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INTERNATIONAL STANDARD

Information technology – UPnP Device Architecture – Part 11-2: Quality of Service Device Control Protocol – Level 2 – Quality of Service Schemas



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CONTENTS

FOREWORD 3
ORIGINAL UPNP DOCUMENTS (informative) 5
1. Introduction 7
2. Schemas 8
2.1. ConfRotameterObservations 8
2.2. ListOfTrafficDescriptors 9
2.3. MostRecentStreamAction 10
2.4. PathInformation 11
2.5. QosDeviceCapabilities 12
2.6. QosDeviceInfo 14
2.7. QosDeviceState 15
2.8. RotameterInformation 17
2.9. TrafficDescriptorsPerInterface 19
2.10. TrafficDescriptor 20
2.11. TrafficPolicy 24

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INFORMATION TECHNOLOGY – UPNP DEVICE ARCHITECTURE –

Part 11-2: Quality of Service Device Control Protocol – Level 2 – Quality of Service Schemas

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1501 Page Mill Road
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Digital Media Business, Samsung Electronics Co. Ltd.
416 Maetan-3 Dong, Yeongtang-Gu,
KR – Suwon City 443-742

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The list of all currently available parts of the ISO/IEC 29341 series, under the general title *Universal plug and play (UPnP) architecture*, can be found on the IEC web site.

This International Standard has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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ORIGINAL UPNP DOCUMENTS
(informative)

Reference may be made in this document to original UPnP documents. These references are retained in order to maintain consistency between the specifications as published by ISO/IEC and by UPnP Implementers Corporation. The following table indicates the original UPnP document titles and the corresponding part of ISO/IEC 29341:

UPnP Document Title	**ISO/IEC 29341 Part**
UPnP Device Architecture 1.0	ISO/IEC 29341-1
UPnP Basic:1 Device	ISO/IEC 29341-2
UPnP AV Architecture:1	ISO/IEC 29341-3-1
UPnP MediaRenderer:1 Device	ISO/IEC 29341-3-2
UPnP MediaServer:1 Device	ISO/IEC 29341-3-3
UPnP AVTransport:1 Service	ISO/IEC 29341-3-10
UPnP ConnectionManager:1 Service	ISO/IEC 29341-3-11
UPnP ContentDirectory:1 Service	ISO/IEC 29341-3-12
UPnP RenderingControl:1 Service	ISO/IEC 29341-3-13
UPnP MediaRenderer:2 Device	ISO/IEC 29341-4-2
UPnP MediaServer:2 Device	ISO/IEC 29341-4-3
UPnP AV Datastructure Template:1	ISO/IEC 29341-4-4
UPnP AVTransport:2 Service	ISO/IEC 29341-4-10
UPnP ConnectionManager:2 Service	ISO/IEC 29341-4-11
UPnP ContentDirectory:2 Service	ISO/IEC 29341-4-12
UPnP RenderingControl:2 Service	ISO/IEC 29341-4-13
UPnP ScheduledRecording:1	ISO/IEC 29341-4-14
UPnP DigitalSecurityCamera:1 Device	ISO/IEC 29341-5-1
UPnP DigitalSecurityCameraMotionImage:1 Service	ISO/IEC 29341-5-10
UPnP DigitalSecurityCameraSettings:1 Service	ISO/IEC 29341-5-11
UPnP DigitalSecurityCameraStillImage:1 Service	ISO/IEC 29341-5-12
UPnP HVAC_System:1 Device	ISO/IEC 29341-6-1
UPnP HVAC_ZoneThermostat:1 Device	ISO/IEC 29341-6-2
UPnP ControlValve:1 Service	ISO/IEC 29341-6-10
UPnP HVAC_FanOperatingMode:1 Service	ISO/IEC 29341-6-11
UPnP FanSpeed:1 Service	ISO/IEC 29341-6-12
UPnP HouseStatus:1 Service	ISO/IEC 29341-6-13
UPnP HVAC_SetpointSchedule:1 Service	ISO/IEC 29341-6-14
UPnP TemperatureSensor:1 Service	ISO/IEC 29341-6-15
UPnP TemperatureSetpoint:1 Service	ISO/IEC 29341-6-16
UPnP HVAC_UserOperatingMode:1 Service	ISO/IEC 29341-6-17
UPnP BinaryLight:1 Device	ISO/IEC 29341-7-1
UPnP DimmableLight:1 Device	ISO/IEC 29341-7-2
UPnP Dimming:1 Service	ISO/IEC 29341-7-10
UPnP SwitchPower:1 Service	ISO/IEC 29341-7-11
UPnP InternetGatewayDevice:1 Device	ISO/IEC 29341-8-1
UPnP LANDevice:1 Device	ISO/IEC 29341-8-2
UPnP WANDevice:1 Device	ISO/IEC 29341-8-3
UPnP WANConnectionDevice:1 Device	ISO/IEC 29341-8-4
UPnP WLANAccessPointDevice:1 Device	ISO/IEC 29341-8-5
UPnP LANHostConfigManagement:1 Service	ISO/IEC 29341-8-10
UPnP Layer3Forwarding:1 Service	ISO/IEC 29341-8-11
UPnP LinkAuthentication:1 Service	ISO/IEC 29341-8-12
UPnP RadiusClient:1 Service	ISO/IEC 29341-8-13
UPnP WANCableLinkConfig:1 Service	ISO/IEC 29341-8-14
UPnP WANCommonInterfaceConfig:1 Service	ISO/IEC 29341-8-15
UPnP WANDSLLinkConfig:1 Service	ISO/IEC 29341-8-16
UPnP WANEthernetLinkConfig:1 Service	ISO/IEC 29341-8-17
UPnP WANIPConnection:1 Service	ISO/IEC 29341-8-18
UPnP WANPOTSLinkConfig:1 Service	ISO/IEC 29341-8-19
UPnP WANPPPConnection:1 Service	ISO/IEC 29341-8-20
UPnP WLANConfiguration:1 Service	ISO/IEC 29341-8-21
UPnP Printer:1 Device	ISO/IEC 29341-9-1
UPnP Scanner:1.0 Device	ISO/IEC 29341-9-2
UPnP ExternalActivity:1 Service	ISO/IEC 29341-9-10
UPnP Feeder:1.0 Service	ISO/IEC 29341-9-11
UPnP PrintBasic:1 Service	ISO/IEC 29341-9-12
UPnP Scan:1 Service	ISO/IEC 29341-9-13
UPnP QoS Architecture:1.0	ISO/IEC 29341-10-1
UPnP QosDevice:1 Service	ISO/IEC 29341-10-10
UPnP QosManager:1 Service	ISO/IEC 29341-10-11
UPnP QosPolicyHolder:1 Service	ISO/IEC 29341-10-12
UPnP QoS Architecture:2	ISO/IEC 29341-11-1
UPnP QOS v2 Schema Files	ISO/IEC 29341-11-2

