Modelling the 'Hurried' Bug Report Reading Process to Summarize Bug Reports



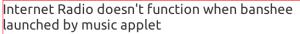
Rafael Lotufo, Zeeshan Malik, and Krzysztof Czarnecki Generative Software Development Lab University of Waterloo

ICSM. September 27, 2012

Bug reports are consulted all the time

40% of sw. dev. efforts are spent in bug resolution; Getting updates on bug diagnostics; Consuling similar/related bugs; Getting updates on resolution progress; Upstream bugs;

Bug reports should be easily digestible



Bug Description

Binary package hint: banshee

So, it works from the command line, works from the Applications menu. All the Banshee tells me is "unspecified error".

DistroRelease: Ubuntu 10.04

Package: banshee 1.6.1-1~lucid1 Uname: Linux 2.6.32-25-generic x86 64

Architecture: amd64

evrieowl (evrieowl) wrote on 2010-11-11:

Oh, and it's worth noting that the streams work with music-applet/panflute running *as long as* banshee is NOT started by the applet. They only fail to function when Banshee is run from the amplet itself.

a eyrieowl (eyrieowl) wrote on 2010-11-11:

The only difference is how Banshee was invoked. The same station configuration is present with either way of invoking the application, but when I attempt to play it, I get different behaviour.

Chauncellor (brettcornwall) wrote on 2010-11-20:

I can confirm this. I'm using the sound indicator and internet doesn't work. Running through terminal works fine.

I've tried both 1.8 and the latest unstable 1.9

Report a bug

This report contains Public information

Everyone can see this information.

Mark as duplicate

Convert to a question

Link a related branch
 Link to CVE

. ...

38

#2

#10

#12

Duplicates of this bug

Bug #704381

You are not directly subscribed to this bug's notifications.

Edit bug mail

Other bug subscribers Subscribe someone else

Notified of all changes

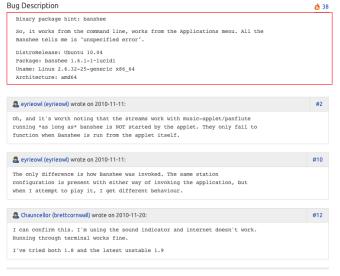
Chauncellor

SRU Verification

Ubuntu Stable Rel...
A eyrieowl

🚨 Γουργιώτης Γιώργο...

Internet Radio doesn't function when banshee launched by music applet



Report a bug This report contains Public information (P) Everyone can see this information. Mark as duplicate Convert to a question Link a related branch Link to CVE Duplicates of this bug A Bug #704381 You are not directly subscribed to this bug's notifications. Edit bug mail Other bug subscribers Subscribe someone else Notified of all changes Chauncellor

SRU Verification

eyrieowl
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Ubuntu Stable Rel...

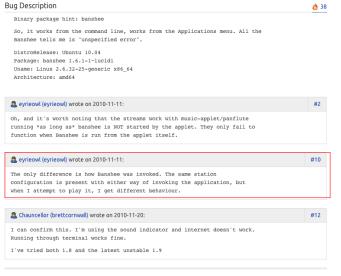
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Bug Description



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Internet Radio doesn't function when banshee launched by music applet



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♣ Chauncellor♣ SRU Verification♣ Ubuntu Stable Rel...

eyrieowl
Γουργιώτης Γιώργο...

Internet Radio doesn't function when banshee launched by music applet



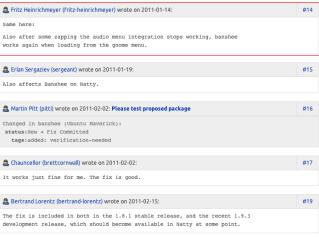
Notified of all changes
♠ Chauncellor

SRU Verification
Ubuntu Stable Rel...

notifications.

Edit bug mail

eyrieowl
Γουργιώτης Γιώργο...



