



# I 1024 Volti di openSUSE

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# [dariof](#)

🐦 [@DarioFaggioli](#)



# Ciao!

- Empoli (FI), [about.me/dariofaggioli](https://about.me/dariofaggioli)
- GOLEM
  - <<A' mi' tempi...>> == oltre 10 anni fa:
    - attivista, vice-presidente, presidente
  - Ora:
    - ogni volta che posso :-)
- 2008, Ph.D, ReTiS Lab, Scuola Sant'Anna, Pisa
  - [SCHED\\_DEADLINE](#) scheduler nel kernel Linux



# Ciao!

- 2011, Sr. Software Engineer @ Citrix
  - Xen-Project, internals dell'hypervisor
- 2018, Virt. Software Engineer @ SUSE
  - Xen, Linux kernel, KVM, QEMU, Libvirt (scheduling, performance evaluation & tuning)








# GNU/Linux Operative System\_s\_


## openSUSE Tumbleweed & Leap


openSUSE

HOME TOOLS NEWS CONTRIBUTE CONFERENCES

The makers' choice for sysadmins, developers and desktop users.

  
Tumbleweed  
Get the newest Linux packages with our rolling release.  
Fast! Integrated! Stabilized! Tested!

  
Leap  
Get the most complete Linux distribution with openSUSE's  
latest regular-release version!

**LEAP 15.2**  
IS NOW AVAILABLE 



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# E Altri GNU/Linux Operating System\_s\_

## openSUSE Kubic & MicroOS

### Kubic



Multi-purpose Standalone & Kubernetes  
Container Operating System based on openSUSE  
MicroOS

Kubernetes is an open-source system for automating deployment, scaling, and management of containerised applications. Kubic uses kubectl to provide an easy way of configuring a Kubernetes cluster across multiple machines, while our MicroOS base keeps your operating system updated automatically, with fully atomic rollbacks if required.



 Documentation

 System Requirements

 Downloads

### MicroOS



Micro Service OS providing Transactional (Atomic)  
Updates upon a read-only btrfs root filesystem

Designed to host container workloads with automated administration & patching. Installing openSUSE MicroOS you get a quick, small environment for deploying Containers, or any other workload that benefits from Transactional Updates. As rolling release distribution the software is always up-to-date.

Check out the [MicroOS website](#) for further information.



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# Non Solo GNU/Linux Operating System\_s\_

- Per sviluppare, testare e gestire... ...  
... .. GNU/Linux Operating System\_s\_ :-)

openSUSE TOOLS

Discover the best open-source tools developed by our community

- Open Build Service (OBS)** (Go to link [↗](#))  
Our build tool, building all of our packages as well as ones for SUSE Linux Enterprise, Arch, Debian, Fedora, Scientific Linux, RHEL, CentOS, Ubuntu, and more.
- openQA** (Go to link [↗](#))  
Automated testing for "any" operating system, that can read the screen and control the test host the same way a user does.
- YaST** (Go to link [↗](#))  
The best/only comprehensive Linux system configuration & installation tool.
- Kiwi** (Go to link [↗](#))  
Create Linux images for deployment on real hardware, virtualisation, and now even container systems like Docker. Kiwi is the engine that builds the openSUSE release images.



# Community

- Mailing lists:
  - <https://lists.opensuse.org/>
- Reddit:
  - <https://www.reddit.com/r/openSUSE/>
- Forums:
  - <https://forums.opensuse.org/>
- IRC:
  - [https://en.opensuse.org/openSUSE:IRC\\_list](https://en.opensuse.org/openSUSE:IRC_list)
- Telegram:
  - <https://t.me/opensuseitalia>
  - [https://t.me/openSUSE\\_group](https://t.me/openSUSE_group)



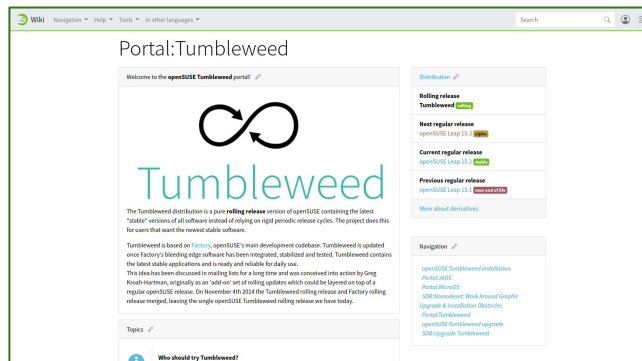
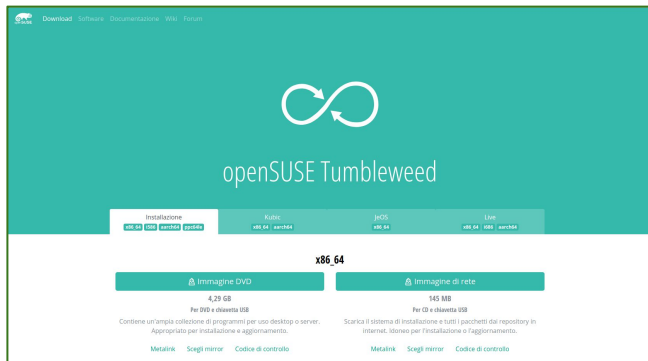


# Tumbleweed

“Pure rolling”: una nuova release 2 / 5 volte la settimana!  
Quindi, in pratica, rilasciata sempre (o mai, come volete!)  
Ma comunque sottoposta a QA (more on this later)  
“Va dove la porta la community”

E` (via factory) l'upstream per tutti i SO openSUSE e SUSE

- <https://software.opensuse.org/distributions/tumbleweed>
- <https://en.opensuse.org/Portal:Tumbleweed>



# Leap

Sistema operativo professionale (soprattutto server).  
Deriva da SUSE Linux Enterprise (SLE) (shared core + pacchetti aggiuntivi e contributi della comunita').  
Esempio di variante/contributo comunitario: KDE  
(*Dicono* che Plasma sia integrato molto bene...)  
Rilasci ~ annuali, release supportate 18 mesi.  
Base di software stabile (e.g., non necessariamente tutti i pacchetti cambiano versione in ogni release)

- <https://software.opensuse.org/distributions/leap>
- <https://en.opensuse.org/Portal:Leap>



# MicroOS

Single Purpose, Immutable OS: Usalo per uno scopo specifico!

Tipico: container host

Futuro: Desktop ? (see later)

- <https://microos.opensuse.org/>
- <https://en.opensuse.org/Portal:MicroOS>



openSUSE MicroOS

# Kubic

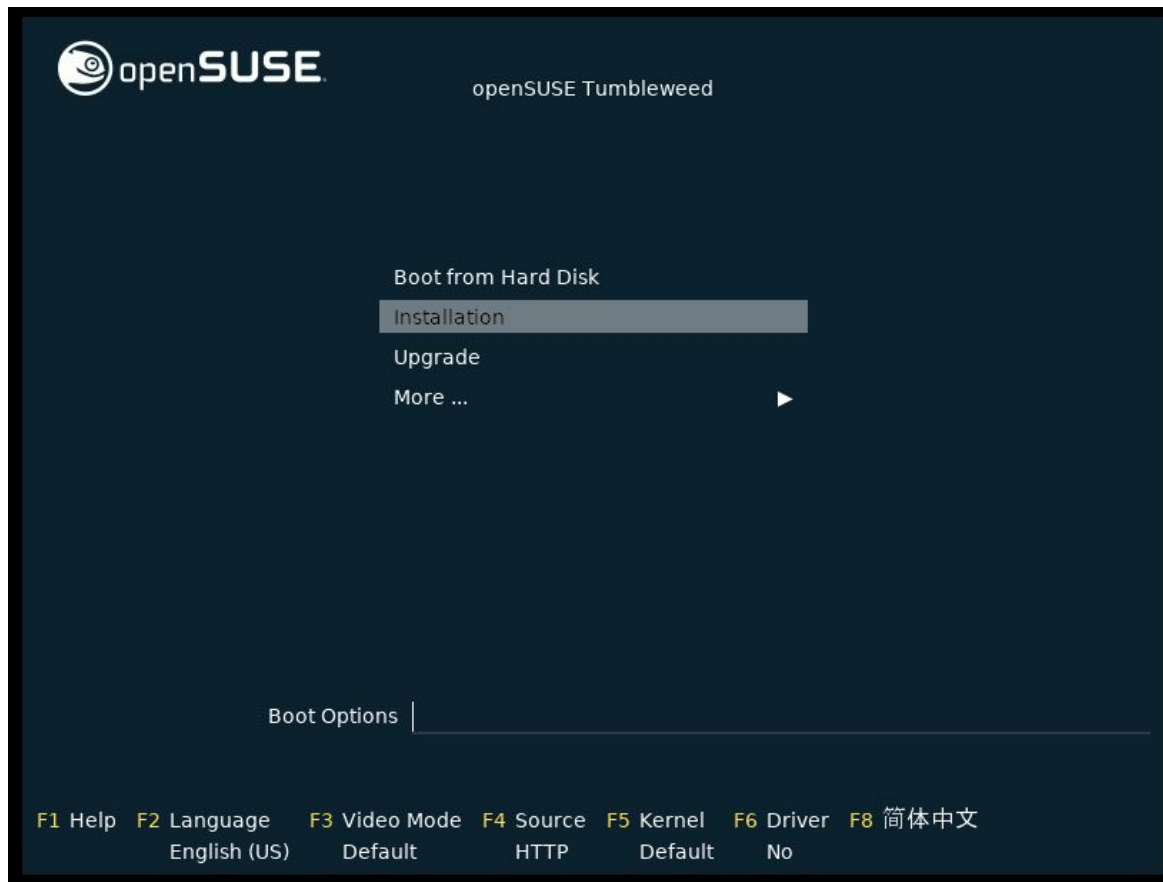
Single Purpose, Immutable K8s distribution

Usalo per create un cluster Kubernetes

- <https://kubic.opensuse.org/>
- <https://en.opensuse.org/Portal:Kubic>



# Installazione (Just Very Quickly)

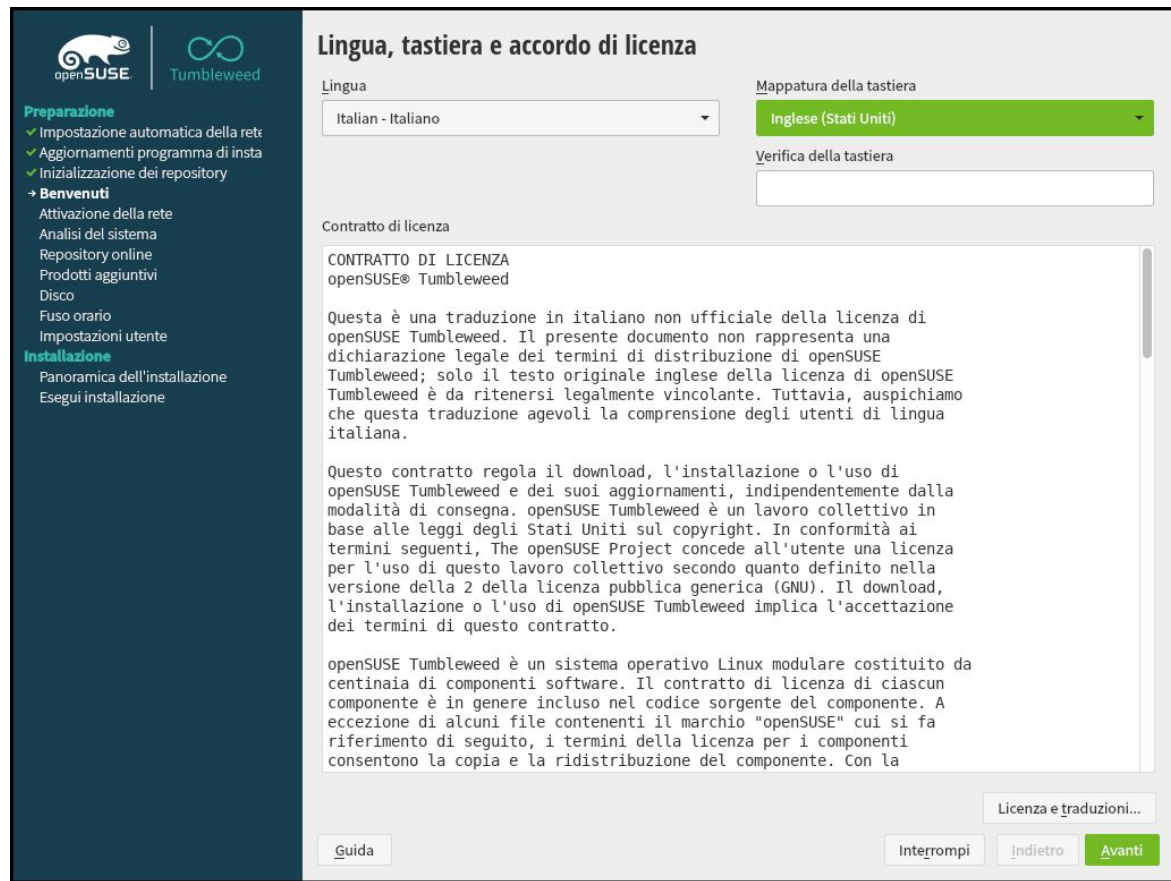


Click 10 volte  
“Avanti”





# Installazione (Just Very Quickly)



The screenshot shows the 'Lingua, tastiera e accordo di licenza' (Language, keyboard and license agreement) screen during the installation of openSUSE Tumbleweed. The interface is in Italian. On the left, a sidebar contains navigation options: 'Preparazione' (Preparation) with sub-items for network settings, repository updates, and repository initialization; 'Benvenuti' (Welcome) with sub-items for network activation, system analysis, repository online status, additional products, disk, time zone, and user settings; and 'Installazione' (Installation) with sub-items for a panoramic view and starting the installation. The main area is titled 'Lingua, tastiera e accordo di licenza'. It features a 'Lingua' dropdown menu set to 'Italian - Italiano', a 'Mappatura della tastiera' dropdown menu set to 'Inglese (Stati Uniti)', and a 'Verifica della tastiera' input field. Below these is the 'Contratto di licenza' section, which contains the text of the license agreement in Italian. At the bottom, there are buttons for 'Guida', 'Interrompi', 'Indietro', and 'Avanti', along with a link for 'Licenza e traduzioni...'. The openSUSE and Tumbleweed logos are visible in the top left corner of the window.

**Lingua, tastiera e accordo di licenza**

Lingua: Italian - Italiano

Mappatura della tastiera: Inglese (Stati Uniti)

Verifica della tastiera

Contratto di licenza

**CONTRATTO DI LICENZA**  
openSUSE® Tumbleweed

Questa è una traduzione in italiano non ufficiale della licenza di openSUSE Tumbleweed. Il presente documento non rappresenta una dichiarazione legale dei termini di distribuzione di openSUSE Tumbleweed; solo il testo originale inglese della licenza di openSUSE Tumbleweed è da ritenersi legalmente vincolante. Tuttavia, auspichiamo che questa traduzione agevoli la comprensione degli utenti di lingua italiana.

Questo contratto regola il download, l'installazione o l'uso di openSUSE Tumbleweed e dei suoi aggiornamenti, indipendentemente dalla modalità di consegna. openSUSE Tumbleweed è un lavoro collettivo in base alle leggi degli Stati Uniti sul copyright. In conformità ai termini seguenti, The openSUSE Project concede all'utente una licenza per l'uso di questo lavoro collettivo secondo quanto definito nella versione della 2 della licenza pubblica generica (GNU). Il download, l'installazione o l'uso di openSUSE Tumbleweed implica l'accettazione dei termini di questo contratto.

openSUSE Tumbleweed è un sistema operativo Linux modulare costituito da centinaia di componenti software. Il contratto di licenza di ciascun componente è in genere incluso nel codice sorgente del componente. A eccezione di alcuni file contenenti il marchio "openSUSE" cui si fa riferimento di seguito, i termini della licenza per i componenti consentono la copia e la redistribuzione del componente. Con la

Guida Interrompi Indietro Avanti Licenza e traduzioni...

1mo click:  
licenza



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# Installazione (Just Very Quickly)

**openSUSE** | **Tumbleweed**

**Preparazione**

- ✓ Impostazione automatica della rete
- ✓ Aggiornamenti programma di insta
- ✓ Inizializzazione dei repository
- ✓ Benvenuti
- ✓ Attivazione della rete
- ✓ Analisi del sistema

**Repository online**

- Prodotti aggiuntivi
- Disco
- Fuso orario
- Impostazioni utente

**Installazione**

- Panoramica dell'installazione
- Esegui installazione

**Rilevamento del sistema**

- ✓ Rileva dispositivi USB
- ✓ Rileva dispositivi FireWire
- ✓ Rileva dischi fissi
- ✓ Ricerca dei file di sistema
- ✓ Inizializza gestore dei programmi

**YaST2**

È presente una connessione attiva nel sistema.  
È disponibile software aggiuntivo online.

Attivare i repository online adesso?

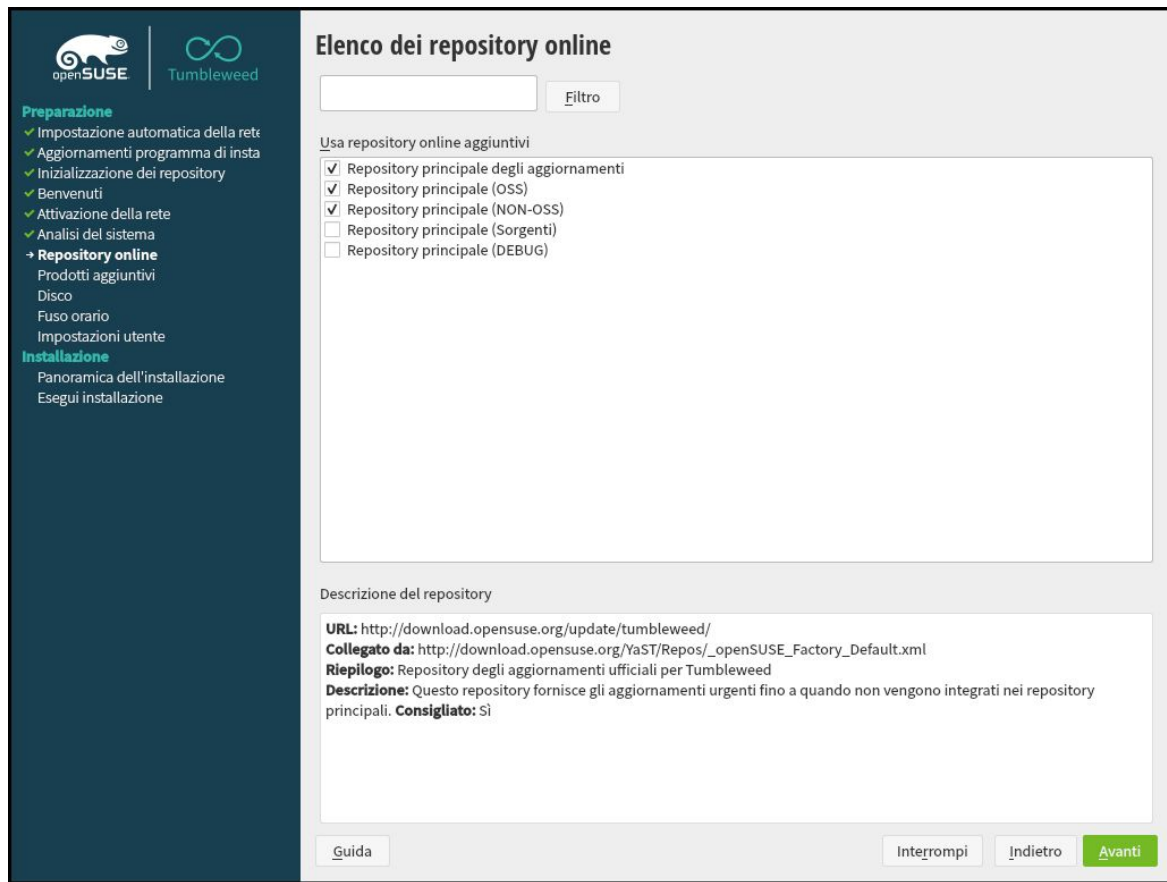
100%

2ndo click:  
repo



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# Installazione (Just Very Quickly)



**Elenco dei repository online**

Usa repository online aggiuntivi

- Repository principale degli aggiornamenti
- Repository principale (OSS)
- Repository principale (NON-OSS)
- Repository principale (Sorgenti)
- Repository principale (DEBUG)

Descrizione del repository

**URL:** <http://download.opensuse.org/update/tumbleweed/>  
**Collegato da:** [http://download.opensuse.org/yaST/Repos/\\_openSUSE\\_Factory\\_Default.xml](http://download.opensuse.org/yaST/Repos/_openSUSE_Factory_Default.xml)  
**Riepilogo:** Repository degli aggiornamenti ufficiali per Tumbleweed  
**Descrizione:** Questo repository fornisce gli aggiornamenti urgenti fino a quando non vengono integrati nei repository principali. **Consigliato:** Sì

Guida Interrompi Indietro Avanti

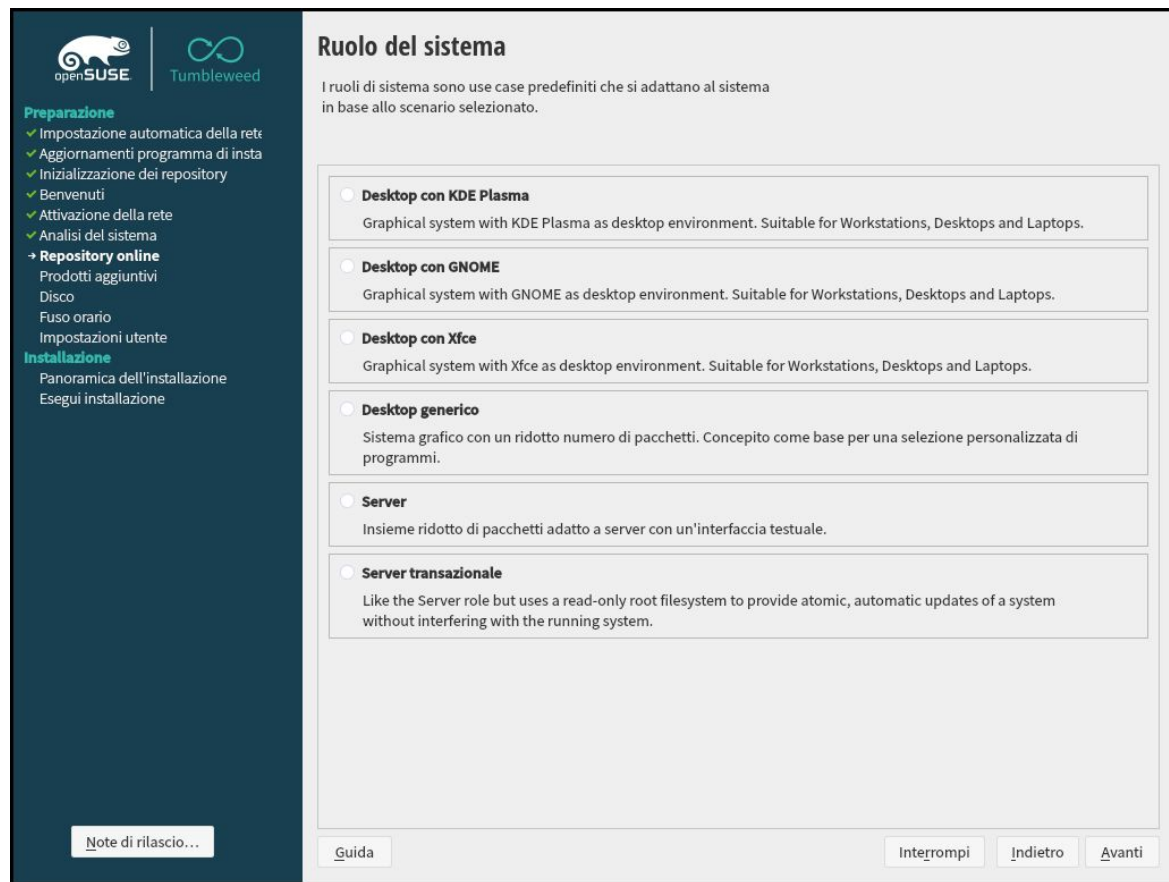
3zo click  
conferma  
repo



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# Installazione (Just Very Quickly)



The screenshot shows the 'Ruolo del sistema' (System Role) selection screen in the openSUSE installer. The interface is in Italian. On the left, there is a navigation menu with sections for 'Preparazione' (Preparation) and 'Installazione' (Installation). The main area displays a list of system roles, each with a radio button and a description. The roles are: Desktop con KDE Plasma, Desktop con GNOME, Desktop con Xfce, Desktop generico, Server, and Server transazionale. At the bottom, there are buttons for 'Guida' (Help), 'Interrompi' (Cancel), 'Indietro' (Back), and 'Avanti' (Next).

