Overview

• The future computing model.
• What are the problems?
• What is Centaurus?
• What have we done?
The Future Computing Model

Singer Sewing Machine & Game Boy

Casio MP3 Watch

Palm V with Omnisky

Old Good desktop

Casio Wrist Cam

Toaster + Jini

Nokia 9210 Communicator
What are the Problems?

1. Computers and devices are facing interoperability problems.
   - PDAs want to talk to printers, lamps, toasters etc.

2. The computing platforms are less likely to be uniform.
   - Palm OS, Windows CE, UNIX, Windows etc.

3. The communication mediums between devices are less likely to be uniform.
   - Infrared, Bluetooth, Wired cables, Wireless LAN etc.
Centaurus Motivation

- Create a **framework** for **building portals** to the **world of services** that users can **communicate** with and **control**.
- “**Things**” can communicate with each other in a **uniform** way.
The Centaurus Architecture

Communication Managers (Centaurus COMM)


Service Manager 1  Service Manager n

Service Managers

Communication Managers (Centaurus COMM)

CCML (XML)

Lamp Service  Coffee Maker Service  MP3 Jukebox Service  ...

Services
Centaurus Communication

- Centaurus Communication (Centaurus COMM) provides a message passing network architecture that allows heterogeneous devices to communicate through varied communication mediums in a uniform fashion.
Centaurus Communication

Application Layer

Programming API Layer
(Centaurus COMM Level 3)

Abstract Protocol Layer
(Centaurus COMM Level 2)

Concrete Protocol Layer
(Centaurus COMM Level 1)

Centaurus COMM Protocol

Java | PERL | C | Python

CDPD | IR | Bluetooth
An Example
What have we done?

1. We have defined the Centaurus COMM Protocol (Layer 2).
2. We have implemented CDPD & IR modules for the Concrete Protocol Layer (Layer 1).
   - Implemented in C.
3. We have implemented the C & PERL programming API for the Programming API Layer (Layer 3).
4. We have experimented using XML-encoded objects (CCML) as the message exchange format between devices (Application Layer).
Online Resource

- Centaurus Web Site
  - http://research.ebiiquity.org/centaurus/
- UMBC eBiquity Research Group
  - http://research.ebiiquity.org
- Harry Chen
  - Email: hchen4@cs.umbc.edu
  - Home Page: http://www.cs.umbc.edu/~hchen4