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UPnP Document Title	ISO/IEC 29341 Part
UPnP QosDevice:2 Service	ISO/IEC 29341-11-10
UPnP QosManager:2 Service	ISO/IEC 29341-11-11
UPnP QosPolicyHolder:2 Service	ISO/IEC 29341-11-12
UPnP RemoteUIClientDevice:1 Device	ISO/IEC 29341-12-1
UPnP RemoteUIServerDevice:1 Device	ISO/IEC 29341-12-2
UPnP RemoteUIClient:1 Service	ISO/IEC 29341-12-10
UPnP RemoteUIServer:1 Service	ISO/IEC 29341-12-11
UPnP DeviceSecurity:1 Service	ISO/IEC 29341-13-10
UPnP SecurityConsole:1 Service	ISO/IEC 29341-13-11

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1. Introduction

The following schema definitions are referenced in the Quality of Service Level 2 standards. In the original UPnP standards these were distributed as files with the type "XSD", collected into a ZIP archive. They are presented in this standard, ISO/IEC 29341-11-2, for consistency with ISO/IEC document formatting requirements.

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2. Schemas

2.1. ConfRotameterObservations

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns="http://www.upnp.org/schemas/ConfRotameterObservations.xsd"
   targetNamespace="http://www.upnp.org/schemas/ConfRotameterObservations.xsd"
   elementFormDefault="qualified" id="ConfRotameterObservations.xsd">
   <xs:annotation>
      <xs:documentation xml:lang="en">
            ConfRotameterObservations
            This is for Version 2.0 of the UPnP QoS specification
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reserved.
            Schema Location:
"http://www.upnp.org/schemas/qos/ConfRotameterObservations-v2.xsd"
       </xs:documentation>
   </xs:annotation>
   <xs:element name="ConfRotameterObservations"
type="ConfRotameterObservationsType"/>
   <xs:complexType name="ConfRotameterObservationsType">
      <xs:sequence>
         <xs:element name="ROPeriod" type="xs:integer"/>
         <xs:element name="MonitorResolutionPeriod" type="xs:integer"/>
         <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
         <!-- allow any element except those from target namespace -->
         <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:any namespace="##other" processContents="lax"/>
            <xs:any namespace="##local" processContents="lax"/>
         </xs:choice>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="v2ExtensionType">
      <xs:sequence>
         <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
         <!-- allow any element except those from (v2) target namespace -->
         <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:any namespace="##other" processContents="lax"/>
            <xs:any namespace="##local" processContents="lax"/>
         </xs:choice>
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
   <xs:complexType name="v3ExtensionType">
      <xs:sequence>
         <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
</xs:schema>
```

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2.2. ListOfTrafficDescriptors

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.upnp.org/schemas/ListOfTrafficDescriptors.xsd"
  targetNamespace="http://www.upnp.org/schemas/ListOfTrafficDescriptors.xsd"
  xmlns:td2="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
  elementFormDefault="qualified" id="ListOfTrafficDescriptors.xsd">

  <xs:import namespace="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
  schemaLocation="http://www.upnp.org/schemas/qos/TrafficDescriptor-v2.xsd"/>
  <xs:annotation>
    <xs:documentation xml:lang="en">
      ListofTrafficDescriptors
      This is for Version 2.0 of the UPnP QoS specification
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reserved.
     Schema Location: "http://www.upnp.org/schemas/qos/ListOfTrafficDescriptors-
v2.xsd"
    </xs:documentation>
  </xs:annotation>
  <xs:element name="ListOfTrafficDescriptors" type="ListOfTrafficDescriptorsType"/>
  <xs:complexType name="ListOfTrafficDescriptorsType">
    <xs:sequence>
      <xs:element name="TrafficDescriptor" type="td2:TrafficDescriptorType"
minOccurs="0" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

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2.3. MostRecentStreamAction

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/MostRecentStreamAction.xsd"
 targetNamespace="http://www.upnp.org/schemas/MostRecentStreamAction.xsd"
 elementFormDefault="qualified"
 attributeFormDefault="unqualified" id="MostRecentStreamAction.xsd">
 <xs:annotation>
   <xs:documentation xml:lang="en">
     MostRecentStreamAction
     This is for Version 2.0 of the UPnP QoS specification
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reserved.
    Schema Location: "http://www.upnp.org/schemas/qos/MostRecentStreamAction-
v2.xsd"
   </xs:documentation>
 </xs:annotation>
 <xs:element name="MostRecentStreamAction" type="MostRecentStreamActionType"/>
 <xs:complexType name="MostRecentStreamActionType">
   <xs:sequence>
     <xs:element name="SetupTrafficQos" type="xs:unsignedInt" minOccurs="1"
maxOccurs="1"/>
     <xs:element name="ReleaseTrafficQos" type="xs:unsignedInt" minOccurs="1"
maxOccurs="1"/>
     <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from v1 target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
