

tmux

A Great Terminal Multiplexer

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plexus platform

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Agenda

- 1 Annoying things
- 2 Features
 - Key features
 - More features
- 3 Notes on terminal emulator
- 4 “Advanced” skills and tips
- 5 Q&A

Agenda

1 Annoying things

It is annoying

- Loosing everything when the connection to server broken?

It is annoying

- Switching among dozens of terminal windows.

It is annoying

- Drag&Drop *again and again* to tile terminal windows

It is annoying

- Can not share *current* terminal with others.

It is annoying

- Can not open one more window over one connection.

Agenda

2 Features

- Key features
- More features

Detach and re-attach

```
tmux [new -s session_name]  
tmux attach [ -t session_name]  
tmux list-sessions
```

Windows grouped into sessions

```
(0) 88690: 4 windows [88x28] (attached)
(1) daily: 4 windows [88x28]
(2) support: 5 windows [167x54]
```

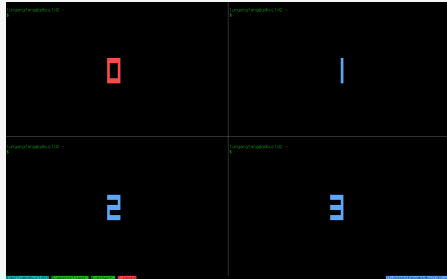
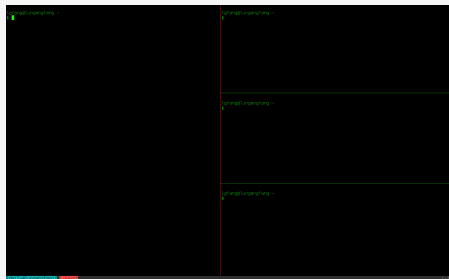
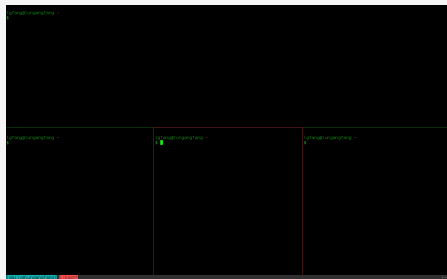
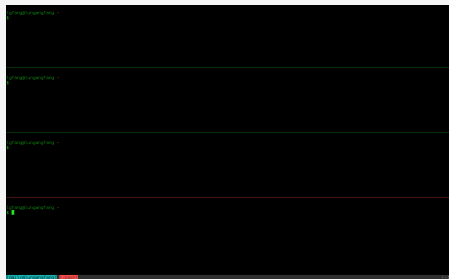
```
[88690@qdbuild2] 1:[tmux]* 2: bash# 3: bash# 4: bash#-
```

```
[lungangfang@qdbuild2:~]
```

```
gdbuild2:-
```

4

Or, preset layouts



When shared, auto-resize according to smallest window

```
requests from Unconfigured source - logged in sipa_protocol_error
;;
tellica 2011-12-05 10:43:52
0 COMPLD
*IP-169.254.125.3-10000-DEFAULT-NOTPRNT-NOTPRNT:TGN=1*
/* RTRV-SIP-TGMAFADDR */
;
Tellica> rtrv-sip-tgmaFADDR;
tellica 2011-12-05 10:44:06
0 COMPLD
*IP-169.254.125.3-10000-DEFAULT-NOTPRNT-NOTPRNT:TGN=1*
/* RTRV-SIP-TGMAFADDR */
;
Tellica>
tellica 2011-12-05 10:48:51
A 2 REPT EVT COM
*Com:GP,TC,2011-12-05,10-48-51,,,,,\SHELF-0-ACM-3-INST-1-
requests from Unconfigured source - logged in sipa_protocol_error
;
tellica 2011-12-05 10:53:51
A 3 REPT EVT COM
*Com:GP,TC,2011-12-05,10-53-51,,,,,\SHELF-0-ACM-3-INST-1-
requests from Unconfigured source - logged in sipa_protocol_error
;
tellica 2011-12-05 10:58:51
A 4 REPT EVT COM
*Com:GP,TC,2011-12-05,10-58-51,,,,,\SHELF-0-ACM-3-INST-1-
requests from Unconfigured source - logged in sipa_protocol_error
;
```

```
.ddl.sql does not exist. IGNORE
Mon Dec 5 09:56:23 CST 2011: Note: run /Tellica/swCPU/CurrRel/sy
.isup.ddl.sql finished.
Mon Dec 5 09:56:23 CST 2011: CLEANING SORM Data
Mon Dec 5 09:56:23 CST 2011: CLEANING SORM Data Done
Mon Dec 5 09:56:23 CST 2011: Internal Data Loading Done
Mon Dec 5 09:56:23 CST 2011:
Mon Dec 5 09:56:23 CST 2011: =====
Mon Dec 5 09:56:23 CST 2011: --- END MYSQL INSTALLATION ---
Mon Dec 5 09:56:23 CST 2011: =====
Mon Dec 5 09:56:23 CST 2011:
Tellica_IP already supports IPv6 data
mgt0 data is provisioned, creating mgt0 aliases with IPADDR=135
255.255.255.240 PORT=68
sigal0 data is provisioned, creating sigal0 aliases with IPADDR=1
55.255.255.248 PORT=66 IPV6=none/0
mgt1 data is provisioned, creating mgt1 aliases with IPADDR=135
255.255.255.240 PORT=68
sigal data is provisioned, creating sigal aliases with IPADDR=1
55.255.255.248 PORT=66 IPV6=none/0
WARN: No AMC S87 card found
<qd102-s00c04h0iroot>/Tellica/swCPU/CurrRel/system/scripts:
> reboot
Broadcast message from root (pts/0) (Mon Dec 5 10:28:41 2011):
The system is going down for reboot NOW!
<qd102-s00c04h0iroot>/Tellica/swCPU/CurrRel/system/scripts:
>
telnet> q
Connection closed.
lungangfang@qdbuild2 -
$
```

```
qdbuild2:- 1:expect* 2:luaoc# 3:expect 4:bash# 5:bash# 9:emacs#-
```

```
[daily@qdbuild2]
```