Doraann2 🚨 Ed Enver ALTIN Franko Fang A HavSavCheese A Hidagawa Jesse Jones José Alfonso Kamus LPM See full activity log Matt i Max Greta Michael Davenport Mikhail Sakleev Mr Verity Mr. MInhai

Mame Channed

🌉 Γουργιωτης Γιωργο...

May be notified

Andreas Mood

Ashani Holland
Banshee Team

Christian Victor
Dave Morley

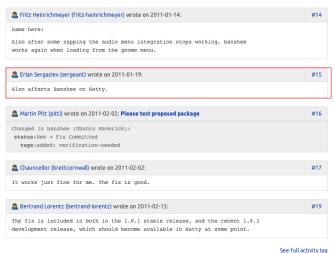
Desktop Packages

Debian PTS

Bilal Shahid
Bruno Garcia

♣ CRC
♣ Charlie Smotherma...

Alejandro J. Alva...



🌉 Γουργιωτης Γιωργο... May be notified Alejandro J. Alva... Andreas Moog Ashani Holland Banshee Team Bilal Shahid Bruno Garcia CRC Charlie Smotherma... Christian Victor Dave Morley Debian PTS Desktop Packages Doraann2 🚨 Ed Enver ALTIN Franko Fang A HavSavCheese A Hidagawa Jesse Jones José Alfonso Kamus LPM Matt i Max Greta Michael Davenport Mikhail Sakleev

4/32

Mr Verity



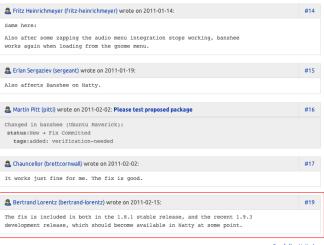
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Mr. MInhaj
Name Changed



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Max Greta
 Michael Davenport
 Mikhail Sakleev
 Mr Verity
 Mr. Minhaj
 Name Changed



See full activity log

🌉 Γουργιωτης Γιωργο... May be notified Alejandro J. Alva... Andreas Moog Ashani Holland A Banshee Team Bilal Shahid Bruno Garcia CRC Charlie Smotherma... Christian Victor Dave Morley Debian PTS Desktop Packages Doraann2 🚨 Ed Enver ALTIN Franko Fang A HavSavCheese A Hidagawa Jesse Jones José Alfonso Kamus LPM Matt i Max Greta Michael Davenport Mikhail Sakleev

Mr. MInhaj
Name Changed

To post a comment you must \log in.

That is an extractive summary of a bug report

I added this stream: http://ktru.org/audiometa/listen3.m3u to banshee. At first I thought that banshee internet radio wasn't working. I tried all the other streaming urls at http://ktru.org/ (they have 3 mp3 streams, 2 AAC, 1 real audio, 1 wma), and none of them worked. They had, however, been working when I'd previously been using rhythmbox. I verified they were still working in rhythmbox. I didn't see anything relevant in the banshee log...so I tried running banshee from the command line. lo-and-behold, the radio worked. I changed the music-applet to use the banshee-1 command instead of DBus...still didn't work. I also tried banshee command, still no love. So, it works from the command line, works from the Applications menu. I then went to the musicapplet page, saw that it's being replaced with panflute. I installed panflute...still had the same issue. I suspect there's something about how Banshee reports to the applets when it starts a stream which causes Banshee to end up failing to play the stream. All the Banshee tells me is "unspecified error". The work around, of course, is to not use the music applet or panflute to run banshee. However, the player should probably be able to play the streams regardless of how it was invoked. Hence the bugreport.

Package: banshee 1.6.1-1~lucid1 ProcVersionSignature: Ubuntu 2.6.32-25.45-generic 2.6.32.21+drm33.7 Uname: Linux 2.6.32-25-generic x86 64 NonfreeKernelModules: nvidia Architecture: amd64 CheckboxSubmission: 37894631f5c420e18ac8edbbb2af3541 CheckboxSystem: edda5d4f616ca792bf437989cb597002 Date: Thu Nov 11 10:21:28 2010 InstallationMedia: Ubuntu 9.10 "Karmic Koala" - Release amd64 (20091027) ProcEnviron: PATH=(custom, user) LANG=en US.utf8 SHELL=/usr/bin/tcsh SourcePackage: banshee

ProblemType: Bug DistroRelease: Ubuntu 10.04 subscribed to this bug's notifications.