 </xs:complexType>
 <xs:complexType name="v2ExtensionType">
   <xs:sequence>
     <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from (v2) target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
 <xs:complexType name="v3ExtensionType">
   <xs:sequence>
     <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
</xs:schema>
```

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2.4. PathInformation

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/PathInformation.xsd"
 targetNamespace="http://www.upnp.org/schemas/PathInformation.xsd"
 elementFormDefault="qualified" id="PathInformation.xsd">
 <xs:annotation>
   <xs:documentation xml:lang="en">
     PathInformation
     This is for Version 2.0 of the UPnP QoS specification
     Copyright 2004-2006 Contributing Members of the UPnP Forum. All rights
reserved.
    Schema Location: "http://www.upnp.org/schemas/qos/PathInformation-v2.xsd"
   </xs:documentation>
 </xs:annotation>
 <xs:element name="DeviceReachableMacs" type="DeviceReachableMacsType"/>
 <xs:complexType name="DeviceReachableMacsType">
   <xs:sequence>
     <xs:element name="LinkReachableMacs" maxOccurs="unbounded">
       <xs:complexType>
         <xs:sequence>
           <xs:element name="LinkId" type="xs:string"/>
           <xs:element name="BridgeId" type="xs:string" minOccurs="0"/>
           <xs:element name="MacAddress" type="MacAddressType" minOccurs="0"/>
           <xs:element name="ReachableMac" type="MacAddressType" minOccurs="0"
maxOccurs="unbounded"/>
           <!-- allow any element except those from target namespace -->
           <xs:choice minOccurs="0" maxOccurs="unbounded">
             <xs:any namespace="##other" processContents="lax"/>
             <xs:any namespace="##local" processContents="lax"/>
           </xs:choice>
         </xs:sequence>
       </xs:complexType>
     </xs:element>
     <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
 </xs:complexType>
 <xs:simpleType name="MacAddressType">
   <xs:restriction base="xs:string">
     <xs:pattern value="[0-9a-fA-F]{12}"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:complexType name="v2ExtensionType">
   <xs:sequence>
     <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from (v2) target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
 <xs:complexType name="v3ExtensionType">
   <xs:sequence>
     <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
</xs:schema>
```

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2.5. QosDeviceCapabilities

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/QosDeviceCapabilities.xsd"
 targetNamespace="http://www.upnp.org/schemas/QosDeviceCapabilities.xsd"
 elementFormDefault="qualified" id="QosDeviceCapabilities.xsd">
  <xs:annotation>
    <xs:documentation xml:lang="en">
      QosDeviceCapabilities
      This is for Version 2.0 of the UPnP QoS specification
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reserved.
     Schema Location: "http://www.upnp.org/schemas/qos/QosDeviceCapabilities-
v2.xsd"
    </xs:documentation>
  </xs:annotation>
  <xs:element name="QosDeviceCapabilities" type="QosDeviceCapabilitiesType"/>
  <xs:complexType name="QosDeviceCapabilitiesType">
    <xs:sequence>
      <xs:element name="Interface" maxOccurs="unbounded">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="InterfaceId" type="xs:string"/>
            <xs:element name="MacAddress" type="MacAddressType" minOccurs="0"/>
            <xs:element name="IanaTechnologyType" type="xs:integer" minOccurs="0"/>
            <xs:element name="AdmissionControlSupported">
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="No"/>
                  <xs:enumeration value="Yes"/>
                </xs:restriction>
              </xs:simpleType>
            </xs:element>
            <xs:element name="PacketTaggingSupported">
              <xs:simpleType>
                <xs:restriction base="xs:string">
                  <xs:enumeration value="No"/>
                  <xs:enumeration value="Yes"/>
                </xs:restriction>
              </xs:simpleType>
            </xs:element>
            <xs:element name="NativeQos" type="NativeQosType"/>
            <xs:element name="MaxPhyRate" type="xs:unsignedInt"/>
            <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
            <!-- allow any element except those from target namespace -->
            <xs:choice minOccurs="0" maxOccurs="unbounded">
              <xs:any namespace="##other" processContents="lax"/>
              <xs:any namespace="##local" processContents="lax"/>
            </xs:choice>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="MacAddressType">
    <xs:restriction base="xs:string">
      <xs:pattern value="[0-9a-fA-F]{12}"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="NativeQosType">
    <xs:union memberTypes="BasicNativeList xs:string"/>
  </xs:simpleType>
  <xs:simpleType name="BasicNativeList">
    <xs:restriction base="xs:string">
      <xs:enumeration value="Prioritized"/>
      <xs:enumeration value="BestEffort"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="v2ExtensionType">
    <xs:sequence>
```

