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ETSI Standard

Open Service Access (OSA); Application Programming Interface (API); Part 13: Policy Management SCF (Parlay 6)



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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 13 of a multi-part deliverable covering Open Service Access (OSA); Application Programming Interface (API), as identified below. The API specification (ES 204 915) is structured in the following parts:

- Part 1: "Overview";
- Part 2: "Common Data Definitions";
- Part 3: "Framework";
- Part 4: "Call Control";
- Part 5: "User Interaction SCF";
- Part 6: "Mobility SCF";
- Part 7: "Terminal Capabilities SCF";
- Part 8: "Data Session Control SCF";
- Part 9: "Generic Messaging SCF";
- Part 10: "Connectivity Manager SCF";
- Part 11: "Account Management SCF";
- Part 12: "Charging SCF";
- Part 13: "Policy Management SCF";**
- Part 14: "Presence and Availability Management SCF".
- Part 15: "Multi-Media Messaging SCF";
- Part 16: "Service Broker SCF".

The present document has been defined jointly between ETSI, The Parlay Group (<http://www.parlay.org>) and the 3GPP, in co-operation with a number of JAIN™ Community (<http://www.java.sun.com/products/jain>) member companies.

The present document forms part of the Parlay 6.0 set of specifications.

The present document is equivalent to 3GPP TS 29.198-13 V7.0.0 (Release 7).

1 Scope

The present document is part 13 of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardised interface, i.e. the OSA APIs.

The present document specifies the Policy Management Service Capability Feature (SCF) aspects of the interface. All aspects of the Policy Management SCF are defined here, these being:

- Sequence Diagrams.
- Class Diagrams.
- Interface specification plus detailed method descriptions.
- State Transition diagrams.
- Data Definitions.
- IDL Description of the interfaces.

The process by which this task is accomplished is through the use of object modelling techniques described by the Unified Modelling Language (UML).

2 References

The references listed in clause 2 of ES 204 915-1 contain provisions which, through reference in this text, constitute provisions of the present document.

ETSI ES 204 915-1: "Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (Parlay 6)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 204 915-1 apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ES 204 915-1 apply.

4 Policy Management SCF

It is expected that more and more OSA services will use policies to express operational criteria. It is also expected that network providers will host policy-enabled services that have been written by 3rd party application service providers. In order to manage policy information, control access to it and to request evaluation of policies a policy management service is needed. Consistent with this, a policy management provisioning manager, IpPolicyManager, and a policy evaluation manager, IpPolicyEvalManager have been defined.

APIs have been defined to offer provisioning services. These include APIs to create, update or view policy information for any policy enabled service. Similarly APIs have been defined to facilitate interactions between clients (e.g. a 3rd party application) and the policies of any policy enabled service. These include APIs to subscribe to policy events, to request evaluation of policies and to request the generation of policy events. All APIs conform to an underlying policy information model that is derived from the policy core information model defined by the IETF in RFC 3460.

Clients that perform administrative tasks of behalf of a policy enabled service, e.g. create, update or delete policy information must obtain access to IpPolicyManager via the Framework. Administrative tasks may then be performed through methods supported by IpPolicyManager. Similarly, clients that need to invoke evaluation of policies of a specific policy enabled service may do so by obtaining access to IpPolicyEvalManager via the Framework.

Consistent with the above the Policy Management Service supports two classes of service interfaces for policy provisioning and policy evaluation. These are the PM Provisioning SCF and the PM Policy Evaluation SCF respectively.

Examples of policy enabled services include: A load balancing service that uses policies to manage application loads on the network, a charging service that determines charging criteria based on policies, a call management service that uses policies to direct end-user calls to appropriate call agents, etc.