Edit bug mail

Other bug subscribers

Subscribe someone else

Notified of all changes

Chauncellor

SRU Verification

Ubuntu Stable Rel... evrieowl

🚨 Γουρνιώτης Γιώρνο...

May be notified

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Debian PTS

Desktop Packages

Doraann2

Ed

Enver ALTIN A Franka Fana



🚨 Mr. Minhaj Name Changed PCTeacher012 Paolo Topa Peter Bullert Punnsa Ramón Jordán Richard Sequin Richard Williams Ruben Sebastian Dröge Thomas Green Tom Weiss 🕰 Ubuntu Buas Ubuntu CLI/Mono U... Uniropo Vasanth Vic Parker ahepas antonio congedo basilisgabri christine dsfkj dfjx a ed faeth eoininmoran filmogul ganesh hellojoker Linuxgiis mbkc2009@vahoo.com



eoininmoran 💂 filmogul ganesh helloioker linuxaiis mbkc2009@vahoo.com nikonikic42 projevie@hotmail.com 🔔 gadir sankaran

Bug attachments Dependencies.txt (edit)

vanessa

log file for banshee run from music applet with --debug -redirect-log (edit)

log file for banshee run from command line with --debug -redirect-log (edit)

Add attachment

Remote bug watches

anome-bugs #486543

Bug watches keep track of this bug in other bug trackers.

Introduction

Motivation

oh, and just to note, I did use music-applet and not panflute because I didn't see where in panflute to change how it launches the application. It's probably in a config file somewhere but since music-applet makes it easy and has the same behaviour I just used it.

Chow Loong Jin (hyperair) wrote on 2010-11-11:

serieowl (eyrieowl) wrote on 2010-11-11:

#9

#8

On Friday 12, November, 2010 02:00 AM, eyrieowl wrote:

> ** Attachment added: "log file for banshee run from command line with -debug --redirect-log"

> https://bugs.launchpad.net/ubuntu/+source/banshee/+bug/674116/+attachment/

1730238/+files/bansheeWorking.log

Are you adding the streams into Banshee via Panflute? It looks like it was trying to parse an invalid URL.

a eyrieowl (eyrieowl) wrote on 2010-11-11:

#10

No. I'm using the URL pasted above, and I'm not editing the station between runs of banshee. The station is configured (and was initially configured) from within Banshee. The only difference is how Banshee was invoked. The same station configuration is present with either way of invoking the application, but when I attempt to play it, I get different behaviour.

serieowl (eyrieowl) wrote on 2010-11-19:

#11

To follow up, is there any extra info you require? I can consistently replicate this result, every time.

Chauncellor (brettcornwall) wrote on 2010-11-20:	#12
I can confirm this. I'm using the sound indicator and internet doesn't work. Running through terminal works fine.	
I've tried both 1.8 and the latest unstable 1.9	
A Kamus (kamus) wrote on 2010-11-24:	#13
Kallus (kallus) wrote oil 2010-11-24.	#13
Confirmed under release 1.9.0-lubuntul~hyperl+maverick	
Changed in banshee (Ubuntu): importance:Undecided + Medium status:Incomplete + Triaged	
Eritz Heinrichmeyer (fritz-heinrichmeyer) wrote on 2011-01-14:	#14
Same here:	
I use banshee 1.8 (maverick proposed) and there are definitely problems when switching radio channels, radio gets unuseable after some zapping of radio streams whereas mp3 playing stays functional.	
Also after some zapping the audio menu integration stops working, banshee works again when loading from the gnome menu.	
I tried banshee after i have read that banshee becomes the default ubuntu audio player and really very fast stumbled over this bug.	
Clementine works nice and is also available with windows, btw., but it is qt-based. $% \begin{center} c$	
♣ Erlan Sergaziev (sergeant) wrote on 2011-01-19:	#15
Also affects Banshee on Natty.	

