



OTF for MSP



Commetrex has decomposed the generic digital-media telephony system into value-adding system elements that complement virtually any development strategy: OTF Kernel is the industry’s only vendor- and resource-independent telephony middleware. OpenMedia is the only licensed standards-based streams framework. MSP (Media Stream Processor) is Commetrex’ line of call-stream-processing resources. OTF for MSP is the combination of these individual products into an integrated platform for the application-level system developer. With OTF for MSP, the developer benefits from the productivity of developing on a full-function platform, but without giving up the option of adding proprietary functionality at the middleware, media-resource, or algorithm level.

The OTF for MSP SDK gives the developer the prerequisite software for development of systems that use MSP-H8, MSP-320, and/or MSP-BladeWare media-processing resources. The SDK includes the ECTF S.100-conforming OTF Kernel middleware and Resource Service Managers for Commetrex’ MSP product line. Media-specific SDKs are added to support voice or fax development. Runtime licenses then add per-channel media-processing support to the MSP resource. Media processing is managed by Commetrex’ standards-based OpenMedia streams framework. Should the OEM need functionality not included in the SDKs, additional SDKs are available to support extending OTF Kernel, adding a new stream-processing technology, or a completely new resource.

Features

- Integrated platform
- Decomposed platform
- ECTF S.100 conforming
- Call Control
- Signal Generation-Detection
- Voice Play-Record
- Fax Send-Receive
- Client-server architecture
PSTN & IP support
- Win32 Platform
- Linux (1Q03)

Benefits

- Development productivity
- Unrestrained Value-adding opportunities
- Application portability
- Rich media options
- Minimized development investment
- Control of strategic product platform

System Overview

S.100 is the ECTF recommendation for a digital-media telephony client-server software framework. One of the primary objectives of the ECTF was to produce an API that would enable application portability between S.100 implementations. To a significant degree, that has been accomplished. But the most significant innovation is S.100's Group Manager, which supports resource sharing among multi-vendor applications, giving rise to the multi-vendor integrated communications platform.

The Group Manager (GM) is responsible for assembling media-processing and stream-connection resources on behalf of client applications. Since a resource request may be denied, S.100 inherently supports high-availability implementations.

Other major OTF Kernel entities include the Authentication Server, Connection Manager, Container Manager, OTF Administration Facility (OAF), and the System Call Router (SCR).

Authentication Server

OTF Kernel is a client-server system, giving the developer the maximum in configuration flexibility and scalability. For example, the entire system can exist on one computer, clients can be separated from the servers, or any combination.

The addition of computers in either dimension is transparent to the application. But each client must be granted credentials to operate within the system. Configuration files that specify the application's resource requirements are prepared using the OAF. The system administrator must grant the client system access by supplying credentials to the application and the Authentication Server.

Connection Management Subsystem

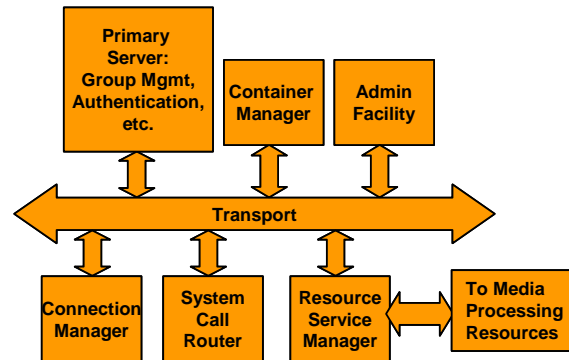
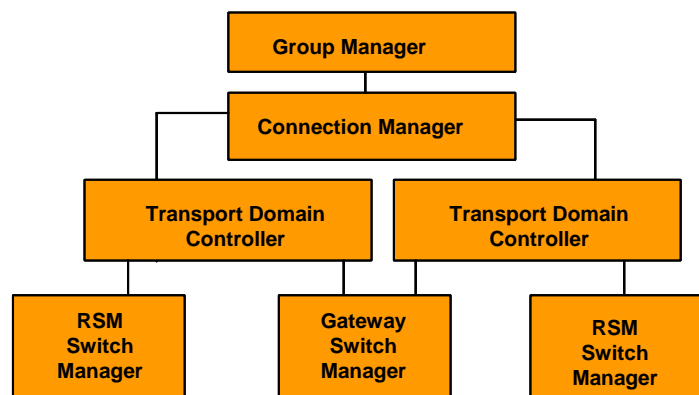
The GM's abstraction of media-processing and stream-interconnection resources allows the application to ignore not just the specifics of vendor implementations, but the specifics of network transports and the interconnection of endpoints on heterogeneous endpoints, as well.

