



QVD

Virtual Desktop Infrastructure

X2GO Gathering



QVD

presentation

Linux Desktop Virtualization



QindelGroup

Presented by:
Nito Martínez

Index

- **Introduction**
 - Problem to solve
- **Nspluginwrapper**
 - Nspluginwrapper. History
 - How it works
- **Flash plugin + NX**
 - How it works
 - Changes to nspluginwrapper
 - Changes to nxagent
- **Challenges**



1

Introduction

Multimedia 

One of the VDI main problems is the Multimedia reproduction:

- How to detect that multimedia is playing in the remote desktop
- How to encode/decode it



The approach presented only works with firefox & flash. It might be expanded using firefox as media player (gecko-mplayer plugin)...

It relies on:

- Firefox npapi
- Nspluginwrapper
- Flash plugin
- NX channels (might also be ssh channels)



2

nspluginwrapper

What is it



nspluginwrapper

What is it?

- It allows to start a firefox plugin outside of firefox using socket communication between the plugin and the browser
- It started to allow to run 32bit third party plugins (flash for example) in a 64 bit firefox



How it works

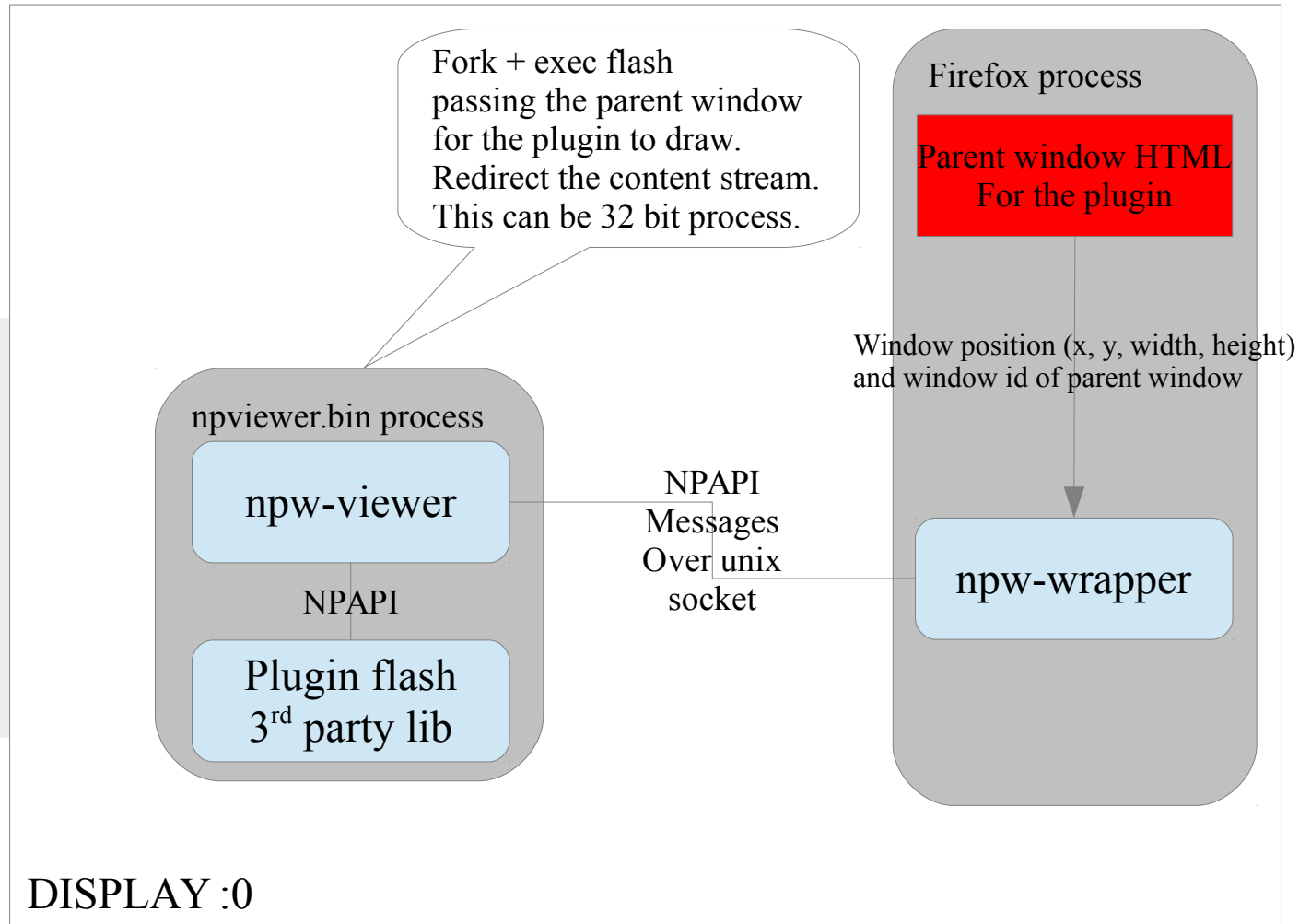


In the HTML flash content is specified

Firefox invokes the flash plugin passing

- Parent window: where the plugin draws
- API to request content from internet using firefox connectivity

nspluginwrapper



3

Flash plugin + QVD



Redirect multimedia

How it works

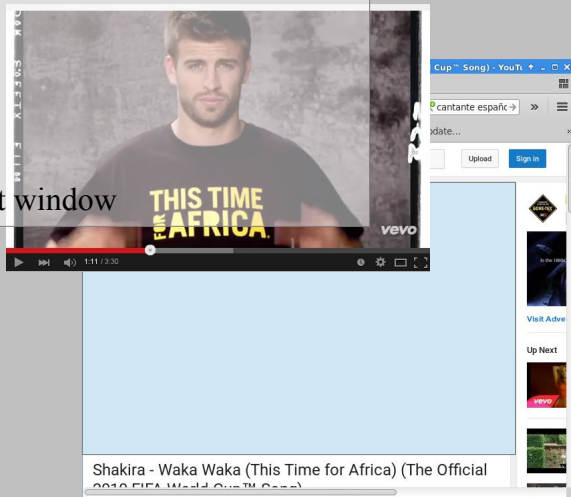
Changes:

- Git branch “flash” <https://github.com/theqvd/qvd-nx.git/>
- Use nspluginwrapper with TCP sockets
- Change nxagent to:
 - Register the remote mapped window id for each window (xprop `_QVD_CLIENT_WID`)
 - Allow to raise/lower the input window if you enter in a special signaled window (xprop `_QVD_REDIRECT_EVENT`)



