BeComm™ Corporation

Using BeComm's RADkit to develop Distributed Network Applications

A Case Study – The Distributed Media Player

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Contents

Objective (per Motorola specification)
To build a Distributed Audio Player application that meets the following requirements.

- The audio player must play out audio files of multiple formats including MP3, Microsoft Media, and Real Media.
- The audio player must play out audio from either downloaded files or "live" streams from the Internet.
- The audio player must support play lists.
- The audio player must be distributed between a central location and a lightweight end-point where the connection to a stereo occurs.
- The user must be able to control the player to:
    - Select a play list
    - Select content form the Internet
    - Start and stop play-out, skip a selection

Features that are not included in this example of the DMP app but could be easily added are:

- Edit playlist (i.e.: add, remove, reorder songs in list)
- Auto-generate playlists (i.e.: make me a playlist of 15 random songs that are Rock and less than 5 minutes long)
- Edit attributes of a song (i.e.: set the Title, Author, Genre, etc)
- Other stream controls (i.e.: Pause, FF, REW)

Controls to add/remove endpoints to a playout session.

Overview

Tools:

- *RADkit* Level I consisting of:
  - RADapi for MFC and RADapi for Java
  - *Strings* runtime
- Windows development environment (such as MSDEV)
- Java development environment

Setup

For clarity this case study's example will use three 'media playing' devices: (see Fig.1)

- *PC-A* and *PC*-B
  - Running Windows 2000
  - *Strings* Runtime with MP3, RealAudio, and Windows packages installed
  - Distributed Media Player (DMP) Application have been installed
  - Access to the Internet.
  - LAN network connectivity
- *Home Stereo Companion*
  - Running Linux
  - A lightweight endpoint with PCM play out capabilities only and no storage device
  - *Strings* Runtime with PCM play-out package installed
  - Java DMP client app installed
  - LAN network connectivity

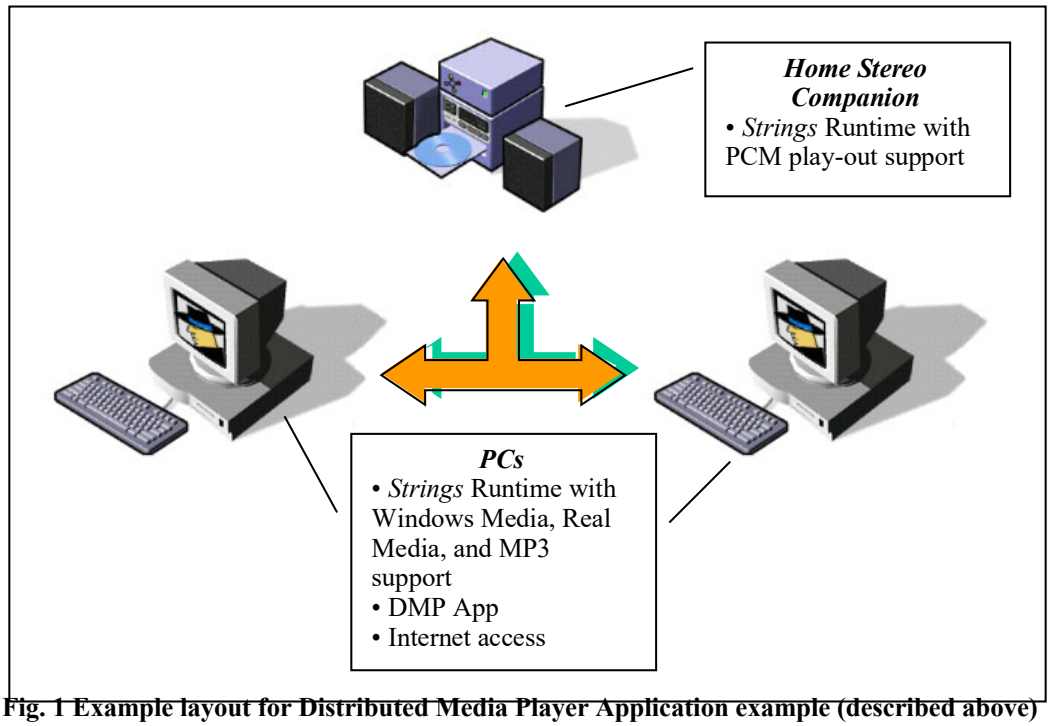

Fig. 1 Example layout for Distributed Media Player Application example (described above)

Building the DMP Applications
The application design that will run on both PCs is a standard form-based MFC application. The dialog box has two list boxes, one for 'Songs' and one for end point 'Destinations'; in this case the endpoints are speakers on the local network. Fig. 2 is a representation of the user interface that an application developer might build for this application.

