

HCL iCE.X Intelligent Device Management Platform

Scalable Life Cycle Management for Service Providers

The continued growth of connected devices presents service providers with a lucrative opportunity for monetization. Customers require reliable connectivity and want frictionless service. Service providers' ability to deliver depends on their ability to cost-effectively and efficiently meet customers' requirements—simplifying management, minimizing customer service calls, and reducing truck rolls.



Efficiently manage and improve the customer experience

HCL's iCE.X provides the platform that service providers need to take full advantage of the opportunities to manage residential gateways and monetize connected devices.

Going beyond management functions, HCL iCE.X allows service providers to efficiently manage devices and improve the customer experience.



HCL iCE.X is a carrier-grade, vendor-agnostic intelligent device management platform for service providers that enables:

- Zero-touch, secure device onboarding
- Automated mass management of devices
- On-premises and cloud-hosted SaaS deployment
- Ability to resolve automatically network issues
- Scale to support millions of devices and other services

Among the devices supported by HCL iCE.X are:

- Fixed wireless broadband gateways (4G/5G)
- IoT, WiFi, xDSL, FTTH, and residential gateways
- Intelligent mesh WiFi
- Small cells (LTE/5G, public and private)
- Network extenders/repeaters
- Settops
- G.fast modems
- ONT/PON (Fiber)
- Business routers
- Network-attached storage (NAS)
- IP phones/cameras
- Power line adapters

HCL iCE.X is an open solution designed to manage a broad range of device types regardless of the vendor. The primary management protocol deployed is TR-069-based with multi-protocol support for non-TR069-based deployments and extensibility to new protocols and standards from a flexible mediation layer. Service providers have access to a library of more than 300 device profiles from multiple vendors. Visibility to devices is provided through managed gateways.



5 Key Workflow Elements

HCL iCE.X supports the entire device management lifecycle with five key workflow elements that enable service providers to streamline and optimize services to deliver a first-rate customer experience.

1. Onboarding

Seamless, zero-touch, and secure device onboarding

2. Management

Automated mass management at cloud-scale with containerization and vendor-agnostic flexibility

3. Data collection

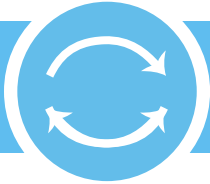
Efficient collection of device data with a reduced operational footprint

4. Deep analysis

AI and ML-enabled data analytics deliver improved insights based on historical and current data and predicted trends

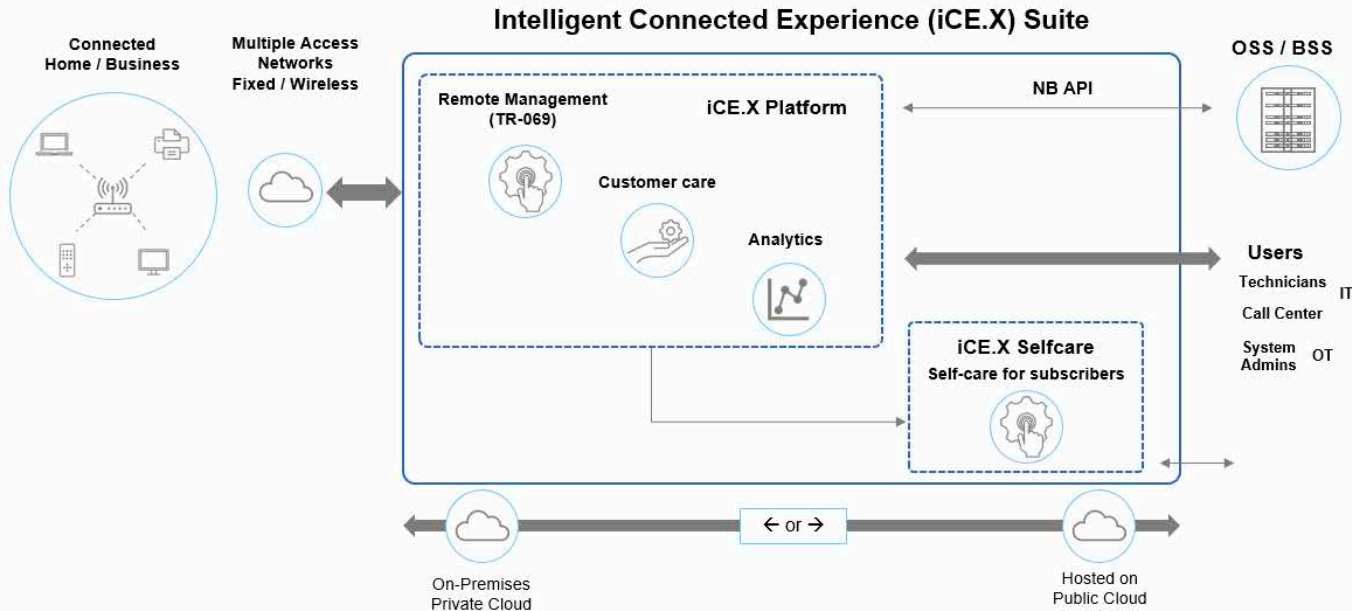
5. Operational efficiencies

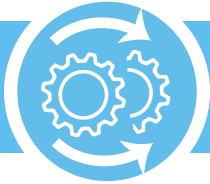
Scalable and extensible platform that automatically optimizes the environment and supports frictionless expansion



