White Paper:
Virtual Access Activator

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1 The business challenge of network management

Service provisioning is as much a business challenge as it is a technical challenge. Your business goals are to keep your customers happy, your costs down, and your profits up. Any technical solution must meet these goals to be truly successful.

What are the characteristics of a system that meets the business challenge?

Product-ready system

The system must easily integrate with existing operation support systems (OSS) and management systems. Integration reduces start-up costs and training costs.

Future proofed

The system must easily scale to support new services and devices, often millions of devices.

Excellent SLA and QoS performance levels

The system must increase service levels, but without increasing staffing needs or costs. Extensive diagnostics are key to keeping staffing and costs down.

Robust

You must be able to guarantee services to meet your SLAs. Provisioning and device management must be continuously available.

Secure

Security is key to ensuring the integrity of device configurations and network management.

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2 Activator provides the solution

2.1 What is Activator?

Activator is a complete service definition and management system for managed and semi-managed network services. Built on Microsoft® technology and accessed through Internet Explorer, Activator integrates with industrial-strength relational database technology to manage large volumes of configuration data and support large-scale deployments of access devices.

Activator is designed to operate as:

- the primary data entry and management system for service provisioning, or
- a lights out, flow-through system that integrates with existing OSS and management systems.
- Activator brings immediate benefits to your network management and significantly reduces your cost of ownership. Site visits are no longer necessary for device configuration. Support calls become less frequent because you directly manage configurations and upgrades. You need fewer staff because network management is centralised. Your customer base can grow by orders of magnitude.

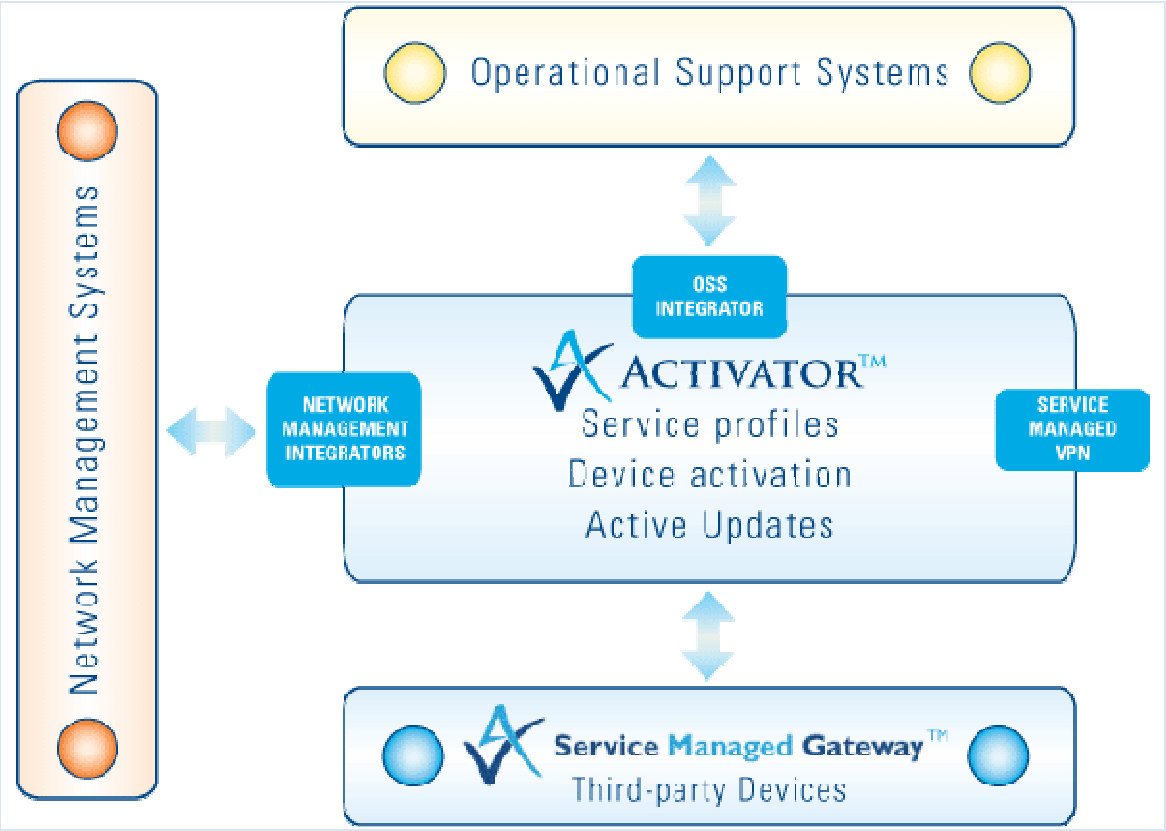

Figure 1: Activator process diagram.