**openSUSE** | **Tumbleweed**

**Preparazione**

- ✓ Impostazione automatica della rete
- ✓ Aggiornamenti programma di installazione
- ✓ Inizializzazione dei repository
- ✓ Benvenuti
- ✓ Attivazione della rete
- ✓ Analisi del sistema

→ **Repository online**

- Prodotti aggiuntivi
- Disco
- Fuso orario
- Impostazioni utente

**Installazione**

- Panoramica dell'installazione
- Esegui installazione

## Ruolo del sistema

I ruoli di sistema sono use case predefiniti che si adattano al sistema in base allo scenario selezionato.

- Desktop con KDE Plasma**  
Graphical system with KDE Plasma as desktop environment. Suitable for Workstations, Desktops and Laptops.
- Desktop con GNOME**  
Graphical system with GNOME as desktop environment. Suitable for Workstations, Desktops and Laptops.
- Desktop con Xfce**  
Graphical system with Xfce as desktop environment. Suitable for Workstations, Desktops and Laptops.
- Desktop generico**  
Sistema grafico con un ridotto numero di pacchetti. Concepito come base per una selezione personalizzata di programmi.
- Server**  
Insieme ridotto di pacchetti adatto a server con un'interfaccia testuale.
- Server transazionale**  
Like the Server role but uses a read-only root filesystem to provide atomic, automatic updates of a system without interfering with the running system.

[Note di rilascio...](#) | [Guida](#) | [Interrompi](#) | [Indietro](#) | [Avanti](#)

4to click  
“flavor”





# Installazione (Just Very Quickly)

**Preparazione**

- ✓ Impostazione automatica della rete
- ✓ Aggiornamenti programma di insta
- ✓ Inizializzazione dei repository
- ✓ Benvenuti
- ✓ Attivazione della rete
- ✓ Analisi del sistema
- ✓ Repository online
- ✓ Prodotti aggiuntivi

**Disco**

- Fuso orario
- Impostazioni utente

**Installazione**

- Panoramica dell'installazione
- Esegui installazione

## Partizionamento suggerito

Struttura iniziale proposta con le impostazioni predefinite della configurazione guidata.

Modifiche al partizionamento:

- Creare la tabella delle partizioni GPT su /dev/vda
- Creare la partizione /dev/vda1 (8.00 MiB) come Partizione d'avvio del BIOS
- Creare la partizione /dev/vda2 (18.62 GiB) per / con btrfs
- Creare la partizione /dev/vda3 (1.37 GiB) per swap
- Azioni del sottovolume 9 ([mostra dettagli](#))

Configurazione guidata

Partizionatore avanzato ▾

Guida

Interrompi Indietro **Avanti**

5to click:  
partizioni



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# Installazione (Just Very Quickly)

**Partizionamento suggerito**

Struttura iniziale proposta con le impostazioni predefinite della configurazione guidata.

Modifiche al partizionamento:

- Creare la tabella delle partizioni GPT su /dev/vda
- Creare la partizione /dev/vda1 (8.00 MiB) come Partizione d'avvio del BIOS
- Creare la partizione /dev/vda2 (18.62 GiB) per / con btrfs
- Creare la partizione /dev/vda3 (1.37 GiB) per swap
- Azioni del sottovolume 9 ([nascondi dettagli](#))
  - Creare il sottovolume @/su su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/var su /dev/vda2 (18.62 GiB) con l'opzione 'no copy on write'
  - Creare il sottovolume @/usr/local su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/srv su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/root su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/opt su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/home su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/boot/grub2/x86\_64-efi su /dev/vda2 (18.62 GiB)
  - Creare il sottovolume @/boot/grub2/i386-pc su /dev/vda2 (18.62 GiB)

Configurazione guidata

Partizionatore avanzato ▾

Guida

Interrompi

Indietro

Avanti

Note di rilascio...

6to click:  
conferma  
partizioni

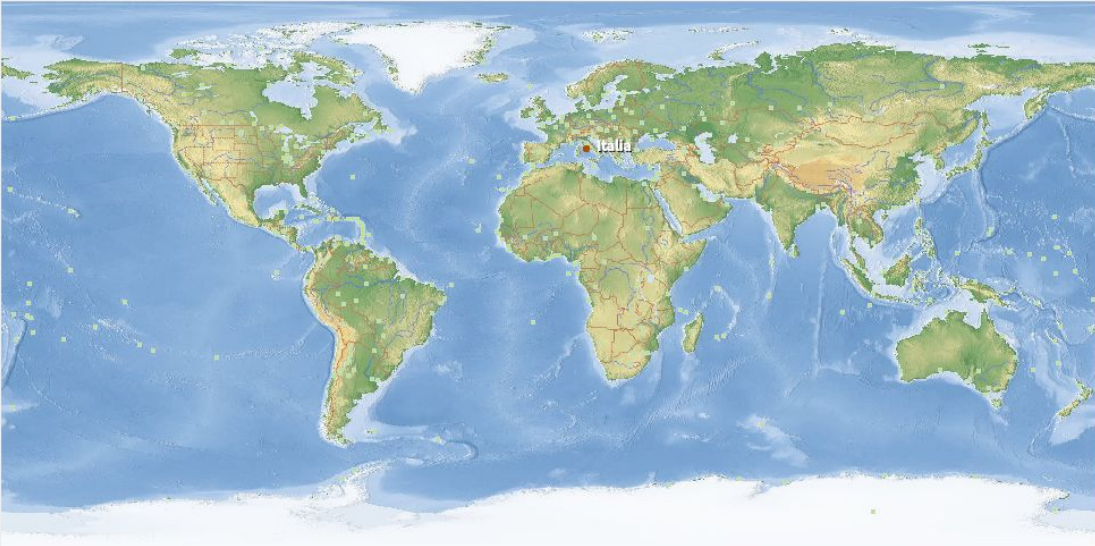


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# Installazione (Just Very Quickly)

Fuso orario e orologio



Regione  
Europa

Fuso orario  
Italia

Orologio di sistema impostato su UTC

Data e ora: 2020-09-22 - 12:03:28

Altre impostazioni...

Guida Note di rilascio... Interrompi Indietro **Avanti**

7mo click:  
fuso orario



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# Installazione (Just Very Quickly)

**Utente locale**

**Preparazione**

- ✓ Impostazione automatica della rete
- ✓ Aggiornamenti programma di insta
- ✓ Inizializzazione dei repository
- ✓ Benvenuti
- ✓ Attivazione della rete
- ✓ Analisi del sistema
- ✓ Repository online
- ✓ Prodotti aggiuntivi
- ✓ Disco
- ✓ Fuso orario

**+ Impostazioni utente**

**Installazione**

- Panoramica dell'installazione
- Esegui installazione

**Crea nuovo utente**

Nome utente completo

Nome utente

Password

Conferma password

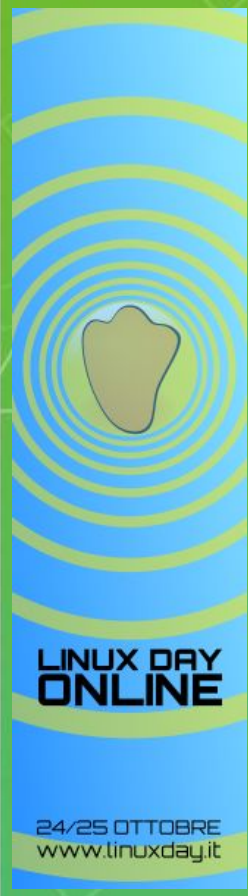
Usa questa password per l'amministratore di sistema

Login automatico

Ignora creazione utente

[Note di rilascio...](#) [Guida](#) [Interrompi](#) [Indietro](#) [Avanti](#)

8vo click:  
utente





# Installazione (Just Very Quickly)

The screenshot shows the 'Impostazioni dell'installazione' (Installation Settings) window in openSUSE. The window is divided into several sections: 'Preparazione' (Preparation), 'Installazione' (Installation), 'Avvio' (Boot), 'Programmi' (Programs), 'Destinazione systemd predefinita' (Default systemd destination), and 'Sistema' (System). The 'Avvio' section is currently selected and shows options for the boot loader (GRUB2), whether to enable the boot loader (disabled), the location of the boot loader (MBR), and whether to install the boot loader in the MBR (not installed). The 'Programmi' section shows the product (openSUSE Tumbleweed) and a list of models, including desktop environments (GNOME, Wayland, X11), minimal systems, and various system management and multimedia options. The 'Destinazione systemd predefinita' section shows the 'Modalità grafica' (graphical mode) option. The 'Sistema' section is partially visible at the bottom. The window has a dark sidebar on the left with a navigation menu and a 'Note di rilascio...' button at the bottom left. At the bottom right, there are buttons for 'Interrompi' (Cancel), 'Indietro' (Back), and 'Installa' (Install).

**Preparazione**

- ✓ Impostazione automatica della rete
- ✓ Aggiornamenti programma di installazione
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- ✓ Disco
- ✓ Fuso orario
- ✓ Impostazioni utente

**Installazione**

- **Panoramica dell'installazione**
- Esegui installazione

**Impostazioni dell'installazione**

Premere una delle impostazioni per effettuare modifiche.

**Avvio**

- Tipo di boot loader: GRUB2
- Avvio attendibile: disabilitato ([disabilita](#))
- Stato ubicazione: /dev/vda (MBR)
- Modifica ubicazione:
  - Installa codice di avvio in MBR ([non installare](#))

**Programmi**

- Prodotto: openSUSE Tumbleweed
- Modelli:
  - Ambiente desktop GNOME (di base)
  - Ambiente desktop GNOME (Wayland)
  - Ambiente desktop GNOME (X11)
  - Minimal Base System
  - Sistema di base migliorato
  - AppArmor
  - Amministrazione di sistema YaST
  - Gestione dei programmi
  - Multimedia
  - Programmi per l'ufficio
  - Tipi di carattere
  - X Window System
  - Grafica
  - Giochi
  - Minimal Appliance Base
- Dimensione dei pacchetti da installare: 4.4 GiB
- Download da repository remoti: 1.6 GiB

**Destinazione systemd predefinita**

- Modalità grafica

**Sistema**

Guida Interrompi Indietro **Installa**

9no click:  
riepilogo



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# Installazione (Just Very Quickly)

**Impostazioni dell'installazione**

Premere una delle impostazioni per effettuare modifiche.

- Ambiente desktop GNOME (di base)
- Ambiente desktop GNOME (Wayland)
- Ambiente desktop GNOME (X11)
- Minimal Base System
- Sistema di base migliorato

**YaST2**

**Confermare installazione**

Le informazioni richieste per l'installazione di base sono ora complete.

Procedendo con l'installazione, le partizioni sul disco fisso verranno modificate in base alle impostazioni di installazione definite nelle precedenti finestre di dialogo.

Se non si è sicuri delle impostazioni, tornare indietro e verificarne la correttezza.

• Il firewall sarà abilitato ([disabilita](#))

• Il servizio SSH sarà disabilitato ([abilita](#))

• La porta SSH sarà aperta ([blocca](#))

**Configurazione della rete**

- È in uso **NetworkManager** ([passaggio a wicked](#))

openSUSE | Tumbleweed

**Preparazione**

- ✓ Impostazione automatica della rete
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- ✓ Impostazioni utente

**Installazione**

- **Panoramica dell'installazione**
- Esegui installazione

Note di rilascio...

10mo click:  
conferma  
riepilogo :-)



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# Installazione (Just Very Quickly)

**Esecuzione dell'installazione**

Dettagli Note di rilascio di openSUSE

Supporto	Rimanenti	Pacchetti	Durata
<b>Totale</b>	<b>4.224 GiB</b>	<b>2088</b>	<b>39:59</b>
openSUSE-20200917-0	4.224 GiB	2088	39:59

Azioni eseguite:

- Installazione di gnome-menus-lang-3.36.0-1.3.noarch.rpm (dimensione parte installata 223.5 KiB)
- Download di myspell-lightproof-en (dimensioni download 37.8 KiB)
- Installazione di myspell-lightproof-en-20191219-1.3.x86\_64.rpm (dimensione parte installata 53.3 MiB)
- Download di glibc (dimensioni download 1.82 MiB)
- Installazione di glibc-2.31-6.3.x86\_64.rpm (dimensione parte installata 5.90 MiB)
- Download di myspell-en\_US (dimensioni download 3.23 MiB)
- Installazione di myspell-en\_US-20191219-1.3.noarch.rpm (dimensione parte installata 21.23 MiB)
- Download di libpcre1 (dimensioni download 384 KiB)
- Installazione di libpcre1-8.44-1.19.x86\_64.rpm (dimensione parte installata 935.7 KiB)
- Download di libselinux1 (dimensioni download 92.3 KiB)
- Installazione di libselinux1-3.0-2.3.x86\_64.rpm (dimensione parte installata 163.7 KiB)

Installazione di libselinux1-3.0-2.3.x86\_64.rpm (dimensione parte installata 163.7 KiB)

39%

Installazione dei pacchetti in corso... (Rimanenti: 4.224 GiB / 39:59, 2088 pacchetti)

9%

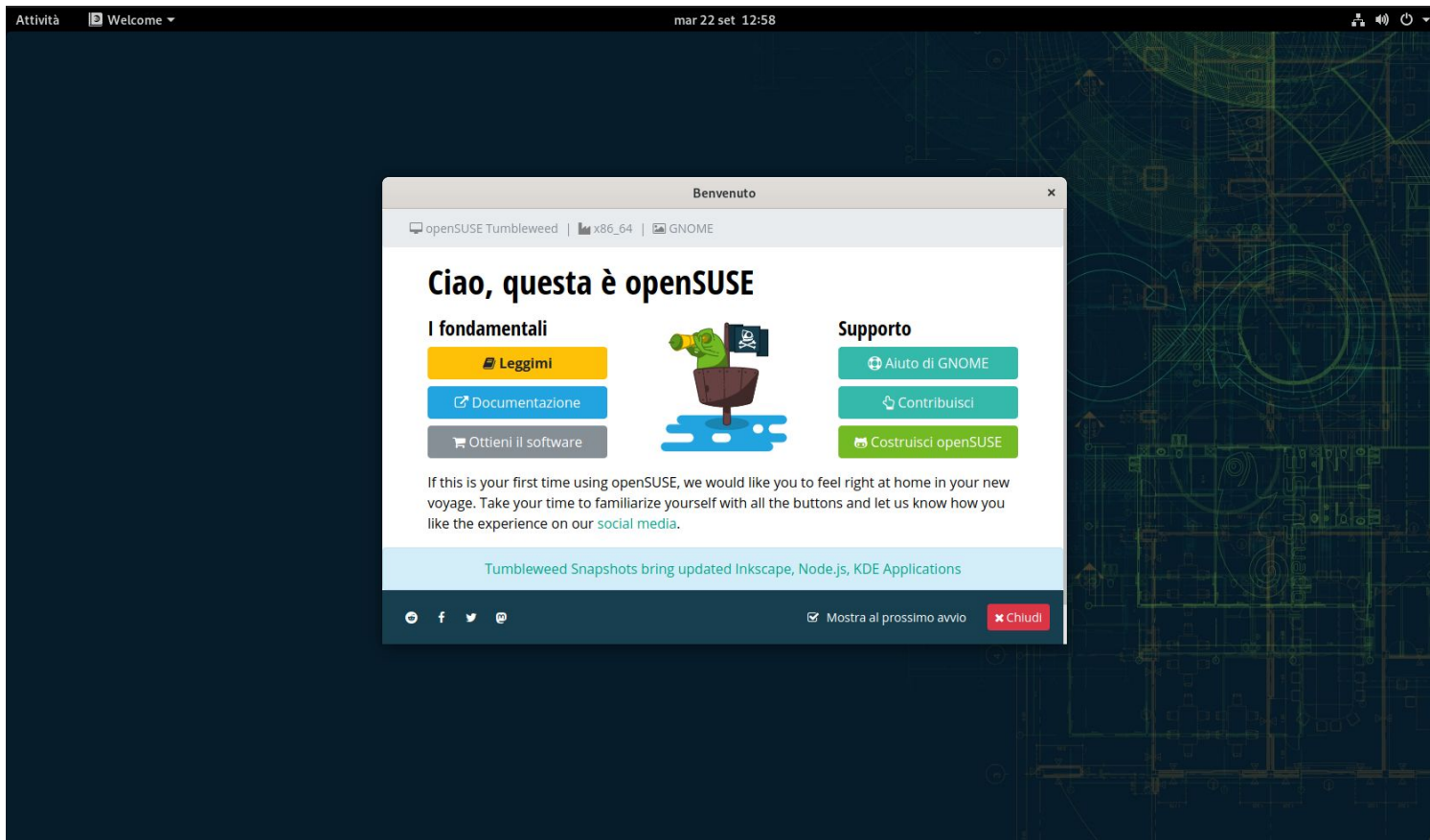
Guida Interrompi Indietro Avanti

...aspettiamo



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# Installazione (Just Very Quickly)



# Installazione: Variazioni sul Tema

Schema di partizionamento

Abilita la gestione dei volumi logici (LVM)

Enable Disk Encryption

Password

Verifica la password

[Guida](#) [Note di rilascio...](#) [Annulla](#) [Indietro](#) [Avanti](#)

## Full Disk Encryption

Al costo di 1 solo click in piu`!





# Installazione: Variazioni sul Tema

**Partizionatore avanzato**

Vista sistema

- linux
  - Dischi fissi
    - vda**
    - RAID
    - Gestione volume
    - Bcache
    - NFS
    - Btrfs
      - vda2
    - Grafi dispositivi
    - Riepilogo installazione
    - Impostazioni

Disco fisso: /dev/vda

Panoramica Partizioni

Dispositivo	Dimensione	F	Cif	Tipo	Etichetta	Punto
vda2 18.62 GiB						
/dev/vda1	8.00 MiB			Partizione d'avvio del BIOS		
/dev/vda2	18.62 GiB	F		Btrfs Partizione		/
/dev/vda3	1.37 GiB	F		Swap Partizione		swap

Modifica Elimina

Aggiungi partizione... Elimina tutto

Annulla Indietro Accetto

Guida Note di rilascio...

## Modifica Partizioni (I)



# Installazione: Variazioni sul Tema



**Partizionatore avanzato**

Vista sistema

- linux
  - Dischi fissi
    - vda
      - RAID
      - Gestione volume
      - Bcache
      - NFS
      - Btrfs
        - vda2

**Grafi dispositivi**

Dispositivi pianificati

Dispositivi dei sistemi correnti

Risultato finale che verrà confermato nel sistema.  
Questo grafo viene aggiornato a ogni azione da parte dell'utente.

```
graph TD; vda["/dev/vda"] -.-> gpt["gpt"]; gpt --> vda1["/dev/vda1"]; gpt --> vda2["/dev/vda2"]; gpt --> vda3["/dev/vda3"]; vda1 -.-> btrfs["btrfs"]; btrfs -.-> top_level["'top level'"]; top_level -.-> at["@"]; at --> usr_local["@/usr/local"]; at --> var["@/var"]; at --> srv["@/srv"]; at --> root["@/root"]; at --> opt["@/opt"]; at --> home["@/home"]; at --> usr_local2["@/usr/local"]; vda2 -.-> swap["swap"];
```

Salva come XML... Salva come Graphviz...

Guida Note di rilascio... Annulla Indietro Accetto

## Modifica Partizioni (II)



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# Installazione: Variazioni sul Tema

Selezione dei programmi e attività di sistema

Modello

- The openSUSEway desktop e...
- Graphical Environm...**
- Ambiente desktop GNOME (d...**
- Ambiente desktop GNOME (...)
- Ambiente desktop GNOME (X...
- Desktop base Plasma 5 di KDE
- Applicazioni KDE e desktop P...
- Ambiente desktop XFCE
- Ambiente desktop LXDE
- Ambiente Desktop LXQt
- Sway Tiling Wayland Compos...
- Enlightenment
- Ambiente desktop MATE
- Tipi di carattere
- X Window System
- A very basic desktop (previou...
- Desktop Functions**
- Multimedia

Dettagli...

**Ambiente desktop GNOME (di base)**

The GNOME desktop environment is an intuitive and attractive desktop for users. This pattern installs GNOME desktop environment with only essential graphical applications installed (File Manager, Web Browser).