Device Management Lifecycle with HCL iCE.X

A modular platform for maximum flexibility

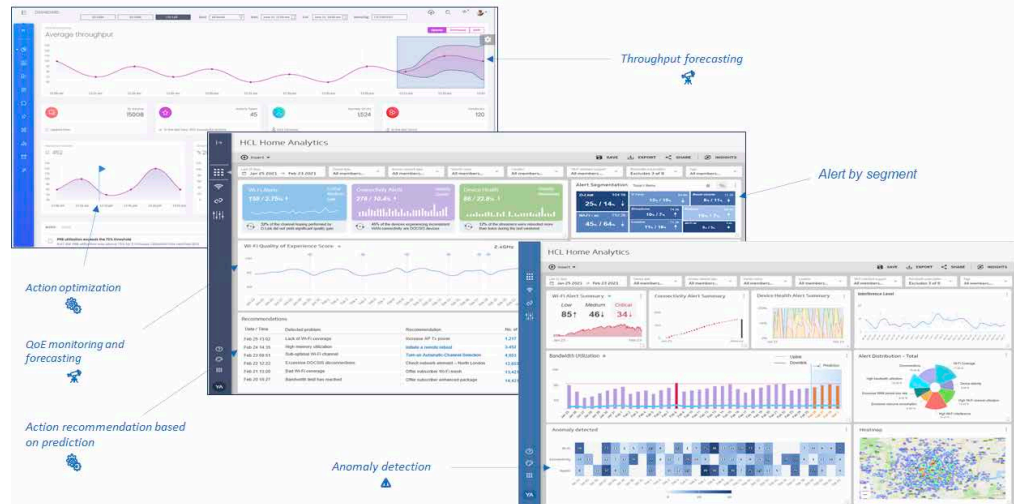




HCL iCE.X Automated Management

HCL iCE.X automates and expedites secure device onboarding, including device setup, allowing service providers to quickly scale a network without the disruption of manually adding or optimizing devices. Once devices are set up, HCL iCE.X makes it easy for service providers to:

- Create custom workflows, quick access, and configuration sets (hierarchical configuration)
- Set custom cross-device alarms and alerts
- Define group batch processes
- Manage backup and restoration of device configurations
- Automate the resolution of network anomalies
- Optimizes devices as a part of a network or individually
- Support grouping, batch process, and file management





HCL iCE.X Analytics and Insights

HCL iCE.X provides flexible and configurable analytics and visualization derived from real-time, historical, and correlated data across the network. This helps service providers leverage the insights provided from device data collection to identify, diagnose, and solve customer-impacting problems more effectively and efficiently with proactive recommended actions based on HCL iCE.X analytics.

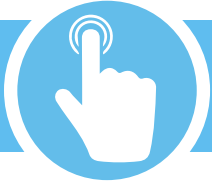




HCL iCE.X Analytics and Insights Minimize MTTR

The rapid problem detection and resolution, made possible with HCL iCE.X, result in reduced call volumes, decreased call handle times, and the elimination of preventable truck rolls. The HCL iCE.X analytics also increase first call resolution (FCR), enhance customer satisfaction, and improve MTTR (mean time to repair) for service providers.