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```
      <xs:element name="ChannelInformation" type="xs:unsignedInt" minOccurs="0"/>
      <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
      <!-- allow any element except those from (v2) target namespace -->
      <xs:choice minOccurs="0" maxOccurs="unbounded">
        <xs:any namespace="##other" processContents="lax"/>
        <xs:any namespace="##local" processContents="lax"/>
      </xs:choice>
    </xs:sequence>
    <xs:anyAttribute/>
  </xs:complexType>
  <xs:complexType name="v3ExtensionType">
    <xs:sequence>
      <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
    </xs:sequence>
    <xs:anyAttribute/>
  </xs:complexType>
</xs:schema>
```

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2.6. QosDeviceInfo

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/QosDeviceInfo.xsd"
 targetNamespace="http://www.upnp.org/schemas/QosDeviceInfo.xsd"
 elementFormDefault="qualified" id="QosDeviceInfo.xsd">

 <xs:annotation>
   <xs:documentation xml:lang="en">
     QosDeviceInformation
     This is for Version 2.0 of the UPnP QoS specification
     Copyright 2004-2006 Contributing Members of the UPnP Forum. All rights
reserved.
    Schema Location: "http://www.upnp.org/schemas/qos/QosDeviceInfo-v2.xsd"
   </xs:documentation>
 </xs:annotation>
 <xs:element name="QosDeviceInfo" type="QosDeviceInfoType"/>
 <xs:complexType name="QosDeviceInfoType">
   <xs:sequence>
     <xs:element name="TrafficHandle" type="xs:string"/>
     <xs:element name="SourcePort" type="IpPortNumber" minOccurs="0"/>
     <xs:element name="DestinationPort" type="IpPortNumber" minOccurs="0"/>
     <xs:element name="IpProtocol" type="IpProtocolType"/>
     <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
 </xs:complexType>
 <xs:simpleType name="IpPortNumber">
   <xs:restriction base="xs:nonNegativeInteger">
     <xs:minInclusive value="0"/>
     <xs:maxInclusive value="65535"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name="IpProtocolType">
   <xs:restriction base="xs:nonNegativeInteger">
     <xs:minInclusive value="0"/>
     <xs:maxInclusive value="255"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:complexType name="v2ExtensionType">
   <xs:sequence>
     <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from (v2) target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
 <xs:complexType name="v3ExtensionType">
   <xs:sequence>
     <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
</xs:schema>
```