Information in the present document is organized as follows:

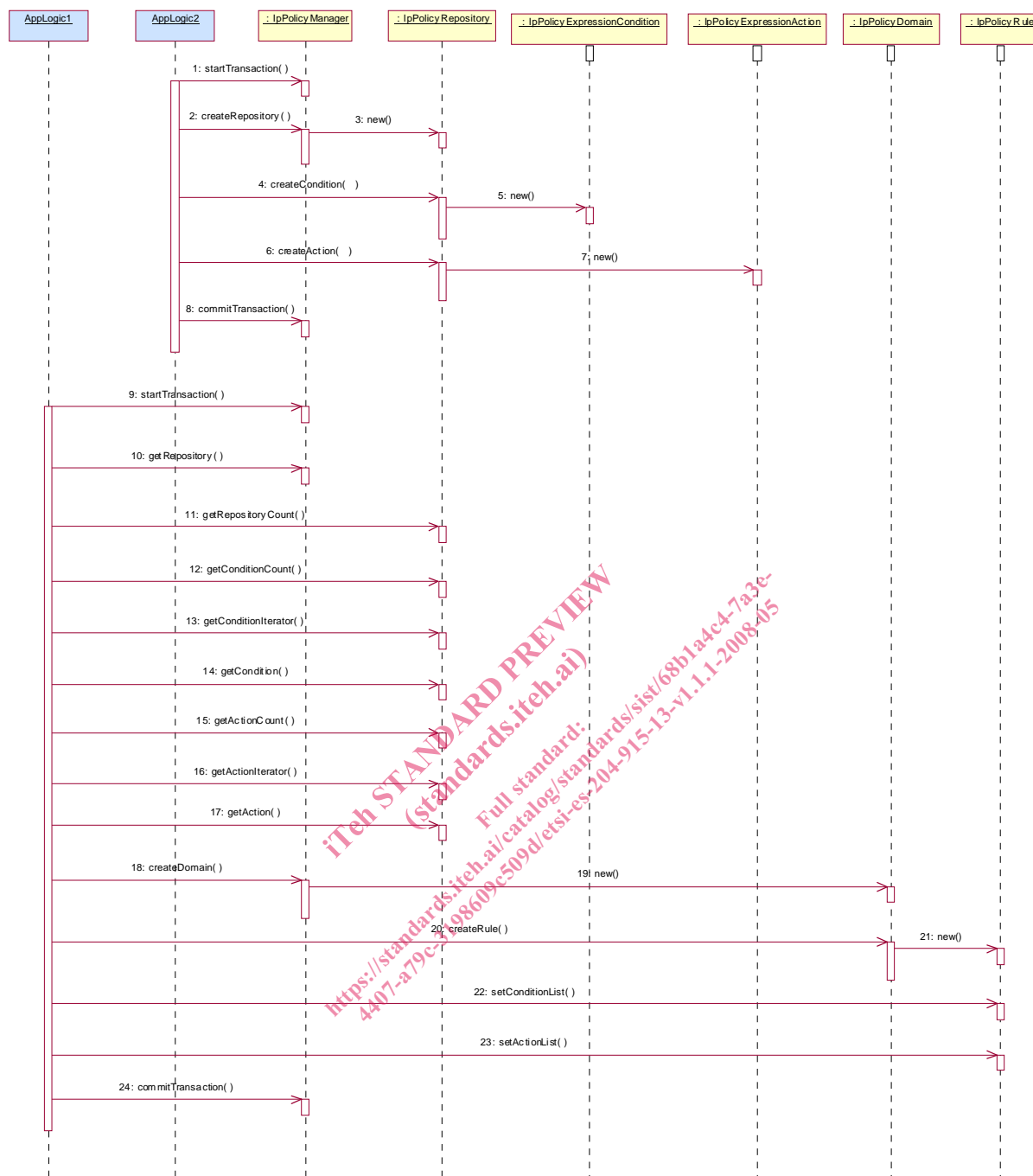
- The Sequence diagrams give the reader a practical idea of how PM provisioning and PM evaluation SCFs are used by clients.
- The Class relationships clause shows relationships between the various interfaces supported by the PM provisioning and PM evaluation SCFs respectively.
- The Interface specification clauses describe in detail each of the interfaces shown within the Class diagram clause.
- The Data Definitions clause shows a detailed expansion of each of the data types associated with the methods within the classes. Note that some data types are used in other methods and classes and are therefore defined within the Common Data types part ES 204 915-2.

