AdvOSS Multi-Tenant Hierarchy

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Multi-Tenancy is a concept that carries different meanings at different times. All AdvOSS Products support multi-tenancy at different levels. This document outlines the multi-tenancy architecture of AdvOSS products and explains their details.

AdvOSS products are offered on an Infrastructure provided by an Infrastructure Provider. The Infrastructure includes network and computing resources required to offer the intended Services. Any telecom or Communication Service Provider needs to setup the complete Platform to offer the required services. This may be done over in-house infrastructure or Third Party Infrastructure. But this document starts its hierarchy from an entity that Providers have the full Platform over which Services are offered.

Depending on the specific business model, one or more of the multi-tenancy layers may not be present in a specific situation.

This document is primarily about the Switching Products and Application Servers as provided by AdvOSS but it also mentions the details of AAA, Billing and Provisioning to complete the multi-tenancy spectrum at all levels.

Platform Provider

At the top of multi-tenancy hierarchy, an AdvOSS customer who purchases the Switching products or other products from AdvOSS may choose to operate as Platform as a Service (PaaS) provider. In this role, the PaaS provider offers its network and computing resources along with installed and running AdvOSS products as a complete platform for "Operators" to offer their Services. The primary role of PaaS provider in this case is to manage the Network and Compute Resources and provide managed services for this Platform.

Over the Network and Compute Resources, PaaS provider also offers Services which are realized through one or more Application Servers provided by AdvOSS. Examples of Application Servers can be VoIP Peering, SIP Trunking, Enterprise Communications, Hosted PBX

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systems, Residential VoIP systems, Calling Card and IVR based services and others.

All these available Resources and Services are exposed over IP addresses and specific Ports which the PaaS provider can allocate to different Operators which are his primary customers.

The Multi-Tenancy at this level means multiple Operators are all sharing the Platform provided by the PaaS Provider and a typical sales unit is a 'Partition'. A Partition includes one or more Services and is usually capped on specific number of concurrent calls or minutes per month. Obviously it is possible for the Platform as a Service Provider to assume the role of the Operator as well as down the line entities in the hierarchy. In that case, he will be working on a default unlimited Partition assigned to itself in the Operator role.

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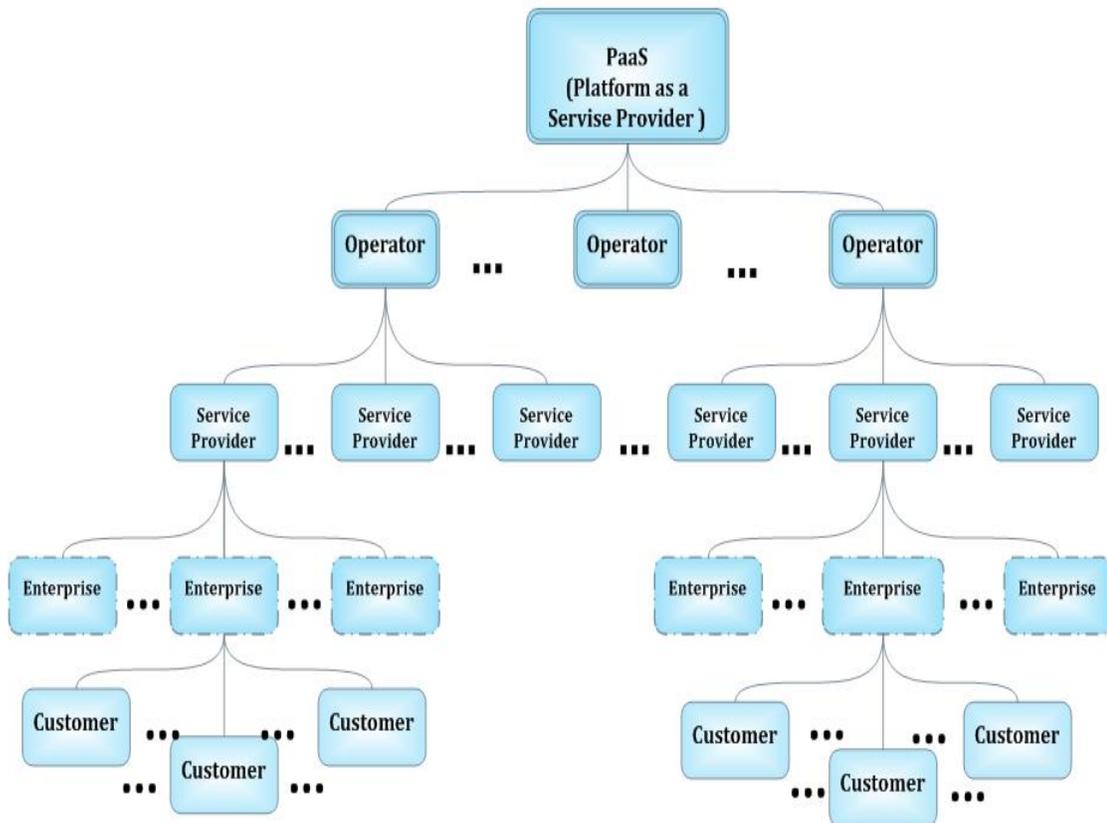
Operator

