



# Siemens Linux Distribution

“SLIND”

**Benjamin Collar**  
<[benjamin.collar@siemens.com](mailto:benjamin.collar@siemens.com)>  
**CT SE 2**





## Agenda

- **Distribution overview**
- **Slind installation**
- **Target package management**
- **Host development environment**
- **Slind development process**
- **Conclusions and perspectives**
- **Demo**





# Background: Why YALD?

- **Context: Siemens**

- Customers make individual / specific boards
- Customers are interested in Linux





## Distribution overview Goals

- Wide range of supported architectures
- Pre-packaged software available
- Consistency in terms of inter-dependencies
- Legal cleanliness
- Small
- Easy to use





# What Makes SLIND Different?

- **Based on Debian, but ...**
  - Different core packages
    - Core packages provide virtuals
  - Glibc or uclibc
    - New Architectures
  - Host's dpkg-family changed
  - No Kernels!





## Slind Installation Installer features

- Written in lua, small scripting language
  - **Object oriented code**
  - **Easily extendible by C or Lua modules**
  - **BSD Licensed (based on BSDInstaller code)**
- Host/Target principle
  - **Installer backend is running directly on target, nfs-root-mounted**
  - **Installer frontend GUI is running on host**
    - ncurses frontend ready
    - Qt frontend in the development
  - **Communication via TCP/IP**





## Slind Installation Installer features

- Hardware discovery
- MTD/Hard disk/Image partitioning
- Bootstrapping of the distribution base
- Network installation (HTTP/FTP)
- Configuration of the running system
  - **Managing users, passwords**





## Target package management

- deb format support
  - **Easy to unpack even on a system without dpkg**
  - **Low overhead**
- dpkg package manager
  - **Full power of Debian package management**
  - **New architectures to support uclibc builds (uclibc-i386, uclibc-powerpc..)**
- apt-get package manager
  - **One-command upgrades and package installation/removal**
  - **Flexible and powerful management of releases and package mixtures**
  - **Network/CD media support**





## Target packages

- **Small SLIND base**
  - **15-20 packages**
    - **busybox, sysvinit, coreutils, ifup, net-tools, util-linux, libraries**
    - **Ability to choose base system variant on installation (busybox/gnu base).**
  - **Glibc and Uclibc support**
  - **Space optimization**
    - **Less than 10 megabytes for the base system**





## Host development environment

- gcc 3.4.4
  - powerpc, arm, i386
  - glibc/uclibc
  - Available as Debian packages
  - Builds all architectures from same source
  - Based on a Debian package
  - Three-stage bootstrapping possible
- gcc 4.0.1
  - In the works





# Host development environment

- **dpkg-cross**
  - **Major way of cross-building packages**
  - **As easy as 'dpkg-buildpackage -a uclibc-powerpc -rfakeroot'**
  - **Per-package configuration file tweaking**





## Board support status

- PowerPC
  - MPC82xx
  - MPC5200
  - MPC8xx
- i386
  - Kontron Jrex
- ARM
  - Nokia 770





## Contents of the CD

- **Host:**

- Toolchains for PPC, ARM, X86
- Including glibc, uclibc, libstdc++
- dpkg
- Slind-installer

- **Target:**

- Runtime environment for PPC, ARM, X86
- Dpkg
- Slind-installer
- Installer root filesystems





# Slind development process

- A-la Debian release management
  - **stable/testing/unstable releases**
  - **Multiple maintainers for packages**
  - **Per-package Bug Tracking System**





## Conclusions and perspectives

- Most of the goals were met
- Some problems with Debian “always native” approach
  - Impossible to cross-bootstrap without target or emulator
- Perspectives
  - Further installer development
  - Scratchbox-like Debian-native solution
  - Cross-distribution host-environment (RH, SuSE host)
  - IDE





And finally ...

*Thank you*

