

Alcatel-Lucent 5580 Home Network Manager

Alcatel·Lucent 

The Intelligent and Vendor-Independent
Digital Home Network Manager





Overview

The Alcatel-Lucent 5580 Home Network Manager (HNM) is a centralized solution that solves the challenge of managing digital home networks. It automates the setup and configuration of customer premises equipment (CPE) on a large scale. It also helps you reduce operational expenses, thanks to proactive maintenance, diagnosis and troubleshooting capabilities. As a result, you can deploy advanced digital and multimedia communication services to the home cost effectively, while delivering the quality of experience end users are looking for.



Mastering the Digital Home Revolution

The customer home network is becoming the cornerstone of your service delivery chain. Enabling your organization to master the home management challenge will translate into reduced operational costs and increased customer satisfaction.

Managing the Full Digital Home

Communication services are constantly evolving. Today your focus is on providing triple-play services. Soon, you will move to converged fixed-mobile service offerings. Each service wave brings along a specific set of devices that you need to manage — from residential gateways, set-top boxes and VoIP phones to femto cell gateways. The heterogeneous nature of home networks will require integrated management of all these devices, whatever their vendor.

Overcome the Mass Management Challenge

The growing number of homes to care for — and the heterogeneous nature of devices and services — have turned the home network into a source of many potential problems. Complexity is further increased by the ongoing need for firmware upgrades, bug fixes and new service rollouts. So new tools are essential to help you master this intensified complexity and the associated mass management challenge.

Keeping Operational Costs Under Control

Because the current competitive environment is forcing you to reduce your operational costs, you need to

rationalize installation, activation, maintenance, customer support and troubleshooting processes to the greatest possible extent. Important gains can be achieved through customer self-care and proactive management to eliminate problems early on.

Achieving the Best Subscriber Experience

Your mainstream subscribers have neither the knowledge nor the willingness to care for the increasing complexity of home networking technologies. They expect easy-to-install services that work smoothly. As a result, they will value any tool or support services you provide. Satisfied subscribers will translate into increased loyalty, while effective tools will speed up service adoption.

Smooth Integration in Your Operational Organization

Moving to the digital home requires an operational transformation. You need to implement automated and flow-through processes for your service provisioning, maintenance and customer support operations. Also, as your organization and service offerings continue to evolve, you need flexible solutions that can meet your changing needs.

Troubleshooting, root cause identification and resolution are all dependent on having tools that provide technicians and customer service representatives (CSRs) with a view into the network all the way to the end devices consuming that application

THE YANKEE GROUP –
EXPLORING IPTV LIFECYCLE
AND OPERATIONAL COSTS
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Overcoming the Digital Home Management Challenge

The Alcatel-Lucent 5580 HNM provides extended digital home management capabilities. It supports your fulfillment and assurance processes with advanced automation and troubleshooting capabilities. Based on DSL Forum management standards, the solution allows you to provide multivendor CPE management capability.

A Truly Multivendor CPE Management Solution

The DSL Forum has finalized TR-069 and associated digital home management standards. These have been defined to enable multivendor management of customer premises equipment. The Alcatel-Lucent 5580 HNM fully complies with TR-069 and associated standards, making it the most advanced multivendor management solution on the market. CPE interoperability is thoroughly tested to provide openness and rapid deployment. This offers you increased flexibility in CPE selection and evolution strategy.

Enables Automated Mass Management Operations

The Alcatel-Lucent 5580 HNM brings automation to unprecedented levels. It supports grouped operations that execute management operations for a wide set of devices in a single operator action. It also supports an intelligent policy engine that triggers management operations, upon validation of dynamic criteria. Such policies can trigger quick operational reactions to any management events as they arise.

Accelerates Introduction of New Devices and Services

The Alcatel-Lucent 5580 HNM can manage new device types or releases with no adaptations. New devices can be supported on the fly, while the system continues operating. This helps you cope with the fast-changing nature of your digital home ecosystem. For instance, the Alcatel-Lucent 5580 HNM can easily cope with the introduction of innovative video service or take over the management of new femto cell gateways as you launch new fixed mobile service offerings.