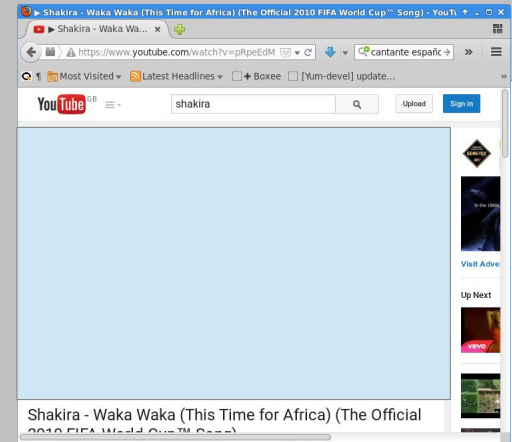
How it works

nxagent Input window



nxcomp DISPLAY=:0

Local display

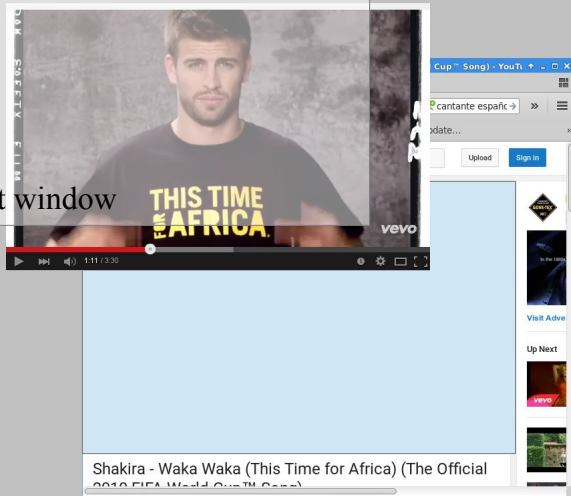


nxagent DISPLAY=:100

Remote desktop

How it works

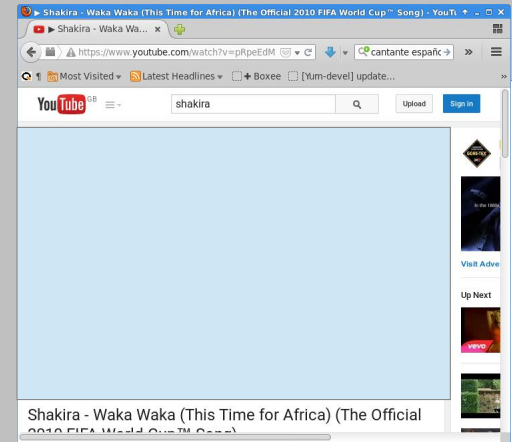
nxagent Input window



nxcomp DISPLAY=:0

Local display

NX
protocol



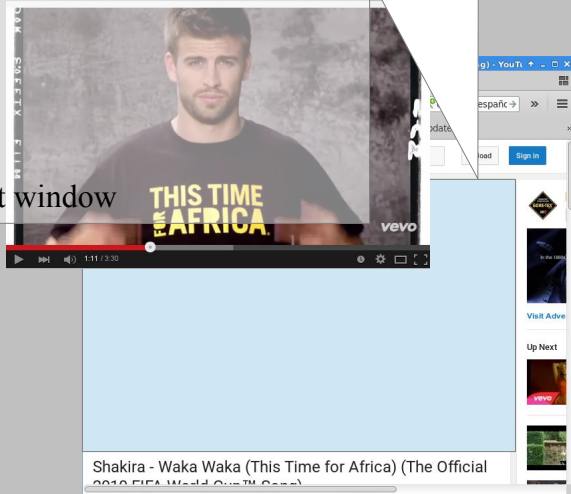
nxagent DISPLAY=:100

Remote desktop

How it works

Flash parent window id is: 0x74005

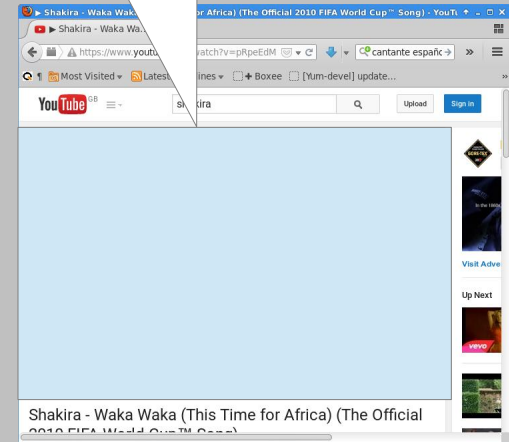
nxagent Input window



nxcomp DISPLAY=:0

Local display

Flash parent window id is: 0x440003
