



PureConnect®

2021 R4

Generated:

04-November-2021

Content last updated:

14-June-2019

See [Change Log](#) for summary of changes.



CIC VoiceXML Integration with Nuance Dialog Modules Versions 6.1/6.1.3

Development Application Note

Abstract

This document describes updates required to allow Nuance Dialog Modules versions 6.1 and 6.1.3 to work with the CIC VoiceXML Interpreter.

For the latest version of this document, see the PureConnect Documentation Library at: <http://help.genesys.com/pureconnect>.

For copyright and trademark information, see https://help.genesys.com/pureconnect/desktop/copyright_and_trademark_information.htm.

Table of Contents

Table of Contents	2
Introduction to VoiceXML Integration with Nuance Dialog Modules Version 6.1/6.3	4
VoiceXML changes	5
BladewareVXML changes	6
Nuance NDM changes	7
Incident ST-201204250331	7
Incident ST-201205110231	7
Incident ST-201207180221	7
ndm-core 6.1.3 changes	8
Grammars	8
inin_dtmf_boolean.grxml	9
inin_dtmf_ccexpdate.grxml	9
inin_dtmf_creditcard.grxml	11
inin_dtmf_currency.grxml	13
inin_dtmf_digits.grxml	14
inin_dtmf_keypad.grxml	16
inin_dtmf_number.grxml	16
inin_dtmf_phone.grxml	17
inin_dtmf_socialsecurity.grxml	20
inin_dtmf_time.grxml	20
inin_dtmf_zipcode.grxml	23
Other files	24
Relative files in grammars	24
ndm-service-config.xml	25
ndmStandaloneWrapper.jsp	26
*.xml	26
Recommended VoiceXML parameter settings	28
Nuance NDM Changes	29
Official patch against NSRD00088654(for NDM61-core 6.1.3 only)	29
Incidents 201310110341 and 201310110251	29
Incident 201311270181	29
ndm61-name changes	30
DTMF Grammars	30
.\ndm61-name\en-US\grammar\nr9.0 directory for Nuance Recognizer 9 or the .\ndm61-name\en-US\grammar\nr10.0 directory for Nuance Recognizer 10	30
name.properties, all.properties	30
web.xml	31
Ndm61-address changes	32
DTMF Grammars	32
.\ndm61-address\en-US\grammar\nr9.0 directory or .\ndm61-address\en-US\grammar\nr10.0 directory	32
.\ndm61-address\en-US\grammar\nr9.0\address directory or .\ndm61-address\en-US\grammar\nr10.0\address directory	32
address.properties, all.properties	34
web.xml	34
spelling-dm changes	35
DTMF Grammars	35
.\spelling-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\spelling-dm\en-US\grammars\framework\ndm\nr10.0 directory	35
Other files	35
Relative files in grammars	35
Dialog files	36
model.es	37
All.xml, Spelling.xml, YesNo.xml	37
web.xml	38
\configuration/application/application-config.xml, \configuration/application/ndm/ndm-service-config.xml core, configuration/framework/ndm/ndm-service-config.xml.template	38
email-dm changes	39
DTMF Grammars	39
.\email-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\email-dm\en-US\grammars\framework\ndm\nr10.0 Directory	39
Other files	39
Relative files in grammars	39
Dialog files	40
EmailDMSubdialog.jsp	41

model.es	42
All.xml, Email.xml, YesNo.xml	42
web.xml	43
\configuration/application/application-config.xml, \configuration/application/ndm/ndm-service-config.xml core, configuration/framework/ndm/ndm-service-config.xml.template	43
Recommended VoiceXML parameter settings	44
Change Log	45

Introduction to VoiceXML Integration with Nuance Dialog Modules Version 6.1/6.3

The *CIC VoiceXML Integration with Nuance Dialog Modules Versions 6.1/6.1.3 Developer's Application Note* represents notes from Genesys PureConnect Voice XML developers and describes the changes that we need to make to allow Nuance's NDM's (version 6.1 and 6.1.3) to work with our VoiceXML interpreter. These changes may include changes to our VoiceXML code, changes to BladewareVXML's libraries, and changes to the grammars (and other files) that Nuance supplies with their NDM's.

VoiceXML changes

The following changes to our VoiceXML code are/were necessary to allow our VoiceXML interpreter to successfully utilize the Nuance NDM's.