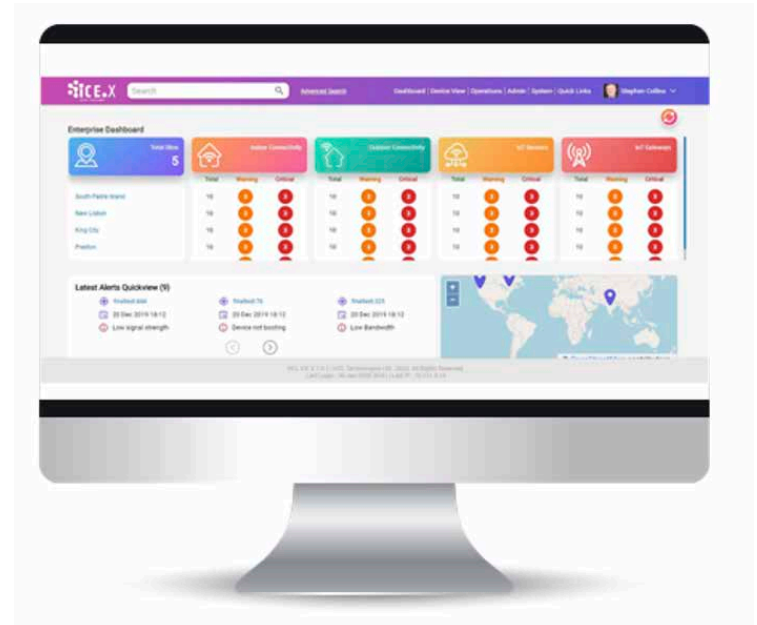




HCL iCE.X Intuitive Interface

HCL iCE.X simplifies platform interactions across network operations, deployment administration, customer support, and IT with an intuitive interface that gives a cross-company view. This helps service providers quickly solve problems that impact business performance by providing:

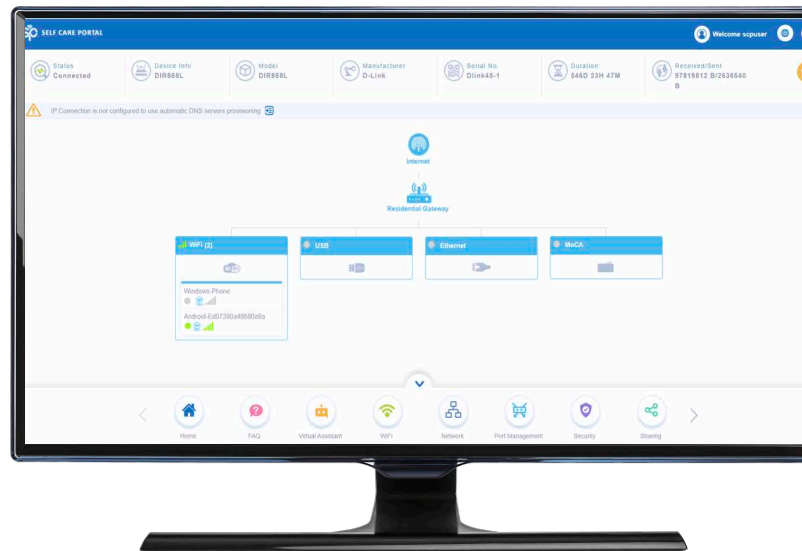
- Complete home-network view (i.e., real-time and historical) of WAN and LAN connections
- Configurable interface to design around the needs and roles of end-users
- Visual representation of physical devices (e.g., connections, ports)
- Detailed LAN host information
- Alerts by device and location
- View of operational reports, such as device changes, inventory, deployments,





HCL iCE.X SelfCare

Technicians and end-users can utilize HCL iCE.X SelfCare's robust library of device profiles to service and provide support for a broad range of device types, regardless of vendor. HCL iCE.X SelfCare reduces call volumes, lowers wait times, and minimizes truck rolls by offering help-desk agents increased visibility into the subscriber networks and an intuitive end-user self-care portal. An integral component of a smart management experience, HCL iCE.X SelfCare includes home status and information, an intelligent and highly-customizable chat, network layout and status, and simple action functions—with multi-language support. Available via browser or mobile device, HCL iCE.X SelfCare delivers significant OpEx savings by reducing call volume and truck rolls.



