INNOPATH

mobile device management

InnoPath OMA-DM Open OS Device Suite

Performance
- Highly compact diff files
- Minimal client footprint
- Content aware diff generator
- Flexible compression framework

Post-Load Capability
- Push client onto handsets in the field
- Reduce time to deploy MDM

Upgradability
- Client field upgradable
- Add new features
- Support evolving standards

Footprint
- Smallest footprint in the industry
- Reduce handset BOM

Scalability
- Handles the largest image sizes required by OEMs

Usability
- Intuitive GUI for diff generation
- Detailed status reporting
- Simple, well documented APIs
- Integration, test and debug tools

Flexibility
- Ports to any processor or OS
- NOR/NAND memory
- Network agnostic
- User pull upgrades
- Server push upgrades
- Supports OTA, Cable & Memory cards

Interoperability
- Standards based
- Compatible with HP/Bitfone, Funambol, IBM, Innoace, Smith Micro / Insignia, mFormation, Nokia, Synchronica, Websync, and Wisegram

Failure Recovery
- Fail safe
- Fallback to earlier firmware

InnoPath's iMDM Open OS Device Suite is the industry's first OMA-DM device management solution that can be loaded onto smartphones that are in the hands of the subscribers. This capability permits the operator to quickly deploy a standards-based MDM solution including configuration, diagnostics, application, and security management. As with InnoPath's RTOS client, the Open OS client may also be loaded on the handset at time of manufacture, permitting the addition of firmware management (FOTA) based on InnoPath's leading DUA solution.

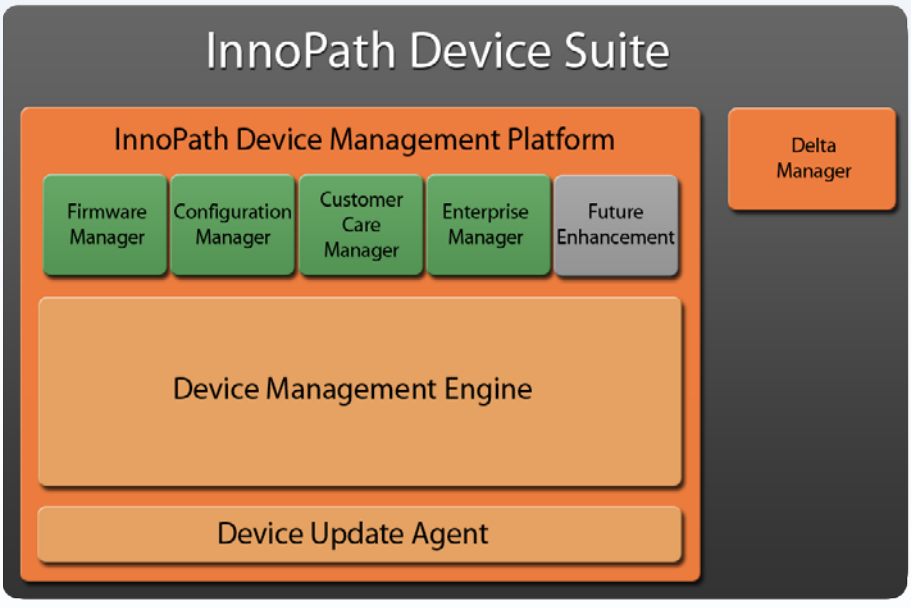
An additional advantage of the post-load capability is upgradability – the client can be upgraded, enabling new capabilities and adapting to evolving standards. The client naturally works with InnoPath's iMDM Server and is fully interoperable with standards-based 3rd party servers.

The InnoPath client consists of the Device Management Engine (DME), a Device Update Agent (DUA) and the Delta Manager (DM). An OEM or OS platform provider may elect to use either the DME, the DUA/DM, or both.

Device Management Engine (DME)
The DM Engine is the core of the solution, maintaining the OMA-DM session with the server, orchestrating downloads, communicating with the DUA, and supporting the various DM applications such as FOTA, Configuration Management, Lock & Wipe, and Device Pulse.

Device Update Agent (DUA)
The DUA is responsible for firmware updates and executed during Initial Program Load (IPL) mode on the device. IPL mode is when the device is first booting up, before the applications begin running. It is much like a PC when it has finished self-test and before it begins booting Windows.

Delta Manager (DM)
InnoPath also supplies a host-based tool used to generate the 'delta' between two images and/or file system components. This tool also creates a package that can be ingested by the iMDM or any OMA-DM server. Currently supported package formats are UPC & PIC.



InnoPath Open OS Client Features and Specifications

Client Platform

Features

- Firmware Management (FOTA): Update device firmware over-the-air to address bugs and increase usability
- Application Management: Manage software through entire lifecycle - download and installation, activation, deactivation and uninstall
- Customer Care: Read, verify and set the device settings based on expected preset values
- Security Management: Lock and Wipe lost or stolen phones
- Diagnostics: Diagnose device operational issues

Client Characteristics

- Dowloadable: “Post-load” capability. Operator can push client onto handsets in the field
- Self-Updating: Client can be updated after installation, allowing for new features or evolving standards
- Provisioning: Enable services remotely
- Bootstrap: Factory & OTA: Enable first-time automatic configuration
- Network, Client & User initiated DM sessions: Multiple modes for updating firmware
- Small Footprint: Reduces Bill-of-Material costs
- Fast Updates: Enhances user experience
- Digital Signatures: Enhanced security
- Custom Carrier Support: Enables operator specific management requirements
- Roaming Support: Saves operator bandwidth if subscriber is roaming
- Multiple DM server support
- Compression: Supports Multiple Algorithms
- Configurable session timeout
- Client management tree – DM tree provisioning, SIM card management

Supported OSs

- Windows Mobile
- Symbian
- Linux
- RTOS support available with InnoPath RTOS Client

Client Security

- SSL, SSL Proxy
- DES, 3DES
- AES-128
- MD-5
- SHA-1

Standards Compliance

- OMA-DM 1.2 & 1.1.2 (coexist), OMA-CP 1.1
- FUMO 1.0, OMA-DL 1.0
- OTAFF
- XML 1.0
- WBXML 1.3
- WAP 183 & 184

Client Applications

Firmware (FOTA) Management

- 100% fault tolerant, supports error recovery
- Installation confirmation including integrity checks
- Fail-safe including bringing devices to operable state after upgrade/update and handling of typical causes of network or device failures
- Flexible format support
- Flash Agnostic
- Suspend/Resume
- Package Encryption & Compression
- Diff Size/Blocks Optimized
- Multi-step Diff handling
- Stable API Set
- Multiple notification methods

Note: FOTA available only with preload clients

Application Management

- Manage applications, including dependencies
- Supports OMA SCoMO standard
- Key part of operator device update strategy

Configuration Management

- Automatically provision initial application settings on the device. Increase uptake of revenue-generating services-enhance usability
- Verify application settings on handset against operator baseline and correct if required - improve subscriber satisfaction and usability

Security Managment

- Lock and Wipe lost or stolen phone
- Manage security applications such as Antivirus, Firewall, Encryption, VPN

Diagnostics Management

Retrieval of critical handset data including:

- Device model
- Device manufacturer
- Handset serial number
- Software/firmware build #
- Signal strength
- Battery strength
- Embedded device applications
- Device phone #
- Time on phone clock
- Available memory (RAM and ROM)
- Default language
- Roaming
- Voice enabled
- Data enabled