Nome	Spazio occupa	Libero	Totale
/	<div style="width: 26%; background-color: green;">26%</div>	13.8 GiB	18.6 GiB

Guida Note di rilascio... Annulla Indietro OK

## Selezione Software (I)



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# Installazione: Variazioni sul Tema

File Pacchetto Dipendenze Opzioni Extra Aiuto

Visualizza Cerca Modelli Riepilogo installazione

Modello

- The openSUSEway desktop e...
- Graphical Environm...**
- Ambiente desktop GNOME (di ...)
- Ambiente desktop GNOME (W...**
- Ambiente desktop GNOME (X11)
- Desktop base Plasma 5 di KDE
- Applicazioni KDE e desktop Pl...
- Ambiente desktop XFCE
- Ambiente desktop LXDE
- Ambiente Desktop LXQt
- Sway Tiling Wayland Composi...
- Enlightenment
- Ambiente desktop MATE
- Tipi di carattere
- X Window System
- A very basic desktop (previou...
- Desktop Functions**
- Multimedia
- Programmi per l'ufficio
- Grafica
- Giochi

Pacchetto	Riepilogo	Versione	Dimens
<input checked="" type="checkbox"/> nautilus-share	Nautilus plugin for sharing...	0.7.3-16.3	77.0 KiB
<input checked="" type="checkbox"/> patterns-gnome-gnome	Ambiente desktop GNOME ...	20200416-2.1	51 B
<input checked="" type="checkbox"/> patterns-gnome-gnome_basis	Sistema di base GNOME	20200416-2.1	57 B
<input checked="" type="checkbox"/> patterns-gnome-gnome_internet	Internet GNOME	20200416-2.1	60 B
<input checked="" type="checkbox"/> patterns-gnome-gnome_utilities	Utilità GNOME	20200416-2.1	61 B
<input checked="" type="checkbox"/> patterns-gnome-gnome_x11	Ambiente desktop GNOME ...	20200416-2.1	55 B
<input checked="" type="checkbox"/> pidgin	Client di messaggistica ista...	2.14.1-1.3	3.5 MiB
<input checked="" type="checkbox"/> polari	An IRC Client for GNOME	3.36.3-3.2	690.7 KiB
<input checked="" type="checkbox"/> rsvg-thumbnailer	SVG thumbnailer using the...	2.48.8-2.2	158 B
<input checked="" type="checkbox"/> seahorse	Interfaccia GNOME per gnu...	3.36.2-1.3	1.5 MiB
<input checked="" type="checkbox"/> transmission-gtk	GTK client for the "transmi...	3.00-1.3	1.1 MiB
<input checked="" type="checkbox"/> dasher	Sistema di inserimento pre...	4.11-32.4	1.9 MiB
<input type="checkbox"/> ekiga	Un'applicazione di telecon...	4.1.0-2.2	9.5 MiB
<input type="checkbox"/> eog-plugins	Una collezione di plugin p...	3.26.5-2.3	312 B
<input type="checkbox"/> epiphany	Browser web di GNOME	3.36.4-1.2	4.2 MiB
<input type="checkbox"/> evolution-plugin-rss	Evolution Plugin for RSS F...	0.3.96-1.3	687.7 KiB
<input type="checkbox"/> frogr	Strumenti per gestire acco...	1.6-1.3	1.1 MiB
<input type="checkbox"/> gedit-plugins	Una collezione di plugin p...	3.36.2-1.4	35.3 KiB

Descrizione Dati tecnici Dipendenze Versioni

**NetworkManager-openconnect-gnome** - NetworkManager VPN support for OpenConnect

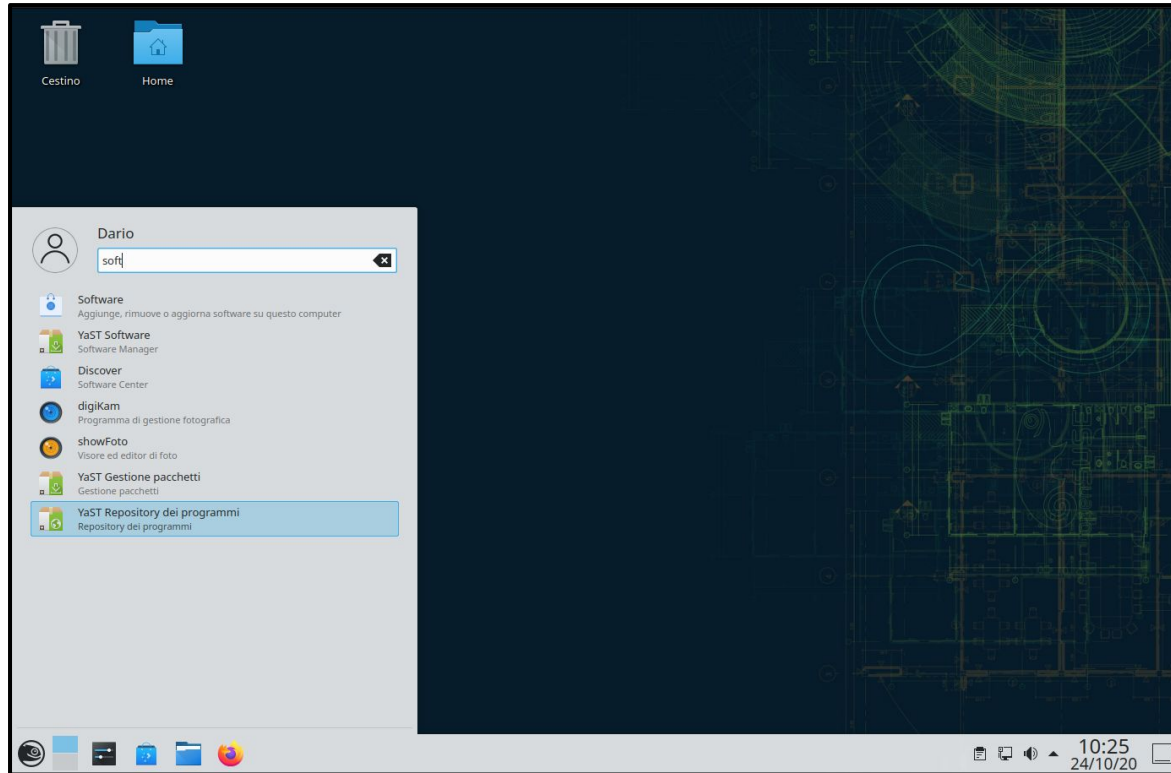
NetworkManager-openconnect provides VPN support to NetworkManager for OpenConnect, an implementation of the Cisco AnyConnect VPN system.

Annulla Accetta

## Selezione Software (I)



# Post Installazione



CODEC,  
NVIDIA, ...



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# Post Installazione

YaST2 - YaST Repository dei programmi — YaST2 - repositories @ localhost.localdomain

Repository dei programmi configurati

Visualizza  
Tutti i repository

Priorità	Abitilitato	Aggiornamento automatico	Nome	Servizio	URL
99 (Predefinito)	✓	✓	Repository principale (NON-OSS)		http://download.opensuse.org/tun
99 (Predefinito)	✓	✓	Repository principale (OSS)		http://download.opensuse.org/tun
99 (Predefinito)	✓	✓	Repository principale degli aggiornamenti		http://download.opensuse.org/upd
99 (Predefinito)	✓	✓	openSUSE-20201022-0		http://download.opensuse.org/tun
99 (Predefinito)		✓	openSUSE-Tumbleweed-Debug		http://download.opensuse.org/det
99 (Predefinito)		✓	openSUSE-Tumbleweed-Source		http://download.opensuse.org/soi

**Repository principale (NON-OSS)**

URL: http://download.opensuse.org/tumbleweed/repo/non-oss/  
Categoria: YUM

Proprietà

Abilitato  Aggiorna automaticamente  Mantieni pacchetti scaricati

Priorità: 99

Aggiungi Modifica Elimina Chiavi GPG... Aggiorna

Guida Annulla OK

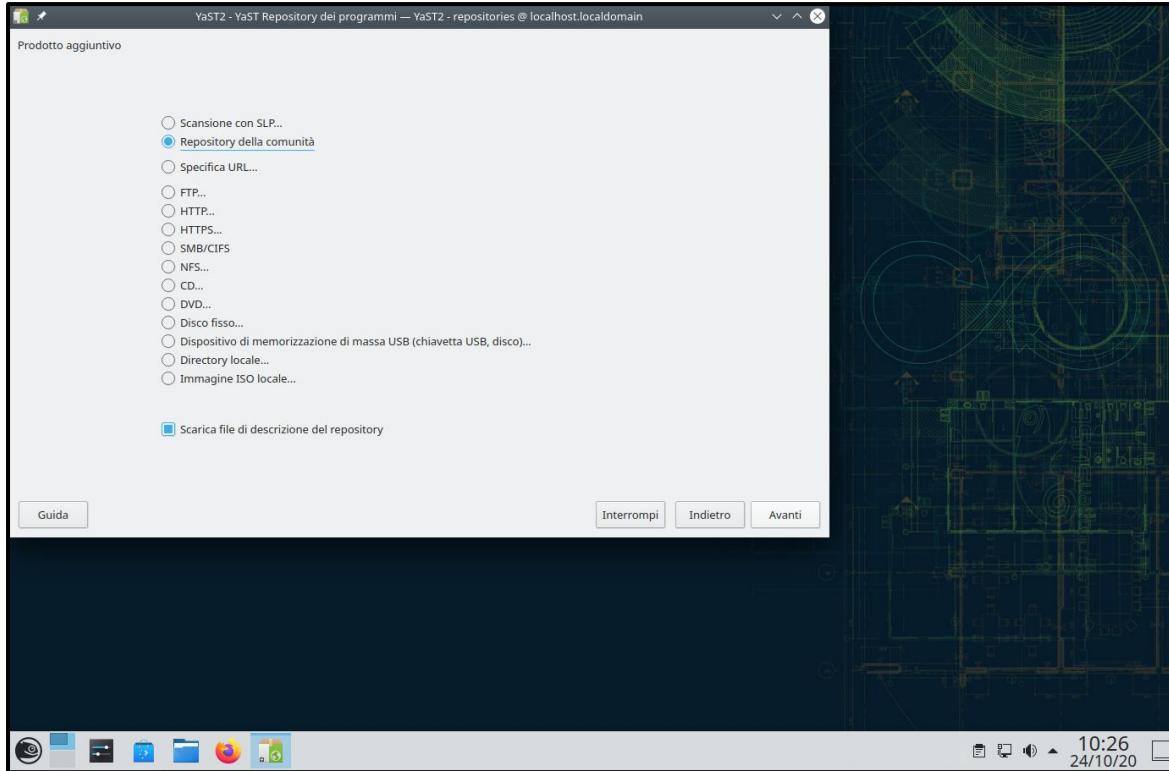
CODEC,  
NVIDIA, ...



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# Post Installazione



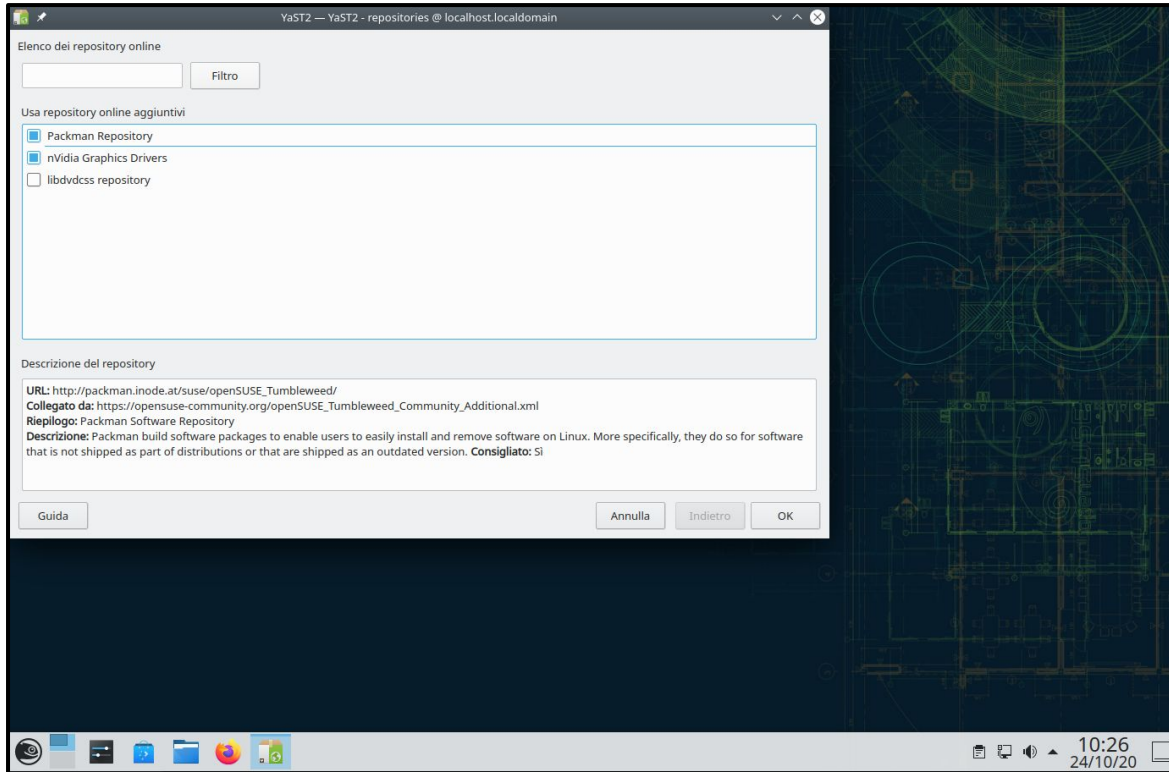
CODEC,  
NVIDIA, ...



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# Post Installazione



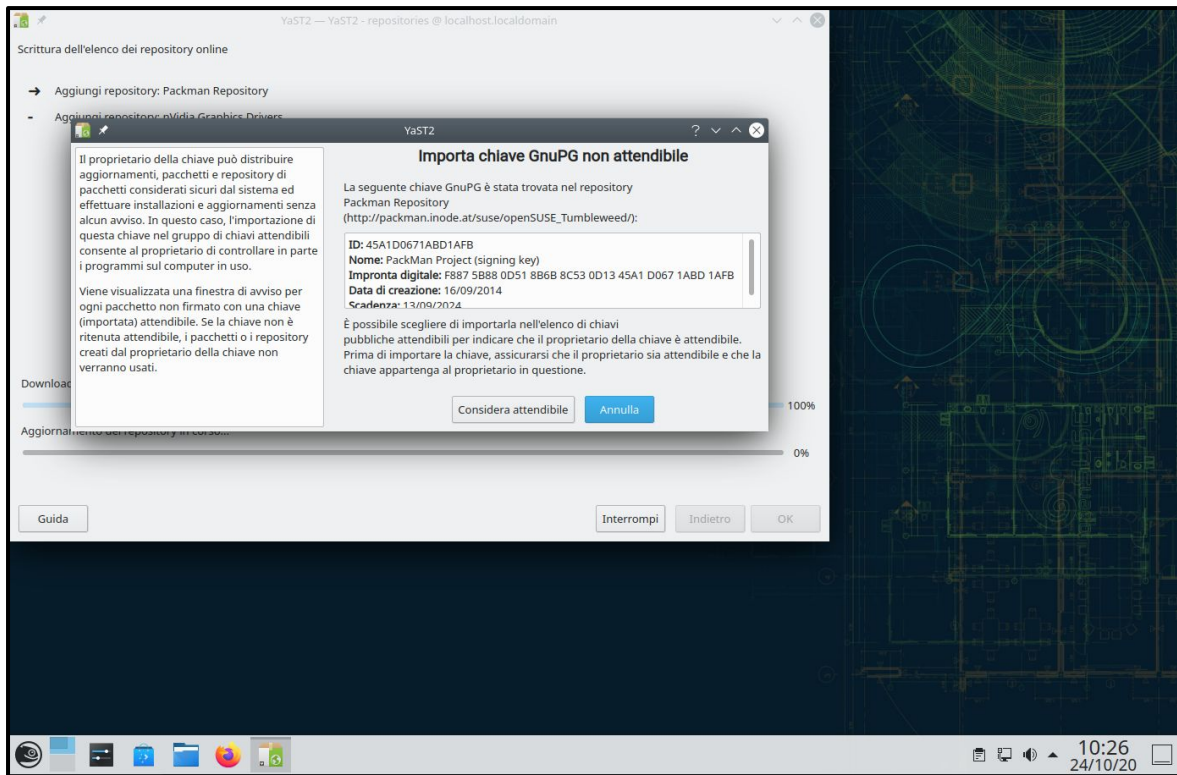
CODEC,  
NVIDIA, ...



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# Post Installazione



CODEC,  
NVIDIA, ...

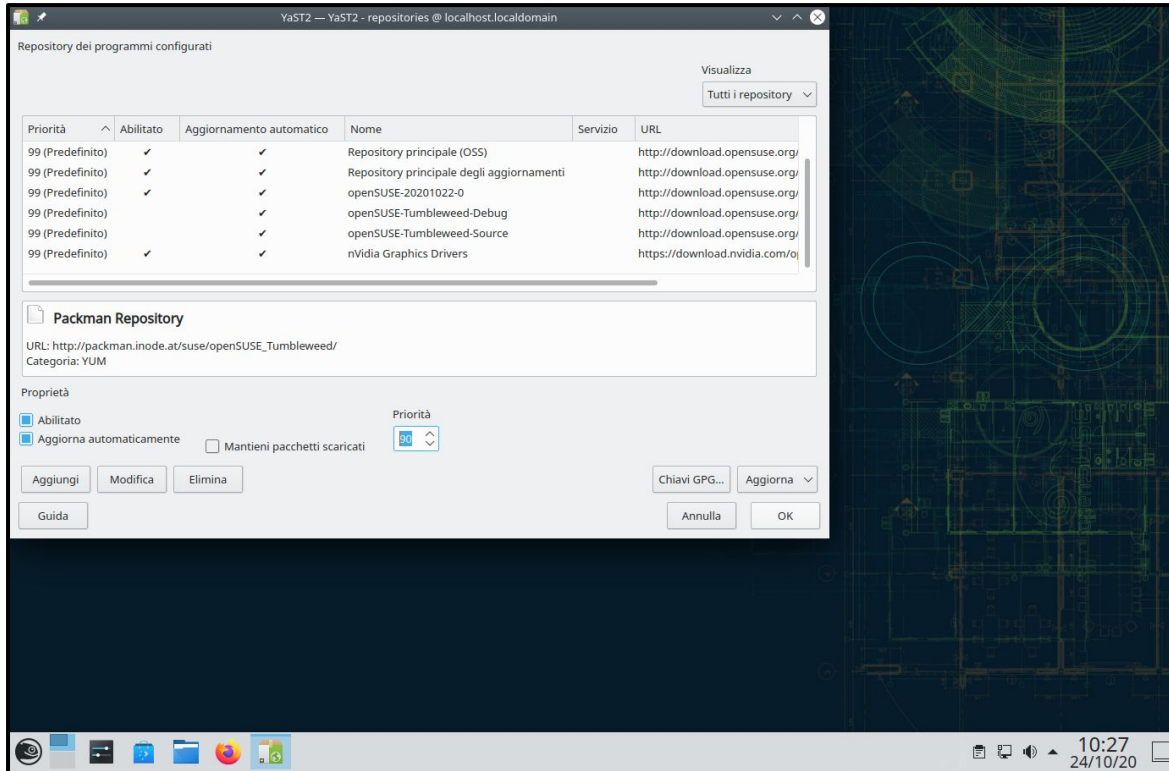


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# Post Installazione



CODEC,  
NVIDIA, ...

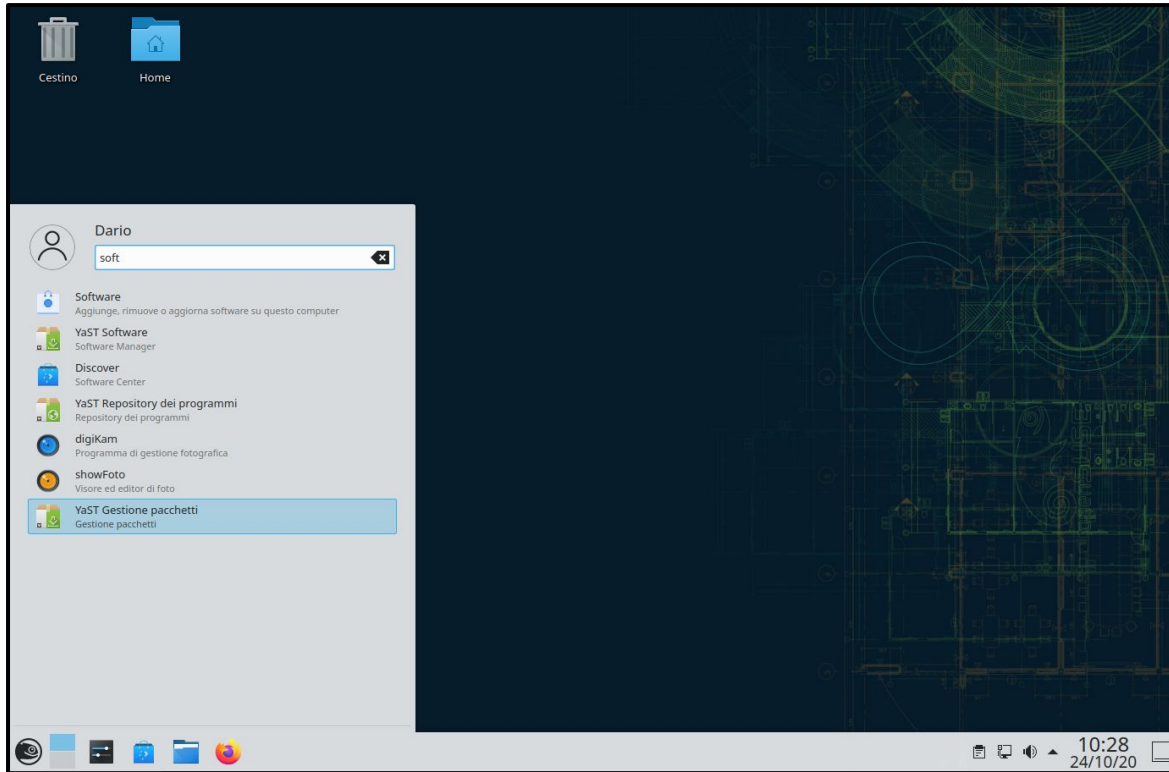


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# Post Installazione



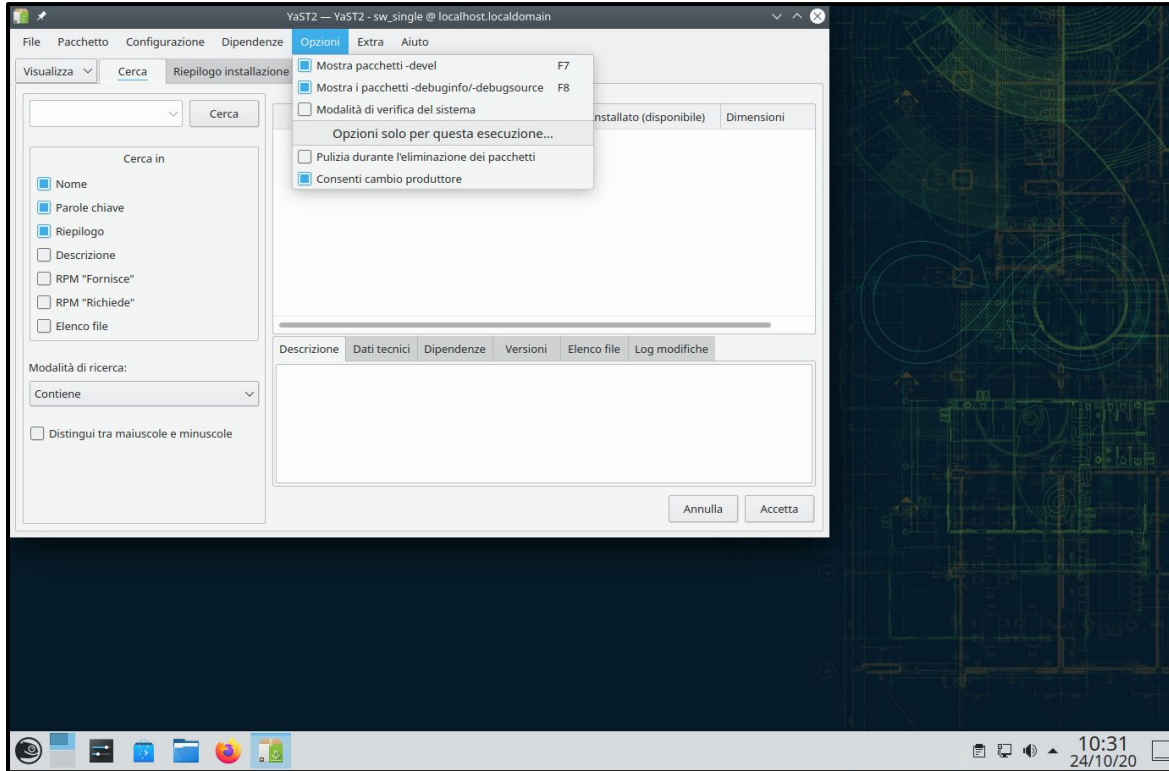
CODEC,  
NVIDIA, ...