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2.7. QosDeviceState

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/QosDeviceState.xsd"
 targetNamespace="http://www.upnp.org/schemas/QosDeviceState.xsd"
 elementFormDefault="qualified" id="QosDeviceState.xsd">
 <xs:annotation>
   <xs:documentation xml:lang="en">
     QosDeviceState
     This is for Version 2.0 of the UPnP QoS specification
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reserved.
    Schema Location: "http://www.upnp.org/schemas/qos/QosDeviceState-v2.xsd"
   </xs:documentation>
 </xs:annotation>
 <xs:element name="QosDeviceState" type="QosDeviceStateType"/>
 <xs:complexType name="QosDeviceStateType">
   <xs:sequence>
     <xs:element name="QosStateId" type="xs:string"/>
     <xs:element name="Interface" maxOccurs="unbounded">
       <xs:complexType>
         <xs:sequence>
           <xs:element name="InterfaceId" type="xs:string"/>
           <xs:element name="IpAddress" type="IpAddressType" minOccurs="0"
maxOccurs="4"/>
           <xs:element name="InterfaceAvailability">
             <xs:simpleType>
               <xs:restriction base="xs:NMTOKEN">
                 <xs:enumeration value="1"/>
                 <xs:enumeration value="0"/>
               </xs:restriction>
             </xs:simpleType>
           </xs:element>
           <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
           <!-- allow any element except those from target namespace -->
           <xs:choice minOccurs="0" maxOccurs="unbounded">
             <xs:any namespace="##other" processContents="lax"/>
             <xs:any namespace="##local" processContents="lax"/>
           </xs:choice>
         </xs:sequence>
       </xs:complexType>
     </xs:element>
   </xs:sequence>
 </xs:complexType>
 <xs:simpleType name="IPv4Address">
   <xs:restriction base="xs:string">
     <xs:pattern value="(([1-9]?[0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}([1-
9]?[0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name="IPv6Address">
   <xs:restriction base="xs:hexBinary">
     <xs:length value="32"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:simpleType name="PrefixLength">
   <xs:restriction base="xs:positiveInteger">
     <xs:minInclusive value="1"/>
     <xs:maxInclusive value="128"/>
   </xs:restriction>
 </xs:simpleType>
 <xs:complexType name="IpAddressType">
   <xs:sequence>
     <xs:choice>
       <xs:element name="Ipv4" type="IPv4Address"/>
       <xs:element name="Ipv6" type="IPv6Address"/>
     </xs:choice>
     <xs:element name="PrefixLength" type="PrefixLength" minOccurs="0"/>
   </xs:sequence>
 </xs:complexType>
```

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```
 <xs:complexType name="v2ExtensionType">
   <xs:sequence>
     <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from (v2) target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
 <xs:complexType name="v3ExtensionType">
   <xs:sequence>
     <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
</xs:schema>
```

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2.8. RotameterInformation

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
 xmlns:xs="http://www.w3.org/2001/XMLSchema"
 xmlns="http://www.upnp.org/schemas/RotameterInformation.xsd"
 targetNamespace="http://www.upnp.org/schemas/RotameterInformation.xsd"
 elementFormDefault="qualified" id="RotameterInformation.xsd">
 <xs:annotation>
   <xs:documentation xml:lang="en">
     RotameterInformation
     This is for Version 2.0 of the UPnP QoS specification
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reserved.
    Schema Location: "http://www.upnp.org/schemas/qos/RotameterInformation-v2.xsd"
   </xs:documentation>
 </xs:annotation>
 <xs:element name="RotameterInformation" type="RotameterInformationType"/>
 <xs:complexType name="RotameterInformationType">
   <xs:sequence>
     <xs:element name="LinkReachableMacs" maxOccurs="unbounded">
       <xs:complexType>
         <xs:sequence>
           <xs:element name="LinkId" type="xs:string"/>
           <xs:element name="BridgeId" type="xs:string" minOccurs="0"/>
           <xs:element name="MacAddress" type="MacAddressType" minOccurs="0"/>
           <xs:element name="RotameterObservation" minOccurs="0"
maxOccurs="unbounded">
             <xs:complexType>
               <xs:sequence>
                 <xs:element name="RotameterIndex" type="xs:integer"/>
                 <xs:element name="ROAddr" type="MacAddressType"/>
                 <xs:element name="ROBits" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits0" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits1" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits2" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits3" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits4" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits5" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits6" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROBits7" type="xs:integer" minOccurs="0"/>
                 <xs:element name="ROPeriod" type="xs:integer"/>
                 <xs:element name="ReportingDateTime" type="xs:string"/>
                 <xs:element name="MonitorResolutionPeriod" type="xs:integer"/>
                 <!-- allow any element except those from target namespace -->
                 <xs:choice minOccurs="0" maxOccurs="unbounded">
                   <xs:any namespace="##other" processContents="lax"/>
                   <xs:any namespace="##local" processContents="lax"/>
                 </xs:choice>
               </xs:sequence>
             </xs:complexType>
           </xs:element>
           <!-- allow any element except those from target namespace -->
           <xs:choice minOccurs="0" maxOccurs="unbounded">
             <xs:any namespace="##other" processContents="lax"/>
             <xs:any namespace="##local" processContents="lax"/>
           </xs:choice>
         </xs:sequence>
       </xs:complexType>
     </xs:element>
     <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
 </xs:complexType>
 <xs:simpleType name="MacAddressType">
   <xs:restriction base="xs:string">
     <xs:pattern value="[0-9a-fA-F]{12}"/>
   </xs:restriction>
```

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```
 </xs:simpleType>
 <xs:complexType name="v2ExtensionType">
   <xs:sequence>
     <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
     <!-- allow any element except those from (v2) target namespace -->
     <xs:choice minOccurs="0" maxOccurs="unbounded">
       <xs:any namespace="##other" processContents="lax"/>
       <xs:any namespace="##local" processContents="lax"/>
     </xs:choice>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
 <xs:complexType name="v3ExtensionType">
   <xs:sequence>
     <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
   </xs:sequence>
   <xs:anyAttribute/>
 </xs:complexType>
</xs:schema>
```