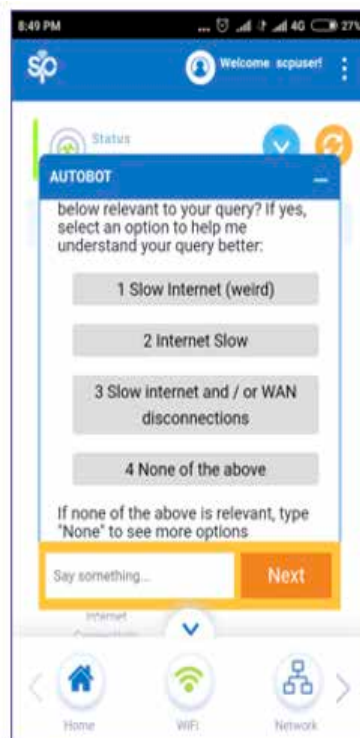


ICE.X SelfCare Mobile Overview

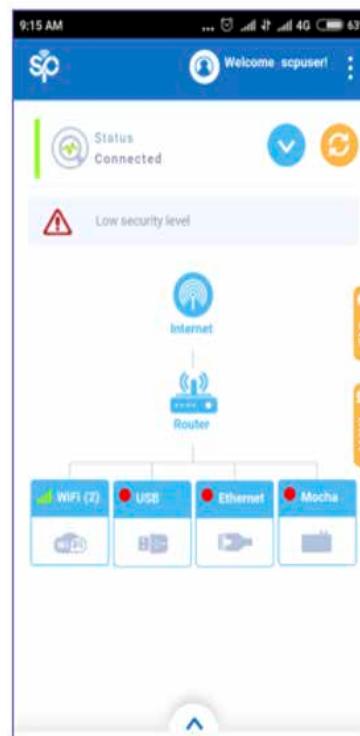
Whole home status and overview



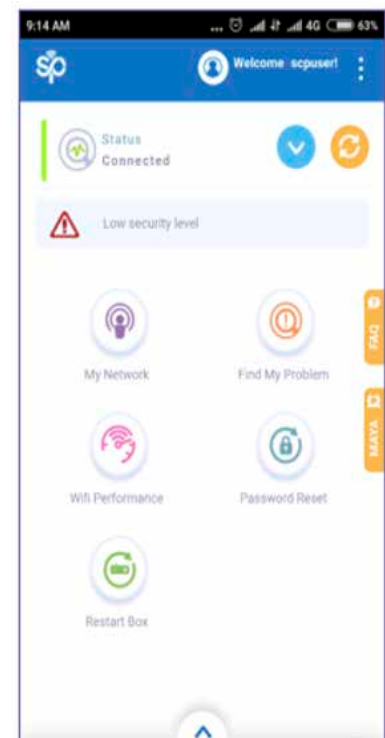
Intelligent and customizable chat

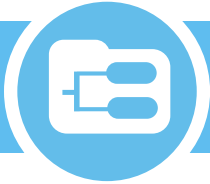


Home network layout and status



Simple action functions





HCL iCE.X Use Cases

Use cases served by the intelligent connected experience of HCL iCE.X:

Cable operator environments

Telecom subscriber's environments

Internet service subscriber environments

Smart homes

Business outcomes from these use cases include advanced control of customer premise equipment, improved customer experience, smooth operations, and OpEx savings.





iCE.X Value for Service Providers

Powerful Portal

- Intelligent operations and monitoring
- Session tracing
- Configurable GUI layout for different roles

Hyper Scalability

- Cloud scale
- >10 million devices
- Containerized

Extensible

- Broad protocol and data model support
- Rich REST APIs for integration to OSS/BSS plat
- Device registration, pre-provisioning, zero-touch provisioning

Vendor Agnostic

- Unification
- Flexible adapters
- Rapid integration

Why HCL ICE.X

EFFECTIVE

- Optimized operations
- Enhanced quality of service
- Improved time to market

EFFICIENT

- Reduced call volume and truck rolls
- Complete home analytics
- Remote management

FLEXIBLE

- Micro-service architecture
- Deploy via cloud, on-premises, or hybrid
- Device agnostic

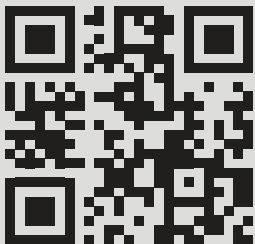


HCL iCE.X Intelligent Device Management Platform for Service Providers

HCL iCE.X provides carrier-grade, end-to-end intelligent device management and more. It goes beyond management functions, enabling service providers to monetize devices and improve customer experiences in a vendor and protocol-agnostic manner. With HCL iCE.X, service providers benefit from the smart processing of real-time data into faster insights that can be used to optimize operations and realize business goals.

Find how HCL iCE.X helps service providers monetize connected devices

HCL



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HCL Technologies (HCL) empowers global enterprises with technology for the next decade today. HCL's Mode 1-2-3 strategy, through its deep-domain industry expertise, customer-centricity and entrepreneurial culture of i deapreneurship™ enables businesses to transform into next-gen enterprises. HCL offers its services and products through three lines of business - IT and Business Services (ITBS), Engineering and R&D Services (ERS), and Products & Platforms (P&P). ITBS enables global enterprises to transform their businesses through offerings in areas of Applications, Infrastructure, Digital Process Operations, and next generation digital transformation solutions. ERS offers engineering services and solutions in all aspects of product development and platform engineering while under P&P. HCL provides modernized software products to global clients for their technology and industry specific requirements. Through its cutting-edge co-innovation labs, global delivery capabilities, and broad global network, HCL delivers holistic services in various industry verticals, categorized under Financial Services, Manufacturing, Technology & Services, Telecom & Media, Retail & CPG, Life Sciences, and Healthcare and Public Services. As a leading global technology company, HCL takes pride in its diversity, social responsibility, sustainability, and education initiatives. As of 12 months ending on December 31, 2021, HCL has a consolidated revenue of US\$ 11.2 billion and its 198,000 ideapreneurs operate out of 52 countries. For more information, visit www.hcltech.com