Supports Flexible Deployment and Operational Modes

The Alcatel-Lucent 5580 HNM can be used as a full fledged management tool for your daily requirements while acting as a proxy for OSS-driven management operations. It can also support strict management context separation, enabling a single system to be used by several internal or external organizations. This allows you to work in a local loop unbundling context, by granting management access to third-party service providers, offering retail services on top of your access infrastructure.

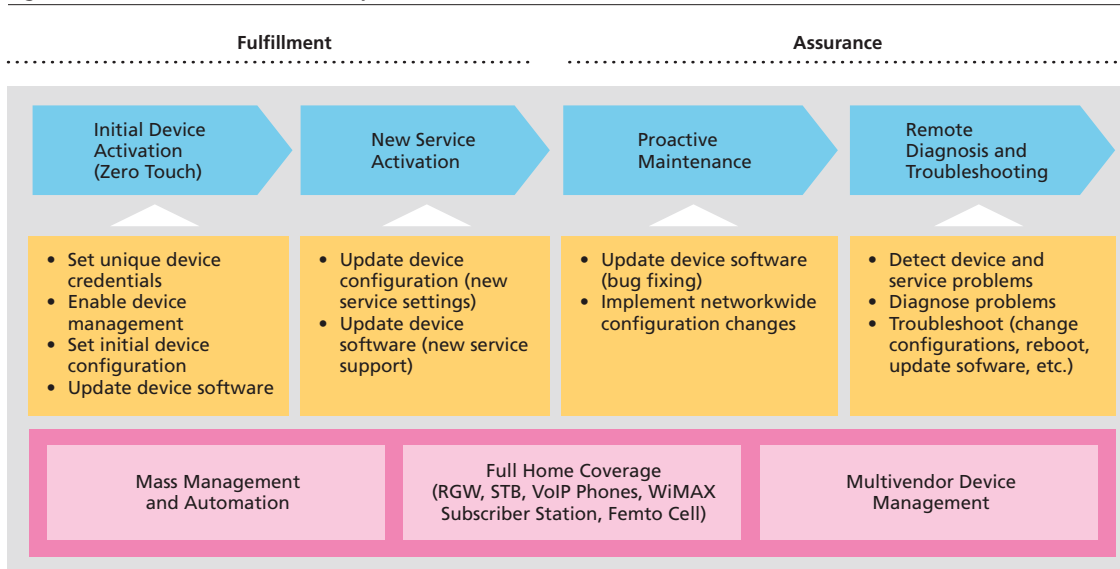


Integrates into Your OSS Organization

Your service activation and assurance processes rely on a number of OSS applications. The Alcatel-Lucent 5580 HNM is easy to integrate into your OSS and BSS environment, thanks to its northbound interface, based on WebService and a high-level abstraction. Building streamlined, end-to-end fulfillment and assurance processes allows you to achieve high levels of automation and faster reaction to network events.

FEATURE	BENEFITS
Multivendor management, based on DSL Forum standards (TR-069, TR-111, etc.)	Comprehensive home network management for all home devices (residential gateway, VoIP phones, etc) and vendors Broad freedom in device selection
Support for multiple zero-touch activation scenarios	Simplified device installation and activation Activation options to meet your needs
Flexible management of operator roles and rights, with strict separation of management domains	Support for specific organizational needs, including wholesale/retail business models
Hot deployable extension of new device types and object models	Faster, easier introduction of new devices and services Streamlined evolution of digital home ecosystem
Grouped management operations and intelligent policies	Reduced cost and complexity for home network management Support for proactive management and large-scale operations
OSS interface based on web services	Streamlined, cost-effective integration into your OSS/BSS environment