- Vxml leaking memory - investigate (CL#797590) (SCR: IC-107158)
- VoiceXML needs to improve the cleanup of cache files. (CL#797601) (SCR: IC-108807)
- VXi attempting to delete memory it doesn't own - investigate (CL#883627) (SCR: IC-106528)
- We don't cache large grammar files (CL#761091) (SCR: IC-105752)
- When running more than 155 concurrent NDM calls on a single vxml interpreter the vxicache seems to cause failures (CL#883627) (SCR: IC-112148)
- When using Interaction Speech Recognition, setting bargains to false in vXML still allow utterances to trigger recognitions during prompts (CL#921260) (SCR: IC-105322)
- vXML interpreter server crashes during NDM longevity test (CL#721656) (SCR: IC-101087)
- vxml server intermittently crashing or throwing dumps (SCR: IC-112435)
- The VoiceXML interpreter can get a hung session with high CPU usage when attempting to access an HTTP file. (CL#938111) (SCR: IC-117224)
- Files in the VXMLHostCache on the CIC server can be deleted before they should be. (CL#909783) (SCR: IC-115456)
- There is a known bug in ACE, wherein a mutex is not locked in the ACE_Future_Rep<T>::attach() method. (CL#883504) (SCR: IONSYSTEM-117)
- Vxml leaking memory - investigate (CL#804947) (SCR: IC-107158)
- VoiceXML's HTTP caching ignores ETags and does not do conditional GETs. (CL#883626) (SCR: IC-106292)
- Occasionally, a cache file in our VoiceXML resource cache will already be open and unable to be written. (CL#684624) (SCR: IC-98711)

BladewareVXML changes

Testing with the NDM's has revealed some shortcomings in the BladewareVXML library.

- The BladewareVXML library does not currently allow the <subdialog> element to be called once it's in the final processing state (the call has disconnected). This change will allow <subdialog> to be processed in the final processing state, as long as no "forbidden" elements are called. We've provided a fix for this.(CL#503065) (SCR: IC-86543)
- Files are being 'cleaned up' from the cache before they expire (CL#883619) (SCR: IC-109396)

Nuance NDM changes

Nuance has supplied a couple of patches that need to be installed.

Incident ST-201204250331

Nuance supplied a patch in response to incident ST-201204250331. This is one of the changes made in the file `ndmStandaloneWrapper.jsp`. This fix was incorporated into NDM-core 6.1.2.

Incident ST-201205110231

Nuance supplied a patch in response to incident ST-201205110231 (“Illegal grammar URI when trying to use the ndm-core SecureAnswerPhrase dialog.”). This contained a replacement `ndm.jar` file. The patch was actually supplied in an attempt to fix another issue, but it contained the fix for this problem. This fix was incorporated into NDM-core 6.1.2.

Incident ST-201207180221

We wrote up incident ST-201207180221 (“Grammar problem sometimes occurs when using ndm-core Digits dialog.”) when we noticed the following problem:

For the digits module, when a length is originally specified and a confirmation prompt is issued (and replied to with “no”), then a couple of grammars are loaded with conflicting parameters.

While Nuance has not provided a fix for this, they did suggest a workaround.

ndm-core 6.1.3 changes

For information about the changes to some of the files from the Nuance ndm-core 6.1.3 offering, see the following:

- [Grammars](#)
- [Other files](#)

Grammars

The grammar files list in this section (from the .\ndm-core\en-US\grammars\framework\ndm\nr9.0 directory for Nuance Recognizer 9 and the .\ndm-core\en-US\grammars\framework\ndm\nr10.0 directory for Nuance Recognizer 10) had to be tweaked for SRGS (SISR) compatibility.

For information about these changes, see the following:

inin_dtmf_boolean.grxml	inin_dtmf_digits.grxml	inin_dtmf_socialsecurity.grxml
inin_dtmf_ccexpdate.grxml	inin_dtmf_keypad.grxml	inin_dtmf_time.grxml
inin_dtmf_creditcard.grxml	inin_dtmf_number.grxml	inin_dtmf_zipcode.grxml
inin_dtmf_currency.grxml	inin_dtmf_phone.grxml	

inin_dtmf_boolean.grxml

This file is a modified version of the original dtmf_boolean.xml file.

- Remove the <!DOCTYPE> line.
- <ruleref uri="#YESNO" tag="<pre>var dtmf_yes = SWI_vars.dtmfyes ? SWI_vars.dtmfyes : 1;
var dtmf_no = SWI_vars.dtmfno ? SWI_vars.dtmfno : 2;
SWI_meaning=YESNO.SWI_literal.replace(/ /g, '');
if (SWI_meaning == dtmf_yes) {
SWI_meaning = true;
}else if (SWI_meaning == dtmf_no){
SWI_meaning = false;
}else{
SWI_disallow=1;
}
dm_root=SWI_meaning;
"/>
-->
<ruleref uri="#YESNO"/>
<tag>
var dtmf_yes = SWI_vars.dtmfyes ? SWI_vars.dtmfyes : 1;
var dtmf_no = SWI_vars.dtmfno ? SWI_vars.dtmfno : 2;
SWI_meaning=rules.YESNO.replace(/ /g, '');
if (SWI_meaning == dtmf_yes) {
SWI_meaning = true;
}else if (SWI_meaning == dtmf_no){
SWI_meaning = false;
}else{
SWI_disallow=1;
}
out.MEANING=SWI_meaning;
</tag>
<item>*</item>--> <item><token>*</token></item>
<item>#</item>--> <item><token>#</token></item>

inin_dtmf_ccexpdate.grxml

This file is a modified version of the original dtmf_ccexpdate.xml file.

