP
Off On
BLACK BOX

Face Reco
Face Reco
Confident
Database SD/ MMC NAND


Ok Cancel

TEXAS INSTRUMENTS

IP Network Camera Reference Design Kit - Mozilla Firefox

192.168.3.142/login.html#

Trip Zone Settings



OBJECT COUNT : 363

Zone Settings

Load Settings Load

Set Zone Zone1 Zone2 Delete Zones

Directionality Bi-Directional
 Zone 1 to 2
 Zone 2 to 1

Trip Zone Settings

Sensitivity

Object Size	In View	Modify	Minimum		Maximum	
			Width	Height	Width	Height
People	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10 %	10 %	20 %	20 %
Vehicles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10 %	10 %	20 %	20 %

Message Window

Sensitivity: Choose sensitivity setting. Note that higher sensitivity might result in more false alarms.