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# Post Installazione



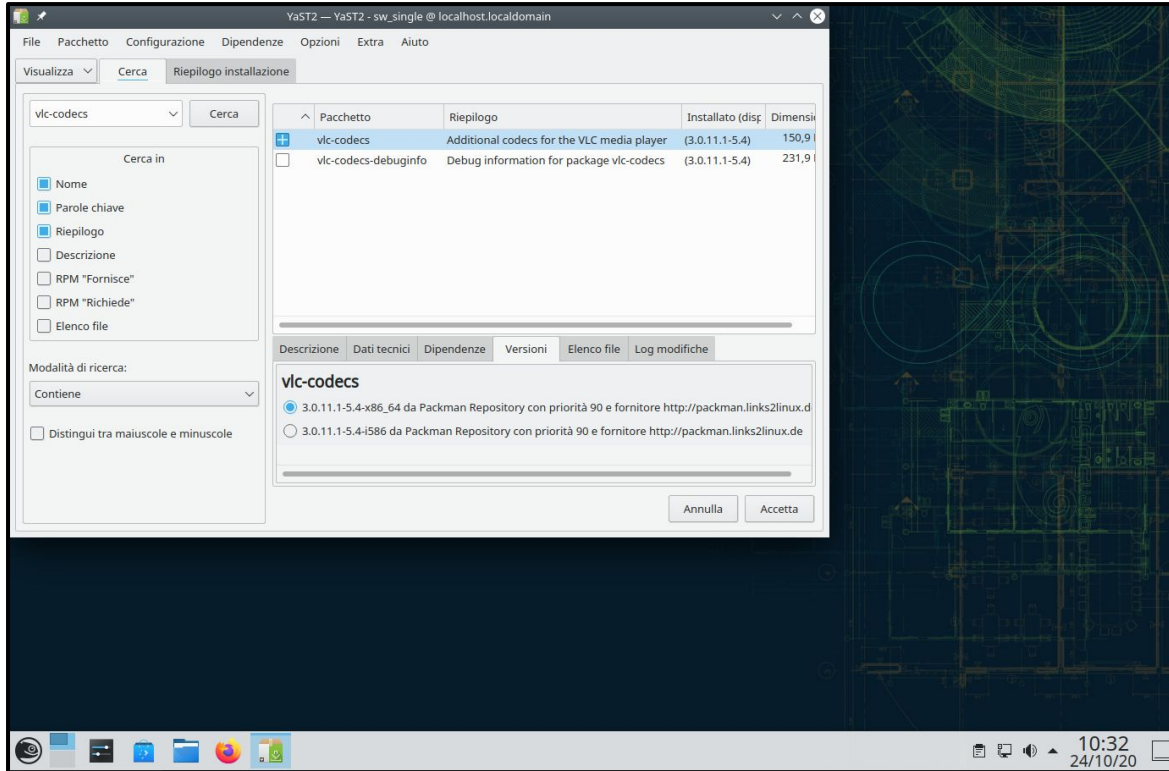
CODEC,  
NVIDIA, ...



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# Post Installazione



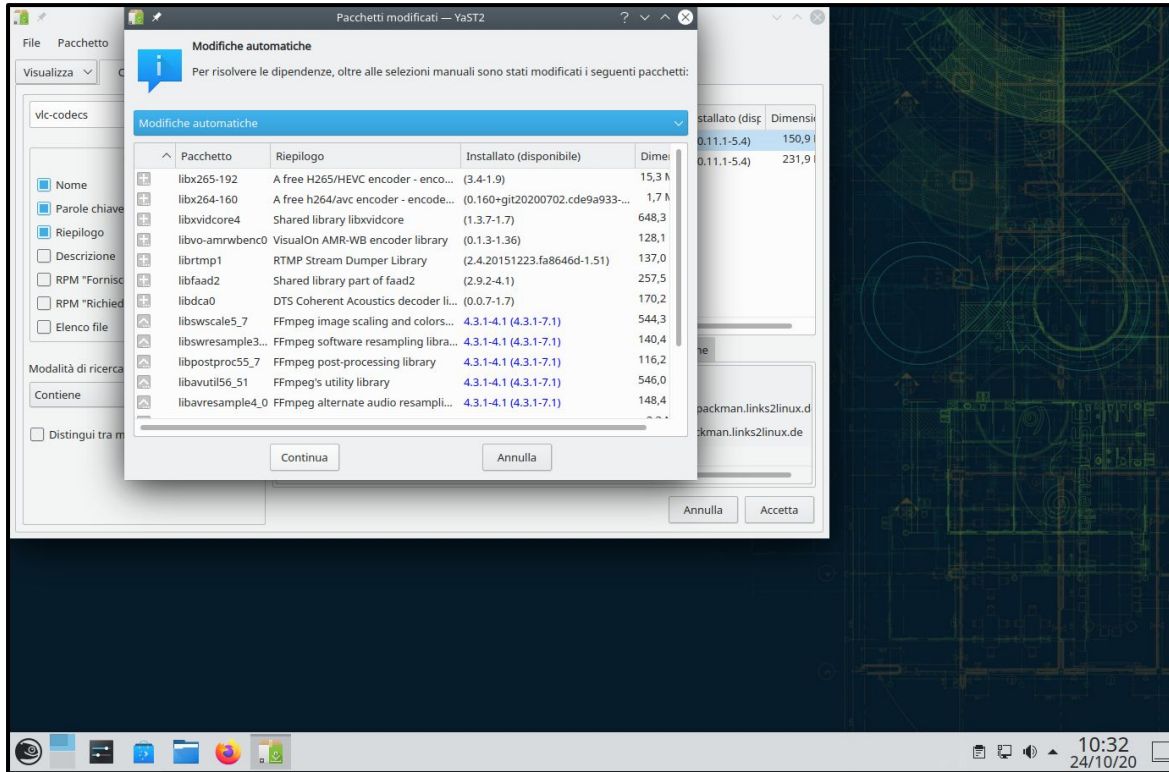
CODEC,  
NVIDIA, ...



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# Post Installazione



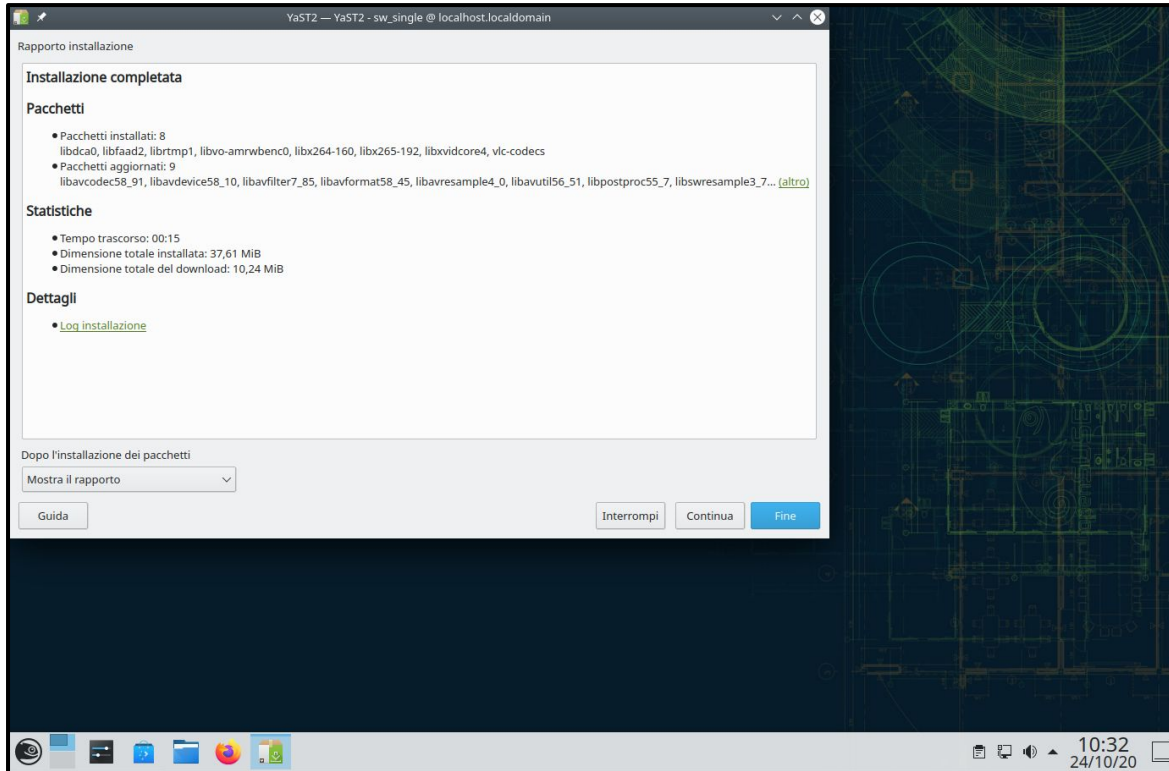
CODEC,  
NVIDIA, ...



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# Post Installazione



CODEC,  
NVIDIA, ...



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# Post Installazione

## CODEC & NVIDIA, procedura alternativa:

```
$ sudo zypper ar -cfp 90  
http://ftp.gwdg.de/pub/linux/misc/packman/suse/openSUSE_Tumbleweed/ packman
```

```
$ sudo zypper install --allow-vendor-change ffmpeg-3 lame  
gstreamer-plugins-libav gstreamer-plugins-bad gstreamer-plugins-ugly  
gstreamer-plugins-ugly-orig-addon vlc-codecs libavdevice58 x264 x265
```

```
$ sudo zypper dup --from packman --allow-vendor-change
```

Da: [Packman, aggiungere funzionalità multimediali](#)



# Post Installazione

CODEC & NVIDIA, procedura alternativa:

```
$ zypper addrepo --refresh  
https://download.nvidia.com/opensuse/tumbleweed NVIDIA
```

```
$ sudo zypper install x11-video-nvidiaG05
```

Da: [https://en.opensuse.org/SDB:NVIDIA\\_drivers](https://en.opensuse.org/SDB:NVIDIA_drivers)

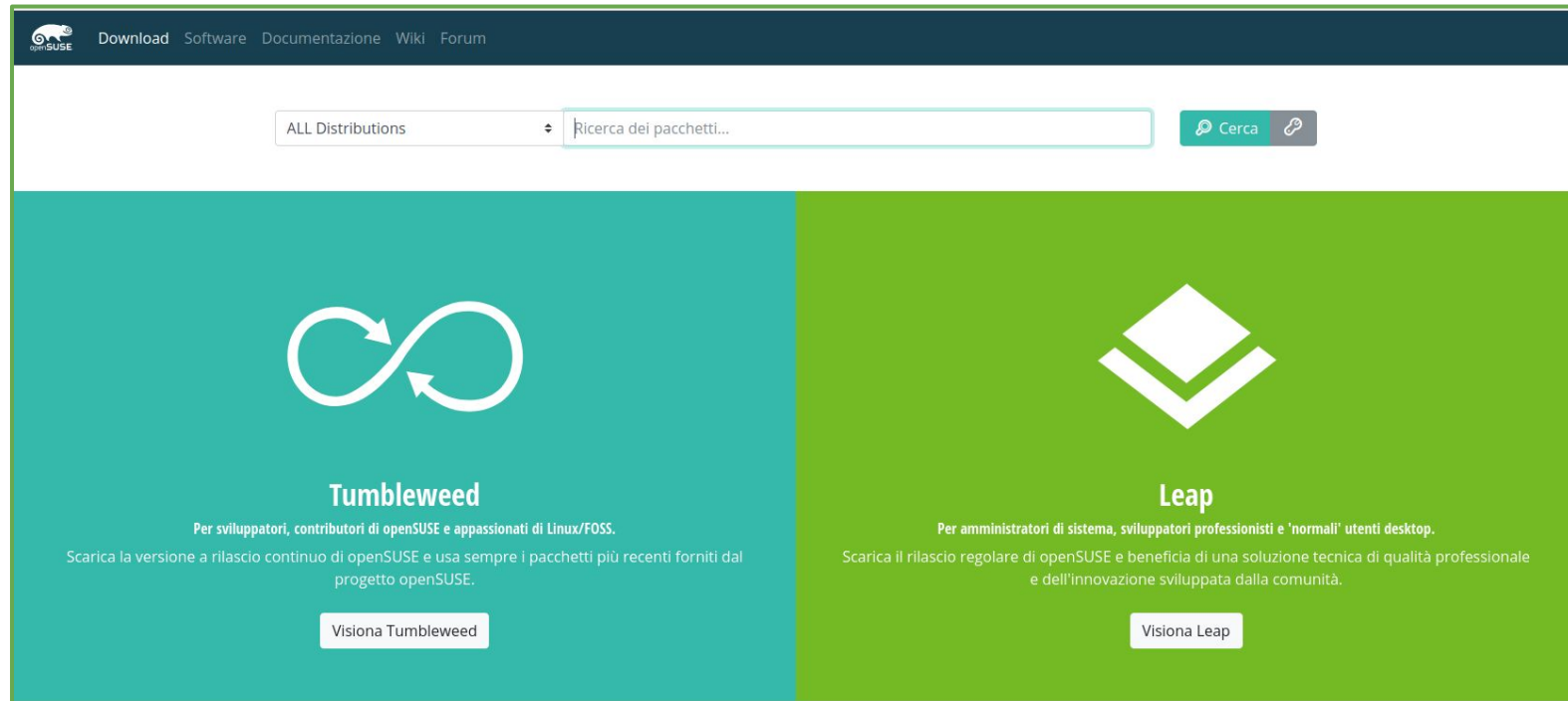


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# software.opensuse.org

## Portale di accesso al Software per openSUSE/SUSE

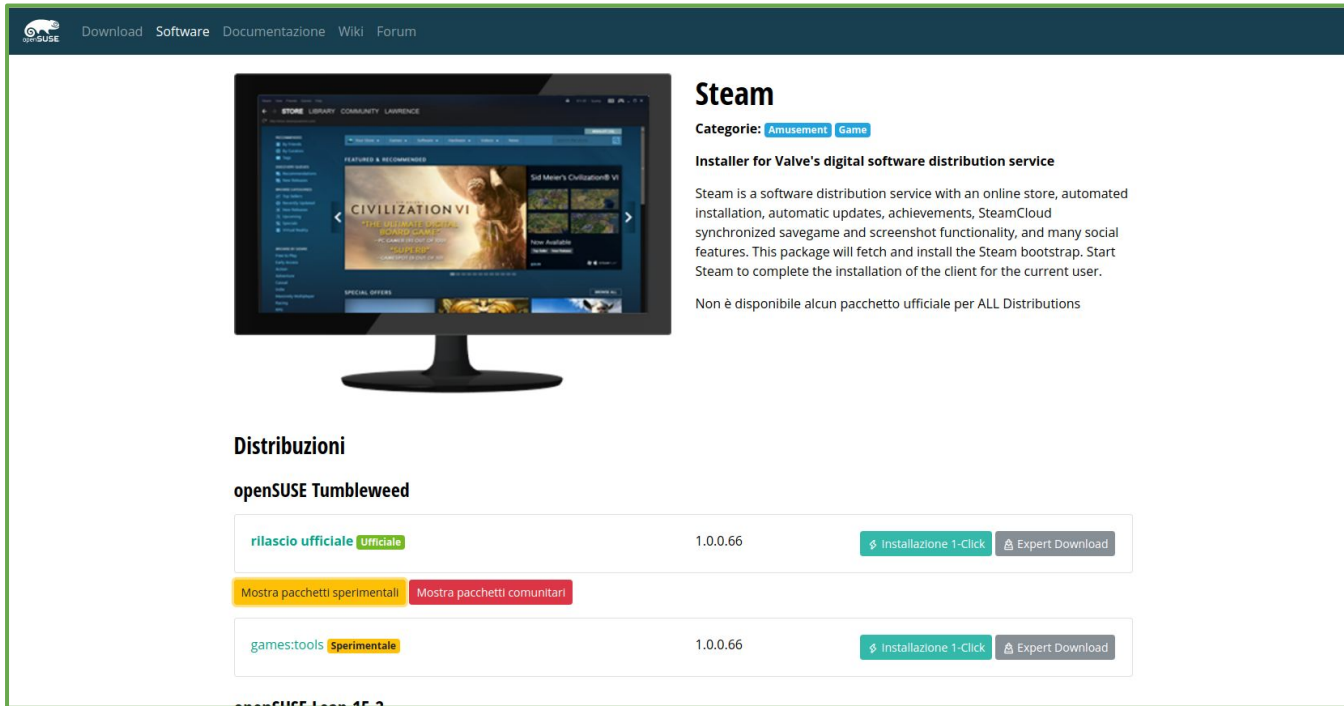


The screenshot shows the software.opensuse.org website. At the top, there is a navigation bar with links for Download, Software, Documentazione, Wiki, and Forum. Below the navigation bar is a search bar with a dropdown menu set to "ALL Distributions" and a search input field containing "Ricerca dei pacchetti...". To the right of the search bar are buttons for "Cerca" and a link icon. The main content area is divided into two columns. The left column features the Tumbleweed logo (an infinity symbol) and the text "Tumbleweed" followed by "Per sviluppatori, contributori di openSUSE e appassionati di Linux/FOSS." and "Scarica la versione a rilascio continuo di openSUSE e usa sempre i pacchetti più recenti forniti dal progetto openSUSE." Below this is a button labeled "Visiona Tumbleweed". The right column features the Leap logo (a diamond shape) and the text "Leap" followed by "Per amministratori di sistema, sviluppatori professionisti e 'normali' utenti desktop." and "Scarica il rilascio regolare di openSUSE e beneficia di una soluzione tecnica di qualità professionale e dell'innovazione sviluppata dalla comunità." Below this is a button labeled "Visiona Leap".



# software.opensuse.org

C'e` Steam per openSUSE ? Si, repo ufficiali (e non)



**Steam**

Categorie: [Amusement](#) [Game](#)

**Installer for Valve's digital software distribution service**

Steam is a software distribution service with an online store, automated installation, automatic updates, achievements, SteamCloud synchronized savegame and screenshot functionality, and many social features. This package will fetch and install the Steam bootstrap. Start Steam to complete the installation of the client for the current user.

Non è disponibile alcun pacchetto ufficiale per ALL Distributions

**Distribuzioni**

openSUSE Tumbleweed

<a href="#">rilascio ufficiale</a> <b>Ufficiale</b>	1.0.0.66	<a href="#">\$ Installazione 1-Click</a> <a href="#">Expert Download</a>
<a href="#">Mostra pacchetti sperimentali</a> <a href="#">Mostra pacchetti comunitari</a>		
<a href="#">games:tools</a> <b>Sperimentale</b>	1.0.0.66	<a href="#">\$ Installazione 1-Click</a> <a href="#">Expert Download</a>

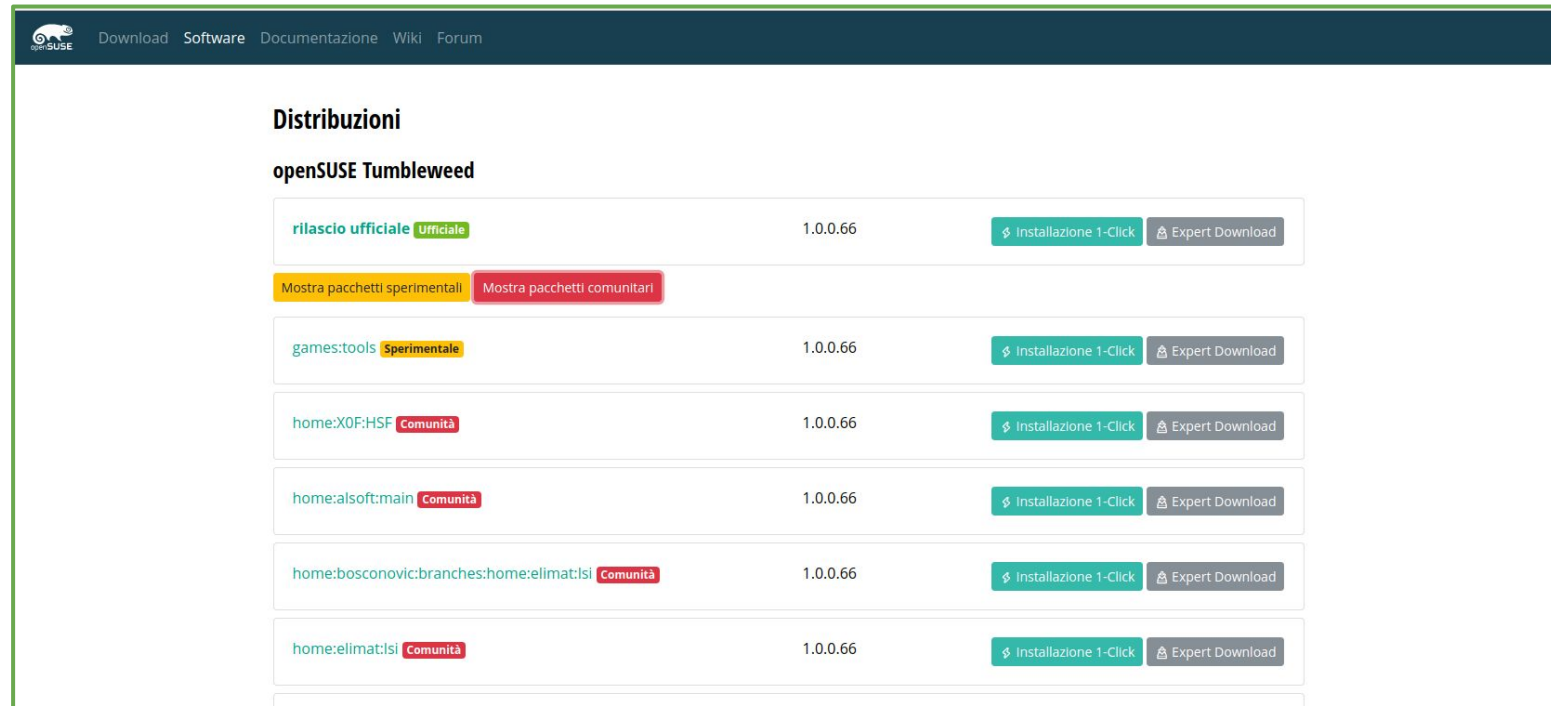


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# software.opensuse.org

C'e` megasync per openSUSE ? Repo non ufficiali



The screenshot shows the 'Distribuzioni' section of the software.opensuse.org website. It lists several distributions for openSUSE Tumbleweed, each with a version number (1.0.0.66) and two installation options: 'Installazione 1-Click' and 'Expert Download'. The distributions are categorized as 'Ufficiale', 'Sperimentale', or 'Comunità'.