xprop _QVD_CLIENT_WID: 0x74005



nxagent DISPLAY=:100

Remote desktop

How it works

nxagent Input window

npw-viewer

nxcomp DISPLAY=:0

Local display

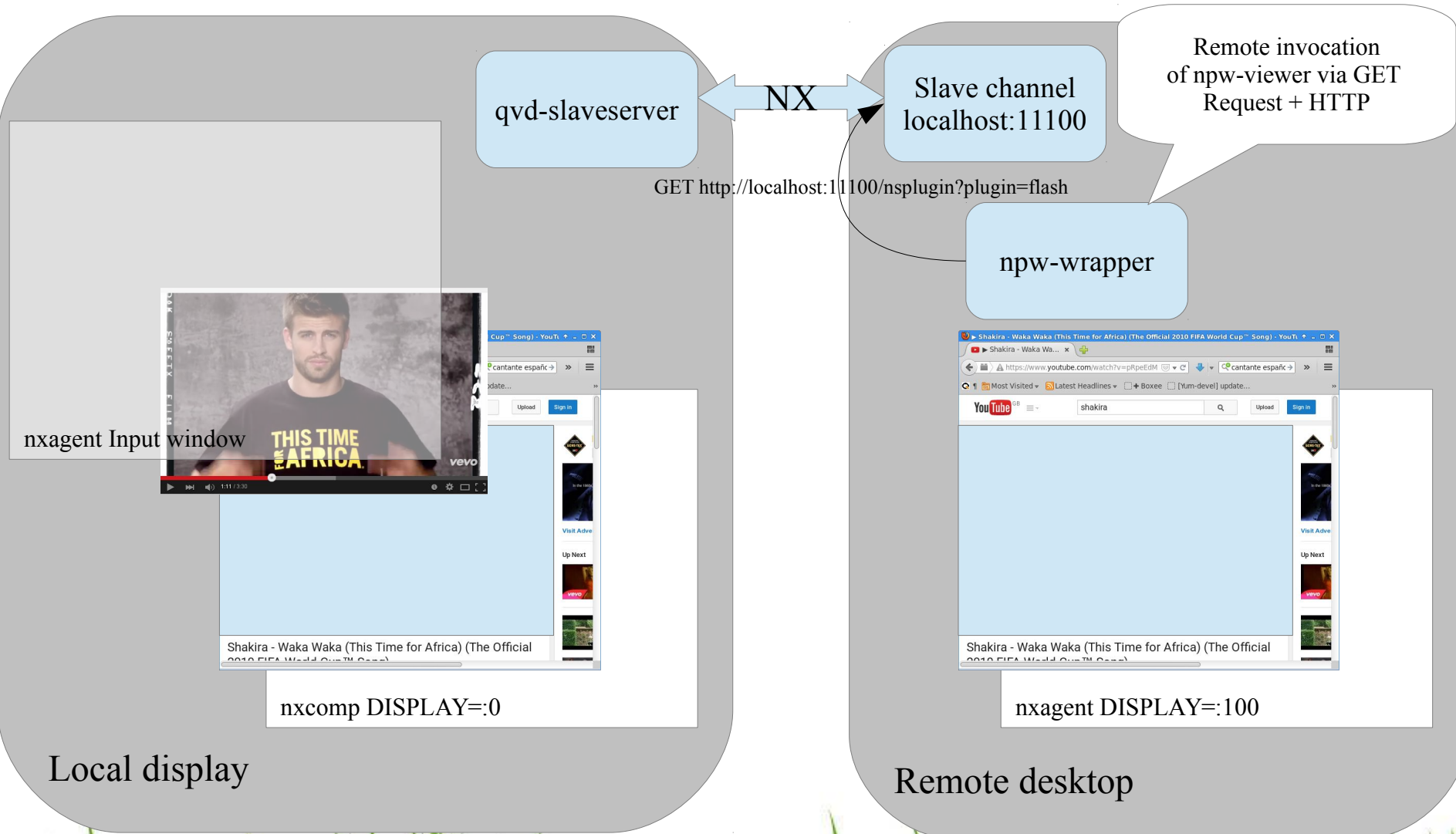
The flash content is handled
By npw-wrapper plugin

npw-wrapper

nxagent DISPLAY=:100

Remote desktop

How it works



How it works

Fork + exec

qvd-slaveserver

NX

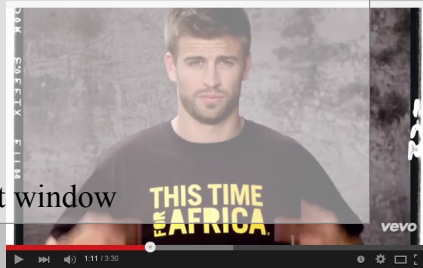
Slave channel
localhost:11100

```
/usr/lib/nspluginwrapper/$machine/x86_64/npviewer  
--plugin /usr/lib/adobe-flashplugin/libflashplayer.so  
--connection 127.0.0.1:11100  
--remote-invocation id=myid-9509
```