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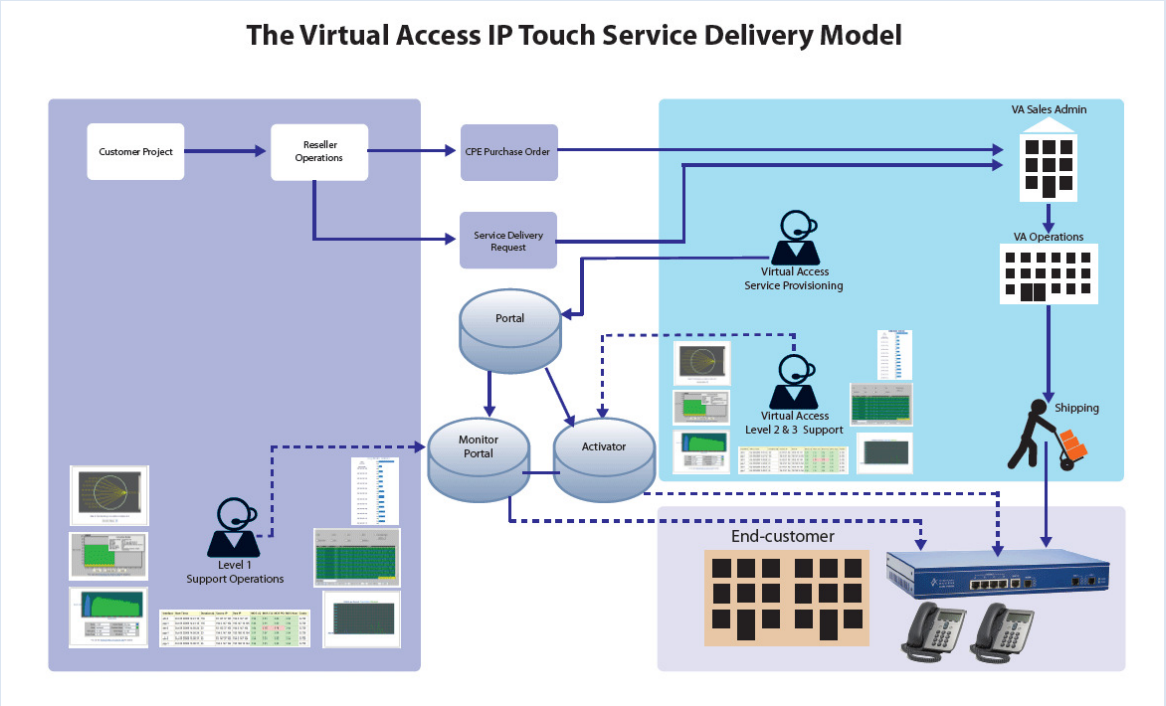
3 Activator in action

3.1 Zero Touch™ service activation makes it all run smoothly

Our patented Zero Touch™ service activation process is an integral part of Activator. Zero Touch creates a completely automated, low-cost plug-and-play device provisioning system. Zero Touch automates configuration and updates.

1. You ship devices directly to customers. Customers plug in the device.
2. The device automatically communicates the provisioning request to Activator over your network or through the Internet.
3. Activator updates service configuration parameters and software binaries when it provisions the device.
4. The device connects to the service.
5. With Zero Touch, you can commission devices without any user input.



3.2 From installation to configuration to update

Zero Touch is the process that streamlines your network services. Three Activator features let you easily manage those network services: service profiles, the device activator, and Active Updates.

Service profiles

A service is a general classification that identifies the type of services that you are offering an end user. In Activator, a service contains all the profiles that feature the common attributes of the service. Service profiles enable you to define service parameters that are common to all devices or a portion of devices. Using service profiles, you can store, organise, manipulate, and distribute configuration parameters. Service profiles allow service modification and software updates based on the profile. Changes to a profile are automatically propagated to devices that are based on the profile.

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Activator Quick Pages make managing profiles very easy. During service design, network specialists use the Quick Page Editor to define the fields that are common to a profile and the fields that are unique to a device. The network specialist places the unique fields on a Quick Page. Operators with basic technical training use the Quick Pages to provision managed devices. Because only the unique fields are available, operator-introduced errors are less likely.

If you integrate Activator with an existing operational support system (OSS), the OSS populates the Quick Page for a profile. Or you can import or export the profile definitions as XML schemas, which makes integration with an OSS much simpler.

Integrating service profile support into Activator enables operations that were previously costly or difficult to manage.

Device activation

Device activation delivers configurations and software images to devices when the device first contacts Activator on your network or over the Internet.

Device activation can be invoked from the centre of the network or the margin. Whether the request comes from the device or an operator, device activation automatically deploys configuration information or software binaries when there is an auto installation or update request.

Because device activation dynamically constructs device configurations from the database, configurations are always current when they are deployed.

Active Updates

Activator Active Updates allow you to easily update devices on managed networks. Active Updates support bulk operations and software updates to selected groups of devices or the entire network.

You can perform updates immediately after you create or modify a parameter, device, or profile, or you can schedule updates to happen at a specific time or on a regular basis. Scheduling enables you to minimise network disruption. Active Updates also distribute software binaries.

The Activator user interface always tells you the update status of any device, so your technical staff can easily spot and troubleshoot any problems.

