



Banca Popolare
di Milano

Linux for enterprise desktop



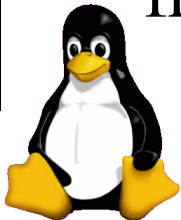
christian.ferrari@primeur.com

<http://www.primetur.com/>



“Linux branch” project in BPM

- November 2003: Banca Popolare di Milano chooses Primeur as the technological partner in the implementation of the “Linux branch” project
- December 2003: start of architecture implementation
- February 2004: delivery of “release 1” of the project
- March 2004: delivery of “release 2” of the project and start of production phase
- July 2004: 120 branches (1050 workstations) migrated from IBM OS/2 to SuSE Linux

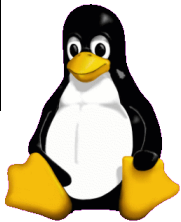


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Numbers of BPM project

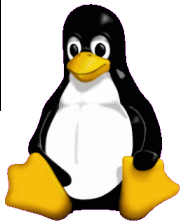
- 5000 workstations distributed in 600 branches
- 600 branch servers
- 1 central server (high availability)





Workstation - hardware

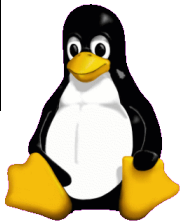
- The project also includes “hardware re-use” characteristics: the client has a significant number of workstations that it does not want to replace
- Minimum hardware configuration required:
 - CPU: Intel **Pentium II 233 MHz**
 - RAM: **256 Mbyte**
 - Storage: hard disk **2 Gbyte**, CD-ROM (optional)
 - Graphic adapter: **800x600** (colour depth: 16/24 bit)
 - Network: ethernet adapter 100 Mbit/s full duplex
 - Peripheral equipment: impact printer, check reader, scanner, bar code reader





Branch server - hardware

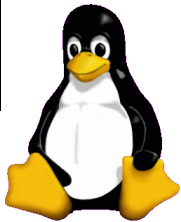
- Hardware configuration required
 - IBM Netfinity 5500/7000
 - CPU: 2 CPU Pentium III
 - RAM: 512 Mbyte
 - Storage: RAID 5 at hardware level (3 + 1 + spare disk)
 - Graphic adapter: not used
 - Network: double ethernet adapter 100 Mbit/s full duplex





Workstation – software 1/2

- ❑ Operating system: **SuSE Linux Desktop**
- ❑ Management and control:
 - **IBM Tivoli**: hardware/software census, software distribution
 - **IBM Tivoli AMOS**: system access and utilization
- ❑ Graphical interface: **Xfree86 + IceWM**
- ❑ Applications:
 - **Acrobat Reader 5**
 - **Mozilla web browser 1.3.1 (+ Sun JRE 1.4.2)**
 - **Sun Star Office 7**
 - **x3270**





Workstation – software 2/2

■ Utilities:

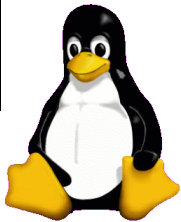
- CUPS: print spooler
- gtlpq: print manager
- rsync: file mirroring
- sane: scanner utilities
- Xplore: file manager





Main applications

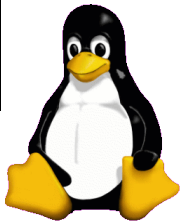
- The main applications used are:
 - “portal”
 - “multichannel application”
- These are Web based applications implemented by the Client in collaboration with **IBM**; main characteristics:
 - WebSphere in z/Linux environments (+ IMS & CICS connectors)
 - Mozilla browser
 - Java applet for interaction with equipment such as printer, check reader, scanner, bar code reader
 - integration with Acrobat Reader for “.pdf” documents and with “Lotus Domino WebMail” for email





Branch server - software

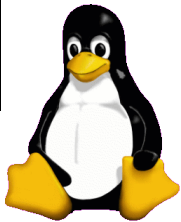
- ❑ Operating system: **SuSE Linux Standard Server**
- ❑ Control and management:
 - **IBM Tivoli**: hardware/software census, software distribution, system monitoring
 - **IBM Tivoli AMOS**: system access and utilization
- ❑ **NFS**: file server
- ❑ **rsync**: file mirroring





