

# Use Advanced Pricing to Access XML-Based Pricing Services

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# Why XML and Advanced Pricing?

- Real estate title insurance policy remittance, policy inventory tracking, and receivables management implementation
- Agent sells title policy at a “gross premium”
- Premium calculations are dictated by state agencies, and at a minimum must be registered with the state agency
  - Strict compliance requirements
  - Calculated versus reported tracking requirements

# Why XML and Advanced Pricing?

- Client has developed a web-based premium calculation engine
  - Web-based interactive interface
  - XML-based transaction processing interface
  - Utilized by many different applications within the client community
- Oracle Applications required to invoke web pricing engine for all premium calculations

# Web App User Interface

Owners	Lenders	Simultaneous	Endorsements	Client ID:	State:	Transaction Date:
				FAC	FL	08-17-2007
ID	Description					
00001	ALTA Owner's or Leasehold Policy					
00003	ALTA Owners Policy. Reissue rate is applicable					
00324	Owner Timeshare Policy					
Rates are effective from July 01 1999						
Policy ID : 00001				Counties : ALL		
Description : ALTA Owner's or Leasehold Policy.				Type : Owners		
Parameter Name	Description	Req'd Value				
COVERAGE_TYPE	Enter Policy Type	1				
OWNER_AMOUNT	Enter Owner Liability Amount:	\$ 0				
OWNER_POLICY_TYPE	Enter Owner Policy Type:	ALTA 1992 Owner's/Leasehold Own				
Run Calculation			Clear			