An implementation of this API which supports or implements a method described in the present document, shall support or implement the functionality described for that method, for at least one valid set of values for the parameters of that method. Where a method is not supported by an implementation of a Service interface, the exception P_METHOD_NOT_SUPPORTED shall be returned to any call of that method.

5 Sequence Diagrams

5.1 Use of Policy Repository

The example shown here shows the use of a Policy Repository. The repository is meant to hold unattached conditions and actions. The Network Operator can populate the repository with the conditions and actions that it can support. These may indeed be based on 'off-line' negotiations with the application developer. The application developer uses the conditions and actions in the Policy Repository to create rules for his own application. In the example application logic represented by AppLogic1 belongs to the Network Operator, whereas the application logic represented by AppLogic2 belongs to the ASP. This example uses the same conditions, actions, and rules as the ASP example.



- 1: The creation of the repository by the Network Operator takes place within one transaction.
- 2: The method createRepository is invoked on the IpPolicyManager interface to create a new repository.
- 3: As a result of the createRepository method a new instance of the IpPolicyRepository interface is created. Its interface reference is returned as return parameter of the createRepository method.
- 4: The Network Operator creates an unattached condition in the new repository by invoking the createCondition method. For simplicity reasons, this is the same condition as in sequence 8 of the ASP example. The same condition attributes apply.
- 5: A new instance of the IpPolicyExpressionCondition interface is created.

- 6: The Network Operator creates an unattached action in the repository. Again, this is the same action as in sequence 10 of the ASP example. The same action attributes apply.
- 7: A new instance of the IpPolicyExpressionAction interface is created.
- 8: The Network Operator is finished with creating and populating the repository and closes the transaction.
- 9: Now that a repository exists, the ASP application can open a transaction to start creating a rule based on the conditions and actions stored in the repository.
- 10: The application invokes the getRepository to obtain a reference to the top-level repository. The returned reference in this case is the reference to the new repository just created by the Network Operator.
- 11: The application can invoke the getRepositoryCount method on the IpPolicyRepository interface to check whether there are any sub-repositories available. This is not the case for this example.
- 12: Before trying to obtain all available conditions in this repository the application retrieves the number of conditions by invoking the method getConditionCount.
- 13: The application can now invoke the getConditioniterator method to obtain the reference to an iterator that contains the names of each of the conditions contained by this repository that the application is authorized to see. As the previous method only return one available condition, this would be only one name, i.e. "SufficientCredit".
- 14: A reference to the condition can be obtained by invoking getCondition, with the condition name from the iterator as input parameter.
- 15: Similar to 12.
- 16: Similar to 13.
- 17: Similar to 14.
- 18: At this point in time the application has the names and references to the unattached condition and action from the repository it wants to use to create the rule. First a domain is created by invoking the createDomain method on the IpPolicyManager interface.
- 19: A new instance of the IpPolicyDomain interface is created.
- 20: The application invokes createRule to create a rule within the domain that was just created in flow 18 and 19.
- 21: A new instance of the IpPolicyRule interface is created.
- 22: By invoking the method setConditionList, the application can now apply the condition from the repository to this rule, by passing the condition reference, obtained by getCondition in flow 14, as an input parameter.
- 23: Similarly the application can apply the action to the rule by invoking setActionList.
- 24: Finally, once the rule is created using the condition and action from the policy repository, the transaction can be closed.

5.2 Introduce condition and action into rule

This sequence diagram describes how a specific policy rule is managed. A rule consists generally of conditions and of actions, the latter being evaluated if all conditions evaluate to true.

This sequence includes:

- creation of a condition and introduction of it into the rule;
- retrieval of an already defined action object from a repository and introduction into the rule;
- establishing a transaction bracket.

Presumption: the Application got a reference to the group, e.g. by having performed the sequence "create and modify domain" as in clause 5.4.