The Simpler The Better

```
lgfang@lungangfang ~/tmp/tmux-1.6  
$ tmux -V  
tmux 1.6
```

```
lgfang@lungangfang ~/tmp/tmux-1.6  
$ █
```

```
[daily@lungangfang] 1: bash* 2: bash- 9: qdbbuild2#
```

```
[~/tmp/tmux-1.6]
```

Easy to configure

Configure file `$HOME/.tmux.conf`

```
# default prefix 'C-b'  
set-option -g prefix F12  
bind-key | split-window -h  
bind-key _ split-window -v
```


Even support mouse

```
set-option -g mouse-select-pane on  
set-option -g mouse-resize-pane on  
set-option -g mouse-select-window on  
set-window-option -g mode-mouse on
```

Easy to use

This is enough to get you started¹.

Detach  

New window  

Split vertically  

Split horizontally  

Change layout  

Kill pane ²  

¹I bind prefix to 

²“kill pane” when it does not response.

Eye candy

```
[lgfang@huang ~]$
[lgfang@huang ~]$
[lgfang@huang ~]$ sed -n '58,71p' .tmux.conf
## colour-theme-blocks
set-option -g status-left "[bg=cyan,fg=black][tmux:#S@#h]"
set-option -g status-right "[#T]"
set-option -g status-attr none
set-option -g status-bg colour236
set-option -g status-fg white
set-window-option -g window-status-attr reverse
set-window-option -g window-status-fg green
set-window-option -g window-status-current-attr reverse
set-window-option -g window-status-current-fg red
set-window-option -g window-status-activity-attr reverse
set-window-option -g window-status-activity-fg yellow
set-option -g pane-border-fg green
set-option -g pane-active-border-fg red
[lgfang@huang ~]$
```

```
[lgfang@huang ~]$
```

```
[lgfang@huang ~]$ for i in {0..255} ; do printf "\x1b[48;5;${i}m "; done; printf "\x1b[0m\n"
```

```
[lgfang@huang ~]$ cd tmp
[lgfang@huang tmp]$ █
```

```
[daily@huang] 1:bash 2:bash 3:bash* 4:bash# 9:gdbbuild2.
```

```
[lgfang@huang:~/tmp]
```

Screen log

Just save when you want. Save all screen output of current pane: **F12**

Ctrl + **h** , or

Start logging **F12** **h**

Stop logging **F12** **H** ³

```
bind-key C-h command-prompt -p "save log to:" "copy-mode; send-keys
'M->' C-e C-space 'M-<' C-a C-w; save-buffer %%"
bind-key h pipe-pane "cat >>$HOME/#S-#I-#P.log" \; display-message
"Start logging($HOME/#S-#I-#P.log)"
bind-key H pipe-pane \; display-message "Stop logging(#S-#I-#P.log)"
```

³**shift** + **h**

Easy to install

If you can not persuade your system administrator, install one under your HOME.

```
# install libevent if not already
tar xvfz libevent-1.4.14b-stable.tar.gz && cd
    libevent-1.4.14b-stable
./configure --prefix=$HOME/.local && make && make install
# set up LD_LIBRARY_PATH, for example
echo 'LD_LIBRARY_PATH=$HOME/.local/lib' >> ~/.bash_profile

tar xvfz tmux-1.6.tar.gz && cd tmux-1.6/
./configure --prefix=$HOME/.local
    CFLAGS="-I$HOME/.local/include"
    LDFLAGS="-L$HOME/.local/lib"
make && make install
# Add $HOME/.local/bin to PATH, for example
echo 'PATH=$HOME/.local/bin:$PATH' >> ~/.bash_profile
```

Easy scripting

It is simple to control tmux in a shell script. Refer to [▶ my start up script](#) for an example.