Commands to interconnect RTP endpoints are no different for those of PCM connections. The application simply commands the system to connect Group A to Group B.

The Group Manager sends the group-interconnection command to the Connection Manager, which examines the Group structure to determine to which Transport Domain Controller to send subordinate commands. If the Group's "Call Channel Resource" or "Switch Point Resources" are members of a homogeneous transport, such as an H.100 bus, the commands are sent to that one TDC. Should the connection points be heterogeneous, multiple TDC commands must be issued. Should commands be issued to heterogeneous transports (e.g., H.100 and RTP), there must be a gateway resource between the two. An error will be sent to the application should the system not be so configured.

Call Control

Connection Management Subsystem



OTF's call-control subsystem begins with the System Call Router, a standard component of S.100. The SCR provides the application with an API that abstracts call-control commands such that they are independent of vendor or network-interface type.

The SCR maps the client's command onto a Resource Service Manager that includes the appropriate vendor-specific call-control resource, which may be responsible for call control for connections of any type and with any type of network.

Container

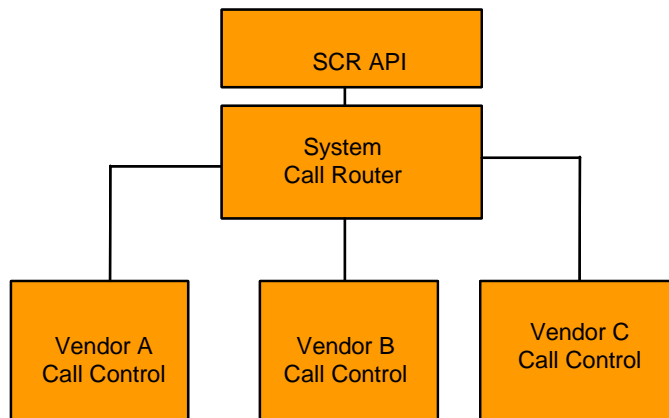
Manager

The S.100 Container Manager and its client API provide an operating system-independent model for the storage and interchange of system data between system services, resources, and the application. A "container" is an object made up of data, usually media data, and a set of attributes. The S.100 Container Manager extends the functionality usually found in file systems with features required by Resources to manipulate media data in a convenient manner.

The OTF Container Manager SDK includes APIs that allow the system developer to add support for additional media and mass-storage devices. As shown below, the Container Manager System includes Data Object Managers (DOMs), such as the Spatial Media DOM for fax, that contain media-specific knowledge, and Mass Storage

Media Managers that encapsulate the storage-system-specific functions. This means the OEM can extend the OTF CM system along both dimensions. In addition, the CM subsystem includes a low-level API that allows resource subsystems to access media data through a low-overhead mechanism.

Call Control Subsystem



OTF Administration Facility (OAF)

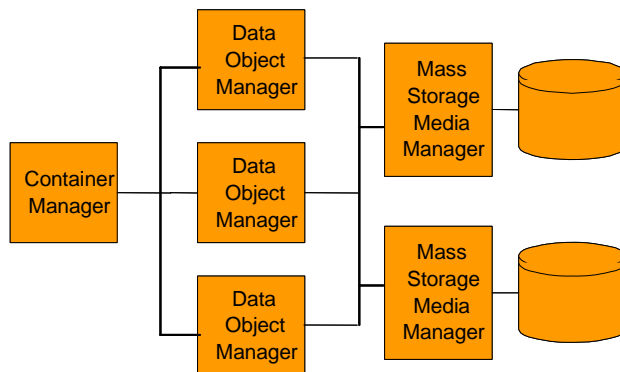
With its distributed client-server architecture, OTF is a network of cooperative applications that must be managed as a system. With its scalability, OTF may be extended to both enterprise and service-network scale, making effective system

management essential. The OTF Administration Facility meets this requirement.