Distribuzione	Versione	Installazione 1-Click	Expert Download
rilascio ufficiale <b>Ufficiale</b>	1.0.0.66	✓	✓
Mostra pacchetti sperimentali   Mostra pacchetti comunitari			
games:tools <b>Sperimentale</b>	1.0.0.66	✓	✓
home:X0F:HSF <b>Comunità</b>	1.0.0.66	✓	✓
home:alsoft:main <b>Comunità</b>	1.0.0.66	✓	✓
home:bosconovic:branches:home:elimat:lsi <b>Comunità</b>	1.0.0.66	✓	✓
home:elimat:lsi <b>Comunità</b>	1.0.0.66	✓	✓

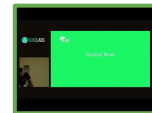


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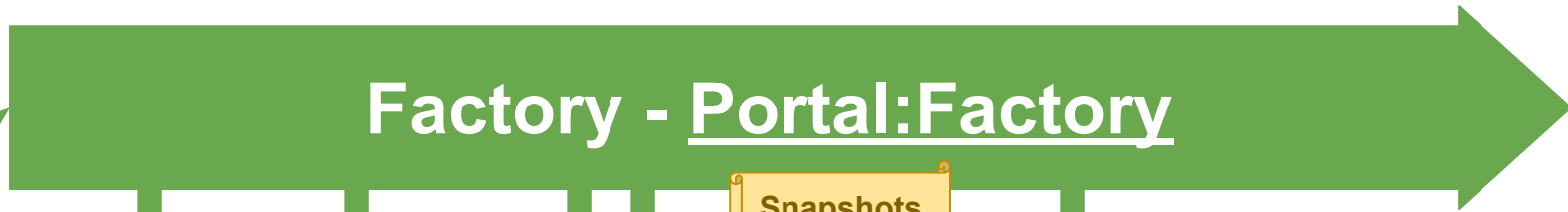


# BTRFS Come Se Non Ci Fosse Un Domani!!!

- Filesystem Linux di nuova generazione
  - E.g.: File system integrity verification in BTRFS
- openSUSE (e SLE) sono costruite attorno a BTRFS
  - SUSE e` tra i principali contributori allo sviluppo
    - Butter bei die Fische!
    - “Siamo quelli di Beverly Hills BTRFS” :-D
- Filesystem snapshot, con snapper
  - Integrati con zypper, yast, ecc
  - Integrati con GRUB
- Transactional Updates
  - Gli aggiornamenti avvengono in un altro snapshot
  - Nessun impatto sul sistema in esecuzione
  - Tecnologia ideale per gli “Immutable OSes”

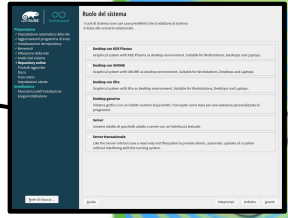


# Quindi, Quante Distro ci Sono ?



Snapshots

Release!



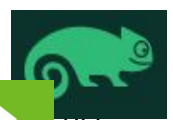
Can be installed as...

Factory First

Upstream development



Transactional Update Technology



Can be installed as...

Leap

Maintenance



++ Kubernetes



Transactional Update Technology



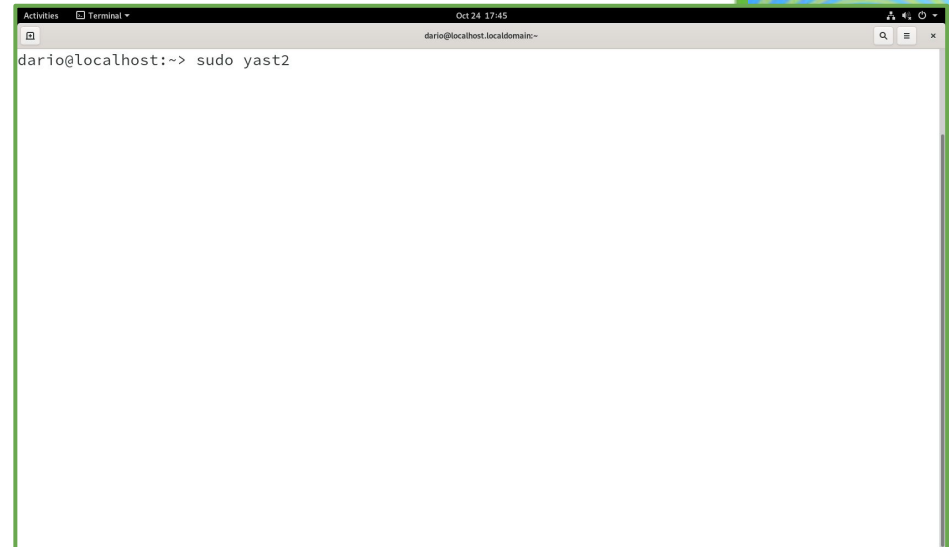
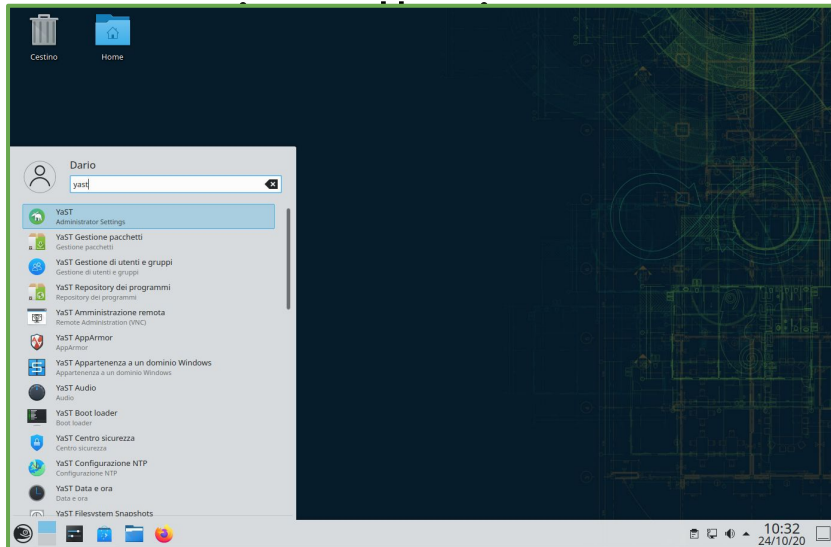
Tumbleweed Transactional Server

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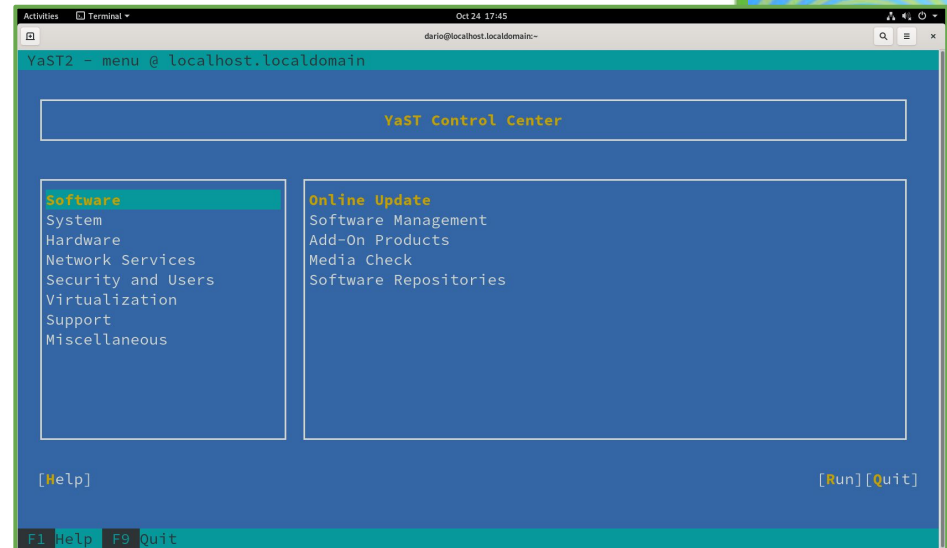
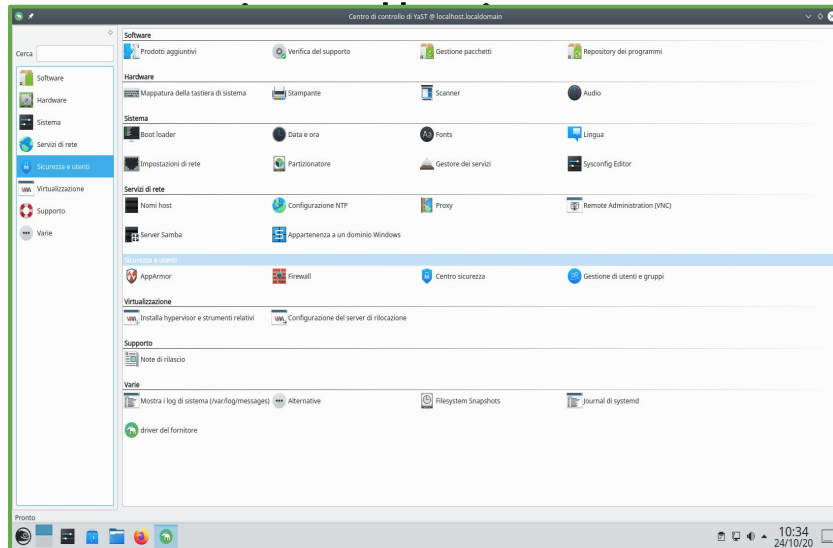
# YaST

- Yet Another Setup Tool - <https://yast.opensuse.org/>
- Setup, configurazione, installazione,



# YaST

- Yet Another Setup Tool - <https://yast.opensuse.org/>
- Setup, configurazione, installazione,



Cerca

- Software
- Hardware
- Sistema
- Servizi di rete
- Sicurezza e utenti**
- Virtualizzazione
- Supporto
- Varie

**Software**

- Prodotti aggiuntivi
- Verifica del supporto
- Gestione pacchetti
- Repository dei programmi

**Hardware**

- Mappatura della tastiera di sistema
- Stampante
- Scanner
- Audio

**Sistema**

- Boot loader
- Data e ora
- Fonts
- Lingua
- Impostazioni di rete
- Partizionatore
- Gestore dei servizi
- Sysconfig Editor

**Servizi di rete**

- Nomi host
- Configurazione NTP
- Proxy
- Remote Administration (VNC)
- Server Samba
- Appartenenza a un dominio Windows

**Sicurezza e utenti**

- AppArmor
- Firewall
- Centro sicurezza
- Gestione di utenti e gruppi

**Virtualizzazione**

- Installa hypervisor e strumenti relativi
- Configurazione del server di rilocalazione

**Supporto**

- Note di rilascio

**Varie**

- Mostra i log di sistema (/var/log/messages) ... Alternative
- Filesystem Snapshots
- Journal di systemd
- driver del fornitore

Pronto

10:34  
24/10/20



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# Snapper

```
File Modifica Visualizza Segnalibri Impostazioni Aiuto
dario@localhost:~> sudo zypper se gnuhealth
Caricamento dati del repository in corso...
Lettura dei pacchetti installati in corso...

S | Nome | Sommario | Tipo
-----|-----|-----|-----
| gnuhealth | A Health and Hospital Information System | pacchetto
| gnuhealth-client | The client of the GNU Health Hospital system | pacchetto
| gnuhealth-orthanc | Integration module for Orthanc | pacchetto
| gnuhealth-thalamus | The GNU Health Federation Message and Authentication Server | pacchetto
| python3-PyWebDAV3-GNUHealth | WebDAV library for Python - GNU Health port | pacchetto
dario@localhost:~> sudo zypper in gnuhealth
Caricamento dati del repository in corso...
Lettura dei pacchetti installati in corso...
Risoluzione dipendenze dei pacchetti in corso...

I seguenti 88 NUOVI pacchetti verranno installati:
bsdjar gnuhealth html2text libpq5 postgresql postgresql12 postgresql12-llvmjit postgresql12-server postgresql-llvmjit postgresql-server proteus python3-alabaster
python3-argh python3-Babel python3-bcrypt python3-catrocffi python3-caldav python3-cssselect python3-Cycler python3-docutils python3-Genshi python3-hl7apy
python3-imagesize python3-Jinja2 python3-kiwisolver python3-ldap3 python3-Levenshtein python3-lxml python3-MarkupSafe python3-matplotlib python3-mock python3-numpy
python3-olefile python3-passlib python3-pathtools python3-Pillow python3-polib python3-psycopp2 python3-pycha python3-Pygments python3-PyICU python3-python-barcode
python3-python-dateutil python3-python-magic python3-python-sql python3-python-stdnum python3-pytz python3-PyWebDAV3-GNUHealth python3-PyYAML python3-qrcode
python3-relatorio python3-roman python3-simpleeval python3-snowballstemmer python3-Sphinx python3-sphinxcontrib-applehelp python3-sphinxcontrib-devhelp
python3-sphinxcontrib-htmlhelp python3-sphinxcontrib-jsmath python3-sphinxcontrib-qthelp python3-sphinxcontrib-serializinghtml python3-sphinxcontrib-websupport
python3-sphinx_rtd_theme python3-SQLAlchemy python3-termcolor python3-vobject python3-watchdog python3-Werkzeug python3-Whoosh python3-wrapt python3-xcffib
python-Sphinx-doc-man trytond trytond_account trytond_account_invoice trytond_account_invoice_stock trytond_account_product trytond_company trytond_country
trytond_currency trytond_party trytond_product trytond_purchase trytond_purchase_request trytond_stock trytond_stock_lot trytond_stock_supply unoconv

I seguenti 12 pacchetti raccomandati sono stati selezionati automaticamente:
postgresql12 postgresql12-llvmjit postgresql12-server python3-Pillow python3-Pygments python3-PyICU python3-roman python3-Sphinx python3-SQLAlchemy
python3-termcolor python3-watchdog python3-Whoosh

Il seguente pacchetto è suggerito, ma non verrà installato:
gnuhealth-client

88 nuovi pacchetti da installare.
Dimensione complessiva del download: 32,7 MiB. Già nella cache: 31,0 MiB. Dopo l'operazione, saranno utilizzati altri 338,7 MiB.
Continuare? [s/n/v/...? mostra tutte le opzioni] (s): █
```

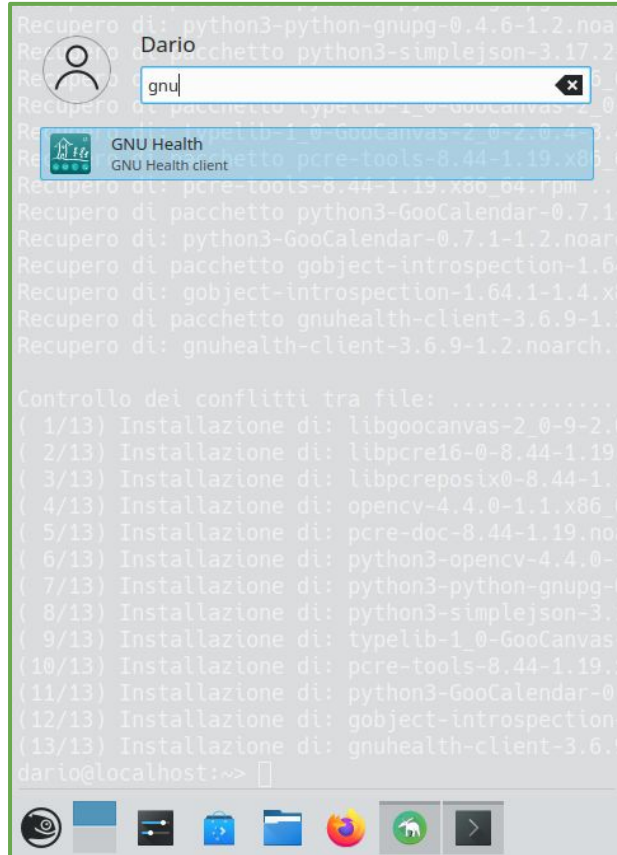
Installiamo qualcosa...



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# Snapper



Eccolo quai



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# Snapper

YaST2 - YaST Filesystem Snapshots — YaST2 - snapper @ localhost.localdomain

Istantanee

Configurazione attuale root

ID	Tipo	Data di inizio	Data di fine	Descrizione	Dati utente
1	Singola	2020-10-24 08:44:13		first root filesystem	
2	Singola	2020-10-24 09:31:34		after installation	important=yes
3 & 4	Pre & Post	2020-10-24 09:33:57	2020-10-24 09:34:47	yast users	
5 & 6	Pre & Post	2020-10-24 10:25:58	2020-10-24 10:27:48	yast repositories	
7 & 8	Pre & Post	2020-10-24 10:28:17	2020-10-24 10:29:48	yast sw_single	
10 & 11	Pre & Post	2020-10-24 10:32:16	2020-10-24 10:32:30	zypp(ruby.ruby2.7)	important=no
9 & 12	Pre & Post	2020-10-24 10:29:57	2020-10-24 10:32:45	yast sw_single	
13 & 14	Pre & Post	2020-10-24 10:35:26	2020-10-24 10:40:36	yast snapper	
15 & 16	Pre & Post	2020-10-24 10:40:43	2020-10-24 10:41:26	yast sw_single	
17 & 18	Pre & Post	2020-10-24 10:42:02	2020-10-24 10:42:10	yast keyboard	
19	Pre	2020-10-24 10:43:35		zypp(zypper)	important=no
20 & 21	Pre & Post	2020-10-24 10:44:23	2020-10-24 10:45:22	zypp(zypper)	important=no
22 & 23	Pre & Post	2020-10-24 10:45:59	2020-10-24 10:46:11	zypp(zypper)	important=no
24	Pre	2020-10-24 10:49:06		yast snapper	

Mostra modifiche   Crea   Modifica   Elimina   Aggiorna

Guida

Chiudi

Questi sono i nostri Snapshots



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# Snapper

YaST2 - YaST Filesystem Snapshots — YaST2 - snapper @ localhost.localdomain

Panoramica istantanea selezionata

/

20 & 21

- createdb
- createuser
- davserver
- davserver-3.8
- doc2odt
- doc2pdf
- dropdb
- dropuser
- f2py
- f2py-3.8
- f2py3
- f2py3.8
- gnuhealth
- gnuhealth-control
- gnuhealth-webdav-server
- hl7apy\_profile\_parser
- hl7apy\_profile\_parser-3.8
- html2text

zyp(zyp)

Momento in cui prendere la prima istantanea: 2020-10-24 10:44:23

Data di acquisizione della seconda istantanea: 2020-10-24 10:45:22

Mostra la differenza tra la prima e la seconda istantanea

Mostra la differenza tra la prima istantanea e il sistema attuale

Mostra la differenza tra la seconda istantanea e il sistema attuale

È stato creato un nuovo file.

Rimuovi Ripristina dal secondo

Guida Annulla Ripristina selezionati

Differenze: binari





# Snapper

YaST2 - YaST Filesystem Snapshots — YaST2 - snapper @ localhost.localdomain

Panoramica istantanea selezionata

/

20 & 21

- etc
  - alternatives
  - bash.bashrc.local
  - group**
  - group-
  - ld.so.cache
  - passwd
  - passwd-
  - shadow
  - shadow-
  - sysconfig
  - tryton
- usr
  - bin
    - bsdcat
    - bsdcpio
    - bsdtar
    - change\_tz

zypp(zypper)

Momento in cui prendere la prima istantanea: 2020-10-24 10:44:23

Data di acquisizione della seconda istantanea: 2020-10-24 10:45:22

Mostra la differenza tra la prima e la seconda istantanea  
 Mostra la differenza tra la prima istantanea e il sistema attuale  
 Mostra la differenza tra la seconda istantanea e il sistema attuale

Il contenuto del file è stato modificato.

```
--- /.snapshots/20/snapshot/etc/group 2020-10-24 09:25:47.295613114 +0200
+++ /.snapshots/21/snapshot/etc/group 2020-10-24 10:45:15.317860908 +0200
@@ -55,3 +55,5 @@
vnc:x:459:
sddm:x:458:
gdm:x:457:
+postgres:x:26:
+tryton:x:456:
```

Ripristina dal primo Ripristina dal secondo

Guida Annulla Ripristina selezionati

Differenze: file testuali

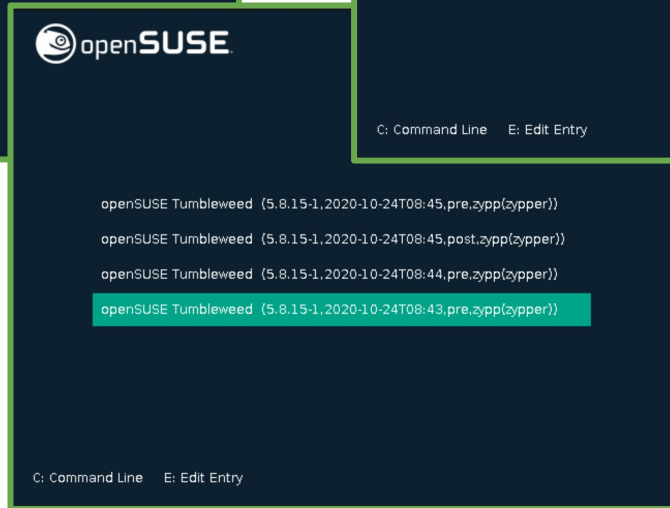
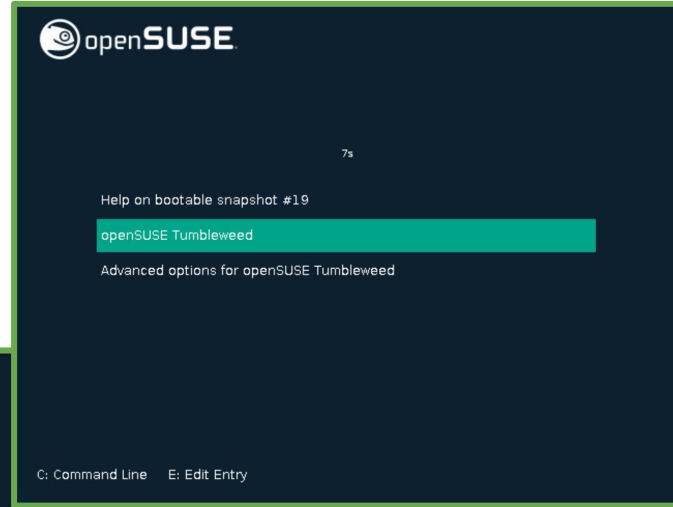
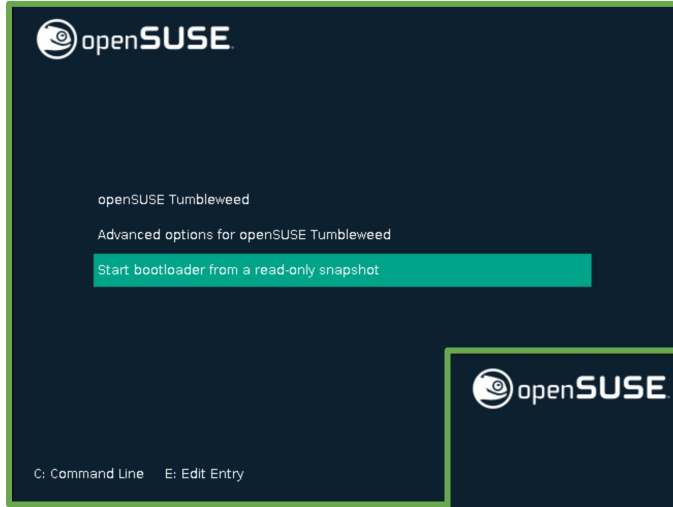


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# Snapper



Torniamo indietro nel tempo?