An Operator is an entity that builds and operates a Telecommunication Service over the Partition provided by the PaaS Provider. An Operator is distinguished from down the line multi-tenancy layers in at least two aspects:

1. Its own Billing Systems. Each Operator on the multi-tenancy partition arranges for his own billing arrangements whether real-time or post-paid.

2. Its arrangement with other B2B providers (vendors or terminators) for final delivery to the end customer. Examples of B2B providers can be VoIP terminators, Video on Demand content repositories, SMS terminators and so on. This means that the Operator must have his own buying arrangements for any Services that require eventual termination or delivery.

   An Operator sells its Operations to Service Providers although it is very much possible for the Operator to go directly and assume the role of a Service Provider as well.

   An operator may be called an 'Admin' elsewhere in other AdvOSS documents.

Service Provider

A Service Provider is a layer under the Operator. A Service Provider rides on the B2B network provided along with the Service Portfolio provided to it by the Operator. The main difference between the Operator and the Service Provider is that the Service Provider is facing the Sales side of the business and it is bound to make the Purchase from the Operator. A Service Provider that does its own buying is in fact an Operator and should be treated as such.
Different names given to Service Provider are Virtual Operators or MVNO etc.
Service Provider purchases the Services at a price from the Operator. It then creates it own products to sell to the Customers. Service Provider is the first party in the multi-tenancy chain that starts to have a B2C relationship with its customers.
Service Provider usually creates differentiation of different shades of the Services available from the Operator. It may be possible for the Service Provider to be running his own billing although AdvOSS billing products are

designed with this layer in mind and provide comprehensive features required for today's Service Providers.

Service Provider may also be called an Agent or a 'Private Labelled Reseller' elsewhere in AdvOSS documentation.

Enterprise (Customer or ABMF)

Service Providers provide Services to Customers of different types. Usually a Customer does not have any further layers of hierarchy but in some Services and Business Models (especially the ones dealing with Enterprises) it is possible and common to have the Enterprise layer added between a Service Provider and its Customer. Enterprise Applications e.g. Hosted PBX Systems provided by AdvOSS are all multi-tenant and allow each Enterprise to manage its account separately from other Enterprises sharing the same Platform.

The Billing Systems provided by AdvOSS are tightly integrated with the Application Servers and provide the Service Provider with tight integration at Enterprise Multi-Tenant levels. The monetary balances and credit control is usually done at the Enterprise level allowing Service Providers to offer full prepaid Services to Enterprises.

Enterprises are also called the 'Paying Party' elsewhere in AdvOSS documentation to separate them from the 'Using Party' described below.

User

A User of the Service is the final end user that consumes the value offered by the Service. A User is also called an AccNo (short for Account Number) elsewhere in the AdvOSS documentation.

An AccNo is usually a human being although it is possible for one human being to have multiple AccNos or multiple human beings to share a single AccNo depending on the business model.

AdvOSS Billing Systems report all activity on an AccNo level. This is the level to which Products are sold and identities issued.

Identities

Identities are identifiers issued to Users to identify themselves when they come to use the Service. Usually a User shares his identity among multiple Services but there may be times when a single User is given multiple identities because he needs multiple subscriptions for the same Service.

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Identity is the lowest level of multi-tenancy hierarchy and is part of the packet received on the platform from the network.

Since all the multi-tenancy layers are fully nested within each other (i.e. make a tree structure instead of a mesh structure), it is possible for the switching and billing engines to identify the User based on the Identity. From the User to identify the Enterprise or the Paying Party, From the Enterprise to identify the Service Provide and. From the Service Provider to identify the Operator.

Self Serve and Management Interfaces:
For each layer in the multi-tenancy hierarchy, AdvOSS products offer a comprehensive GUI for management of entities below. The GUI also includes Self-Serve portals for all entities in the multi-tenant hierarchy

Conclusion:
This document explains the multi-tenancy hierarchy as available in all AdvOSS products and mentions the roles of different layers of multi-tenancy and what they mean from different perspectives. With a nested layer of multi-tenancy hierarchies, it makes possible for any AdvOSS customer to put the purchased resources to the fullest possible use and maximize its RoI on the purchase.