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2.9. TrafficDescriptorsPerInterface

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.upnp.org/schemas/TrafficDescriptorsPerInterface.xsd"
  targetNamespace="http://www.upnp.org/schemas/TrafficDescriptorsPerInterface.xsd"
  xmlns:td2="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
  elementFormDefault="qualified" id="TrafficDescriptorsPerInterface.xsd">

  <xs:import namespace="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
  schemaLocation="http://www.upnp.org/schemas/qos/TrafficDescriptor-v2.xsd"/>
  <xs:annotation>
    <xs:documentation xml:lang="en">
     This file describes the schema for the TrafficDescriptorPerInterface
      This is for Version 2.0 of the UPnP QoS specification
      Copyright 2004-2006 Contributing Members of the UPnP Forum. All rights
reserved.
     Schema Location:
"http://www.upnp.org/schemas/qos/TrafficDescriptorsPerInterface-v2.xsd"
    </xs:documentation>
  </xs:annotation>
  <xs:element name="TrafficDescriptorsPerInterface"
type="TrafficDescriptorsPerInterfaceType"/>
  <xs:complexType name="TrafficDescriptorsPerInterfaceType">
    <xs:sequence>
      <xs:element name="TdInterfacePair" minOccurs="0" maxOccurs="unbounded">
        <xs:complexType>
          <xs:sequence>
            <xs:element name="TrafficDescriptor" type="td2:TrafficDescriptorType"/>
            <xs:element name="InterfaceId" type="xs:string" maxOccurs="unbounded"/>
          </xs:sequence>
        </xs:complexType>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