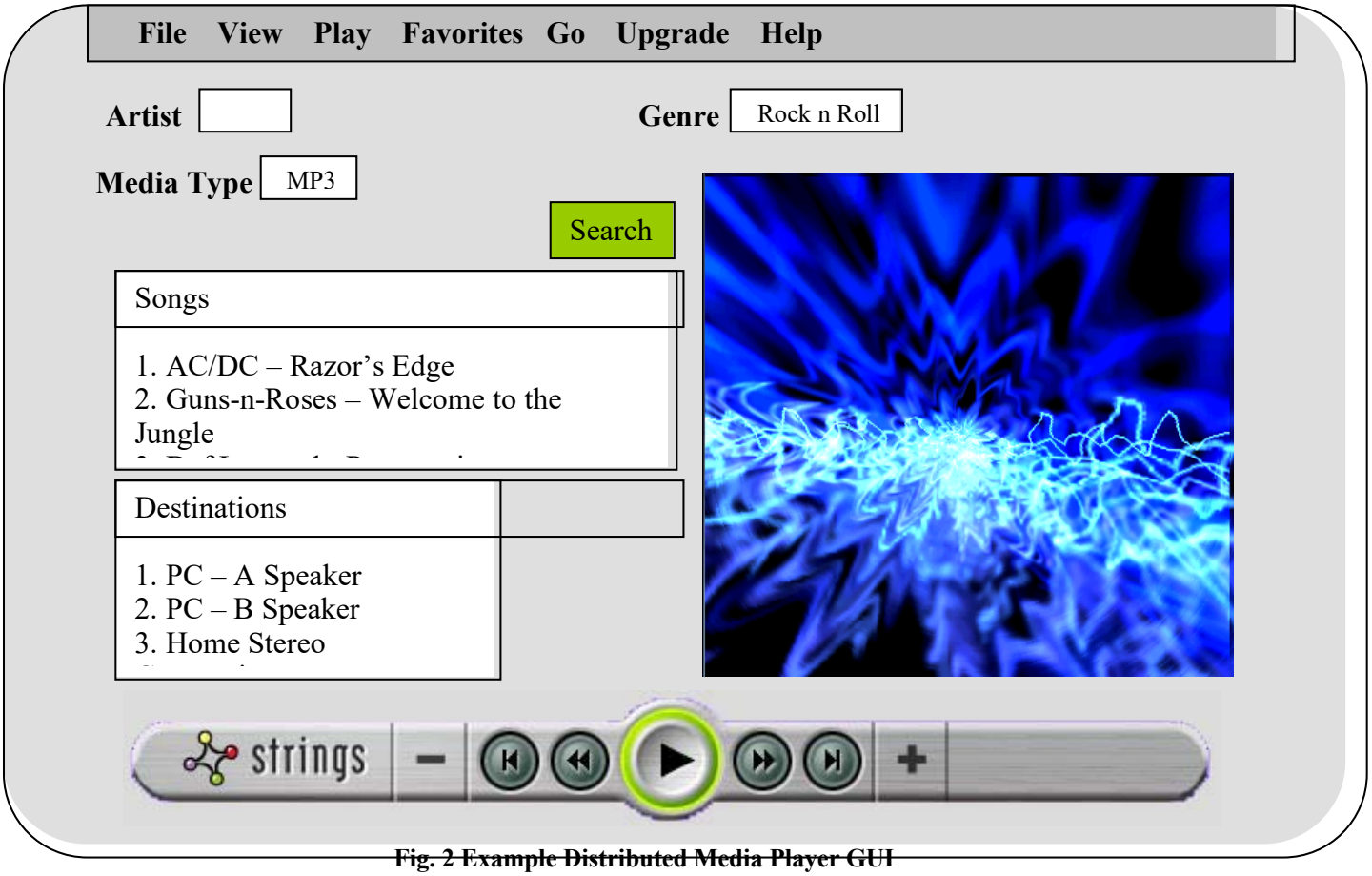

Fig. 2 Example Distributed Media Player GUI

In this example, the MFC application designed to run on the PCs presents a rich GUI to the user since PCs have abundantly large display devices such as a monitor. This example assumes that the *Home Stereo Companion* has a small and limited, LED display and hardware control buttons for "Play", "Pause", "Skip" and "Stop" operations. The RADapi supports application development in Java, which allows for applications to be built for a variety of platforms including Linux. The *Home Stereo Companion's* Java app will be refereed to as the DMP Client app.

The Distributed Namespace
The Distributed Namespace is a browsable data structure that can be populated with objects. An object is defined by the class that implements it and the state that instantiates it.

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