Pilot to Large-scale Open Source Lecture Capture

Stuart Phillipson
IT Services
stuart.phillipson@manchester.ac.uk
@S_Phillipson
What I mean by a podcast
Schedule
Capture

Processing, Management & Distribution

£0 £0
Why do lecture capture?
Graph 1: End of Unit Examination Results: Percentage of Class Attaining Results Range

Two-tailed unpaired t-tests:
- 2007 (mean=52.0%, SD=15.4)
- 2008 (mean=51.9%, SD=17.2)
  t=0.03, p=0.97
- 2008 (mean=52.0%, SD=15.4)
- 2009 (mean=58.3%, SD=11.9)
  t=4.69, p=3.87 x 10^{-6}
- 2008 (mean=51.9%, SD=17.2)
- 2009 (mean=58.3%, SD=11.9)
  t=4.44, p=1.22 x 10^{-5}

Podcasts introduced in 2009
Student Response to the questions “The Best Thing on Blackboard?”

- Podcasts: 75%
- Discussion Board: 5%
- Learning Modules: 10%
- Lecture Slides: 10%
- Other: 0%

Percentage of Response (%)
Large-scale “Meh” Group

- “Meh”: 50%
- Hostile: 20%
- Unsuitable: 10%
- Enthusiastic: 20%
How we did lecture capture
Matterhorn Operations

- **Admin**
  - Schedule
  - Participation
  - Ingest Balance
  - Workflow management
  - Admin UI
  - Services

- **Ingest**
  - Inbound file transfer

- **Worker**
  - Encoding

- **Present**
  - User UI
  - RSS
  - Search
  - PM UI

- **File**
  - HTTPS file delivery

- **Ops**
  - Monitoring
  - Alerting
  - Automation
  - Build
  - Database
  - Log Analysis

**Project**
- Capture
Database Patch (1.4.3)

Top 5 database operations by wall clock time

- mh_capture_agent_state - SELECT
- mh_capture_agent_state - UPDATE
- mh_host_registration - SELECT
- mh_service_registration - SELECT
- mh_organization_node - SELECT
Open Source Recording System

The Podcast Service in 3 minutes

Media Technologies Team
IT Services
mediatechnologies@manchester.ac.uk

Hardware & install cost per room ~ £1,000
Benefiting Each Other

Audio Monitoring
Added by James Perrin, last edited by James Perrin on Nov 29, 2013

Capture Agent Live Audio Monitoring
Manchester has added live audio monitoring to its CA monitor. Here are some details about how the underlying service is setup.

The audio monitoring is provided via an icecast2 - darkice (server - client) set up.

to install the icecast2 server on RHEL 8:

- install the dependencies
  yum install curl-devel libtheora-devel libvorbis-devel libxslt-devel speakerphone-devel
- install the EPEL packages
  rpm -ivh http://fedoraproject.org/pub/epel/epel-release-6-8-13.rpm
- yum install icecast
- configure the config file at /etc/icecast.xml
- service icecast start

On the client: compile darkice from source. [https://code.google.com/p/darkice/](https://code.google.com/p/darkice/) (for pulse audio support). current version 1.2:

- mkdir ~/darkice & cd ~/darkice
- wget https://darkice.googlecode.com/files/darkice-1.2.tar.gz
- tar -xvzf darkice-1.2.tar.gz
- cd darkice-1.2
- apt-get install build-essential libsamplemate0-dev libpulse-dev libaudio-dev lame libjack-jack2-dev libassound2-dev libiw-volume-change-dev libalsa-dev libfftw-dev libtranscode-dev liblame-2.1-dev
- make
- make install
Summary

- Open-source can deliver very large scale *quickly*
- Open-source give rapid flexibility
- Open-source is very cost effective
- Open-source staffing requirement
Questions?
Highly Scaleable Lecture Capture Using Open-Source capture agent. galicaster
Andrew wilson
andrew.wilson-2@manchester.ac.uk
The lay of the land

• Varied environment. hdmi, dvi over ethernet, vga, size availability of power and network
• Often small installation spaces
The Goal

• Initially 60 locations, currently 130 and expanding
• timetable driven
• no user intervention
solved!

- monostream video and audio. simple yet effective
- Linux based. flexible, powerful
- small form factor. off-the-shelf
- Galicaster
- as much hardware as software
Galicastrer: https://github.com/teltek/Galicaster

“Multi Stream Recorder and player”

• solid foundation
  - Python, GTK and Gstreamer
  - Opencast Matterhorn compatible

• compatible with all major H/W
  - Runs on linux based OS’s. Ubuntu.
  - Datapath, Blackmagic, Epiphan
Hardware / Software

Mini-ITX
Gigabyte GA-H77N LGA1155
i3-3220T (with low profile heat-sink and fan)
Travla C292-1 80 watt PSU
Sandisk 60GB SSD
Kingston 4GB DDR3 (1333MHz)
1-U PCI riser board (generic)
PCI Blackmagic Intensity Pro HDMI
Kramer VP 435
total cost per unit: approx £943.80

Lubuntu 12.04LTS
32bit kernel 3.8.0-32
Blackmagic drivers 9.7.8
Galicaaster 1.3.1
monitoring VNC
Capture Agent Monitor
audio monitoring
Flexibility

Lubuntu - ‘cut down’ OS. performance dedicated to galicaster

Full suite of software and tools for debian/Ubuntu

Python - Really great to learn as a beginner arguable great for large projects to could run on ‘old’ existing hardware
Flexibility continued...

- adapt the configuration
- scripting and cron jobs
- enable / disable features or UI
- add or remove features
- management by ansible

No vendor intervention necessary
Community

- active mailing list
- frequent community meetings
- new features added
- benefits to the whole community
- developers committed to both stability and features
Open Source Options For Education

by Mark Johnson on 13 January 2013, last updated 3 January 2014

This document presents options for open source software for use in the education sector. Some of these may have uses outside of education, but they are presented here in the context of the specific benefits to educational establishments, or their use in the course of wasting and learning.

The document is intended to complement the UK Cabinet Office's Open Source Options document, which is presented as part of its Open Source Procurement Policy in recognition of open source software's widespread usage across the public sector. As such, the aims and content of this document are those stated in the original document.

OSSwatch maintains a briefing on Making Use of the Cabinet Office's Guidance on Open Source software in the briefing can also be applied to this document. The document in its current format is the product of an ongoing collaboration between OSS Watch and Crown Copyright.

House of Commons
Public Administration Select Committee

Government and IT — “a recipe for rip-offs”: time for a new approach

Twelfth Report

Volume I

Volume I: Report, 20 minutes