3.3 Lights out: integrating with existing systems for flow-through provisioning

Integrating with an existing OSS

If you have an existing operational support system (OSS), you don’t want to go to the expense of replacing it and retraining your technical staff. The OSS Integrator plug-in allows you to benefit from Activator and maintain your existing OSS. The OSS Integrator plug-in minimises changes to your existing processes.

OSS Integrator mediates between Activator and your OSS and allows them to continuously interact. It allows Activator to obtain device or customer-specific information from the OSS. Your technical staff doesn’t have to learn a new interface because device data is entered from the OSS, not by an operator.

In daily operation, Activator combines information from the OSS with parameters from a profile to complete a parameter set that can be used to auto provision an access device. Activator allows your technical staff to focus on network and service design instead of daily provisioning. They continue to interact with the familiar OSS system to take orders and initiate service provisioning.

Integration technologies include structured text (CSV and TSV), XML, and SOAP/XML.

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3.4 Plug it in: expand your network possibilities

Optional plugins allow you to expand your network possibilities beyond device provisioning and management.

Manage your VPNs

The VPN plug-in enables you to easily configure and manage IPSec-based VPN services. The plug-in offers Zero Touch VPN management for both subscribers and network operators and manages secure user communities that are partitioned.

Working with the plugin, Activator hides the complexity of managing numerous peer-to-peer security associations from the operator.

Activator provides network data that supports a service-provider view of the network. You can:

- partition devices on a per-customer basis and treat each partition as a logical VPN;
- apply bulk operations to logical VPNs;
- apply time-based security policies such as key changes; and
- support different VPN topologies, such as star and mesh.

Of course, all the other attributes of Activator are applicable to VPN, including:

- Active Updates with secure transport mechanisms;
- plug-and-play auto provisioning of customer premises equipment;
- flow-through provisioning; and
- OSS and management systems integration.

Support warranty and contract updates in non-managed environments

The Activator Registration Server plug-in increases your opportunities in non-managed environments.

Activator Registration Server supports warranty and contract updates to devices in non-managed environments. Activator does not manage the end-user configurations. Instead, it delivers software updates to contracted customers.

Activator Registration Server enables you to:

- track warranty and contract periods;
- use the initial operating code to understand what updates are allowed for a service; and
- support single-button update services in access devices.

3.5 Secure your configuration data

Data security is absolutely critical to ensuring the constant availability of network devices. Activator uses a multi-level security model to ensure data is maintained and protected from intentional or unintentional attacks.

- Sensitive data is encrypted in the database.
- There are 5 levels of operator access: read-only; Active Updates only; full device access; full profile access; and administrator access.
- External web access is through secure sockets when certificates are installed.
- All web access is through session support.

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3.6 Deploy Activator on the platform that suits your needs

You can deploy Activator on a redundant platform or a resilient, stand-alone platform.

Redundant deployment for maximum reliabililty and performance

In a redundant deployment, there are two clusters, one in active mode and one in standby mode. The Activator database is replicated between the clusters.

The redundant deployment eliminates Activator down time. While the active cluster activates and manages devices, the standby cluster allows for routine backups, Activator upgrades, and operational readiness testing.

When any testing is complete, the standby cluster becomes the active cluster. And failover routing automatically switches operations between clusters.

In exceptional circumstances, when you must apply operations that effect upgrades, the operations are applied on the secondary node of the primary cluster. Then you switch over the operational nodes.

Resilient deployment for a lower-cost system

A resilient deployment enables you to minimise costs and hardware requirements while benefiting from the network management strengths of Activator.

Case study: a simple example of device management

1. A device is shipped from the factory. The device serial number is scanned and recorded against the customer.
2. The customer receives the device and plugs it in.
3. The device contacts the DHCP network server to learn the URL of Activator.
4. The device contacts Activator.
5. Activator sends the correct service configuration and software image to the device.
6. Three months later, there is an upgrade to the software image that requires configuration changes. Activator automatically sends both the software image and configuration parameters to the device as one update: the customer doesn’t even notice the change.

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4 Typical system requirements

Hardware	
Processor	2GHz
Memory	4Gb
RAID 1	2 x 200Gb disks
RAID 5.0	4 x 250Gb disks
Integrated network card 1	Broadcom 10/100/1000 Base T or equivalent
Integrated network card 2	Intel Pro 100+ Ethernet PCI card or equivalent
Power supply	2 x redundant power supplies

Software				
Component	**Description**	**Software Version**	**Service Pack**	**License Requirements**
Operating System	Windows Server 2003 Enterprise Edition (Standard Edition if not clustered)	Microsoft® Windows® 2003	2	2 server licenses for Windows Server
Database Software	Microsoft® SQL Server Enterprise Edition (Standard Edition if not clustered)	Microsoft® SQL Server 2000 Standard Edition	4	1 processor license
Application Support Software	.NET Framework Note: this is usually pre-installed with OS. To verify it has been installed see Windows Administrative Tools.	2.0	None	None
Application Support Software	Sun Java Virtual Machine	1.5; must not be 1.6 or later	None	Free download

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