Transaction Types

- Parameters:
- State
  - Policy Date

Parameters

# Web App XML Interface

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml:stylesheet type="text/xsl" href="policyinfo.xsl"?>
<e:Envelope xmlns:e="http://schemas.xmlsoap.org/soap/envelope/" xmlns:d="http://www.w3.org/2001/XMLSchema"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns:wn0="http://systinet.com/xsd/schemaTypes/"
xmlns:wn1="http://systinet.com/wsd1/rf/" xmlns:wn2="http://systinet.com/wsd1/java/lang/">
  <e:Body>
    <wn0:ArrayOfRFPolicyInfo_Response i:type="wn1:ArrayOfRFPolicyInfo">
      <wn1:RFPolicyInfo i:type="wn1:RFPolicyInfo">
        <wn1:description i:type="d:string">ALTA Owner's or Leasehold Policy.</wn1:description>
        <wn1:parameters i:type="wn2:ArrayOfstring">
          <wn2:string i:type="d:string">COVERAGE_TYPE eq 1</wn2:string>
          <wn2:string i:type="d:string">OWNER_AMOUNT gt 0</wn2:string>
          <wn2:string i:type="d:string">OWNER_POLICY_TYPE in 1,3</wn2:string>
        </wn1:parameters>
        <wn1:policyID i:type="d:string">00001</wn1:policyID>
        <wn1:type i:type="d:string">Owners</wn1:type>
      </wn1:RFPolicyInfo>
      <wn1:RFPolicyInfo i:type="wn1:RFPolicyInfo">
        <wn1:description i:type="d:string">ALTA Owners Policy. Reissue rate is applicable. Requested
owner policy liability is higher than prior ALTA policy liability.</wn1:description>
        <wn1:parameters i:type="wn2:ArrayOfstring">
          <wn2:string i:type="d:string">COVERAGE_TYPE eq 1</wn2:string>
          <wn2:string i:type="d:string">OWNER_AMOUNT gt 0</wn2:string>
          <wn2:string i:type="d:string">OWNER_AMOUNT gt PRIOR_POLICY_AMOUNT</wn2:string>
          <wn2:string i:type="d:string">OWNER_POLICY_TYPE in 1,3</wn2:string>
          <wn2:string i:type="d:string">PRIOR_POLICY_AMOUNT gt 0</wn2:string>
          <wn2:string i:type="d:string">PRIOR_POLICY_COVERAGE eq 1</wn2:string>
        </wn1:parameters>
        <wn1:policyID i:type="d:string">00003</wn1:policyID>
        <wn1:type i:type="d:string">Owners</wn1:type>
      </wn1:RFPolicyInfo>
    </wn0:ArrayOfRFPolicyInfo_Response>
  </e:Body>
</e:Envelope>
```

# Solution Design

## Design Criteria

- Minimize amount of custom code
- Maximize use of Advanced Pricing features
- Design with on-going maintenance in mind

## Advanced Pricing Features

- Additional Pricing Attributes
- Pricing Formulas
- GET\_CUSTOM\_PRICE to the rescue!
- Price Lists

# Web App User Interface

Owners	Lenders	Simultaneous	Endorsements	Client ID: FAC	State: FL	Transaction Date: 08-17-2007
ID	Description					
00001	ALTA Owner's or Leasehold Policy					
00003	ALTA Owners Policy. Reissue rate is applicable					
00324	Owner Timeshare Policy					
<b>Rates are effective from July 01 1999</b>						
Policy ID : 00001				Counties : ALL		
Description : ALTA Owner's or Leasehold Policy.				Type : Owners		
Parameter Name	Description	Req'd Value				
COVERAGE_TYPE	Enter Policy Type	1				
OWNER_AMOUNT	Enter Owner Liability Amount:	\$ 0				
OWNER_POLICY_TYPE	Enter Owner Policy Type:	ALTA 1992 Owner's/Leasehold Own				
<input type="button" value="Run Calculation"/>			<input type="button" value="Clear"/>			

Transaction Types

- Parameters:
- State
  - Policy Date

Parameters

# Additional Pricing Attributes

- Define distinct Pricing Context to collect attributes
- Naming conventions:
  - Attribute Name = textual attribute description
  - Attribute Description = parameter name to pass in XML tags
  - Description used for parameter names due to length restrictions on “Code”
  - Attribute Code = description less underscores



# Additional Pricing Attributes

Context Setup - Advanced Pricing - FAT\_NRFC (FAT NRFC Attributes)

**Context**

Type	Code	Name	Description	Seeded	Enabled	
Pricing Context	FAT_NRFC	FAT NRFC Attributes	FAT NRFC Attributes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
				<input type="checkbox"/>	<input type="checkbox"/>	

**Attributes**

Code	Name	Description	Precedence	Application Name	
ZONE	Enter Zone:	ZONE	100	Advanced Pricing	PRIC
WRITTENPAYOFF	Enter Written Payoff Bala	WRITTEN_PAYOFF_BALANCE	100	Advanced Pricing	PRIC
VALUELANDAM	Enter Value of Land Sec	VALUE_LAND_AMOUNT	100	Advanced Pricing	PRIC
UNPAIDLOANAM	Enter Current Unpaid Loa	UNPAID_LOAN_AMOUNT	100	Advanced Pricing	PRIC
TXPOLICYTYPE	Policy Type Being Issued	TX_POLICY_TYPE	100	Advanced Pricing	PRIC
TXDISCOUNTTY	Texas Discount Type:	TX_DISCOUNT_TYPE	100	Advanced Pricing	PRIC

Restore Defaults    Value Sets

# Web App User Interface

Owners	Lenders	Simultaneous	Endorsements	Client ID: FAC	State: FL	Transaction Date: 08-17-2007
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OWNER_POLICY_TYPE	Enter Owner Policy Type:	ALTA 1992 Owner's/Leasehold Own				
<input type="button" value="Run Calculation"/>			<input type="button" value="Clear"/>			

Transaction Types

- Parameters:
- State
  - Policy Date

Parameters