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2.10. TrafficDescriptor

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
    targetNamespace="http://www.upnp.org/schemas/TrafficDescriptorv1.xsd"
    elementFormDefault="qualified" id="TrafficDescriptorv1.xsd">
    <xs:annotation>
        <xs:documentation xml:lang="en">
         TrafficDescriptor.
         This is for version 2.0 of UPnP QoS specification
         Copyright 2004-2006 Contributing Members of the UPnP Forum.  All rights
reserved.
         Schema Location: "http://www.upnp.org/schemas/qos/TrafficDescriptor-v2.xsd"
        </xs:documentation>
    </xs:annotation>
    <xs:element name="TrafficDescriptor" type="TrafficDescriptorType"/>
    <xs:complexType name="TrafficDescriptorType">
        <xs:sequence>
            <xs:element name="TrafficHandle" type="xs:string" minOccurs="0"/>
            <xs:element name="TrafficId">
                <xs:complexType>
                    <xs:sequence>
                        <xs:element name="SourceAddress" type="IpAddress"/>
                        <xs:element name="SourcePort" type="IpPortNumber"
minOccurs="0"/>
                        <xs:element name="DestinationAddress" type="IpAddress"/>
                        <xs:element name="DestinationPort" type="IpPortNumber"
minOccurs="0"/>
                        <xs:element name="IpProtocol" type="IpProtocolType"
minOccurs="0"/>
                        <xs:element name="v2TrafficId" type="v2TrafficIdType"
minOccurs="0"/>
                        <!-- allow any element except those from target namespace -->
                        <xs:choice minOccurs="0" maxOccurs="unbounded">
                            <xs:any namespace="##other" processContents="lax"/>
                            <xs:any namespace="##local" processContents="lax"/>
                        </xs:choice>
                    </xs:sequence>
                </xs:complexType>
            </xs:element>
            <xs:element name="AvailableOrderedTspecList">
                <xs:complexType>
                    <xs:sequence>
                        <xs:element name="Tspec" type="TrafficSpecification"
maxOccurs="unbounded"/>
                    </xs:sequence>
                </xs:complexType>
            </xs:element>
            <xs:element name="ActiveTspecIndex" type="xs:integer" minOccurs="0"/>
            <xs:element name="TrafficImportanceNumber" type="TrafficImportance"
default="0" minOccurs="0"/>
            <xs:element name="QosBoundarySourceAddress" type="IpAddress"
minOccurs="0"/>
            <xs:element name="QosBoundaryDestinationAddress" type="IpAddress"
minOccurs="0"/>
            <xs:element name="MediaServerConnectionId" type="xs:integer"
minOccurs="0"/>
            <xs:element name="MediaRendererConnectionId" type="xs:integer"
minOccurs="0"/>
            <xs:element name="TrafficLeaseTime" type="xs:integer" minOccurs="0"/>
            <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
            <!-- allow any element except those from target namespace -->
            <xs:choice minOccurs="0" maxOccurs="unbounded">
                <xs:any namespace="##other" processContents="lax"/>
                <xs:any namespace="##local" processContents="lax"/>
            </xs:choice>
            <xs:element name="OptionalPolicyParams" minOccurs="0">
                <xs:complexType>
                    <xs:sequence>
                        <xs:element name="UserName" type="xs:string" minOccurs="0"/>
```

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```
                    <xs:element name="CpName" type="xs:string" minOccurs="0"/>
                    <xs:element name="VendorApplicationName" type="xs:string"
minOccurs="0"/>
                    <xs:element name="PortName" type="xs:string" minOccurs="0"/>
                    <xs:element name="ServiceProviderServiceName" type="xs:string"
minOccurs="0"/>
                    <xs:element name="v2OptionalParams" type="v2OptionalParamsType"
minOccurs="0"/>
                    <!-- allow any element except those from target namespace -->
                    <xs:choice minOccurs="0" maxOccurs="unbounded">
                       <xs:any namespace="##other" processContents="lax"/>
                       <xs:any namespace="##local" processContents="lax"/>
                    </xs:choice>
                 </xs:sequence>
              </xs:complexType>
           </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="TrafficSpecification">
        <xs:sequence>
           <xs:element name="TspecIndex" type="xs:integer"/>
           <xs:element name="AvTransportUri" type="xs:string" minOccurs="0"/>
           <xs:element name="AvTransportInstanceId" type="xs:integer" minOccurs="0"/>
           <xs:element name="TrafficClass" type="TrafficClass" minOccurs="0"/>
           <xs:element name="v2TrafficSpecification"
type="v2TrafficSpecificationType" minOccurs="0"/>
           <!-- allow any element except those from target namespace -->
           <xs:choice minOccurs="0" maxOccurs="unbounded">
              <xs:any namespace="##other" processContents="lax"/>
              <xs:any namespace="##local" processContents="lax"/>
           </xs:choice>
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="TrafficClass">
        <xs:restriction base="xs:string">
           <xs:enumeration value="NetworkControl"/>
           <xs:enumeration value="StreamingControl"/>
           <xs:enumeration value="Voice"/>
           <xs:enumeration value="AV"/>
           <xs:enumeration value="Data"/>
           <xs:enumeration value="Audio"/>
           <xs:enumeration value="Image"/>
           <xs:enumeration value="Gaming"/>
           <xs:enumeration value="Other"/>
           <xs:enumeration value="Background"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="TrafficImportance">
        <xs:restriction base="xs:nonNegativeInteger">
           <xs:minInclusive value="0"/>
           <xs:maxInclusive value="7"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="IpPortNumber">
        <xs:restriction base="xs:nonNegativeInteger">
           <xs:minInclusive value="0"/>
           <xs:maxInclusive value="65535"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="IpProtocolType">
        <xs:restriction base="xs:nonNegativeInteger">
           <xs:minInclusive value="0"/>
           <xs:maxInclusive value="255"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="IPv6Address">
        <xs:restriction base="xs:hexBinary">
           <xs:length value="32"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="IPv4Address">
        <xs:restriction base="xs:string">
           <xs:pattern value="(([1-9]?[0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-
5])\.){3}([1-9]?[0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])"/>
```