Martin Pitt (pitti) wrote on 2011-02-02: Please test proposed package	#16
Accepted banshee into maverick-proposed, the package will build now and be available in a few hours. Please test and give feedback here. See https://wkki.ubunu.com/Testing/EnableFroposed for documentation how to enable and use -proposed. Thank you in advance!	
Changed in banshee (Ubuntu Maverick): status:New + Fix Committed tags:added: verification-needed	
Chauncellor (brettcornwall) wrote on 2011-02-02:	#17
It works just fine for me. The fix is good.	
Changed in banshee (Ubuntu): status:Triaged → Fix Committed	
& Martin Pitt (pitti) on 2011-02-02	
<pre>tags:added: verification-done removed: verification-needed</pre>	
& Kamus (kamus) wrote on 2011-02-15:	#18
According to last duplicate report, this issue is still happening in Natty with 1.9.2 release. By the way and for the record, there is a video available at https://bugs.launchpad.net/ubuntu/+source/banshee/+bug/704381/+attachment/1851397/+files/out-1.ogv	
Bertrand Lorentz (bertrand-lorentz) wrote on 2011-02-15:	#19
	#19
The fix is included in both in the 1.8.1 stable release, and the recent 1.9.3 devalopment release which should become available in Nattu at some point	

Bertrand Lorentz (bertrand-lorentz) wrote on 2011-02-15:

#19

The fix is included in both in the 1.8.1 stable release, and the recent 1.9.3 development release, which should become available in Natty at some point.

Launchpad Janitor (janitor) wrote on 2011-02-20:

#20

This bug was fixed in the package banshee - 1.9.3-2ubuntul

banshee (1.9.3-2ubuntul) natty; urgency=low

- * Merge from Debian Experimental, remaining changes:
 - + Enable SoundMenu and Disable NotificationArea by default
 - + Disable boo and karma extensions
 - + Enable and recommnd ulms and soundmenu extensions
- + Move desktop file for Meego UI to /usr/share/une/applications

banshee (1.9.3-2) unstable: urgency=low

* [c349fbb] Bump gdata-sharp build-dep to accomodate ABI bump

banshee (1.9.3-1ubuntu1) UNRELEASED; urgency=low

- * Merge from Debian Experimental, remaining changes:
 - + Enable SoundMenu and Disable NotificationArea by default
 - + Disable boo and karma extensions
 - + Enable and recommnd ulms and soundmenu extensions
- + Move desktop file for Meego UI to /usr/share/une/applications
- * [aa23652] Drop libindicate0.1-cil-dev

banshee (1.9.3-1) unstable; urgency=low

- * [e588beal New upstream release:
 - + Enhancements:
 - Various fixes and improvements to the Windows build
 - MPRIS: Implement the recently added PlaylistChanged signal
 - SoundMenu: Implement the new registration process
 - Daap: Keep a list of recently used remote servers

They are not easily digestible

The Debian community acknowledges problem:

"[A summary] is useful in cases where ... the bug has many comments which make it difficult to identify the actual problem."

"Personally, I use a greasemonkey script that **highlights** comments from people that are likely to be providing useful information."

State of the Art

Requires set of manually created summaries

Rastkar @ ICSE 2010 Extractive summary: selection of most important sentences; Uses pre-existing email thread summarization approach; Uses machine learning to classify sentences as relevant or not;

Golden summaries impose **significant overhead** for usage.

Objective

Create a general, unsupervised summarization technique;

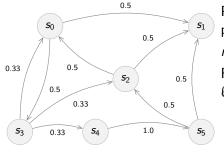
Based on an improved understanding about how information evolves in bug reports;

How would someone read a bug when in a hurry?

