

**SCMS-25000****Service Creation & Management System**

A multi-service Intelligent Network platform that enables service providers to create and manage advanced services on their broadband packet networks

Today's telecommunications service providers are faced with unprecedented opportunities and challenges. Deregulation, intense competition, and advanced networking technologies are driving bandwidth and basic transport services towards commodity prices. Whether you are an incumbent service provider fending off a growing army of competitors or a new service provider out to capture market share and improve revenues, the need for profitable, differentiated services has never been greater.

The SCMS-25000 is the foundation of Starvision's Multi-Services Intelligent Network product family. These software and hardware products offer service providers and large private network operators a comprehensive suite of tools for maximizing the revenue generating potential of their broadband networks and significantly reducing service introduction and operational costs.

Acting as a broadband service control point, the SCMS-25000 leverages the multi-service capabilities of IP and ATM transport networks and enables service providers to economically deliver a common set of advanced services to subscribers independent of the technology they use to access these services. This decoupling of the service and network layers broadens the potential subscriber base for new services while simultaneously increasing their utility to business customers.

Based on a distributed telecommunications software architecture, the SCMS-25000 scales incrementally as your service portfolio grows. Its advanced service automation and end-to-end service management features offer powerful tools for lowering the cost of delivering these new services. And with its object oriented and layered software architecture, new services can be introduced more rapidly than ever before.

- **A multi-service, multi-vendor solution which integrates seamlessly with your existing broadband network**
- **Fault tolerant distributed software architecture and redundant platform delivers the highest levels of scalability and reliability**
- **Rich set of subscriber and operations services exposed through web/Java graphical user interfaces accessible from standard Internet browsers**
- **Connection management service offers automated flow creation in IP networks and UNI 3.x/4.0 circuit creation in SVC based networks**
- **Powerful fault, configuration, accounting, performance, and security capabilities necessary for end-to-end service management**
- **A standards compliant, open architecture with APIs for third party developers**

An Architecture for the Future

Building on the latest concepts and standards in service management and distributed computing from bodies such as the Network Management Forum, ITU-T, IETF, Telecommunications Information Networking Architecture Consortium (TINA-C), and Object Management Group, the SCMS-25000 delivers a highly scalable, reliable and manageable platform for the delivery of advanced network based services.

Service providers use the SCMS-25000 to create a service layer over native ATM and IP based transport networks. Its extensible and open architecture allows these services to be deployed over multi-vendor networks using a wide variety of core network and access technologies. The layered architecture enables the decoupling of services from the underlying network technologies used to realize those services, reducing the cost of service development and maximizing the availability and utility of these services.

A Closer Look

Application Services Layer - The uppermost layer of the SCMS-25000 architecture is the application service layer. Application services represent specific solutions to well defined customer needs. Each application service is managed within a common framework reducing the impact of new services on operations staff. Application service modules may be obtained from Starvision or third party developers who have written to Starvision's open and standards based application programming interfaces (APIs).

Generic Services Layer - These services are high performance and very robust building blocks for new services. Application services which leverage these generic services take less time to bring to market and can be delivered at lower cost than services developed using legacy approaches. Example generic services include security, directory services, connection management and FCAPS.

Distributed Processing Environment (DPE) - The DPE layer allows the SCMS-25000 software platform to run transparently over a collection of servers or service nodes, essentially creating a highly scalable, fault tolerant virtual computer. Based on CORBA, this layer is a key contributor to the scalability and performance of services offered on the

SCMS-25000 platform.

Resource Control Layer - The bottom layer of the SCMS-25000 architecture provides an abstraction of physical network(s) used to deliver services to the subscribers. Starvision has developed a broad collection of resource adapters enabling service applications to be delivered across a wide variety of access network technologies. As new devices and network technologies are introduced, the services of higher layers can be extended simply by creating an appropriate resource control layer adapter.

Scalability and Performance

The SCMS-25000's layered design allows it to scale gracefully as the number of services, service elements, subscribers, operations users, and concurrent sessions grow. It can be applied to small, single service systems or to those incorporating multiple services, multiple service provider domains, and thousands of subscribers. The CORBA based DPE allows the SCMS-25000 service layer to be spread across multiple service nodes. These servers may be co-located in a cluster or geographically dispersed.

As the number of subscribers and services grows, a service provider simply adds additional service nodes to increase capacity and performance. The SCMS-25000 intelligently detects changing load conditions in the service network and automatically adapts to maximize performance, an especially important feature in the era of service level agreements. And since the SCMS-25000 utilizes off-the-shelf server technology from Sun Microsystems, advances in server performance and price points can immediately be applied when additional service node processing capabilities are required.

But scalability is not limited to subscribers and service hardware. As a multi-service platform, the SCMS-25000 supports the concurrent deployment and management of a broad array of advanced services. This flexibility allows you to maximize your investment in the service platform and ensures that as customers needs change, so too can the portfolio of services you offer.