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# Snapper

```
> | ✎
~ : bash — Konsole
File Modifica Visualizza Segnalibri Impostazioni Aiuto
dario@localhost:~> zypper se gnuhealth
Caricamento dati del repository in corso...
Lettura dei pacchetti installati in corso...

S | Nome | Sommario | Tipo
-----|-----|-----|-----
| gnuhealth | A Health and Hospital Information System | pacchetto
| gnuhealth-client | The client of the GNU Health Hospital system | pacchetto
| gnuhealth-orthanc | Integration module for Orthanc | pacchetto
| gnuhealth-thalamus | The GNU Health Federation Message and Authentication Server | pacchetto
| python3-PyWebDAV3-GNUHealth | WebDAV library for Python - GNU Health port | pacchetto
dario@localhost:~> sudo snapper rollback
[sudo] password di root:
L'ambito è classic.
Creazione di un'istantanea in sola lettura del sottovolume predefinito. (Istantanea 37.)
Creazione di un'istantanea in lettura/scrittura del sottovolume corrente. (Istantanea 38.)
Impostazione del sottovolume predefinito all'istantanea 38.
dario@localhost:~> █
```

Tutto OK! Rendiamolo permanente



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# Snapper

The screenshot shows the YaST2 software management window. The search term 'gnuhealth' is entered in the search bar. The search results table is as follows:

Pacchetto	Riepilogo	Installato (dis)	Dimensione
<input checked="" type="checkbox"/> gnuhealth	A Health and Hospital Information System	(3.6.5-1.2)	81,6 M
<input type="checkbox"/> gnuhealth-client	The client of the GNU Health Hospital system	(3.6.9-1.2)	3,3 M
<input type="checkbox"/> gnuhealth-orthanc	Integration module for Orthanc	(3.6.5-1.2)	73,6 M
<input type="checkbox"/> gnuhealth-thalamus	The GNU Health Federation Message and Authentication Server	(0.9.12-1.3)	154,4 M
<input type="checkbox"/> python3-PyWebDAV3-GNUHealth	WebDAV library for Python - GNU Health port	(0.10.3-1.9)	331,5 M

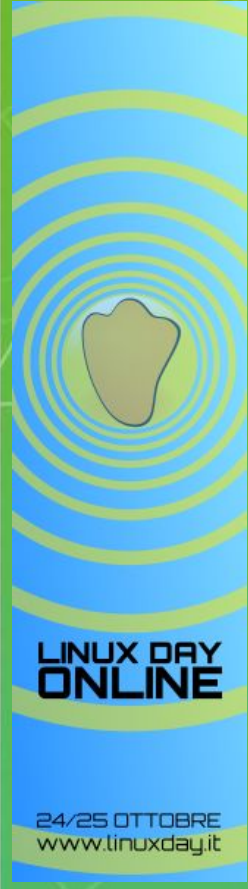
The description for the selected 'gnuhealth' package is:

**gnuhealth - A Health and Hospital Information System**

GNU Health is the Hospital Information System adopted by the United Nations University, International Institute for Global Health, for the implementations and trainings.

This is the server component of GNU Health. You would need the GNU Health Client as well, on the same or a different machine. You may use the Tryton Client either

E GNU Health e' ... Scomparso!!



# OpenQA

<http://open.qa/>

openQA, automated tests for operating systems

[Home](#) [Documentation](#) [Downloads](#) [Contact](#)

## When was the last time you were tested?

openQA is an automated test tool for operating systems and the engine at the heart of openSUSE's automated testing initiative.

[Watch it in action](#)

### Learn more

No matter if you are an openSUSE contributor willing to improve the test coverage of your packages, an operating system developer searching for additions to your toolbox or just a curious geek. There are some resources for you in the documentation page.

[Documentation »](#)

### Get it

openQA is free software (free as in freedom) that can be installed in any Linux distribution and that you can start using right now. Go to the downloads page to find the repositories, the packages and the instructions to get up and running.

[Downloads »](#)

### Join

If you need help setting up your own instance, you want to discuss a bug or new feature or if you are simply interested in automated testing, there are many ways in which you can get in touch with other openQA users and developers.

[Contact »](#)

---

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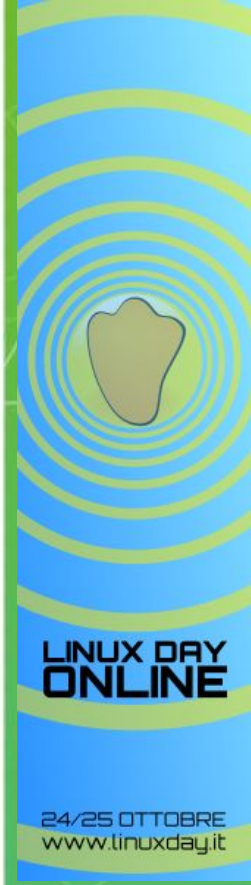
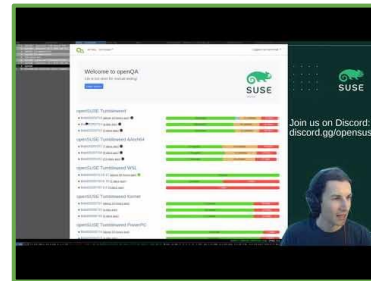
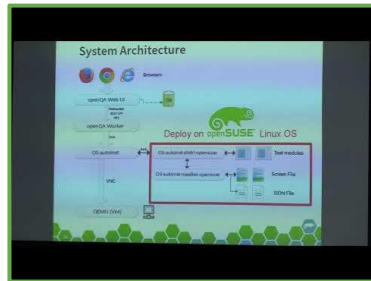
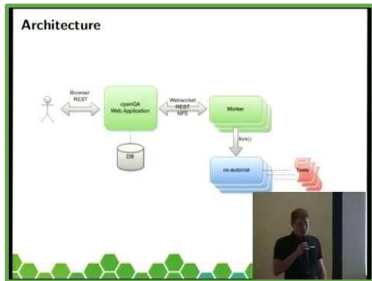


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# OpenQA

Testing di Sistemi Operativi: “The way they’re used”

- ~~Passive Testing~~ Active Testing
- ~~Quality Control~~ Quality Assurance
- Materiale:
  - [openQA | Introduction to the heart of openSUSE's automated testing](#)
  - [Heart of Automated Testing Framework in openSUSE : openQA](#)
  - [OpenQA - automated testing!](#)
  - [openQA Tutorial from 15 JUL 20 Live Stream](#)





# OpenQA: Documentazione

<http://open.qa/docs/>



## Table of Contents

- openQA starter guide
  - Introduction
  - Architecture
  - Basic concepts
    - Glossary
    - Jobs
    - Needles
      - Areas
    - Access management
    - Job groups
    - Cleanup
  - Using the client script
  - Testing openSUSE or Fedora
    - Getting tests
    - Getting openQA configuration
    - Adding a new ISO to test
  - Pitfalls
- openQA installation guide
  - Introduction
  - Quick bootstrapping under openSUSE
    - Directly on your machine
    - openQA in a container
  - Custom installation - repositories and procedure
    - Official repositories
    - Development version repository
  - Installation
  - System requirements
  - Basic configuration
    - Apache proxy
    - TLS/SSL
    - Database
      - Example for connecting to local PostgreSQL database
      - Example for connecting to remote PostgreSQL database

For the installation of openQA in general see the [Installation Guide](#), as a user of an existing instance see the [Users Guide](#). More advanced topics can be found in other documents. All documents are also available in the [official repository](#).

## Architecture

Although the project as a whole is referred to as openQA, there are in fact several components that are hosted in separate repositories as shown in [the following figure](#).

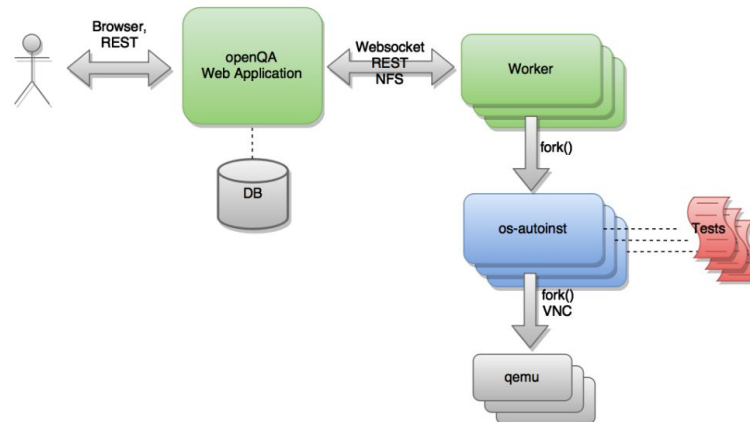


Figure 1. openQA architecture

The heart of the test engine is a standalone application called 'os-autoinst' (blue). In each execution, this application creates a virtual machine and uses it to run a set of test scripts (red). 'os-autoinst' generates a video, screenshots and a

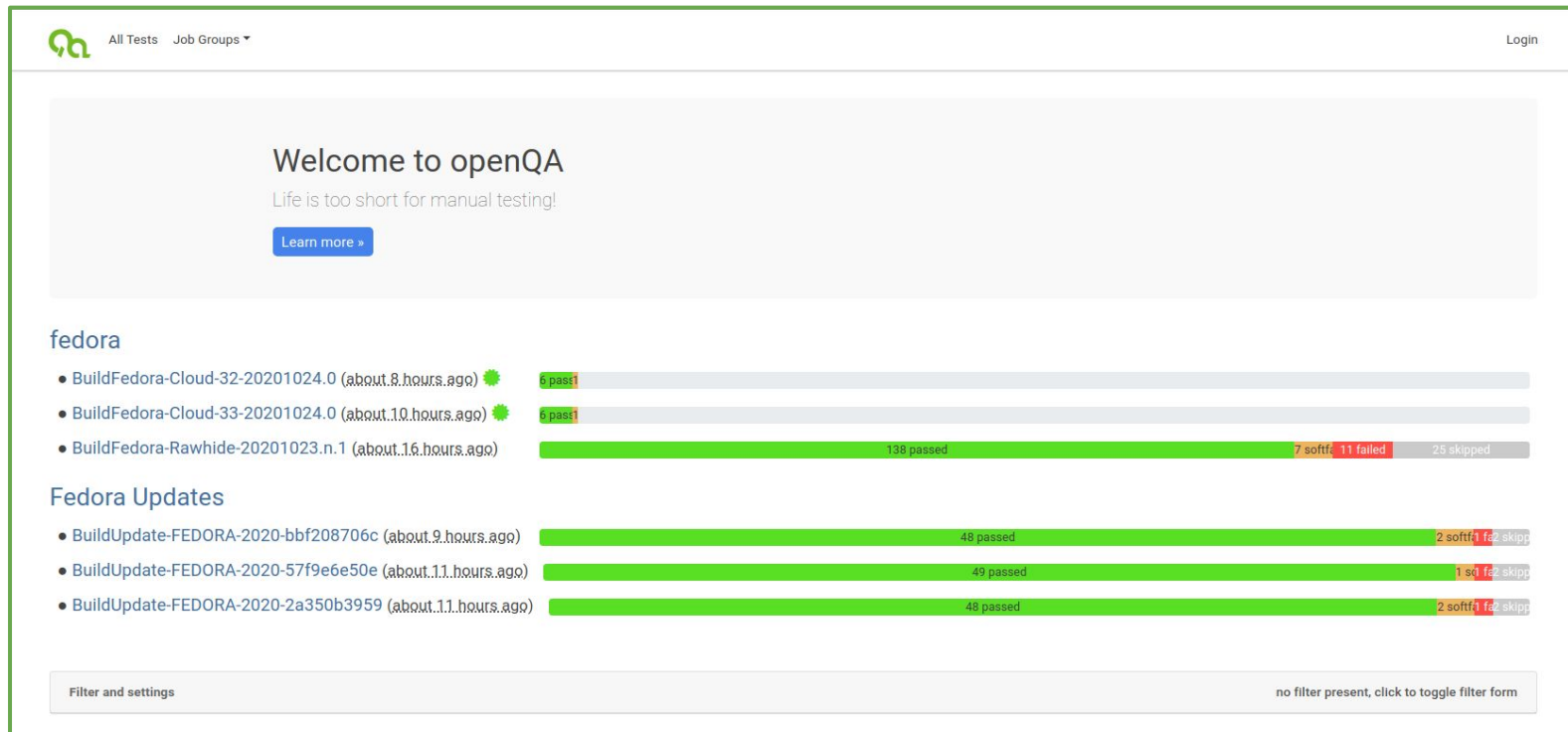


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# OpenQA @ Fedora Project

## How Fedora uses openQA



The screenshot displays the openQA web interface. At the top left is the openQA logo and navigation links for "All Tests" and "Job Groups". At the top right is a "Login" link. The main content area features a "Welcome to openQA" message with the tagline "Life is too short for manual testing!" and a "Learn more" button. Below this, the "fedora" section lists three test jobs with their results:

- BuildFedora-Cloud-32-20201024.0 (about 8 hours ago) 5 passed
- BuildFedora-Cloud-33-20201024.0 (about 10 hours ago) 5 passed
- BuildFedora-Rawhide-20201023.n.1 (about 16 hours ago) 138 passed, 7 softf, 11 failed, 25 skipped

The "Fedora Updates" section lists three test jobs:

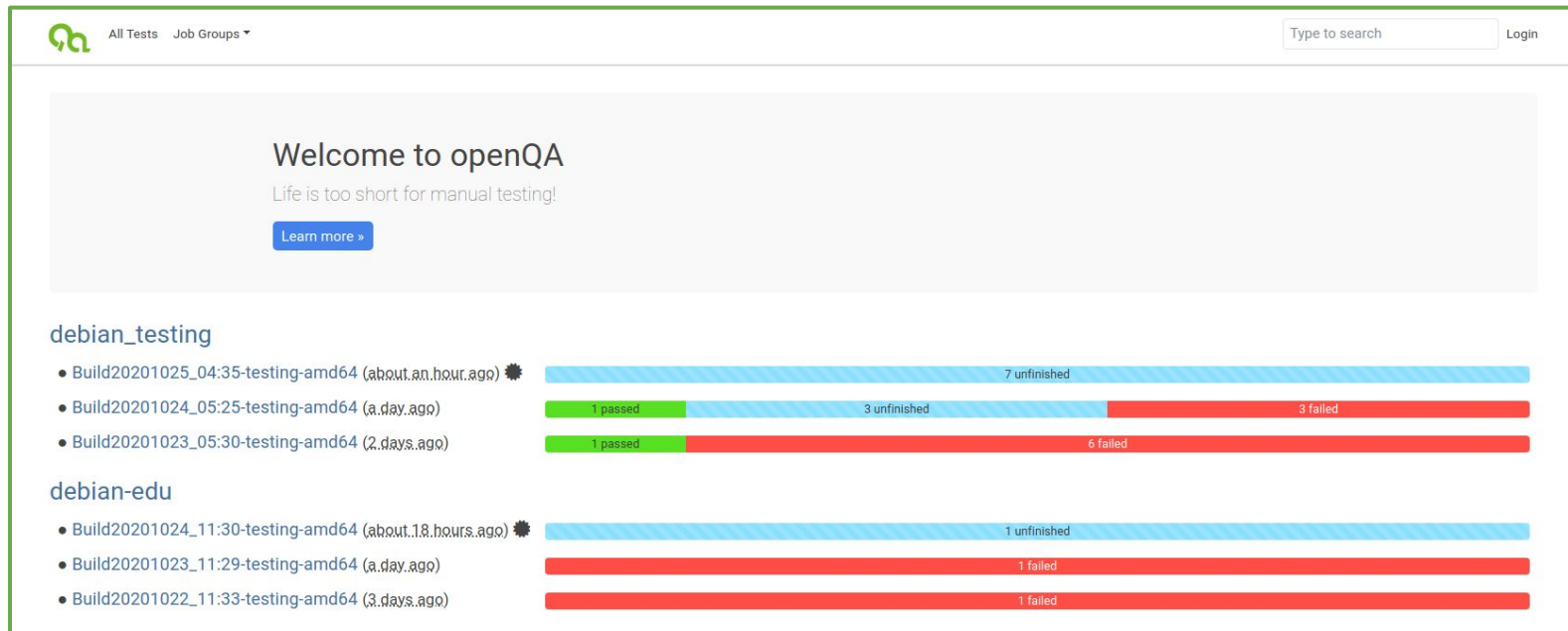
- BuildUpdate-FEDORA-2020-bbf208706c (about 9 hours ago) 48 passed, 2 softf, 1 fail, 2 skip
- BuildUpdate-FEDORA-2020-57f9e6e50e (about 11 hours ago) 49 passed, 1 soft, 1 fail, 2 skip
- BuildUpdate-FEDORA-2020-2a350b3959 (about 11 hours ago) 48 passed, 2 softf, 1 fail, 2 skip

At the bottom, there is a "Filter and settings" section with a "no filter present, click to toggle filter form" link.



# OpenQA @ Debian

<https://openqa.debian.net/>



The screenshot shows the OpenQA Debian website interface. At the top, there is a navigation bar with the OpenQA logo, "All Tests", "Job Groups", a search box labeled "Type to search", and a "Login" link. The main content area features a welcome message: "Welcome to openQA" with the tagline "Life is too short for manual testing!" and a "Learn more" button. Below this, there are two sections: "debian\_testing" and "debian-edu". Each section lists several test jobs with their status and progress bars. The "debian\_testing" section shows three jobs: one with 7 unfinished tests, one with 1 passed, 3 unfinished, and 3 failed tests, and one with 1 passed and 6 failed tests. The "debian-edu" section shows three jobs: one with 1 unfinished test, and two with 1 failed test each.

**debian\_testing**

- Build20201025\_04:35-testing-amd64 (about an hour ago) 🌟 7 unfinished
- Build20201024\_05:25-testing-amd64 (a day ago) 1 passed, 3 unfinished, 3 failed
- Build20201023\_05:30-testing-amd64 (2 days ago) 1 passed, 6 failed

**debian-edu**

- Build20201024\_11:30-testing-amd64 (about 1.8 hours ago) 🌟 1 unfinished
- Build20201023\_11:29-testing-amd64 (a day ago) 1 failed
- Build20201022\_11:33-testing-amd64 (3 days ago) 1 failed

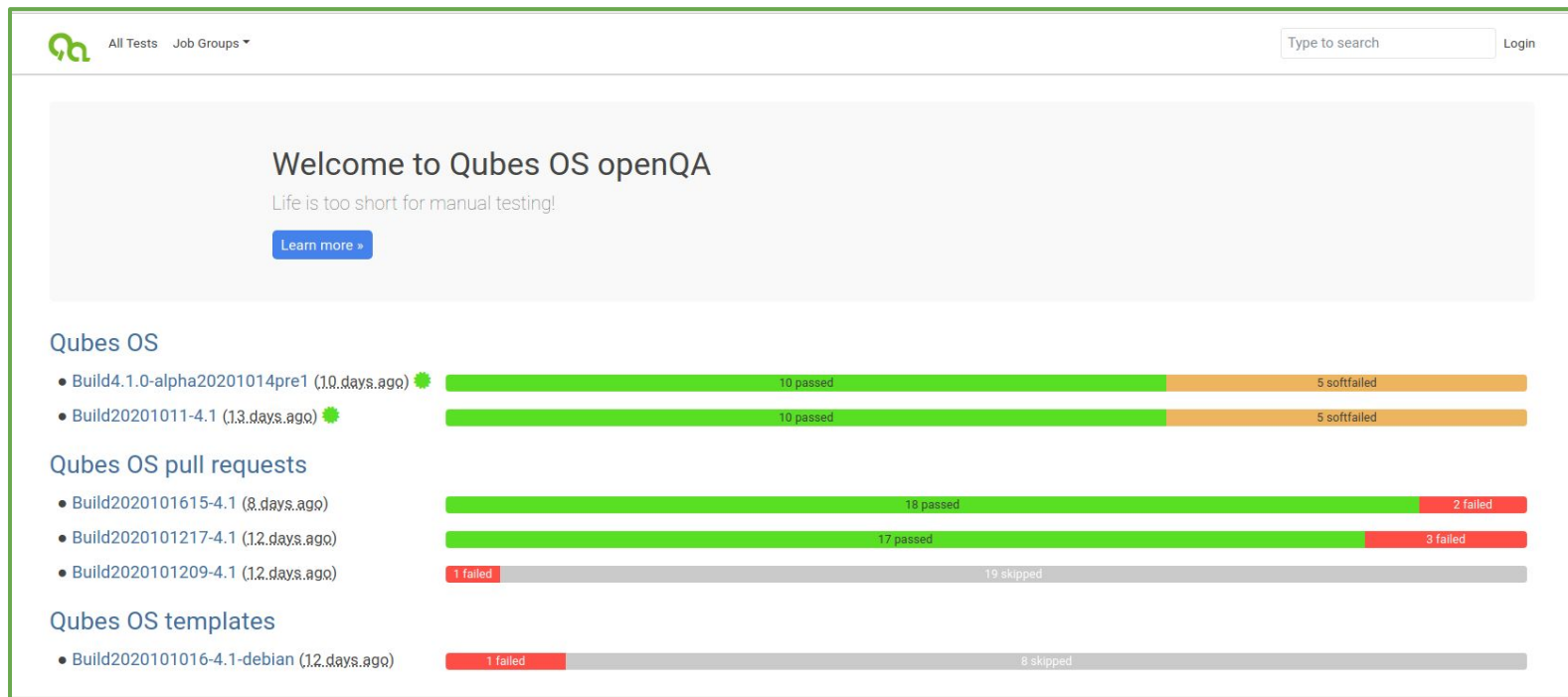


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# OpenQA @ QubesOS

<https://openqa.qubes-os.org/>



**OpenQA** All Tests Job Groups  Login

Welcome to Qubes OS openQA  
Life is too short for manual testing!  
[Learn more >](#)

### Qubes OS

- Build4.1.0-alpha20201014pre1 (10 days ago) 10 passed 5 softfailed
- Build20201011-4.1 (13 days ago) 10 passed 5 softfailed

### Qubes OS pull requests

- Build2020101615-4.1 (8 days ago) 18 passed 2 failed
- Build2020101217-4.1 (12 days ago) 17 passed 3 failed
- Build2020101209-4.1 (12 days ago) 1 failed 19 skipped

### Qubes OS templates

- Build2020101016-4.1-debian (12 days ago) 1 failed 9 skipped

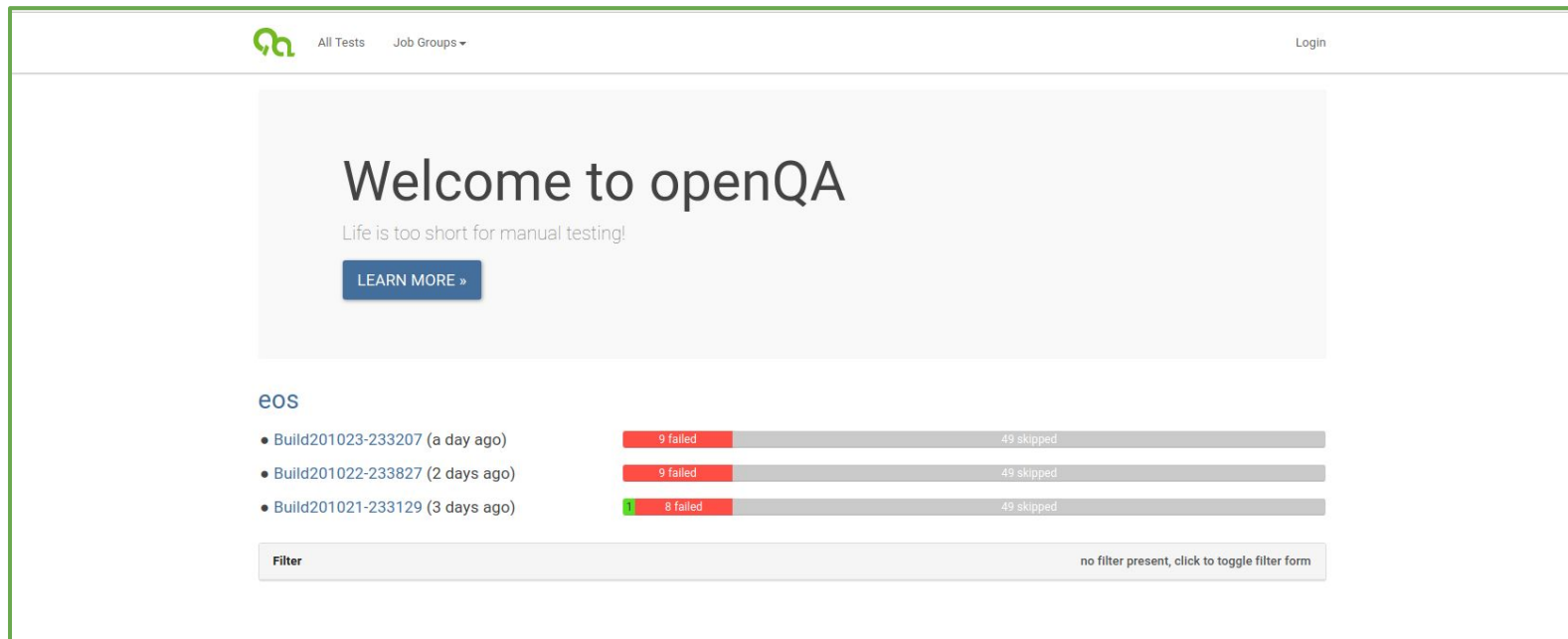


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# OpenQA @ EndlessOS

<https://openqa.endlessm.com/>



The screenshot shows the OpenQA web interface. At the top, there is a navigation bar with the OpenQA logo, "All Tests", "Job Groups", and a "Login" link. The main content area features a large "Welcome to openQA" heading with the tagline "Life is too short for manual testing!" and a "LEARN MORE" button. Below this, there is a section for "eos" tests. Three test jobs are listed, each with a progress bar showing the number of failed and skipped tests. A "Filter" input field is at the bottom of the test list, with the text "no filter present, click to toggle filter form".