# Pricing Formulas

- Pricing Formulas constructed to map to NRFC transactions (policy id's) and parameters
- Formula definition conventions
  - Formula Name = NRFC Policy ID
  - Actual formula is only “1”, a call to GET\_CUSTOM\_PRICE
  - Component 1 always GET\_CUSTOM\_PRICE
  - Components 2 – 999 represent transaction parameters
  - Components 1000 – 1002 used for additional information: State, FIPS Code, Type
- Additional Formula Line DFF defined to allow for state to state differences in parameters for a given transaction

# Pricing Formulas

Advanced Pricing - Pricing Formulas

Name:   Seeded

Description:

Effective Dates:  -

Formula:  [  ]

**Formula Lines**

Formula Lines

Formula Type	Step	Component	Pricing Attribute Conte:	Pricing Attribute	Valid States
Function	1	GET CUSTOM P			..
Pricing Attribute	2		FAT NRFC Attributes	Enter Owner Liability Amount:	..
Pricing Attribute	3		FAT NRFC Attributes	Enter Owner Policy Type:	..
Pricing Attribute	4		FAT NRFC Attributes	Enter Policy Type	..
Pricing Attribute	5		FAT NRFC Attributes	Enter Coverage Class of Owner's Policy:	AZ,MT,OR,UT,WA..
Pricing Attribute	6		FAT NRFC Attributes	First Time Buyer:	MA..
Pricing Attribute	7		FAT NRFC Attributes	Was the policy issued:	NY..
Pricing Attribute	8		FAT NRFC Attributes	Enter the Document Type:	WA..

Factors

# Pricing Formulas

Advanced Pricing - Pricing Formulas

Name:   Seeded

Description:

Effective Dates:  -

Formula:  [  ]

---

**Formula Lines**

Formula Lines

Formula Type	Step	Component	Pricing Attribute Conte:	Pricing Attribute	Valid States
Pricing Attribute	6		FAT NRFC Attributes	First Time Buyer:	MA..
Pricing Attribute	7		FAT NRFC Attributes	Was the policy issued:	NY..
Pricing Attribute	8		FAT NRFC Attributes	Enter the Document Type:	WA..
Pricing Attribute	9		FAT NRFC Attributes	Enter the Type of Property	WA..
Pricing Attribute	10		FAT NRFC Attributes	Enter Georgia Rate Group:	GA..
Pricing Attribute	1000		FAT NRFC Attributes	NRFC STATE	..
Pricing Attribute	1001		FAT NRFC Attributes	NRFC FIPS	..
Pricing Attribute	1002		FAT NRFC Attributes	NRFC TYPE	..

# GET\_CUSTOM\_PRICE

- Oracle provided function to which additional code may be added to facilitate calculations not possible within Advanced Pricing
  - Only invoked through the use of Pricing Formulas
  - Passed arguments:
    - Formula identifier
    - List price from Price List Line
    - Pricing Effective Date
    - PL/SQL table of evaluated Pricing Attributes
- Modify the package body for QP\_CUSTOM to format and execute the XML calls

# Price Lists

- Price Lists used to segregate different policies (items) by state of remittance
- Each price list line represents
  - Policy (Item Number)
  - Formula (NRFC Transaction ID)
  - Additional Pricing Attributes for
    - Specific types of transactions, e.g. new policy versus refinance
    - Other rules

# Price Lists

Advanced Pricing - Price Lists

Main | Other

Name:   Mobile Download  Active

Description:

Currency:  Round To:

Effective Dates:  -  Payment Terms:

Freight Terms:  Freight Carriers:

Comments:  [  ]

List Lines | Secondary Price List | Qualifiers

Price List Lines

Product	Product Attribute	Product Value	Dynamic Formula	UOM	Start Date	End Date	Pr
Item	Item Number	ER-524	00001	Ea			
Item	Item Number	1037.91-SE	00003	Ea			
Item	Item Number	1402.70.84	00003	Ea			
Item	Item Number	350-F	00003	Ea			
Item	Item Number	524	00003	Ea			

Price Breaks | Pricing Attributes



# Price Lists

The screenshot displays the Oracle Advanced Pricing - Price Lists interface. The main window is titled 'Advanced Pricing - Price Lists' and has two tabs: 'Main' and 'Other'. The 'Main' tab is active, showing fields for Name (NRFC-FL-OWNERS), Description, Currency (USD), Effective Dates, Freight Terms, and Comments. Below these fields are 'List Lines' and 'Secondary Price List' tabs. The 'Price List Lines' section contains a table with the following data:

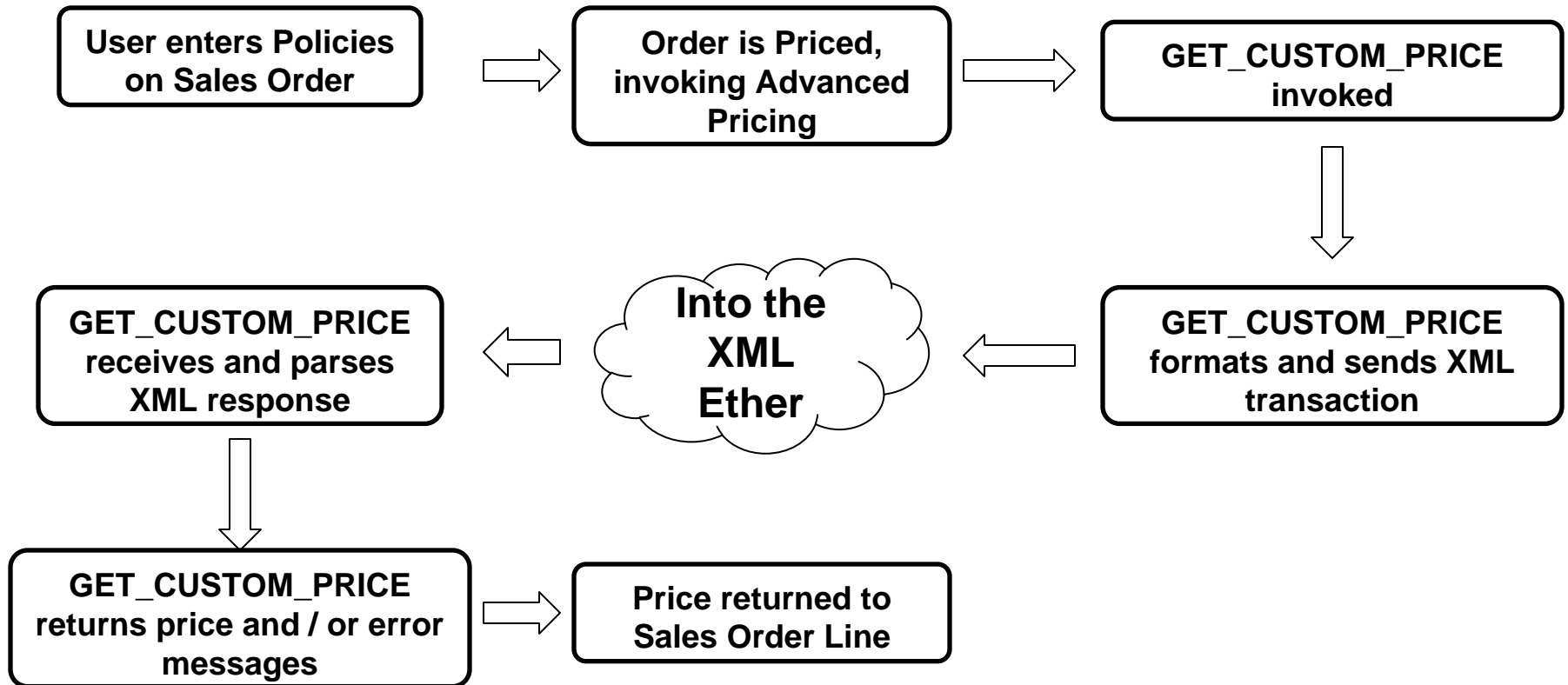
Product	Product Attribute	Product Value				
Item	Item Number	ER-524	00001			
Item	Item Number	1037.91-SE	00003			
Item	Item Number	1402.70.84	00003			
Item	Item Number	350-F	00003			
Item	Item Number	524	00003			

Overlaid on this is a 'Pricing Attributes' dialog box titled 'PL - Pricing Attributes'. It contains a table with the following data:

Produ	Product A	Proc	Pricing Context	Pricing Attribute	Op	Value Fm
Item	Item Num	1037	FAT Pricing A	Modifier Class	=	REISSUE

At the bottom of the main window, there are two buttons: 'Price Breaks' and 'Pricing Attributes'.

# Tying It All Together



# GET\_CUSTOM\_PRICE Logic

- When Pricing Formula is executed, GET\_CUSTOM\_PRICE is invoked
- Logic
  - Using Formula ID and State (component in Formula), loop through formula components for the given state
  - Construct the XML transaction
  - Send the XML transaction to the web service
  - Parse the return
  - Return the price to Advanced Pricing

# XML Envelope Construction