Figure 1. Alcatel-Lucent 5580 HNM Operational Overview



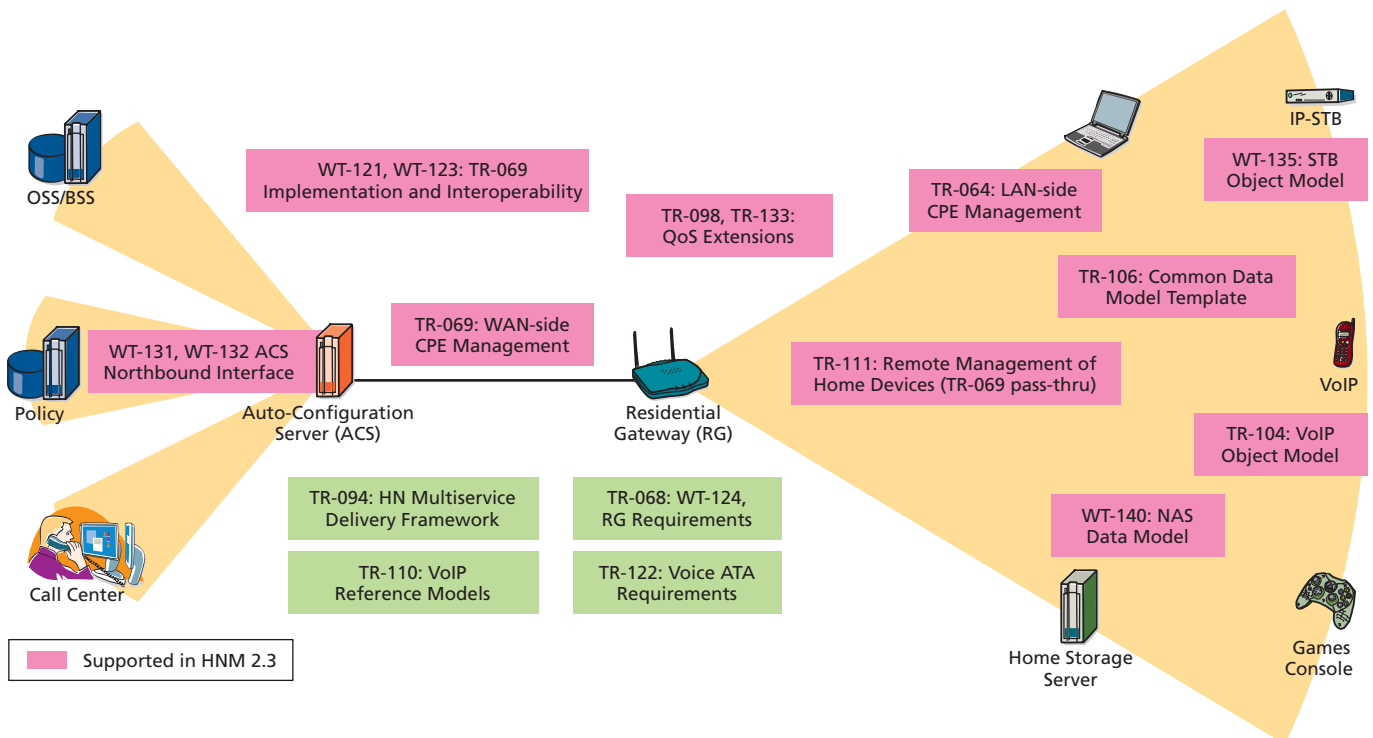
How the Alcatel-Lucent 5580 HNM Works

Remote Device Management Based on DSL Forum TR-069

The Alcatel-Lucent 5580 HNM implements the WAN-side management protocol described in the DSL Forum TR-069 standard. TR-069 specifies a protocol stack, connectivity and object model for the management of modems and residential gateways. The TR-069 standard has been extended with TR-111 to allow management of devices behind a NAT residential gateway. Connectivity between the Alcatel-Lucent 5580 HNM and home devices is established based on HTTP and IP protocols, making the link-layer independent and suitable for any service provider (access provider, Internet service provider [ISP] or application provider).

The TR-069 protocol is CPE-driven, as the CPE connects periodically to the management system. The CPE also contacts the Alcatel-Lucent 5580 HNM on specific events such as reboot and IP address change. This communication is complemented with a connection request mechanism, permitting the Alcatel-Lucent 5580 HNM to contact the CPE at any time.

Figure 2. DSL Forum Standards for CPE Management





CPE interoperability tests

Working with the MotiveSmart verification program, Alcatel-Lucent is engaged in thorough interoperability testing with more than 40 market-leading CPE vendors. Tests check conformance to TR-069 and associated standards and are executed according to PD-128 specifications.

