The TeleHome Approach of Service Provisioning

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Starting Point

- Enable service providers to perform their services in an effective, secure and easy to use way.
- Dynamic home configurations and service application stock requires dynamic platform behavior: Dynamic service offering, plug & play driver installation etc.
- Not constrain the functionality of service applications (too much)
- Access to any resource of a customer must be under his control.
- Support service application development by providing Core Services.
Features of TeleHome

- Broadband (ADSL) connections to the home.
- Service application support by providing Core Services: Remote Control, Notification, Net Storage, Localization, Accounting.
- Access to Core Services using Web Services technology.
- Representation of Core Services on the OSGi service platform as OSGi services.
- Sharing of profiles for users, devices, service features etc. even in between service applications.
- Controlled access to all shared resources.
- Unified authentication with Liberty Project Specification.
Connected Domains

Service Provider
- Service Application (Backend)

Portal Provider
- Service Application (Portlet)

Hosting Provider
- Service Application (Backend)

TeleHome Service
- TeleHome Web Services

TeleHome Service Aggregation Platform (Operator)

OSGi Service Platform
- Service Application (Bundle)

Home Appliances

Home Networks (UPnP, IEEE 1394, EHS, ...)

Internet
WAN Connections

- ADSL – Connects an OSGi gateway to the Internet.
- SOAP over S-HTTP – Connects external service applications and Core Service bundles to TeleHome Web Services.
- Optional: VPN Tunnel – Connects an Internet connection to TeleHome platform.
SOAP over S-HTTP

- Easy to use: Standardized, simple and proven technology.
- Not constraining: Gives freedom of choice regarding service application backend platform (.NET, J2EE, …)
- Certification Authority (CA) needed.
Example: Remote Meter Reading (1/3)

- **Simple Scenario:** The ACME utility wants to read the electricity consumption of a home.
- Therefore it needs to contact it’s device driver bundle on the OSGi service platform of a customer’s gateway and ask it for the currently consumed amount of kW/h.
- For fine-grained access control, the service application backend can’t directly connect to the gateway.
- The service application communicates with the Operator platform to establish a link between the service application backend and the driver.
- The driver bundle for the metering device exports remote controllable functionality. It registers a `CommandService` service within the OSGi service registry.
Example: Remote Meter Reading (2/3)

- The service application uses the Remote Control Web Service’s `locate` operation to find an OSGi bundle (in Java notation):
  
  ```java
  String[] locate(java.util.Map properties)
  ```

- The service application expects the following OSGi service properties:
  ```
  objectClass=com.acme.ElectricityMeter
  meterPrincipal=ACME Utility
  ```

- The service application receives session IDs for the found device driver bundles (if it has access rights on these).
Example: Remote Meter Reading (3/3)

- Now it uses the `invoke` operation to contact the bundles (again Java notation):
  ```java
  byte[] invoke(String id, byte[] in)
  ```
- Contents of the sent and received byte arrays are transparent to the Operator platform. The service application expects the returned byte array to contain the electricity consumption value.
Operator’s Major TO-DOs

Constitute a group of operators working on:

- Alignment of functional requirements joint with (potential) service providers.
- Evaluate usability, security & scalability issues of a Service Enabling Platform.
- Agree on and standardize Service Provisioning APIs.
Future: The Service Provisioning “Router”

- Embedded, OSGi-based device that provides Web Services interfaces for TeleHome SP access.
- Better load distribution, reduces single points of failure.
- Increases freedom of the operator’s and the service provider’s network layout.
- “Out-of-the-box” service provisioning.
- Operator platform could remain transparent.

➔ APIs need to be standardized (like e.g. Parlay X Web Services)
Future: The Service Provisioning “Router”
Questions?