Workplace functionalities

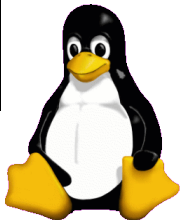
- The Linux SuSE system has been customized to offer a series of added functions:
 - “roaming profile”
 - “sticking profile”
 - Transfers privacy
 - Centralized Configuration management





Roaming profile

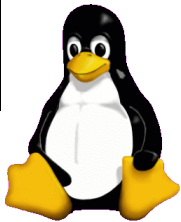
- ❑ The profile is automatically updated on the workstation that the user has chosen
- ❑ **There is not** a “*single point of failure*”: the profile is provided by the branch server or by the central server if the first one does not work
- ❑ Updating the profile is carried out **incrementally** using “rsync”





“Sticking profile”

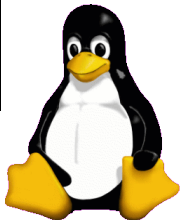
- A portion of the configuration, for example, the Mozilla browser, is reinitialised at **each** user *login*:
 - The user modifications are only temporary and limited to the current session
 - In case of a malfunction, the help-desk may suggest a “*logout + login*” as the first possible solution
 - The user gradually loses the habit of modifying unnecessary parameters; reduction in structure management costs





Privacy

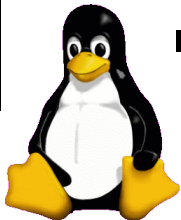
- The profiles and documents (implemented with a word processor, spreadsheet, etc...) are **always** **and only** transferred using encryption:
 - Channel used: “ssh” level 2 with DSA certificates and “3des” encryption
 - results:
 - Guarantees that the provider of the network infrastructure is not able to intercept the content of the documents transferred unless using a supercomputer
 - Possibility for the Client to use more carriers for their own network infrastructure





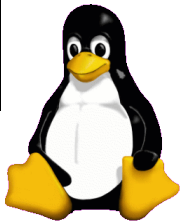
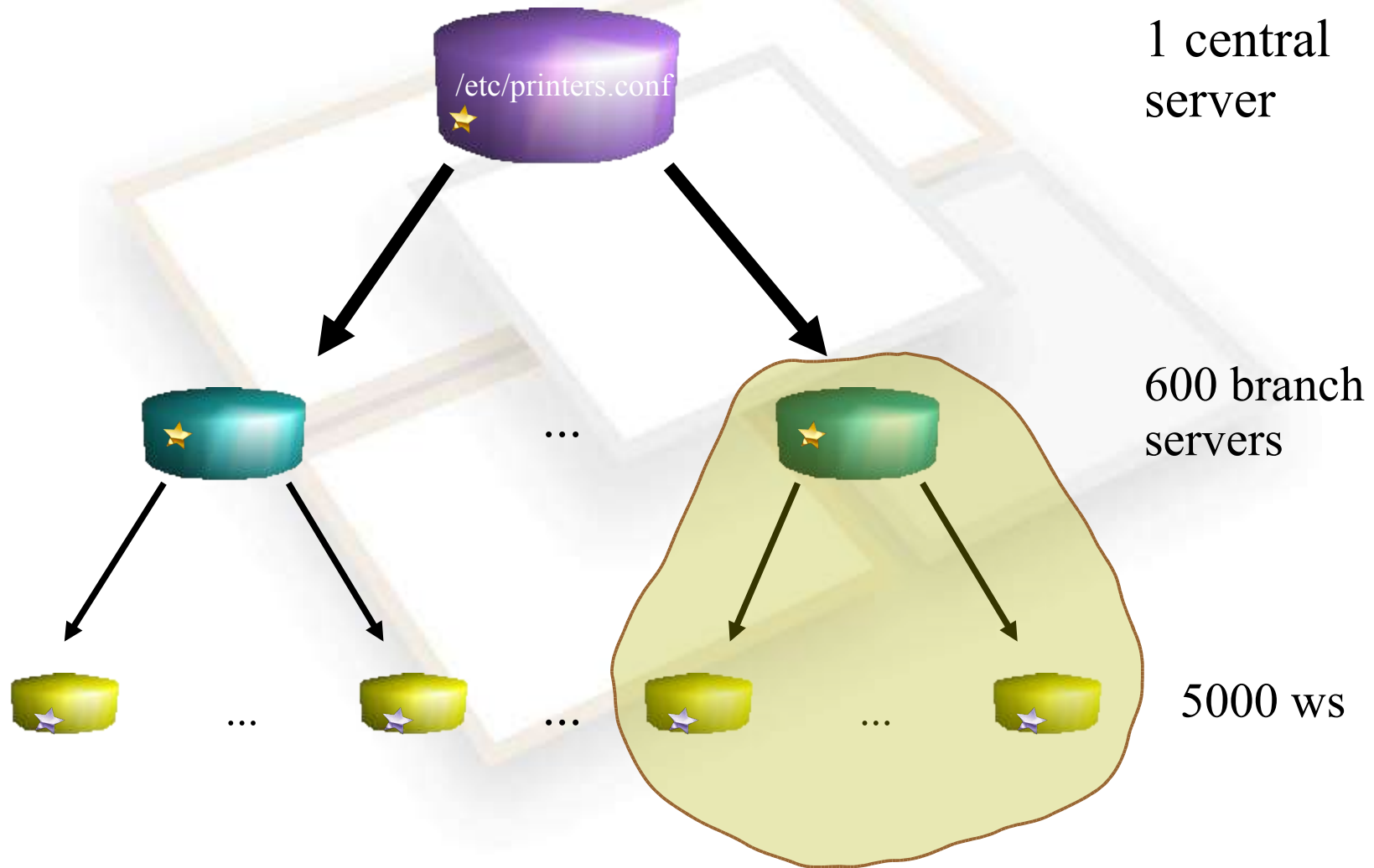
Centralized configuration 1/4

