Hotpluggy Sweetness

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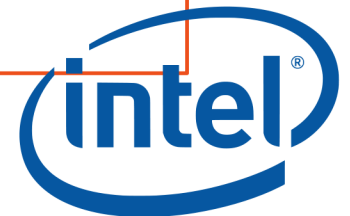
- X—ossified

- Xinerama

- XFree86-VidModeExtension

- RandR Classic

- Desired Capabilities

- Randr++ Hogpluggy Sweetness

- Future Additions

X—unchangable

- Core X does support multiple screens
- Number of screens fixed
- Size of each screen fixed
- Monitors probed at startup

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Screens Fixed

- Screen info passed at X startup
- Static arrays allocated in Xlib
- Adding screens "really hard"
- Many resources per-screen
    - Windows
    - Pixmaps

Xinerama—One Screen to Rule Them All

- Merge monitors into one "screen"
- Allows applications to move
- Screen configuration fixed at startup
- Suitable for fixed multi-head environments
- Solves the application-migration problem
- Initial implementation inefficient

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Changing Modes

- XFree86-VidModeExtension
- Change monitor mode on the fly
- Also exposes gamma correction
- Screen size fixed at startup
- Set of possible modes fixed at startup

Changing Screen Size

- RandR—Resize and Rotate extension
- Run-time changes to screen size
- Fixed set of sizes and monitor modes
- Mode expressed as size and refresh only

Hotpluggy Sweetness

- Add/remove monitors dynamically
- Extend desktop across new monitor
- Expose full system capabilities to applications
- Blend Xinerama, XFree86-VidModeExtension and RandR
- World Domination

Screens, Crtcs, Outputs

- Screen—Core X screen
  - Accept static screen count
  - There need be only one
- Crtc—CRT Controller
  - Scan-out portion of X screen
  - Contains one mode
- Outputs
  - Drive monitors
  - Connected to CRTC

Demonstration

Let's see if it works...

Other Capabilities

- Configure LUT for gamma adjustment
- Output properties
  - Arbitrary data
  - Could be used for EDID
  - Provides application/monitor communication
- User-defined modes

Future Work

- Finish DIX implementation
- Fix all drivers
- Write cool UI