npw-viewer

npw-wrapper

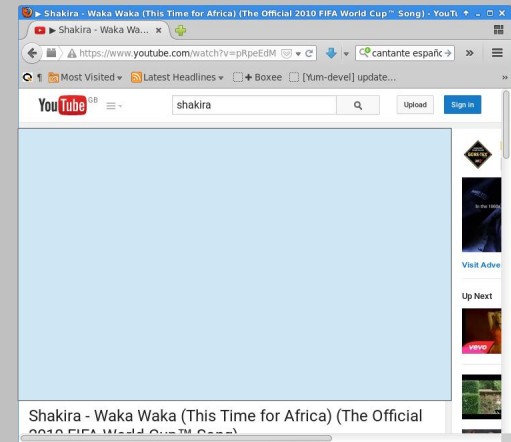
nxagent Input window



Shakira - Waka Waka (This Time for Africa) (The Official
2010 FIFA World Cup™ Song)

nxcomp DISPLAY=:0

Local display



nxagent DISPLAY=:100

Remote desktop

How it works

HTTP Protocol upgrade
(similar to websocket)
Use stdin/stdout as
communication
channel

ncv-slaveserver

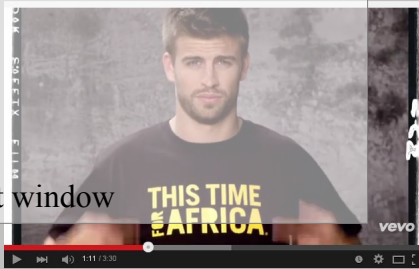
NX

Slave channel
localhost:11100

npw-viewer

npw-wrapper

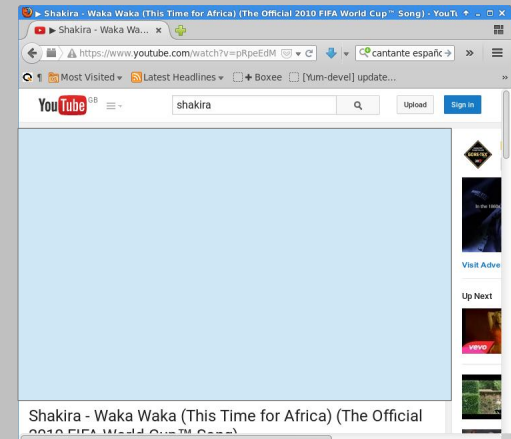
nxagent Input window



Shakira - Waka Waka (This Time for Africa) (The Official
2010 FIFA World Cup™ Song)

nxcomp DISPLAY=:0

Local display



nxagent DISPLAY=:100

Remote desktop

How it works

NPAPI using stdin/stdout
→ several steps
→ one of them is to ask for
parent wid

server

NX

Slave channel
localhost:11100

NPAPI using stdin/stdout
→ Query for parent window
Answers with the xprop
_QVD_CLIENT_WID
(mapped window id in local display)

npw-viewer

npw-wrapper

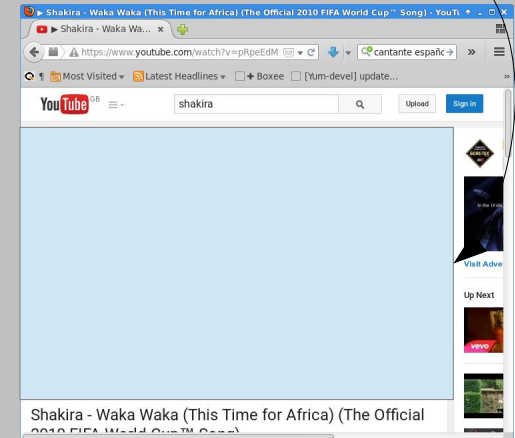
nxagent Input window



Shakira - Waka Waka (This Time for Africa) (The Official
2010 FIFA World Cup™ Song)