Figure 3. A Sampling of CPE Vendors in Interoperability Tests with Alcatel-Lucent and Motive





The Alcatel-Lucent 5580 HNM in Action

Devices and services involve various management operations, including service provisioning, security, traffic policing and troubleshooting. These need to be controlled by operators, customer support personnel or even by customers themselves. The Alcatel-Lucent 5580 HNM is a full-fledged management system, operated via graphical user interface. As shown in Figure 4, it can also serve as a management hub, performing operations on behalf of OSS applications, including provisioning or traffic policing, or from customer support or customer self-care solutions.

Intelligent Policy Engine

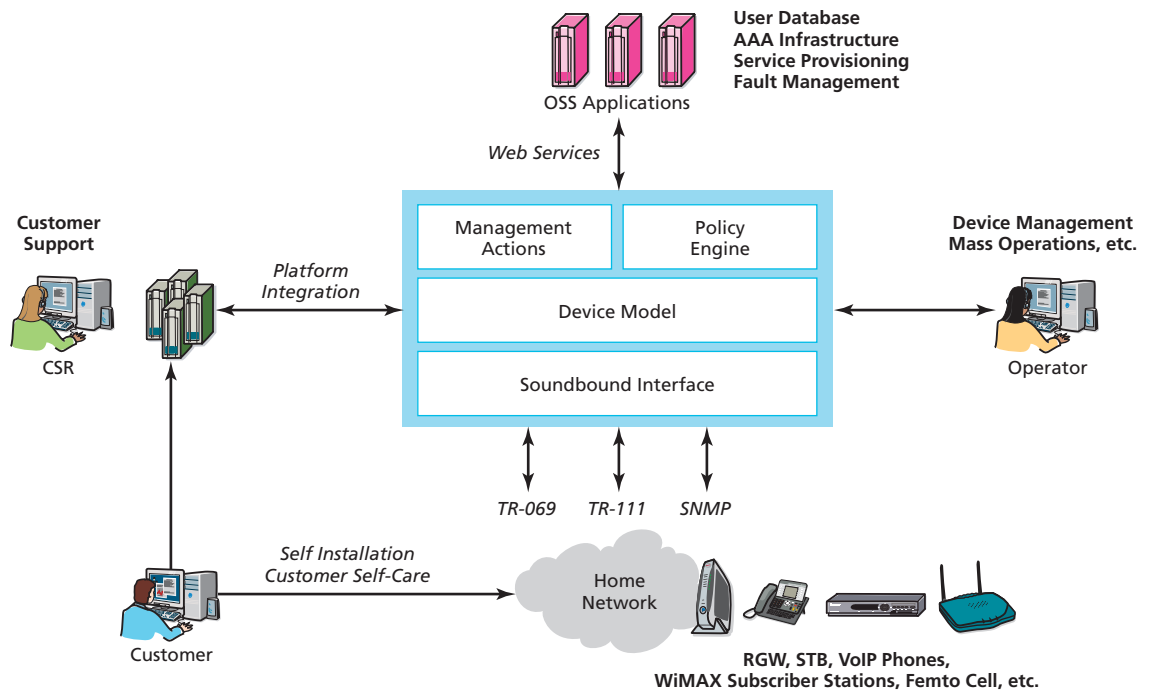
An intelligent policy engine is implemented to provide a high level of automation for day-to-day operations, including initial device activation and configuration, configuration updates, proactive maintenance and troubleshooting. Detailed reporting is provided to inform operators of the state of a given policy — typically statistics on successfully executed actions, aborted actions or on-going retries.

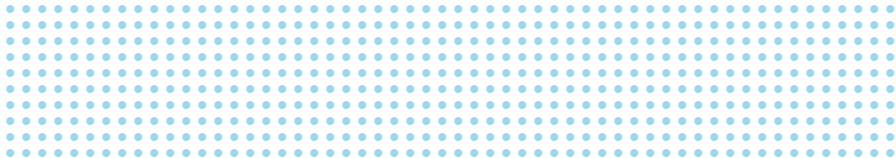
Multiple Device Activation Scenarios

“Zero-touch” activation offers your subscribers the ability to activate new devices simply and easily. The objective of the initial device activation is to give the device access to your Internet network, configure the device for the services subscribed and enable the Alcatel-Lucent 5580 HNM to take over device management.