- The configuration of 600 branch servers and 5000 workstations is updated every 60 minutes from the centre to the periphery
- The main parameters can be configured by modifying the configuration files on the central server:
 - GUI
 - Applications parameters (Mozilla, StarOffice, ecc...)
 - printers
 - etc...





Centralized configuration 2/4





Centralized configuration 3/4

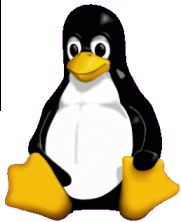
■ Configuring a second printer for the C0100071003 workstation :

■ before:

```
...  
C0100071001 lpagenzia/hp8150/10.14.64.10  
C0100071002 lpagenzia/hp8150/10.14.64.10  
C0100071003 lpagenzia/hp8150/10.14.64.10  
...
```

■ after:

```
...  
C0100071001 lpagenzia/hp8150/10.14.64.10  
C0100071002 lpagenzia/hp8150/10.14.64.10  
C0100071003 lpagenzia1/hp8150/10.14.64.10 lpagenzia2/hp8150/10.14.64.11  
...
```





Centralized configuration 4/4

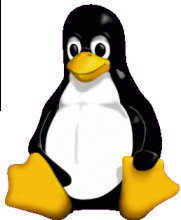
■ Deleting the clock from the “task bar” (for all users):

■ before:

```
...  
# Auto hide task bar after delay  
TaskBarAutoHide=1 # 0 / 1  
# Show clock on task bar  
TaskBarShowClock=1 # 0 / 1  
# Show automatic power management (APM) status on task bar  
TaskBarShowAPMStatus=0 # 0 / 1  
...
```

■ after:

```
...  
# Auto hide task bar after delay  
TaskBarAutoHide=1 # 0 / 1  
# Show clock on task bar  
TaskBarShowClock=0 # 0 / 1  
# Show automatic power management (APM) status on task bar  
TaskBarShowAPMStatus=0 # 0 / 1  
...
```





References

■ Primeur

Competence Center for Open Source Technologies

- <http://www.primeur.com/>
 - <mailto:cc.opensource@primeur.com>
 - Tel.: +39 041 595 0998
 - Fax: + 39 041 595 1024
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