Build ID	Age	Failed	Skipped
Build201023-233207	(a day ago)	9	49
Build201022-233827	(2 days ago)	9	49
Build201021-233129	(3 days ago)	8	49



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# OpenQA @ openSUSE [Tumbleweed]



## Last Builds for openSUSE Tumbleweed

Responsible person: DimStar

Automatic acceptance tests for openSUSE Tumbleweed. All tests in this job group have to pass for an automatic release of Tumbleweed to happen with the exception of the ignored issues. The process is controlled by the bot `totest-manager`. Run `totest-manager.py --dry --debug run Factory` locally to check how its evaluation could look like. Call `osc meta --blame prj openSUSE:Factory:ToTest | grep -A1 '<publish>'` to check if the repository is maybe already publish right now. You might need the following two lines in your `~/osrc` file.

```
[openSUSE:Factory]
staging=openSUSE:Factory:Staging
```

The ignored issues are taken from comments, but are stored in `OSRT:IgnoredIssues`. Only edit via `osc` as the webui destroys newlines.

See <https://openqa.opensuse.org/snapshot-changes/opensuse/Tumbleweed/> for live package diff calculations.

The openSUSE:Factory dashboard gives an overview about the state of the current snapshot in building/testing/publishing.

Visit #opensuse-factory for discussions and if you want to help.

coolo wrote about a year ago

pinned-description: Ignored issues

To see the list of issues @ttm ignores, run the following command: `osc meta attribute openSUSE:Factory --attribute OSRT:IgnoredIssues`



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# OpenQA @ openSUSE [Tumbleweed]



## Last Builds for openSUSE Tumbleweed

Responsible person: DimStar

Automatic acceptance tests for openSUSE Tumbleweed. All tests in this job group have to pass for an automatic release of Tumbleweed to happen with the exception of the ignored issues. The process is controlled by the bot `totest-manager`. Run `totest-manager.py --dry --debug run Factory` locally to check how its evaluation could look like. Call `osc meta --blame prj openSUSE:Factory:ToTest | grep -A1 '<publish>'` to check if the repository is maybe already publish right now. You might need the following two lines in your `~/osrc` file:

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# OpenQA: Come Funziona



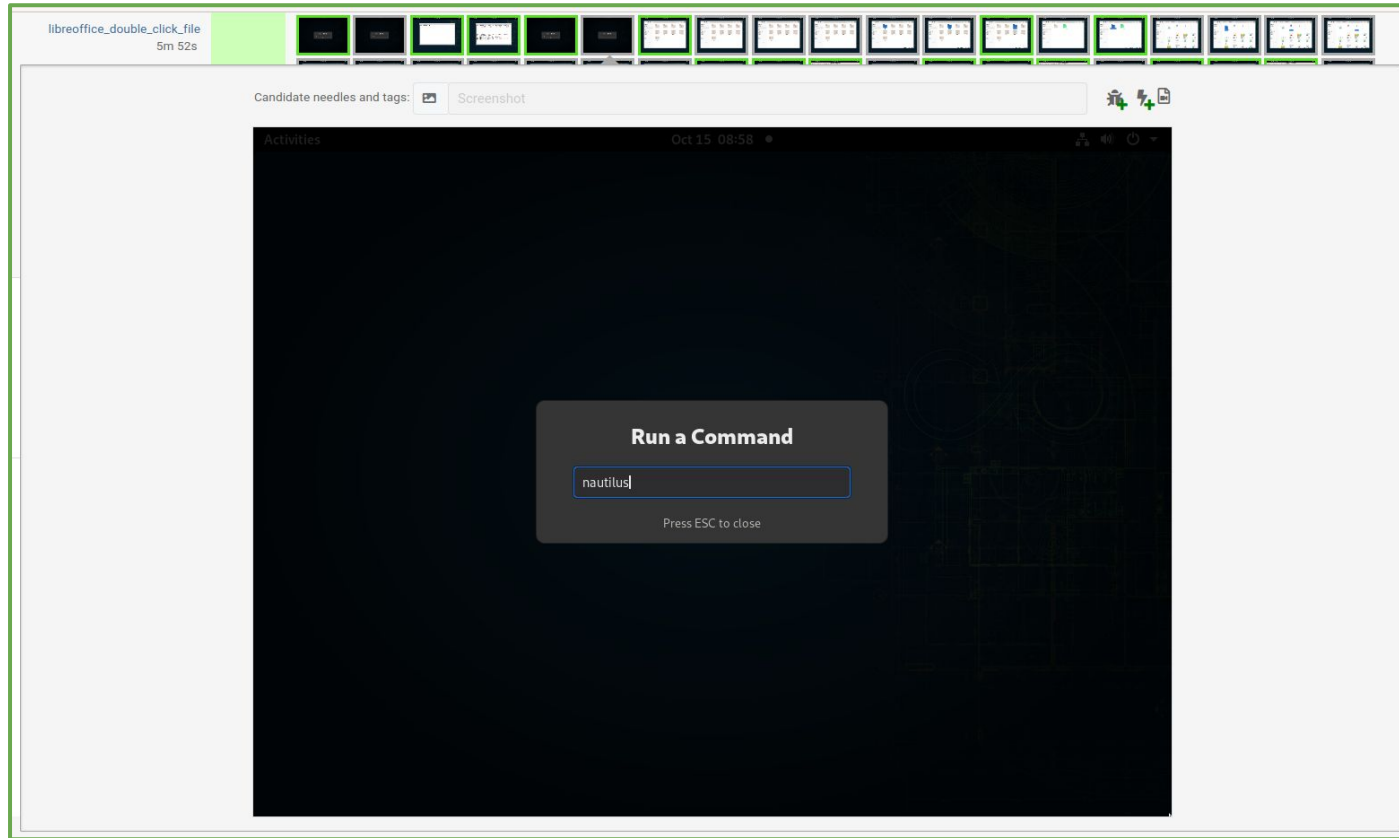
libreoffice_mainmenu_components 3m 4s	passed	
libreoffice_recent_documents 2m 37s	softfailed	
libreoffice_default_theme 1m 30s	passed	
libreoffice_double_click_file 5m 52s	passed	
libreoffice_open_specified_file 13m 7s	passed	



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# OpenQA: Come Funziona

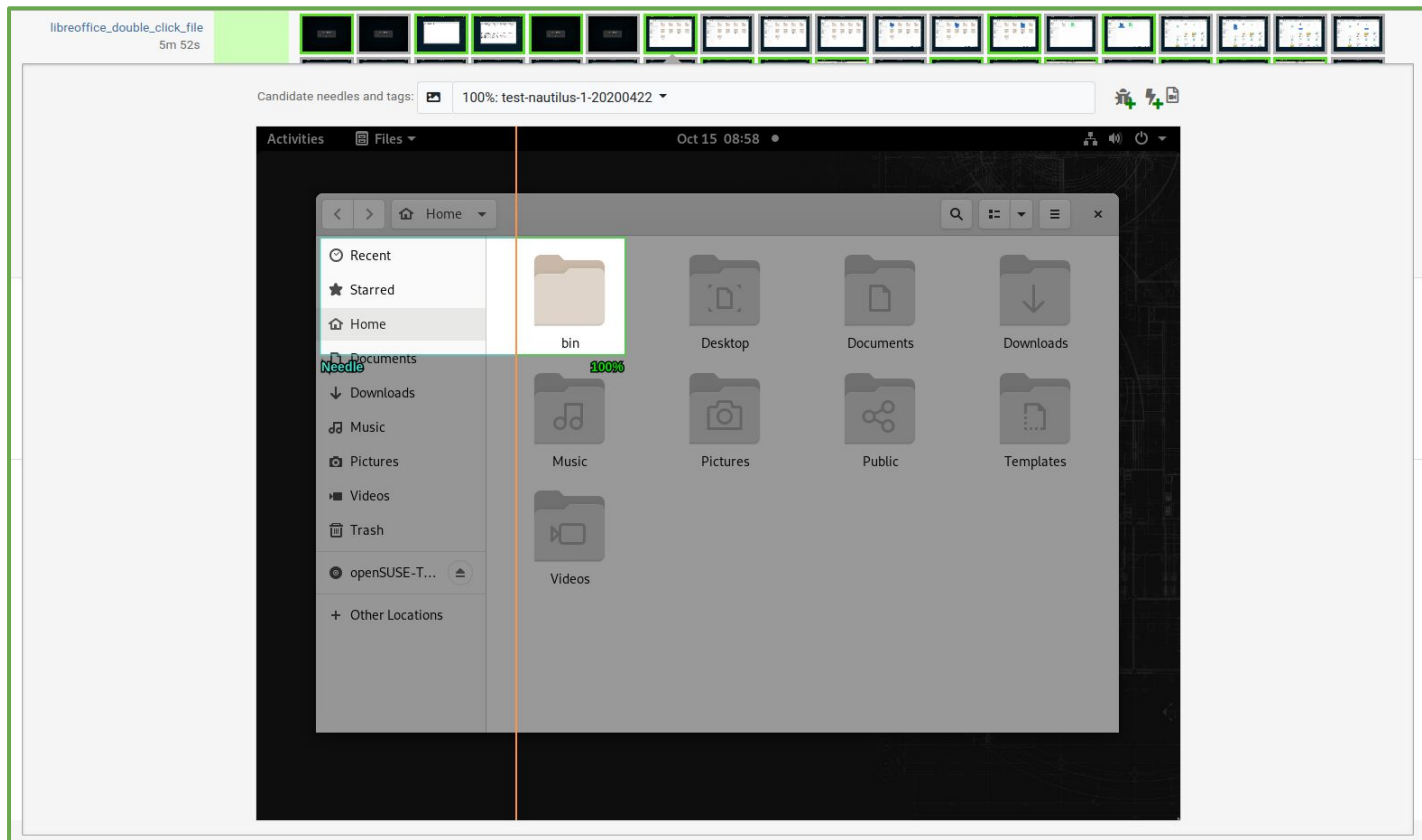


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# OpenQA: Come Funziona



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# Open Build Service (OBS)

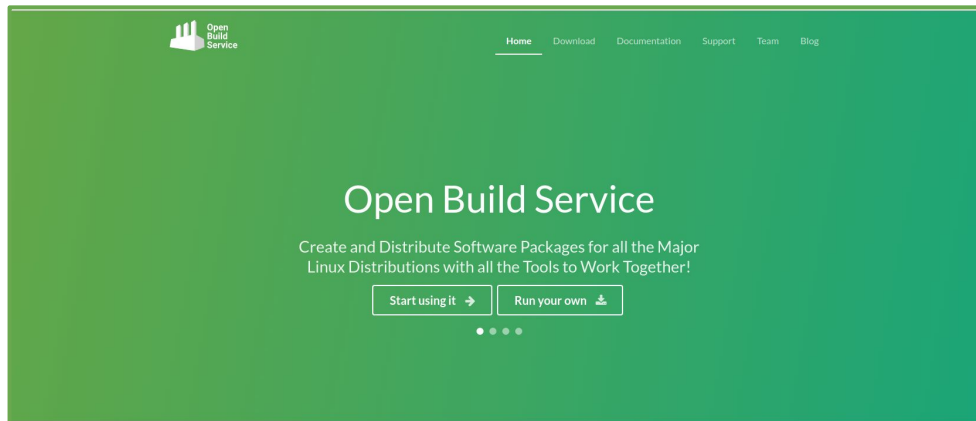
Infrastruttura “As A Service” per creare pacchetti:

- Usato per creare openSUSE / SUSE

Usabile da chiunque:

- crea il tuo account e vai! :-)
- Scarica, installa e gestisci la tua istanza

[OBS User Documentation](#)



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# Open Build Service (OBS)

Crea i tuoi pacchetti ⇒ OBS fara` il build (e il repo!)

The screenshot displays the OBS web interface for a project named 'home:dfaggioli'. The interface is divided into several sections:

- Places:** A sidebar on the left with navigation options like 'Tasks', 'Your Home Project', 'All Projects', and 'Status Monitor'. Below it, 'Actions on this page' includes 'Create Patchinfo', 'GPG Key / SSL Certificate', 'Edit Project', 'Delete Project', 'New Image', 'Create Package', and 'Branch Package'.
- Overview:** The main content area shows the project name 'Dario's packages and repos' with a search bar and tabs for 'Overview', 'Repositories', 'Monitor', 'Requests', 'Users', 'Subprojects', 'Project Config', 'Attributes', 'Meta', 'Status', 'Pulse', and 'Staging'. A description 'No description set' is visible.
- Packages:** A table listing packages. The first entry is 'my-first-obs-package' with a status of 'Changed' and a timestamp of '7 months ago'. The table has columns for 'Name' and 'Changed'. Below the table, it indicates 'page 1 of 1 (1 records)' and navigation buttons for 'First', 'Previous', 'Next', and 'Last'.
- Comments:** A section for 'Comments for home:dfaggioli' with a text input field and an 'Add comment' button.
- Build Results:** A section on the right showing a list of build results for various packages and architectures (e.g., SLE\_12\_SP5, SLE\_15, openSUSE\_Leap\_15.0). Each entry shows a status of 'succeeded: 1' and a 'Refresh' button.



# Open Build Service (OBS)

Contenuto di un Pacchetto  $\Rightarrow$  RPM: spec file + ...

The screenshot shows the OBS web interface for a project named 'my-first-obs-package'. The interface includes a sidebar with navigation options like 'Places', 'Tasks', and 'Actions on this page'. The main content area shows the package overview, including a table of source files and a list of build results.

**Source Files**

Filename	Size	Changed	Actions
first-obs-patch.patch	418 Bytes	7 months	<a href="#">Download</a> <a href="#">Delete</a>
my-first-obs-package-0.1.0.tar.gz	13 KB	about 3 years	<a href="#">Download</a> <a href="#">Delete</a>
my-first-obs-package.changes	305 Bytes	7 months	<a href="#">Download</a> <a href="#">Delete</a>
my-first-obs-package.spec	1.62 KB	7 months	<a href="#">Download</a> <a href="#">Delete</a>

**Latest Revision**

Dario Faggioli (dfaggioli) committed 7 months ago (revision 2)  
- First patch

**Build Results**

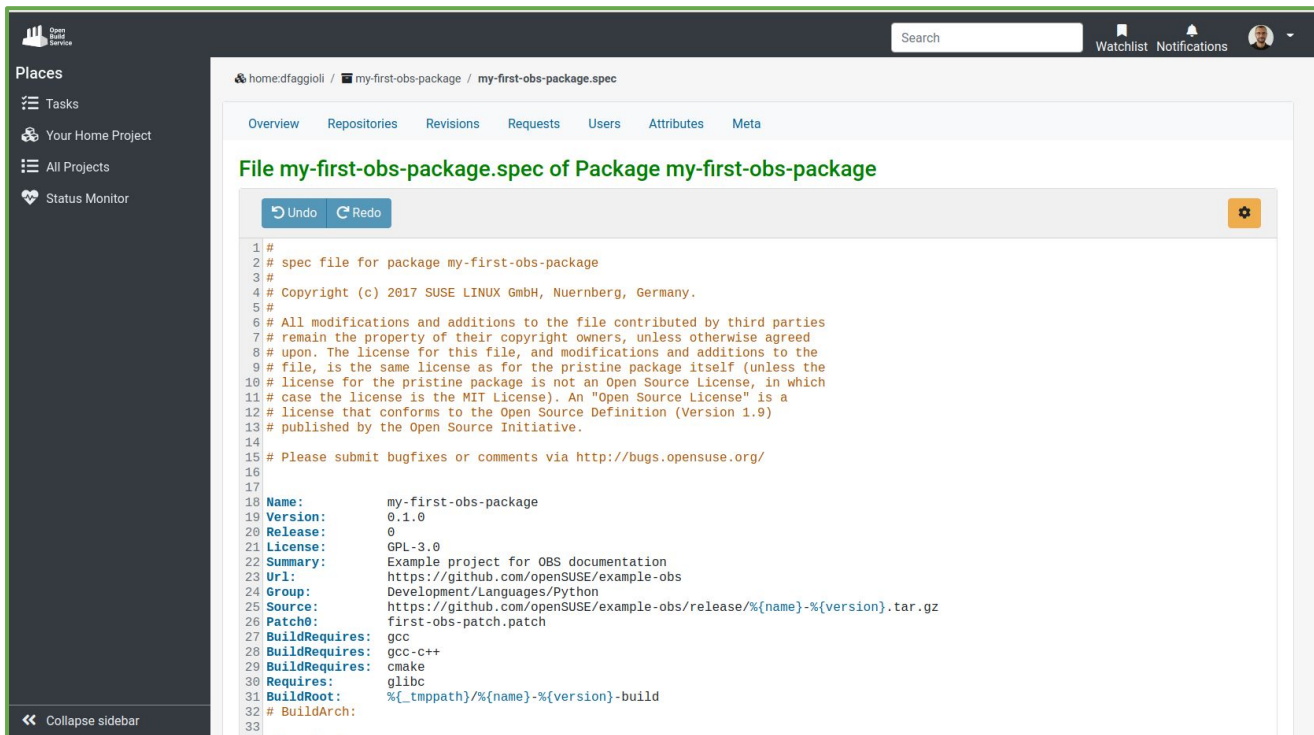
my-first-obs-package

- SLE\_12\_SP5
  - x86\_64 succeeded
- SLE\_15
  - x86\_64 succeeded
- SLE\_15\_SP1
  - x86\_64 succeeded
- openSUSE\_Leap\_15.0
  - x86\_64 succeeded
- openSUSE\_Leap\_15.1
  - x86\_64 succeeded
- openSUSE\_Leap\_15.2
  - x86\_64 succeeded
- openSUSE\_Tumbleweed
  - x86\_64 succeeded



# Open Build Service (OBS)

Modifiche via Web Interfaccia (ma, consigliata CLI)



The screenshot displays the OBS web interface for editing a package spec file. The breadcrumb path is `home:daggioli / my-first-obs-package / my-first-obs-package.spec`. The page title is **File my-first-obs-package.spec of Package my-first-obs-package**. The spec file content is as follows:

```
1 #
2 # spec file for package my-first-obs-package
3 #
4 # Copyright (c) 2017 SUSE LINUX GmbH, Nuernberg, Germany.
5 #
6 # All modifications and additions to the file contributed by third parties
7 # remain the property of their copyright owners, unless otherwise agreed
8 # upon. The license for this file, and modifications and additions to the
9 # file, is the same license as for the pristine package itself (unless the
10 # license for the pristine package is not an Open Source License, in which
11 # case the license is the MIT License). An "Open Source License" is a
12 # license that conforms to the Open Source Definition (Version 1.9)
13 # published by the Open Source Initiative.
14 #
15 # Please submit bugfixes or comments via http://bugs.opensuse.org/
16 #
17
18 Name:          my-first-obs-package
19 Version:       0.1.0
20 Release:       0
21 License:       GPL-3.0
22 Summary:       Example project for OBS documentation
23 Url:           https://github.com/opensuse/example-obs
24 Group:         Development/Languages/Python
25 Source:        https://github.com/opensuse/example-obs/release/{name}-{version}.tar.gz
26 Patch:         first-obs-patch.patch
27 BuildRequires: gcc
28 BuildRequires: gcc-c++
29 BuildRequires: cmake
30 Requires:      glibc
31 BuildRoot:     %[_tmppath]/{name}-{version}-build
32 # BuildArch:
33
```



# Open Build Service (OBS)

Cosa “buildare”:

The screenshot displays the OBS web interface for configuring package flags. The interface includes a search bar, navigation tabs for Watchlist and Notifications, and a sidebar with sections for Places (Tasks, Your Home Project, All Projects, Status Monitor) and Actions on this page (Add from a Distribution, Add from a Project). The main content area shows a configuration page for a package, with a note: "You can configure individual flags for this package here. The repositories are inherited from the project home:dfaggioli".

The configuration is divided into four sections, each with a table of flags for 'All' and 'x86\_64' architectures:

- Build Flag:** All flags are checked (green checkmarks).
- Publish Flag:** All flags are checked (green checkmarks).
- Debuginfo Flag:** All flags are unchecked (red X marks).
- Use for Build Flag:** All flags are checked (green checkmarks).