```

env:= '<?xml version="1.0" encoding="utf-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
env:= env || ' xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"';
env:= env || ' xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"';
env:= env || ' xmlns:xsd="http://www.w3.org/2001/XMLSchema"><SOAP-ENV:Body>';
env:= env || '<m0:getTitleFee xmlns:m0="http://tempuri.org/">';
env:= env || '<m0:requests><m0:RFRequest>';

--
-- Parameters selection based on Policy ID
-- Loop to get parameter values based on formula components and passed in attributes
--
for fcomp in formula_attributes loop
  for i in 1 .. p_req_line_attrs_tbl.count loop
    if b_first_pass then
      -- GENERATE CLIENT ID
      env:= env|| '<m0:ClientID>' || v_client_id || '</m0:ClientID>';      -- 6/20/07 client id based on OU
      -- GENERATE EFFECTIVE DATE
      env:= env|| '<m0:EffectiveDate>' || to_char(p_date, 'YYYY-MM-DD HH:MI:SS') || '</m0:EffectiveDate>';
      -- GENERATE PARAMETERS
      env:= env|| '<m0:Parameters>';
      -- set to False after first pass, to from a valid request
      b_first_pass:= false;
    end if;
    env:= env|| '<m0:RFKeyValuePair>';
    env:= env|| '<m0:Key>' || fcomp.user_description || '</m0:Key>';
    env:= env|| '<m0:Value>' || v_value || '</m0:Value>';
    env:= env|| '</m0:RFKeyValuePair>';
  end loop;
end loop;
-- End Parameters Selection
env:= env|| '</m0:Parameters>';
--GENERATE REQUEST ID
env:= env|| '<m0:RequestID>' || g_interface_id || '</m0:RequestID>';
-- GENERATE STATE
env:= env|| '<m0:State>' || v_state || '</m0:State>';
-- GENERATE FIPS Code
env:= env|| '<m0:County>' || v_fips || '</m0:County>';
-- GENERATE TYPE
env:= env|| '<m0:Type>' || v_type || '</m0:Type>';
env:= env || '</m0:RFRequest></m0:requests></m0:getTitleFee></SOAP-ENV:Body></SOAP-ENV:Envelope>';

```

# XML Development

- TOAD for PL/SQL development
- ALTOVA XMLSpy for Web service call testing and constructing valid XML for the web service
- SYS.XMLTYPE used to store XML
- SYS.UTL\_HTTP used to make the SOAP call to the WSDL
- APPS.XMLPARSER used to read XML in our case the WSDL for the web service
- APPS.XMLDOM used to create/update/read XML. We used to grab SOAP Address node and corresponding value

# Additional Configurations

- Profile option to point to production and test versions of the web service
- Interface debug table to capture outbound envelope and inbound response

# Interface Debug Samples

## Generated Envelope:

```
<?xml version="1.0" encoding="utf-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"><SOAP-ENV:Body><m0:getTitleFee
xmlns:m0="http://tempuri.org/"><m0:requests><m0:RFRequest><m0:ClientID>1</m0:ClientID><m0:EffectiveDate>2007-08-06
12:00:00</m0:EffectiveDate><m0:Parameters><m0:RFKeyValuePair><m0:Key>ENDORSEMENT</m0:Key><m0:Value>EN_ALTA8.1</m0:Value></m0:
RFKeyValuePair></m0:Parameters><m0:RequestID>2419361</m0:RequestID><m0:State>FL</m0:State><m0:County>12015</m0:County><m0:Typ
e>endorsement</m0:Type></m0:RFRequest></m0:requests></m0:getTitleFee</SOAP-ENV:Body></SOAP-ENV:Envelope>
```

## Response:

```
<?xml version="1.0" encoding="utf-8"?><soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"><soap:Body><getTitleFeeResponse
xmlns="http://tempuri.org/"><getTitleFeeResult><RFResponse><RequestID>2419361</RequestID><ResponseID>1186580355776</ResponseI
D><Disclaimer>NA</Disclaimer><Type>endorsement</Type><Replies><RFReply><ID>EN_ALTA8.1</ID><Name>Endorsement
Fee</Name><Value>25.00</Value></RFReply></Replies></RFResponse></getTitleFeeResult></getTitleFeeResponse></soap:Body></soap:E
nvelope>
```

## Error Response:

```
<?xml version="1.0" encoding="UTF-8"?>
<e:Envelope xmlns:e="http://schemas.xmlsoap.org/soap/envelope/"><ns2:Body
xmlns:ns2="http://schemas.xmlsoap.org/soap/envelope/"><ns1:Fault
xmlns:ns1="http://schemas.xmlsoap.org/soap/envelope/"><faultcode
xmlns:ns0="http://schemas.xmlsoap.org/soap/envelope/">ns0:Server</faultcode><faultstring>java.lang.Exception: Error 103: An
invalid combination of parameters was sent. Please examine the state document to confirm your selection was valid. Here is
the rate request with the problem:
```

```
[BEGIN: RFRequest Contents]
[ClientID=1]
[Type=policy]
[RequestNo=56]
[State=NY]
[County=36059]
[EffectiveDate=2006-05-16 12:00:00]
[Parameters:]
  [Key=OWNERS_COVERAGE_CLASS] [Value=1]
  [Key=LENDER_AMOUNT] [Value=310000]
  [Key=LENDERS_POLICY_TYPE] [Value=6]
  [Key=OWNER_AMOUNT] [Value=310000]
  [Key=OWNER_POLICY_TYPE] [Value=1]
  [Key=COVERAGE_TYPE] [Value=3]
[END: RFRequest Contents]
</faultstring>
```

# Lessons Learned

- Effort
  - Development of GET\_CUSTOM\_PRICE was the easy part, about 4-5 weeks.
  - The pain is in the mapping exercise between the Order Management / Pricing data and the user Pricing Engine
- GET\_CUSTOM\_PRICE
  - Component must be numeric
- XML Issues - connectivity
  - Don't underestimate the time required to get the Oracle Apps (DB at 9i or newer) boxes to be able to communicate to the Web Service
  - Corporate procedures added two weeks to our timing



# Lessons Learned

- XML Issues
  - Migration from 9i DB to 10G DB caused interface to fail
  - 10G DB requires the explicit use of namespaces in the XML
- Performance
  - In general, round-trip performance is sub-second.
  - HOWEVER ... make sure EVERYONE understands that the Oracle folks have ZERO control over the performance of the web service itself.

# Thank You!

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