The OAF is a browser-based administration facility, extensible by the OEM using the OAF SDK, that provides for configuration, operation, management, logging, and fault isolation and correction. OAF will be used as is by the majority of OTF OEMs. But the SDK

allows the OEM to develop a new or augmented facility to meet a particular requirement. Naturally, resource and system service vendors will use the SDK to create proprietary interfaces, APIs or communication protocols.

The SDK includes an OAF API that offers the OEM a standardized, but not required, interface to the OAF



OTF Container Manager Structure

managed-entity agent. This entity is included in every Commetrex-developed OTF addressable entity as a standardized starting point for entity-specific management. The OAF Agent implements all of the standardized information elements and responses the OAF

assumes. The developer then adds custom extensions.

Resource Service Manager

The RSM isolates OTF Kernel from vendor-specific connection and call-stream processing resources. Commetrex has developed RSMs for its MSP-H8 and MSP-320 PCI telephony boards. The OTF Kernel, an optional SDK, includes an RSM SDK for the developer requiring a non-Commetrex resource. A top-level data-flow diagram for SDK's RSM is shown above. It is coded in C++ and uses the Adaptive Communication

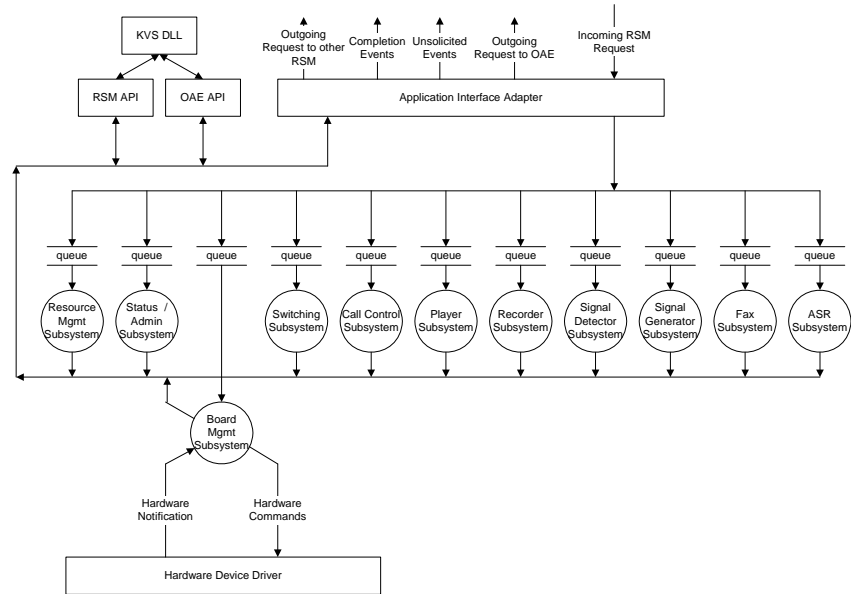
Environment (ACE) cross-platform library to abstract the OS-dependent features like multithreading and messaging.

The MSP-H8 and its associated Resource Controllers, which are designed to be separate OTF-addressable entities, is diagrammed below. In the Commetrex implementation, the RSM is hardware-resource specific, the Resource Controllers are media-technology specific, and the OpenMedia environment is stream-processing-resource specific.

OpenMedia

OpenMedia is Commetrex' stream-processing environment. It manages the interconnection of call streams and the appropriate stream-processing algorithm on a per-call basis. The OpenMedia execution environment for the MSP-H8 executes on the host computer.

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Configuration Information

PowerVox adds terminating voice to an OTF Kernel-based system. All members of the MSP line of DSP-resource boards are supported, as is the all-IP BladeWare IP media server.

- OTF for MSP SDK, PN 20070
- OTF PowerCall SDK, PN 20050
- OTF PowerVox SDK, PN 20060
- OTF PowerFax SDK, OB 20030