The Alcatel-Lucent 5580 HNM supports three main device activation scenarios, allowing you to choose those that best suit your needs, with easy adaptation as your services and processes evolve.

Figure 4. The Alcatel-Lucent 5580 HNM Serving as a Digital Home Management Hub





Managing New Devices on the Fly

The Alcatel-Lucent 5580 HNM can manage new device types or releases on the fly. For that purpose, you can simply load the object model of the device in an XML form. The Alcatel-Lucent 5580 HNM will take over management of the device with no need for further adaptation.

Interaction in Your OSS Environment

The Alcatel-Lucent 5580 HNM provides a northbound interface to communicate with higher level OSSs. This interface is implemented through a set of high-level primitives covering service provisioning, device configuration, software management, etc. These

primitives provide a powerful means for OSS applications to perform management operations on one or several devices with a single command.

System Architecture

The Alcatel-Lucent 5580 HNM has been developed as a J2EE application, making it independent of the underlying operating system. The Java Virtual Machine shields the application server from the underlying hardware. The Alcatel-Lucent uses BEA WebLogic, but owing to the use of J2EE, it can be easily adapted to other middleware systems (e.g., Jboss). Hibernate provides the same independence for the database technology and enables smooth migration from Oracle to any other database system.

Figure 5. Multiple Device Activation Scenarios

Zero-Touch Activation Processes (All processes are fully automated; no customer or operator intervention)			
	Pre-Provisioning	Zero-Touch	Customer Self-Serve
Initial Device Status (Factory pre-provisioning)	Unique Credentials (User name, password, management system URL)	Default Credentials	Default Credentials
Process Highlights	Configure Device for Service	Set Unique Credentials Configure Device for Service	Set Unique Credentials Configure Device for Service
Pros	Limited Upfront OSS Adaptations	Device Configured on the Fly	Devices Configured on the Fly Support for Customer Self-Ordering
Cons	Factory Pre-Provisioning Implies Logistic Challenge and Device Delivery Lead Time	Need Upfront OSS Adaptations	Need Upfront OSS Adaptations



Alcatel-Lucent Digital Home Care Solution Addressing Comprehensive Digital Home Management Needs

Because your operating challenges extend beyond home devices, Alcatel-Lucent has developed the Digital Home Care solution with our partner Motive Inc. It extends the Alcatel-Lucent 5580 HNM digital home management capabilities to include customer support interactions (through self-care and CSR assisted care tools), along with DSL loop validation, optimization and troubleshooting. The solution is integrated out-of-the-box, but it can also accommodate various adaptations to meet your specific needs. It increases efficiency by eliminating problems upfront — and typically reduces digital home operational expenses by an average 50 percent.





The Alcatel-Lucent Advantage

The Alcatel-Lucent 5580 HNM allows you to successfully deploy innovative communication and multi-media services by mastering operational complexity. It offers:

- A truly vendor agnostic solution, committed to full CPE interoperability
 - Interoperability testing with more than 40 leading CPE vendors
 - Live deployments that incorporate the devices of more than 10 CPE vendors
- Automated mass management of home devices
 - Extended grouping functions
 - An intelligent policy engine for proactive operations
- Better “quality of experience” for customers and operators
 - Zero-touch, worry-free device activation
 - Proactive maintenance and remote troubleshooting capabilities
- Flexible deployment and operational modes
 - Easy adaptation to your organization and processes
 - Authorized access for third-party service providers (wholesale / retail models)
- Management of triple-play devices and converged fixed-mobile services
 - Triple-play devices: residential gateways, set-top-boxes and VoIP phones
 - Fixed mobile convergence devices: WiMAX subscriber stations and femto cell gateways
- Field proven
 - Deployed by more than 25 service providers worldwide
 - More than three million lines under management to date
 - Two deployments with more than one million lines
 - First TR-69—based solution managing third-party set-top-boxes for IPTV services
- Brought to you by the leading provider of advanced communication solutions
 - Leading vendor of end-to-end triple-play and fixed-mobile convergence
 - Experienced in large-scale deployments and integration projects
 - Committed to carrier-grade solutions
 - Helping you succeed with an extensive portfolio of professional services

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