Reader has to choose the most relevant sentences to focus on; Many portions will be left unread or only briefly looked at;

Sentence relevance = probability of being read

PageRank solves a very similar problem



PR estimates the relevance of web pages;

 $relevance(page) \equiv P(landing(page))$ Random surfer model:

$$\ell_{web}(p_i, p_j) = 1/N_i$$

How do we measure probability transitions?

But how does a user choose the *next sentence*?

Qualitative investigation on 55 bugs; Grounded theory [Strauss and Corbin];

"How does information evolve in bug reports?"

A bug report has many threads of conversations about different topics

Follow similar threads of topics: ℓ_{tp}

Deal with large number of topics being discussed;

Transition probability is higher the more two sentences talk about the same topics;

Prioritizes sentences that talk about "hot" topics.

Avoid parallel, off-topic discussions: ℓ_{df}

Relevance of a sentence is higher the more topics it shares with the bug title and description.

Estimate topic similarity using cosine similarity

Information evolves through evaluative comments

Claims are disputed or confirmed;

Hypotheses are tested;

Proposals are evaluated.

Follow **evaluation** relations: ℓ_{ev}

Transition probability is higher the stronger the evaluation relation between two sentences.

Identifying evaluation relations with sentiment analysis

Evaluation ↔ positive or negative opinion;

Most promising previous results with classification;

Infer positive or negative polarity using emoticons;) [Bo & Bhyani]

Three heuristics

Follow similar threads of **topics**: ℓ_{tp} ;

Follow topics similar to bug **definition**: ℓ_{df} ;

Follow **evaluation** relations: ℓ_{ev} ;

Combining all heuristics (ℓ_{all})

$$\ell_{\mathsf{all}}(s_i, s_j) = \frac{\left[\ell_{\mathsf{tp}}(s_i, s_j) + \ell_{\mathsf{df}}(s_i, s_j) + \ell_{\mathsf{ev}}(s_i, s_j)\right]}{3}$$

 ℓ_{tp} : follow similar topics

 ℓ_{df} : follow topics similar to bug description

 ℓ_{ev} : follow evaluation comments

Evaluation

Test heuristics:

 $\ell_{\text{tp}},\;\ell_{\text{df}},\;\ell_{\text{ev}},\;\ell_{\text{all}}$

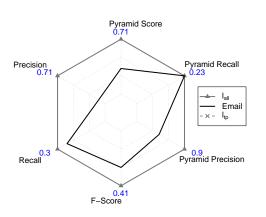
Compare accuracy to accuracy of previous approach (email summarizer);

Accuracy is based on expert created golden summaries.

Standard precision and recall;

Pyramid precision and recall [Nenkova 2007].

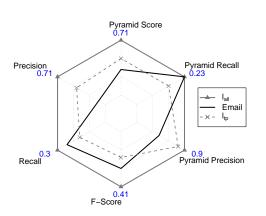
Results



$$\begin{split} &\ell_{\text{all}} \gg \text{email} \\ &\Pr(\ell_{\text{tp}}) > \Pr(\text{email}) \\ &\text{Rec}(\ell_{\text{tp}}) < \text{Rec}(\text{email}) \\ &\ell_{\text{df}} > \text{email} \\ &\ell_{\text{ev}} \sim \text{email} \end{split}$$

Individual heuristics ~ previous approach Combined heuristics >> previous approach

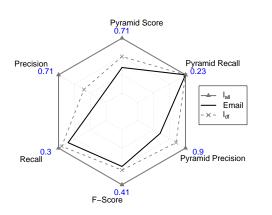
Results



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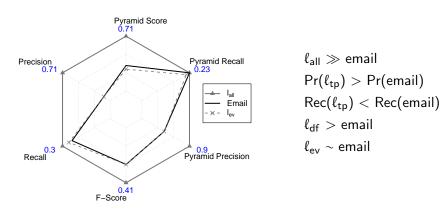
Individual heuristics ~ previous approach Combined heuristics ≫ previous approach