Finally, the service management capabilities of the SCMS-25000 scale from small to large systems. Services can be managed by multiple operations users,

within a single operating company, or as part of a larger collection of service providers.

Reliability and Redundancy

The SCMS-25000 was designed from the outset to meet the stringent reliability and performance needs of telecommunication service providers. It is a self monitoring system which detects and in many cases automatically corrects service related faults.

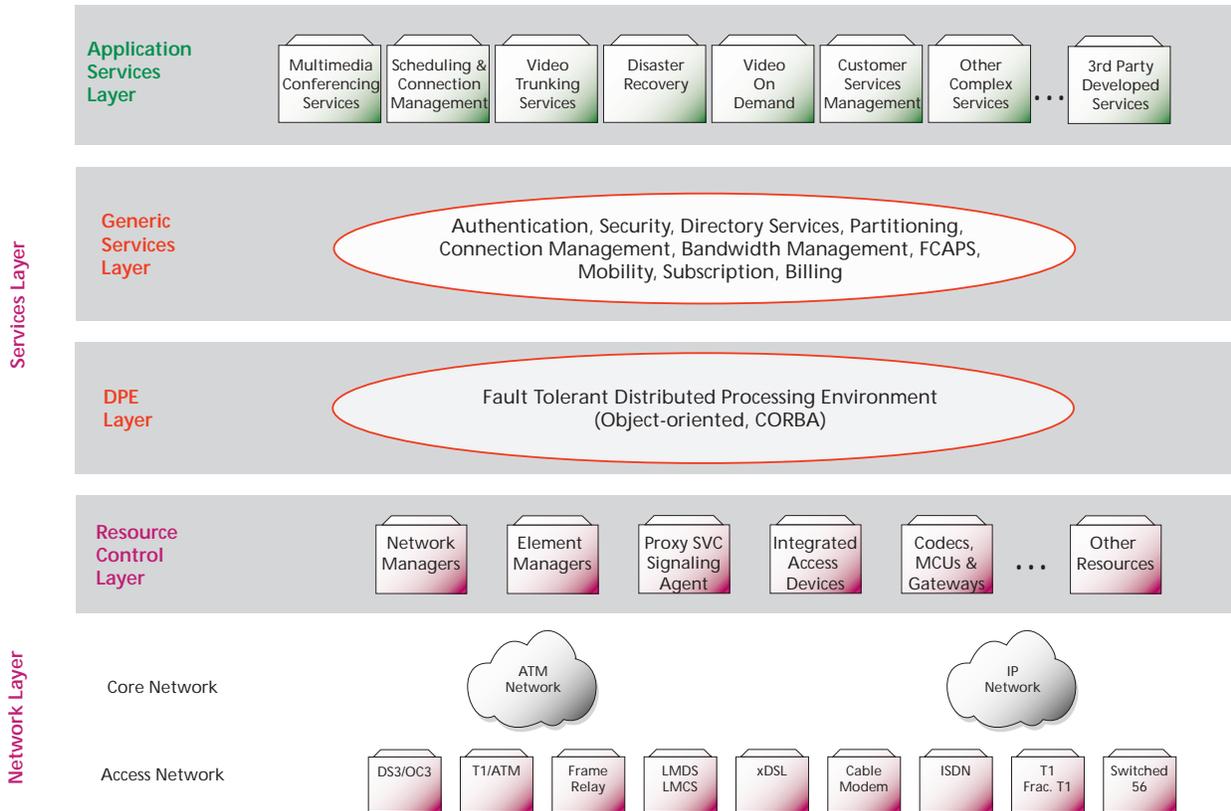
Starvision's fault tolerant distributed processing environment is fundamental to the SCMS-25000's ability to deliver reliable, robust services. The DPE protects the service layer from outages by providing a software platform on which there is no single point of failure. When using multiple service nodes, SCMS processes, called computational objects, may be strategically distributed across multiple servers. This replication of intelligence provides for load balancing and service redundancy. The service database can also be distributed across multiple service nodes for even greater fault tolerance. And the SCMS-25000 leverages some of the industry's most durable and scalable technologies including Sun Microsystems operating system technologies and NEBS Level 3 certified servers and Oracle database technology.

Subscriber Services

Subscribers access services through web/Java based graphical user interfaces projected from the SCMS-25000 service network. Whenever a service is requested, client software is automatically downloaded eliminating the need for subscribers to locate and install application software. Advanced caching techniques ensure software downloads only occur when the subscriber first uses the service or when the service client is updated.

SessionBuilder™ - The first subscriber interface for the SCMS-25000 allows end users to quickly and easily create communication sessions of arbitrary complexity. SessionBuilder supports a variety of call models including point to point, multipoint, multicast, and broadcast and allows users to select which endpoints participate in a session. Sessions may be initiated immediately or may be scheduled to occur in the future. Subscribers specify

Starvision SCMS 25000



Architecture and functional separation

the desired quality of service through an intuitive interface. Scheduled sessions support recurring events as well as automatic detection and resolution of resource contention.