Repository	All	x86_64
All	✓	✓
SLE_12_SP5	✓	✓
SLE_15	✓	✓
SLE_15_SP1	✓	✓
openSUSE_Leap_15.0	✓	✓
openSUSE_Leap_15.1	✓	✓
openSUSE_Leap_15.2	✓	✓
openSUSE_Tumbleweed	✓	✓

Repository	All	x86_64
All	✓	✓
SLE_12_SP5	✓	✓
SLE_15	✓	✓
SLE_15_SP1	✓	✓
openSUSE_Leap_15.0	✓	✓
openSUSE_Leap_15.1	✓	✓
openSUSE_Leap_15.2	✓	✓
openSUSE_Tumbleweed	✓	✓

Repository	All	x86_64
All	✗	✗
SLE_12_SP5	✗	✗
SLE_15	✗	✗
SLE_15_SP1	✗	✗
openSUSE_Leap_15.0	✗	✗
openSUSE_Leap_15.1	✗	✗
openSUSE_Leap_15.2	✗	✗
openSUSE_Tumbleweed	✗	✗

Repository	All	x86_64
All	✓	✓
SLE_12_SP5	✓	✓
SLE_15	✓	✓
SLE_15_SP1	✓	✓
openSUSE_Leap_15.0	✓	✓
openSUSE_Leap_15.1	✓	✓
openSUSE_Leap_15.2	✓	✓
openSUSE_Tumbleweed	✓	✓



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# Open Build Service (OBS)

Cosa “buildare”:

Download / repositories / home: / dfaggioli / openSUSE\_Tumbleweed

Name ▼	Last modified	Size	Metadata
Parent Directory			-
repdata/	30-Aug-2020 17:09	-	
src/	30-Aug-2020 17:09	-	
x86_64/	30-Aug-2020 17:09	-	
home:dfaggioli.repo	30-Aug-2020 17:09	302	Details

home:dfaggioli.repo

Parent Directory			-
Name ▼	Last modified	Size	Metadata

Download / repositories / home: / dfaggioli / openSUSE\_Tumbleweed / x86\_64



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# Open Build Service (OBS)

Non solo RPMs...

**Overview** Repositories Revisions Requests Users Attributes Meta

## wine-staging

Wine staging branch packages. [Download package](#)

### Source Files

Show 25 entries

Filename	Size	Changed	Actions
debian.changelog	143 Bytes	about 10 hours	<a href="#">Download</a>
wine-staging-5.20.tar.xz	30.4 MB	about 10 hours	<a href="#">Download</a>
wine-staging-Debian_10.dsc	2.82 KB	about 10 hours	<a href="#">Download</a>
wine-staging-Debian_Testing_standard.dsc	2.82 KB	about 10 hours	<a href="#">Download</a>
wine-staging-Ubuntu_Next_standard.dsc	2.81 KB	about 10 hours	<a href="#">Download</a>
wine-staging-xUbuntu_16.04.dsc	2.75 KB	about 10 hours	<a href="#">Download</a>
wine-staging-xUbuntu_18.04.dsc	2.78 KB	about 10 hours	<a href="#">Download</a>
wine-staging-xUbuntu_20.04.dsc	2.81 KB	about 10 hours	<a href="#">Download</a>
wine-staging.debian.tar.xz	7.17 KB	6 months	<a href="#">Download</a>

page 1 of 1 (9 records) [First](#) [Previous](#) [Next](#) [Last](#)

### Latest Revision

### Build Results

RPM Lint [Refresh](#)

[Show 2 excluded/disabled results](#)

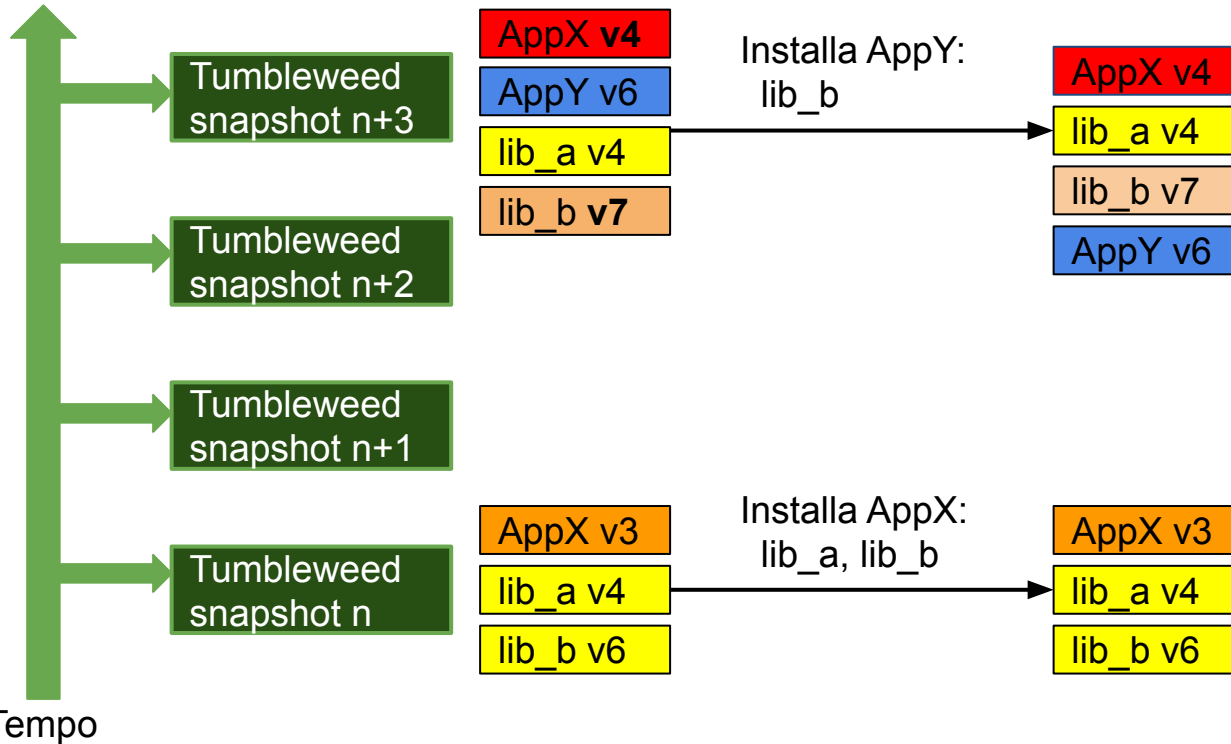
#### wine-staging

- Debian\_10
  - i586 succeeded
  - x86\_64 succeeded
- Debian\_Testing\_standard
  - i586 succeeded
  - x86\_64 succeeded
- Ubuntu\_Next\_standard
  - i586 succeeded
  - x86\_64 succeeded
- xUbuntu\_18.04
  - x86\_64 succeeded



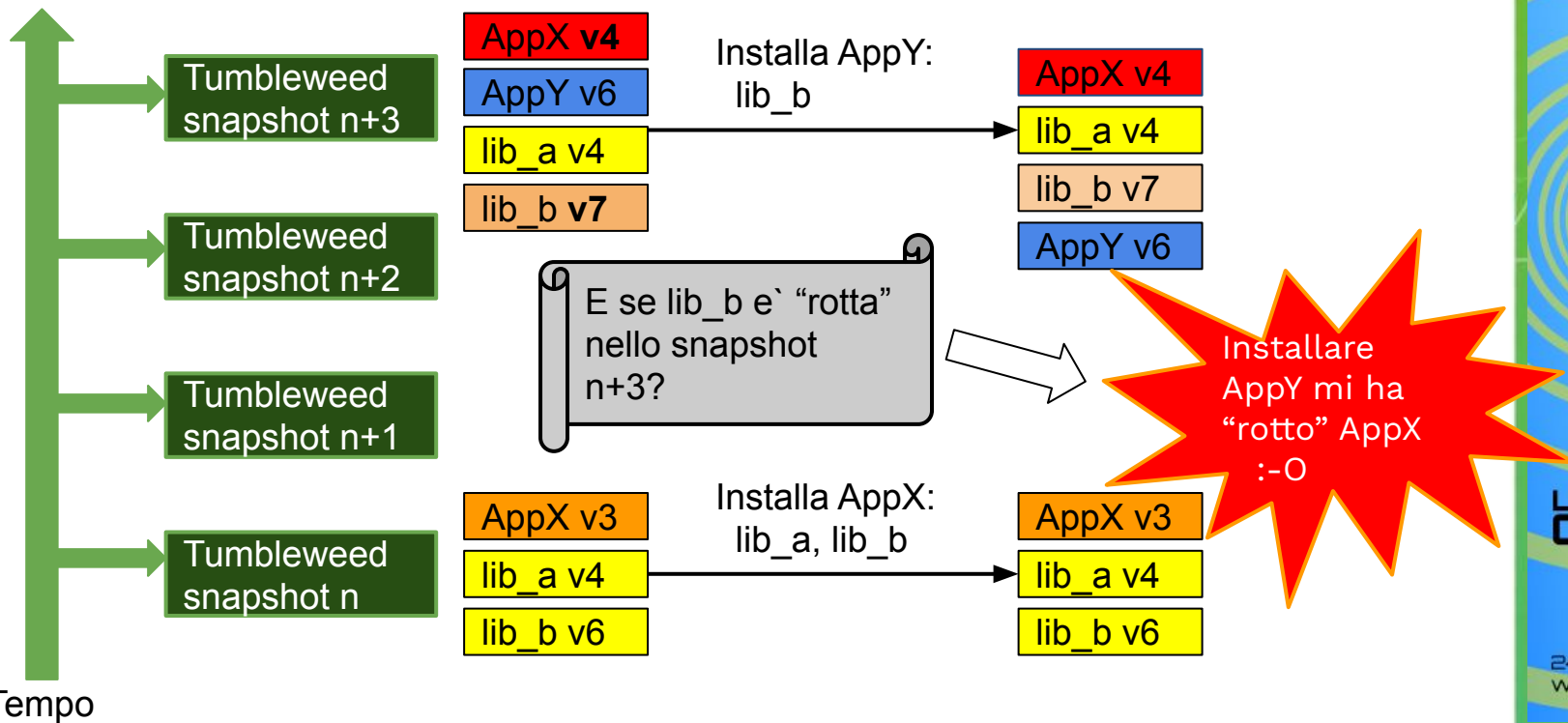
# Tumbleweed Snapshots

Vita quotidiana di un utente di distro rolling:



# Tumbleweed Snapshots

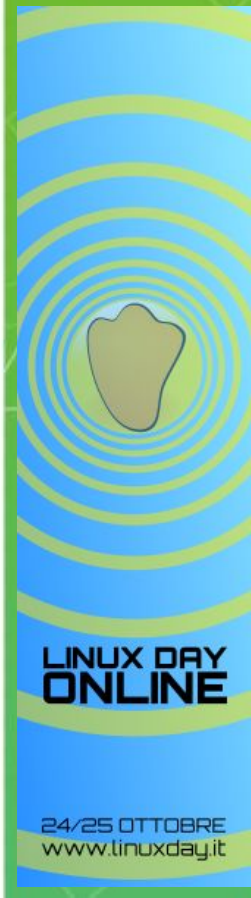
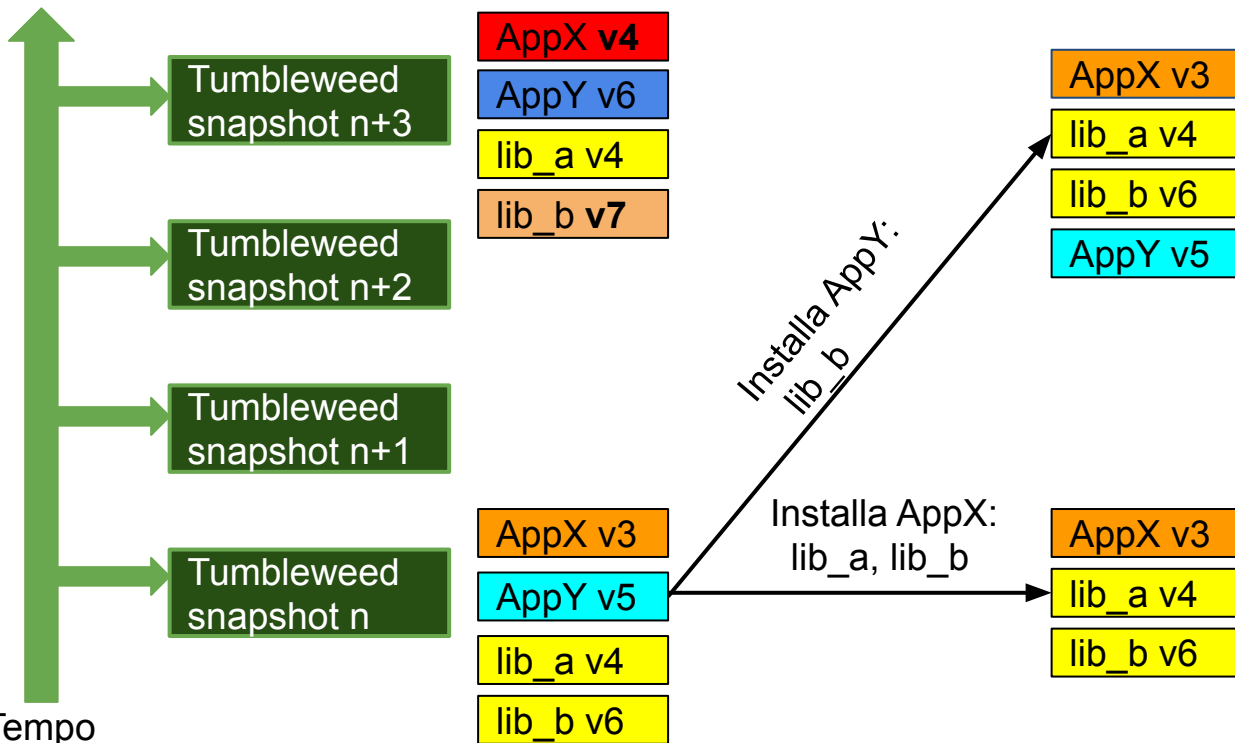
Vita quotidiana di un utente di distro rolling:



# Tumbleweed Snapshots → tumbleweed-cli



tumbleweed-cli, to the rescue!





# tumbleweed-cli: utilizzo

## Installazione

```
$ sudo zypper in tumbleweed-cli  
$ sudo tumbleweed init
```

## Utilizzo day-to-day:

```
$ sudo tumbleweed list  
20201014  
20201012  
20201011  
$ sudo tumbleweed switch <quale?>  
$ sudo zypper dup
```



# tumbleweed-cli: utilizzo

Ins  
\$  
\$  
Ut  
\$  
20  
20  
20  
\$  
\$

<b>98</b> stable	<b>2020-10-11</b> unique: 487 total: 63725 disk: 1.7GiB mail (0:0) no relevant mails bugs (0)
<b>95</b> stable	<b>2020-10-09</b> unique: 278 total: 65480 disk: 1.1GiB mail (0:0) no relevant mails bugs (0)
<b>89</b> moderate	<b>2020-10-08</b> unique: 1552 total: 65202 disk: 4.0GiB mail (0:0) no relevant mails bugs (0)
<b>74</b> moderate	<b>2020-10-07</b> unique: 852 total: 64491 disk: 1.9GiB mail (3:19) <ul style="list-style-type: none"><li>◦ <a href="#">and X11 keyboard setup</a> (11 refs)</li><li>◦ <a href="#">no summary given</a> (7 refs)</li></ul>

tumbleweed-cli

Review / Rating di ogni Snapshot

- Bugs
- Mailing lists
- ...



“Voto Stabilita’”: 0-99

<quale?>

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# tumbleweed-cli: riferimenti

- [Announcing Tumbleweed Snapshots: Rolling With You](#)
- [boombatower / tumbleweed-cli](#)
- [openSUSE Tumbleweed Review](#)
  - <https://review.tumbleweed.boombatower.com/>
- [Introduction to openSUSE Tumbleweed Snapshots](#)



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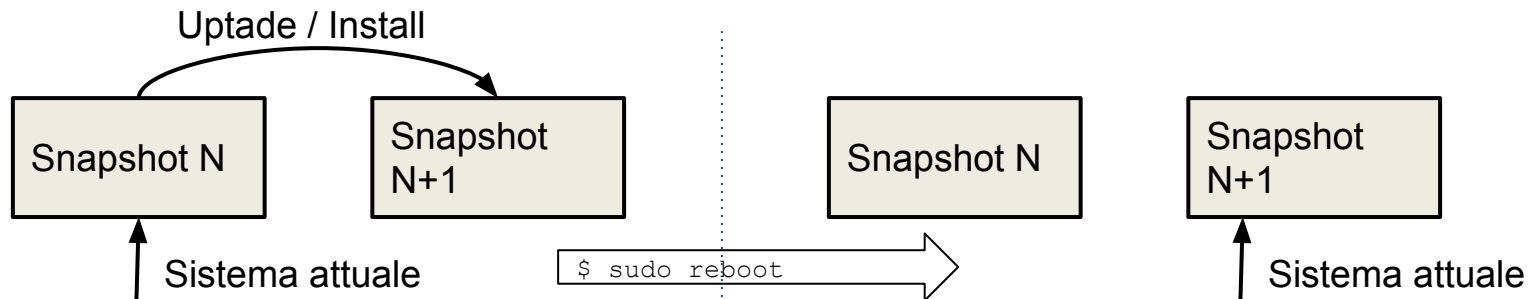
# Transactional Updates

Idea:

- Modificare il sistema (aggiornare, installare, ...) senza toccare quello che sta girando in questo momento

Realizzazione:

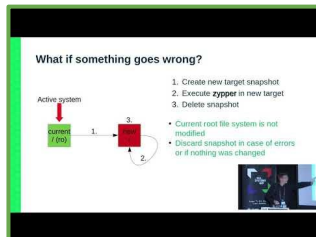
- Rendiamo il FS read-only
- Aggiorniamo/modifichiamo in uno snapshot
- Al prossimo avvio, usiamo lo snapshot aggiornato



# Transactional Updates

Riferimenti:

- [openSUSE Conference 2019 - State of transactional-update](#)
- [openSUSE Conference 2018 - Transactional Updates - deep dive](#)
- [Transactional Updates with Btrfs](#)
- [openSUSE Conference 2017 Transactional Updates with btrfs](#)





# MicroOS e Kubic: Gli OS “Vivi”

Gestione del un sistema  $\Rightarrow$  effort zero

- Scatta un timer (configurabile)
  - Aggiornamento, con transactional-update
  - Reboot
- Al boot:
  - heal-checker controlla se va tutto bene
    - SI: ok
    - NO:
      - rollback automatico allo snapshot precedente all’aggiornamento
      - re-reboot



# Me, I, Myself and openSUSE

- DISCLAIMER: Da qua in poi, **opinioni personali**:
  - *io non credo nelle distro “a rilasci periodici”*
  - (sicuramente non per uso desktop / personal workstation)
- Il software va veloce!
  - kernel, k8s, podman, GNOME, KDE, ...
  - spesso parliamo di rilasci ogni 3, 6, 9, mesi
  - Piu' aggiornato == piu` sicuro
- Gli utenti vogliono software nuovo e sicuro!
  - E.g., openSUSE Leap + Additional Repos ([KDE Apps](#))
  - Backports... che richiedono un bel po' di effort!



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# Let's Roll !

- Le distribuzioni con rilasci regolari tendono irrimediabilmente a Frankenstein-izzarsi
- Le rolling sono l'unica via!
  - [Regular Releases are Wrong, Roll for your life](#)
  - [Rolling Releases – The One True Way](#)



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# Stable Old Base + Services/Apps/...

- Non funziona :-(  
(*Trivia: Tumbleweed e` nata cosi`, by Greg-KH*)
  - Dipendenze (prima o poi qualcosa cercherà di aggiornare la “base”)
  - Se stable == old
    - Ma non vogliamo cose old!
    - Backport  $\leftarrow$  Major Effort
- Richard’s Rolling Release Rule
  - “In order to move ANYTHING quickly, you need to be able to move EVERYTHING quickly”
- Dario’s translation (Go Tommasi di Lampedusa!):
  - “Se vogliamo che qualcosa possa cambiare, bisogna che tutto cambi”



# Come Avere Una “Rolling Stable”

- No “by chance” o “by good will”
  - <<Per me \$ROLLING\_DISTRO\_OF\_CHOICE ha sempre funzionato>>
- A livello di distro/progetto:
  - Serve una struttura e un processo
  - Diverso da “let’s use the dev branch”
- A livello degli utenti finali  
(“Se qualcosa puo` andare storto, lo fara`”):
  - Servono meccanismi di controllo
  - Servono procedure di fallback





# The Tumbleweed Way

- Come ci assicuriamo che tutto funzioni:
  - In OBS, build di tutta la distro (non sai mai cosa uno specific change puo` rompere)
  - OpenQA testa ogni snapshot, release quando e` “green enough”
- Meccanismo di controllo (per gli utenti):
  - Tumbleweed-cli  $\Rightarrow$  se sono in “una release” (snapshot di Tumbleweed), e voglio rimanerci
- Meccanismo di fallback (per gli utenti):
  - BTRFS snapshot  $\Rightarrow$  se qualcosa si rompe, posso tornare indietro



# Rolling Base + Services/Apps/...

- Se la rolling e` stabile (processo + fallbacks):
  - Posso usare quella come base
  - Sempre aggiornata
  - No need for backports
  - ...
- Per i miei servizi (e.g., su servers):
  - Li faccio girare in VMs / containers  
([podman](#) please :-D )
- Per le mie applicazioni (e.g. su desktop):
  - Le prendo bundled, via [Flatpak](#)



# Immutable Rolling Base + Services/Apps/...

- La base puo` essere “Immutable”
  - File system read-only
  - Così **ne` un bug ne` io** posso incasinarlo!



Leap/SLE Transactional Server



Tumbleweed Transactional Server

- O, ancora meglio:



MicroOS



Kubic



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# Immutable Desktop

Sistema di base:

- “Dal kernel a GNOME Shell”, e non oltre!
- Read-only
  - Per modificarla? Ok, ma reboot
  - (sara` meglio modificarla poco!! :-D)
- No Apps

E le apps?

- Come dicevamo: Flatpak
  - Condivise, cross-distro
  - Gli effort degli sviluppatori della distribuzione/OS possono concentrarsi sul base OS



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# Immutable Desktop: Examples

- [Fedora Silverblue](#)
  - Già molto avanti, praticamente funzionante
  - Read-only root file system:
    - [rpm-ostree](#)
- openSUSE MicroOS
  - Progetto in [ALPHA] stage
  - Read-only root filesystem:
    - [Transactional updates](#)
  - [MicroOS Desktop - The Road to Daily Driving](#)
    - [Video](#)
  - (by me) [Can MicroOS Desktop Be Your "Daily Driver"?](#)
    - In attesa del video:  
[openSUSE MicroOS as your Desktop? Why not!](#)



<input type="radio"/> <b>MicroOS</b>
<ul style="list-style-type: none"><li>• OS designed for single-purpose systems and optimised for large deployments</li><li>• Minimal installation, provides no services by default</li><li>• Install software with `transactional-update pkg in`</li></ul>
<input type="radio"/> <b>MicroOS Container Host</b>
<ul style="list-style-type: none"><li>• MicroOS optimised for hosting container workloads</li><li>• Includes Podman Container Runtime by default</li></ul>
<input checked="" type="radio"/> <b>MicroOS Desktop (GNOME) [ALPHA]</b>
<ul style="list-style-type: none"><li>• MicroOS Desktop with automatic updates and rollback</li><li>• Install Apps using `Software`</li><li>• Includes Podman Container Runtime by default</li></ul>
<input type="radio"/> <b>MicroOS Desktop (KDE Plasma) [ALPHA]</b>
<ul style="list-style-type: none"><li>• MicroOS Desktop with automatic updates and rollback</li><li>• Install Apps using `Discover`</li><li>• Includes Podman Container Runtime by default</li></ul>

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