Results

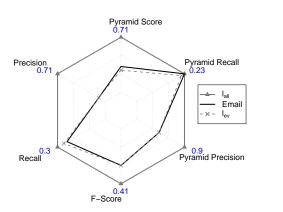


$$\begin{split} &\ell_{\text{all}} \gg \text{email} \\ &\text{Pr}(\ell_{\text{tp}}) > \text{Pr(email)} \\ &\text{Rec}(\ell_{\text{tp}}) < \text{Rec(email)} \\ &\ell_{\text{df}} > \text{email} \\ &\ell_{\text{ev}} \sim \text{email} \end{split}$$

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$$\begin{split} \ell_{\text{all}} &\gg \text{email} \\ &\text{Pr}(\ell_{\text{tp}}) > \text{Pr}(\text{email}) \\ &\text{Rec}(\ell_{\text{tp}}) < \text{Rec}(\text{email}) \\ &\ell_{\text{df}} > \text{email} \\ &\ell_{\text{ev}} \sim \text{email} \end{split}$$

Individual heuristics ~ previous approach Combined heuristics ≫ previous approach

Evaluation with 58 developers

Invited 250 developers from Mozilla, Chrome, Launchpad, and Debian;

Asked them to evaluate summary for bug they had worked on; 58 developers participated (\sim 25%)

Devs. find summaries useful

80% said at least very useful when:

looking for solution or workaround for a bug; searching for similar or duplicates bugs; understand status of bug and open issues;

notifications need acknowledgement URL at bottom

O'Downyon C. Lizenderger 2001-06-06 18:03:51

Packager netsaint
Versions 8.6.6.6.1016-14

Secretify widthist

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Condensed view

notifications need acknowledgement URL at bottom

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Versions: 08.6 stable=4
Severity: visibilist
It would be useful if netsaint's problem notifications listed an UML at the bottom to acknowledge
the problem, libs so:

http://lasias.ditit.met/cpi-bin/netsaint/cod.cgilrosi_typ=34Absat=pindosSeverice=500

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Condensed view

notifications need acknowledgement URL at bottom

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Kernel: Linux ed 24.5 of 15 km Jun 3 15:16:55 CST 2001 1866

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1 Ben Bell 2007-06-08 09-06:59

Litzenberger" ---- > It would be useful if netsaint's problem notifications listed an URL at the e > bottom to acknowledge the problem, like so:

notifications need acknowledgement URL at bottom

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Architecture: 10:00.

Server internation

Dobtion Roises: texting/nortable

Architecture: 10:00.

Kernett Limox 2ed 24.4.5 #1 Sen Jun 3 15:16:55 CST 2001 1606

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"I would never trust an automated summary, and would always need to refer to the original. By highlighting the important sentences, it allows me to speed read a long report with many comments and status updates."

Condensed view

notifications need acknowledgement URL at bottom



notifications need acknowledgement URL at bottom

0 *Dwayne C. Litzenbe	erger* 2001-06-06 18:03:51
Version: 0.0.6stab	Te-d
Severity: wishlist	
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Debian Release: te:	sting/unstable
Architecture: 1386	
	2.4.5 #1 Sun Jun 3 15:16:55 CST 2001 1686
Locale: LANG=C, LC	

"I would never trust an automated summary, and would always need to refer to the original. By highlighting the important sentences, it allows me to speed read a long report with many comments and status updates."

Condensed view

notifications need acknowledgement URL at bottom



"Interlaced works when there aren't pages of irrelevant data. For a bug with *lots* of comments, a condensed view would help."

Future Directions

Improving Relevance Estimates

Better topic similarity metrics;

Different weights for different topics;

Customize per user interest or preferences;

Train polarity classifier on bug reports instead of Twitter messages;

Consider all sentences previously read, not just last;

Moving past extractive summaries

Better understanding of content allows restructuring bug reports;

Conclusion

Create general bug report summarization approach;

Tested three heuristics for how to read a bug report when in a hurry;

Runs better than previous approach and is general;

Evaluation on developers shows usefulness and suggests interesting future directions.

Live @ http://bugsumm.appspot.com/debian/[bug_id] http://bugsumm.appspot.com/mozilla/[bug_id]