The modular design of the SessionBuilder make it ideal for a variety of services such as videoconferencing scheduling, video trunking applications, disaster recovery and customer controlled bandwidth management in heterogeneous SVC based networks. It can be executed within any Java enabled browser or as a stand-alone application.

Management Services

Operations personnel also use standard Internet browser technology to provision, manage and monitor the service network. Starvision's SCMS-25000 offers a rich set of end-to-end service management capabilities designed to minimize the cost of delivering services and maximize the service provider's ability to meet service level agreements.

Access Control and Security - Subscribers must be authenticated before accessing any of the services offered by the service network. A common authentication service is provided.

Subscription Management - A set of tools to manage the services a subscriber has selected, their privileges, and their capabilities. Service capabilities are extended to users based on privileges or access rights which have been granted them. Fine grained control of permissions is available to the service provider. These permissions give service providers precise and flexible control over who uses the service system and how.

Service Provisioning - Powerful tools to define, query, modify, and manage resource and service configuration data. A variety of resources are supported, including integrated access devices such as T1/ATM multiplexors, service interworking units, video codecs, and bridges/routers involved in service delivery.

Closed User Group / Partition Management - A hierarchy or tree-like structure of partitions which may be used to create subnetworks in the service system. This powerful partition model can be easily tailored by the service provider to meet their specific needs. Subscriber and service specific resources can be placed in this partition model to create closed user groups and virtual private networks.

Fault Management - Sophisticated fault detection, alarms, and management capabilities are provided. Faults are correlated and expressed in terms meaningful to the service. Faults may be presented on the SCMS or sent to umbrella management systems such as HP Openview using SNMP.

Accounting and Performance - Tools for accounting, performance, statistics, reporting, and monitoring. The SCMS generates and stores complete usage accounting records for all resources used in a service session. Session detail records can be viewed online or easily exported to downstream billing systems. Service providers can use reports provided with the SCMS-25000 or generate custom reports using tools available from Oracle and other vendors. Reports are also available for resource utilization and performance.

DPE Management - Allows the service provider to configure and tune the fault tolerant distributed processing environment. Operations personnel can implement service software redundancy strategies and may alter the behavior of services in the event of a service node failure.

Capacities

	Single Node	Multi Node
	Up to...	Up to...
Number of subscribers	2,000	10,000
Number of endpoints	1,000	5,000
Number of interworking units	300	1,200
Quality of Service levels	32	32
Concurrent management sessions	20	80
Concurrent subscriber sessions	400	1,600

Hardware Compatibility

Service Nodes

- Wide range of Sun workstations and servers including Sun Netra-t NEBS Level 3 certified servers
- Solaris Release 2.5.1

Transport Networks

Supports services delivered over the following networks:

- High performance IP networks (i.e., MPOA, MPLS, CSI, PoS...)
- Any SVC enabled ATM network (IISP, UNI 3.1, UNI 4.0, UNI 4.0 proxy)
- ATM SPVC/PVC network (Siemens/Newbridge 46020/48020)

Starvision's proxy SVC signalling agent has been tested again numerous ATM vendors switches including:

- 3Com Pathbuilder/Corebuilder
- Ascend/Lucent CBX500/550
- Fore ASX, TNX
- Siemens/Newbridge MainStreetXpress

Access Technologies

The following is a partial list of access technologies supported by the SCMS-25000:

- Wide variety of DS-3/OC-3 access devices
- Wireless ATM including LMDS/LMCS

T1/ATM Integrated Access Devices

- 3Com S310/S330
- Ascend/Lucent SA50/SA100/SA600
- Cisco 3810
- Newbridge/Siemens MainStreetXpress 36121/36123

Video Codec Technologies

H.320 Videoconferencing Codecs

- Intel TeamStation
- PictureTel Concorde, Venue, Swiftsite I/II
- Zydacron 220Plus, 360Plus

MPEG1 Codecs

- VBrick 1000, 2000, 3000 (Native ATM and IP)

H.310/MPEG2 Codecs

- AG Communications Systems VIA 188 (Native ATM)
- Optivision LS25, Pro Series, NAC 3000 (IP)
- Pixstream VDS2000 (Native ATM and IP)
- Newbridge/Siemens MainStreetXpress 36150, 36177 (Native ATM)
- VideoTele.com M2, M2-C (Native ATM)

Multipoint Bridge/Gateways

- Starvision AMF-400/800 and DMF-4800
- Other leading vendors

Interworking Units

- Starvision MGW-580 ATM/ISDN Interworking Unit
- Newbridge/Siemens MainStreetXpress 36170/36177 ATM/ISDN IWU

Future Enhancements

New Service Applications

- Generic connection management
- Disaster recovery
- Realtime multimedia streaming and storage

New Access Technologies

- xDSL and cable modem support



Starvision Multimedia Corporation

1-888-383-5553

www.starvision.com

Vancouver, BC
Dallas, TX

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