Free as in “freedom”

Last but not least: it is BSD-licensed.

Which means, it is free to use, modify, re-distribute, or even *make profit from (sell)* it.

What are you waiting for? Attach to tmux once you connected to a server.

Agenda

3 Notes on terminal emulator

Configuring terminal emulator

You connect to servers with a terminal emulator⁴. Therefore, you need to make sure:

- your terminal emulator cope with UTF8 chars correctly.
- your terminal emulator does not intercept hot-key sent to tmux.
- hold down **shift** when you copy & paste using mouse as usual.

Here is an example:

Example (Seting up putty)

Window → **Translation** → **data ... character set** : *UTF-8* ^a
Terminal → **Keyboard** → **The Function keys and keypad** : *XtermR6*

^ayour putty can receive and display Chinese characters(UTF-8) now

⁴such as putty, secureCRT etc

auto-login and hotkeys

Some can not live without

- auto-login: the emulators remember hostip/username/password.
- auto-hotkey: a windows software enable you to define your own hotkeys.

Do not worry, I wrote “to” in expect, which is (IMHO) more convenient.

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4 “Advanced” skills and tips

Feel free to leave. And, get back when you find yourself need more skills.

Panes

Select pane **F12** **Tab** (or one of **←** **↑** **→** **↓**)

Swap two adjacent panes **F12** **{**

Break current pane to a new window **F12** **!**

Join a pane to current window **F12** **j** *x.y*

Swap with pane y of window x **F12** **m** *x.y*

```
bind-key Tab select-pane -t:.+
bind-key BTab select-pane -t:.-
set-option -g display-time 3000
bind-key j command-prompt "join-pane -s '%1'"
bind-key m command-prompt -p "move (swap) current pane with: "
    "swap-pane -s %1"
```

Windows

Select window **F12** **0** - **9**

Last window **F12** **1**

Rename window **F12** **,** *new name*

Sessions within tmux client

New session F12 `:new-session -s name`

Choose(switch) session F12 s

move window among sessions F12 `:move-window -t sessionName`

Copy mode

Entering “copy mode” to view, search and copy screen output.

- Entering copy mode `F12` `[` or `F12` `PageUp`
- View/search: using emacs (or vi) key bindings according to configure.
- Paste: `F12` `]`
- Show “clip board”: `F12` `=`

```
set-window-option -g mode-keys emacs  
set-option -g history-limit 600000
```

Nested tmux

There are sometimes nested tmux sessions (refer to [my start up script](#)).

- 1 Start a tmux session on local linux box.
- 2 From that tmux session, ssh to a server and run another tmux session.

To send prefix to

nested tmux session Press **F11** .

outer tmux session **F12** .

tmux session nested twice **F11** **C-b**

one more layer⁵ of nest **F11** **C-b** **C-b** .

```
bind-key -n F11 send-prefix  
bind-key C-b send-prefix
```

⁵do you really want a nested nested nested ... session?

Command Line Commands

Please keep in mind that tmux CLI commands almost always help you out when there is no hotkey available.

My start-up script

Here is an example for controlling tmux in shell script. It automatically start a local session, and a remote session if possible.

```
#!/bin/bash
# Created: Fang lungang 2011; Modified: Fang lungang 04/01/2012 09:59>

SESSION_NAME=daily;SVR="135.252.41.248"

tmux has-session -t $SESSION_NAME 2>/dev/null && exec tmux attach -t $SESSION_NAME

tmux new-session -d -s $SESSION_NAME
if hostname | grep -q "\(\lgfang\|lungang\)"; then # On my local PC
    if ping -c 1 -w 1 $SVR; then
        tmux new-window -d -n qdbbuild2 -t $SESSION_NAME:9 \
            "ssh -t lungangfang@$SVR 'source .bash_profile; .local/bin/tmux-go.sh'"
        tmux select-window -t $SESSION_NAME:9
        # make it feels like I'm working on SVR locally
        tmux set-option -g -t $SESSION_NAME status off
        tmux set-option -g -t $SESSION_NAME prefix F11
    fi
else # on servers, a window for emacs (start it if needed).
    tmux new-window -d -n emacsclient -t $SESSION_NAME:9 \
        "emacsclient -t || (emacs --daemon && emacsclient -t)"
fi
exec tmux attach -t $SESSION_NAME
```

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5 Q&A

Thanks

Questions

Thanks

Questions

Read The ... Manual for more.

Reference card according to my configure

Detach	F12	d	
New window	F12	c	
Split vertically	F12	-	
Split horizontally	F12		
Change layout	F12	space	
Kill pane	F12	x	
Select window	F12	0 - 9	
Last window	F12	1	
Rename window	F12	,	<i>new name</i>
Save log	F12	Ctrl + h	
Select pane	F12	Tab	(or one of ← ↑ → ↓)
Break current pane	F12	!	
Join a pane	F12	j	<i>x.y</i>
Swap two panes	F12	{	