nxcomp DISPLAY=:0

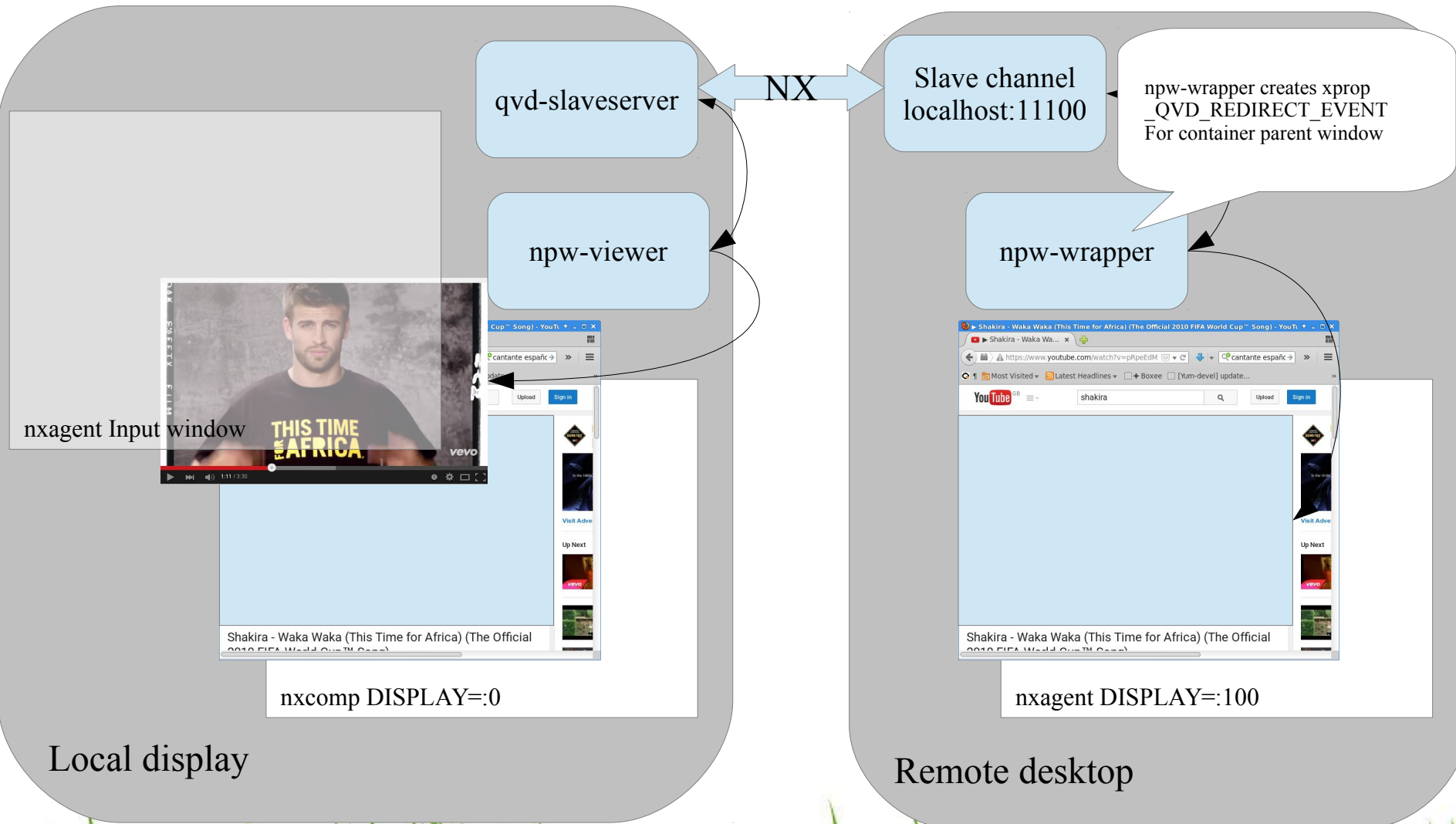
Local display



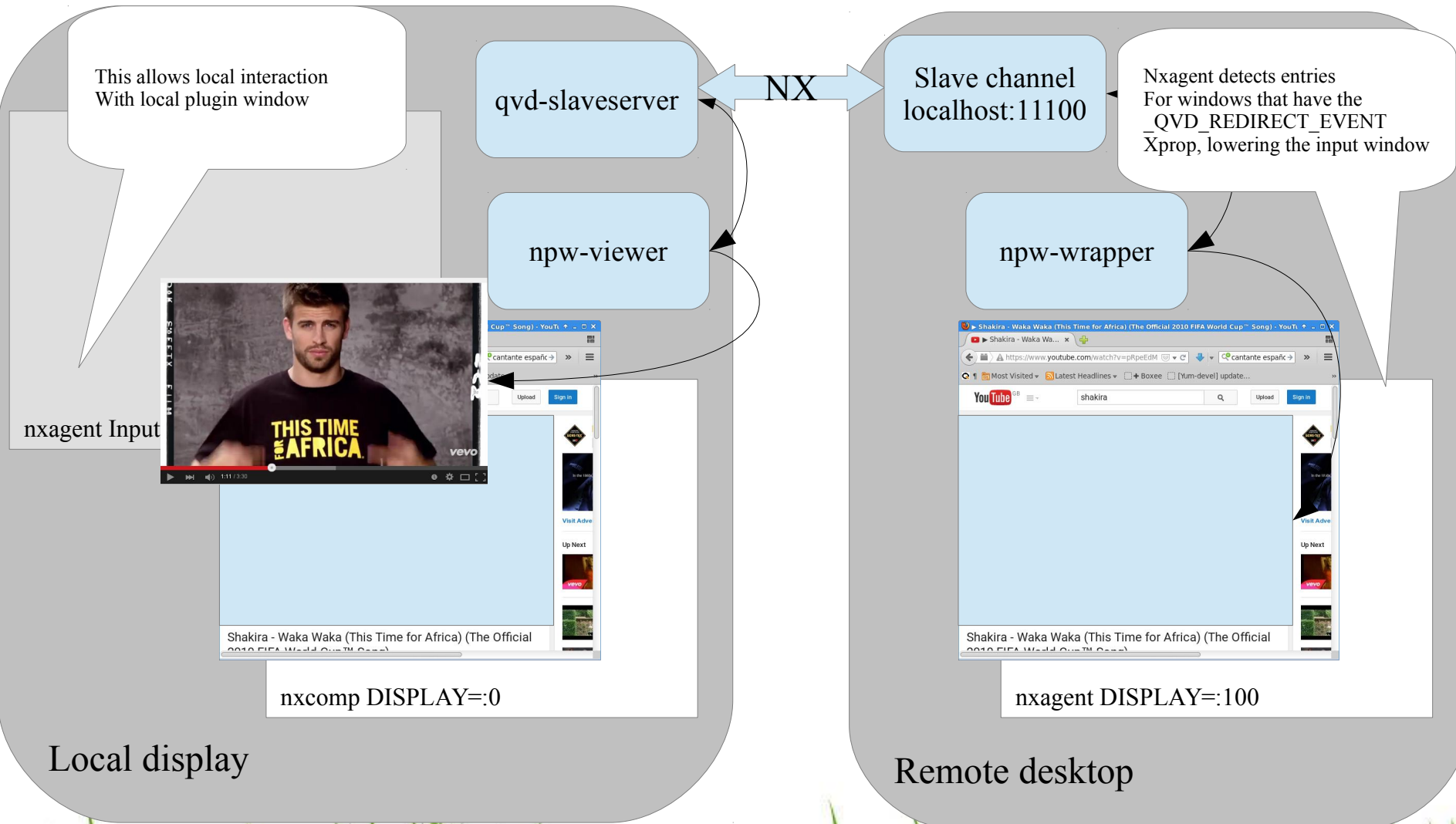
nxagent DISPLAY=:100

Remote desktop

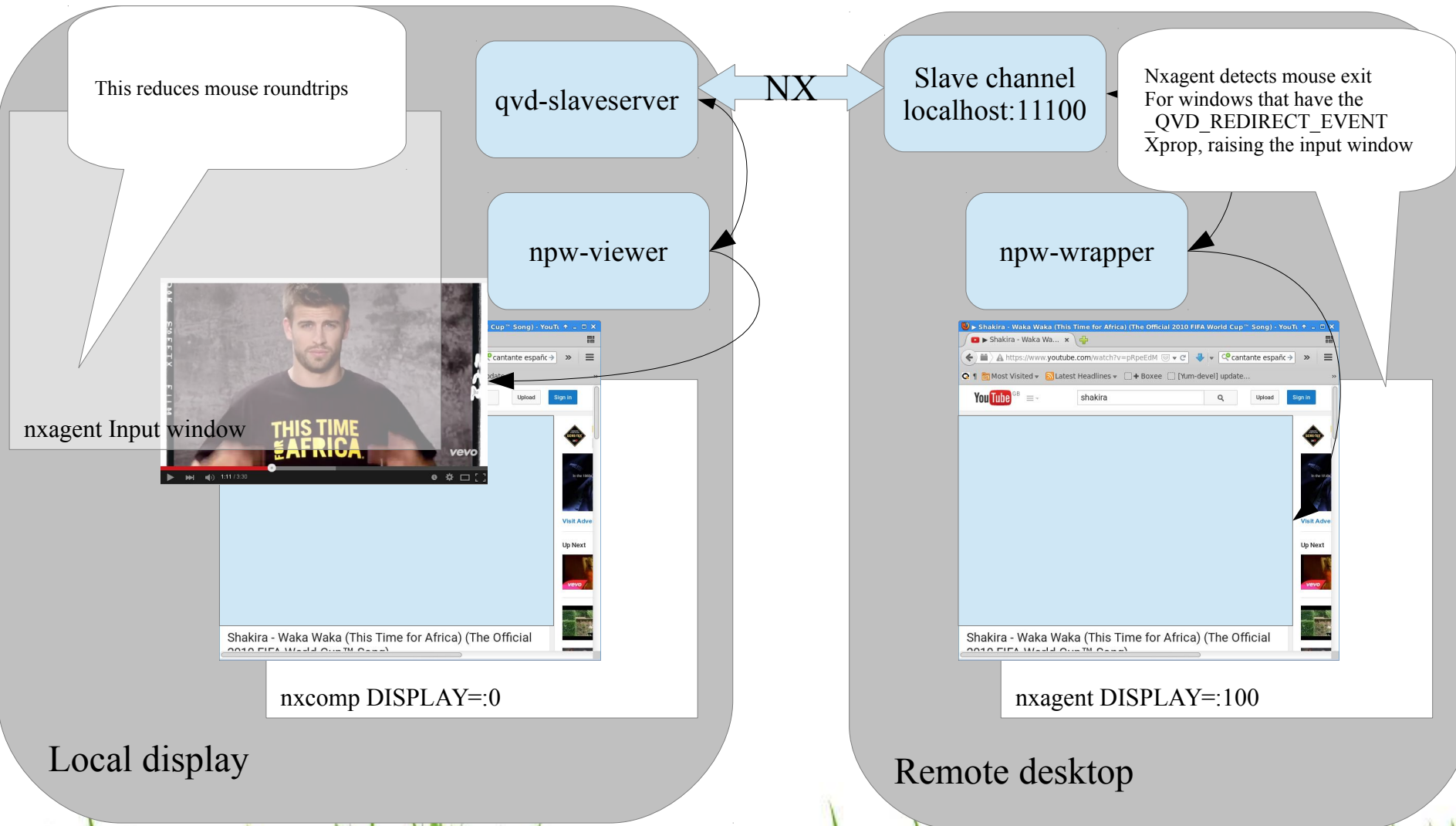
How it works



How it works



How it works



4 Challenges and next steps

Future 

Challenges

Challenges:

- Npapi becomes deprecated? Chromium
- Warning on browser (can be disabled with about:config)
- Multi platform support (linux desktop & window client ...)
- Maximize/minimize window and some other window operations
- What happens when the plugin window creates sub-windows...

Future

- Might be used for flash content with flash plugin. No encoding decoding of content is needed
- Might be used for other multimedia content like mplayer-gecko plugin
-





QVD

Virtual Desktop Infrastructure

Do you wish to know more?
Do you want to participate ?

Let's talk

theqvd.com

Nito Martínez

nito.martinez@qindel.com



@nitomartinez



+34 678476906

QindelGroup

qindel.com | info@qindel.com



/company/qindel



@qindel



/qindelgroup