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```
        </xs:restriction>
    </xs:simpleType>
    <xs:simpleType name="PrefixLength">
        <xs:restriction base="xs:positiveInteger">
            <xs:minInclusive value="1"/>
            <xs:maxInclusive value="128"/>
        </xs:restriction>
    </xs:simpleType>
    <xs:complexType name="IpAddress">
        <xs:sequence>
            <xs:choice>
                <xs:element name="Ipv4" type="IPv4Address"/>
                <xs:element name="Ipv6" type="IPv6Address"/>
            </xs:choice>
            <xs:element name="PrefixLength" type="PrefixLength" minOccurs="0"/>
        </xs:sequence>
    </xs:complexType>
    <xs:complexType name="v2ExtensionType">
        <xs:sequence>
            <xs:element name="PolicyHolderId" type="xs:string" minOccurs="0"/>
            <xs:element name="PolicyLastModified" type="xs:string" minOccurs="0"/>
            <xs:element name="PolicyModifyingUserName" type="xs:string"
minOccurs="0"/>
            <xs:element name="PolicyHolderConfigUrl" type="xs:string" minOccurs="0"/>
            <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
            <!-- allow any element except those from (v2) target namespace -->
            <xs:choice minOccurs="0" maxOccurs="unbounded">
                <xs:any namespace="##other" processContents="lax"/>
                <xs:any namespace="##local" processContents="lax"/>
            </xs:choice>
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
    <xs:complexType name="v3ExtensionType">
        <xs:sequence>
            <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
    <xs:complexType name="v2TrafficIdType">
        <xs:sequence>
            <xs:element name="v3TrafficId" type="v3TrafficIdType" minOccurs="0"/>
            <!-- allow any element except those from (v2) target namespace -->
            <xs:choice minOccurs="0" maxOccurs="unbounded">
                <xs:any namespace="##other" processContents="lax"/>
                <xs:any namespace="##local" processContents="lax"/>
            </xs:choice>
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
    <xs:complexType name="v3TrafficIdType">
        <xs:sequence>
            <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
    <xs:complexType name="v2OptionalParamsType">
        <xs:sequence>
            <xs:element name="v3OptionalParams" type="v3OptionalParamsType"
minOccurs="0"/>
            <!-- allow any element except those from (v2) target namespace -->
            <xs:choice minOccurs="0" maxOccurs="unbounded">
                <xs:any namespace="##other" processContents="lax"/>
                <xs:any namespace="##local" processContents="lax"/>
            </xs:choice>
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
    <xs:complexType name="v3OptionalParamsType">
        <xs:sequence>
            <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
```

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```
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
   <xs:complexType name="v2TrafficSpecificationType">
      <xs:sequence>
         <xs:element name="v3TrafficSpecification"
type="v3TrafficSpecificationType" minOccurs="0"/>
         <!-- allow any element except those from (v2) target namespace -->
         <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:any namespace="##other" processContents="lax"/>
            <xs:any namespace="##local" processContents="lax"/>
         </xs:choice>
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
   <xs:complexType name="v3TrafficSpecificationType">
      <xs:sequence>
         <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
</xs:schema>
```

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2.11. TrafficPolicy

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns="http://www.upnp.org/schemas/TrafficPolicy.xsd"
  targetNamespace="http://www.upnp.org/schemas/TrafficPolicy.xsd"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified"
  id="TrafficPolicy.xsd">
   <xs:annotation>
      <xs:documentation>
           TrafficPolicy
           This is for version 2.0 of the UPnP QoS specification.
           Copyright 2004-2006 Contributing Members of the UPnP Forum. All rights
reserved.
           Schema Location: "http://www.upnp.org/schemas/qos/TrafficPolicy-v2.xsd"
   </xs:documentation>
   </xs:annotation>
   <xs:element name="TrafficPolicy" type="TrafficPolicyType"/>
   <xs:complexType name="TrafficPolicyType">
      <xs:sequence>
         <xs:element name="AdmissionPolicy">
            <xs:simpleType>
               <xs:restriction base="xs:string">
                  <xs:enumeration value="Disabled"/>
                  <xs:enumeration value="Enabled"/>
               </xs:restriction>
            </xs:simpleType>
         </xs:element>
         <xs:element name="TrafficImportanceNumber">
            <xs:simpleType>
               <xs:restriction base="xs:nonNegativeInteger">
                  <xs:maxInclusive value="7"/>
               </xs:restriction>
            </xs:simpleType>
         </xs:element>
         <xs:element name="UserImportanceNumber" minOccurs="0">
            <xs:simpleType>
               <xs:restriction base="xs:nonNegativeInteger">
                  <xs:maxInclusive value="255"/>
               </xs:restriction>
            </xs:simpleType>
         </xs:element>
         <xs:element name="v2" type="v2ExtensionType" minOccurs="0"/>
         <!-- allow any element except those from (v1) target namespace -->
         <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:any namespace="##other" processContents="lax"/>
            <xs:any namespace="##local" processContents="lax"/>
         </xs:choice>
      </xs:sequence>
   </xs:complexType>
   <xs:complexType name="v2ExtensionType">
      <xs:sequence>
         <xs:element name="PolicyHolderId" type="xs:string" minOccurs="0"/>
         <xs:element name="PolicyLastModified" type="xs:string" minOccurs="0"/>
         <xs:element name="PolicyModifyingUserName" type="xs:string"
minOccurs="0"/>
         <xs:element name="PolicyHolderConfigUrl" type="xs:string" minOccurs="0"/>
         <xs:element name="v3" type="v3ExtensionType" minOccurs="0"/>
         <!-- allow any element except those from (v2) target namespace -->
         <xs:choice minOccurs="0" maxOccurs="unbounded">
            <xs:any namespace="##other" processContents="lax"/>
            <xs:any namespace="##local" processContents="lax"/>
         </xs:choice>
      </xs:sequence>
      <xs:anyAttribute/>
   </xs:complexType>
   <xs:complexType name="v3ExtensionType">
      <xs:sequence>
         <xs:any namespace="##targetNamespace" processContents="lax"
maxOccurs="unbounded"/>
```

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```
        </xs:sequence>
        <xs:anyAttribute/>
    </xs:complexType>
</xs:schema>
```

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