- Remove the <!DOCTYPE> line.
 - tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
 - <ruleref uri="#A" tag="<pre>if (!A.C) A.C = '??';
SWI_meaning = A.C + A.Y + A.M;
var today = new Date();
var default_ref = '' + today.getFullYear();
-

```

var tmp = today.getMonth() + 1;
if(tmp < 10) {default_ref += '0';}
default_ref += tmp;
var tmp = today.getDate();
if(tmp < 10) {default_ref += '0';}
var ref_date = SWI_vars.referencedate ? SWI_vars.referencedate : default_ref;
var ref_ym = ref_date.substr(2,4);
var ref_century = parseInt(ref_date.substr (0,2), 10);
var ref_year = parseInt(ref_date.substr(2,2), 10);
var ref_month = parseInt(ref_date.substr(4,2), 10);
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : 84;
maxa = parseInt (maxa, 10);
if (maxa < 0) SWI_disallow = 1;
var century = SWI_meaning.substr(0,2);
var ym = SWI_meaning.substr (2,4);
if (century == '??') {
if (ref_ym > ym) century = ref_century+1;
else century = ref_century;
SWI_meaning = century.toString() + SWI_meaning.substr(2,6);
}
if (SWI_meaning < ref_date) SWI_disallow=1;
var ref_num_month = (parseInt(ref_century, 10)-20)*1200 +
parseInt(ref_year, 10)*12 +
parseInt(ref_month, 10) - 1;
var year = parseInt(SWI_meaning.substr(2,2), 10);
var month = parseInt(SWI_meaning.substr(4,2), 10);
var num_month = (century-20)*1200 + year*12 +
month - 1;
if (num_month > (ref_num_month + maxa) ) SWI_disallow=1;
dm_root=SWI_meaning;
"/>
-->
<ruleref uri="#A"/>
<tag>
var tmp = rules.A.C;
if (!tmp) tmp = '??'; else {tmp;}
SWI_meaning = tmp + rules.A.Y + rules.A.M;
var today = new Date();
var default_ref = '' + today.getFullYear();
var tmp = today.getMonth() + 1;
if(tmp < 10) {default_ref += '0';} else {tmp;}
default_ref += tmp;
var tmp = today.getDate();
if(tmp < 10) {default_ref += '0';} else {tmp;}

```

```

var ref_date = SWI_vars.referencedate ? SWI_vars.referencedate : default_ref;
var ref_ym = ref_date.substr(2,4);
var ref_century = parseInt(ref_date.substr (0,2), 10);
var ref_year = parseInt(ref_date.substr(2,2), 10);
var ref_month = parseInt(ref_date.substr(4,2), 10);
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : 84;
maxa = parseInt (maxa, 10);
if (maxa &lt; 0) SWI_disallow = 1; else {tmp;}
var century = SWI_meaning.substr(0,2);
var ym = SWI_meaning.substr (2,4);
if (century == '??') {
if (ref_ym &gt; ym) century = ref_century+1;
else century = ref_century;
SWI_meaning = century.toString() + SWI_meaning.substr(2,6);
} else {tmp;}
if (SWI_meaning &lt; ref_date) SWI_disallow=1; else {tmp;}
var ref_num_month = (parseInt(ref_century, 10)-20)*1200 +
parseInt(ref_year, 10)*12 +
parseInt(ref_month, 10) - 1;
var year = parseInt(SWI_meaning.substr(2,2), 10);
var month = parseInt(SWI_meaning.substr(4,2), 10);
var num_month = (century-20)*1200 + year*12 +
month - 1;
if (num_month &gt; (ref_num_month + maxa) ) SWI_disallow=1; else {tmp;}
out.MEANING=SWI_meaning;
</tag>

```

- <count number="optional"> --> <item repeat="0-1">
- </count> --> </item>

inin_dtmf_creditcard.grxml

This file is a modified version of the original dtmf_creditcard.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
- <ruleref uri="#CREDITCARD"tag="

```

SWI_meaning = CREDITCARD.SWI_literal.replace(/[ ]+/g, '');
var mask = [ 0, 2, 4, 6, 8, 1, 3, 5, 7, 9 ];
var sum = 0;
var double_the_value = 0; /* start with check digit */
/* move from end to start */
var i;
var add;
var allowed;
for (i=SWI_meaning.length - 1;i &gt;= 0; i--) {

```

```

add = parseInt(SWI_meaning[i], 10);/* get value at index i */
sum += double_the_value ? parseInt(mask[add], 10) : add;/* increase sum */
double_the_value = !double_the_value;
}
if (sum % 10 != 0) SWI_disallow = 1;
CARDTYPE=CREDITCARD.CARDTYPE;
if (CARDTYPE == 'private' &&&
(SWI_meaning.match (/^4/) ||
SWI_meaning.match (/^5/) ||
SWI_meaning.match (/^34/) ||
SWI_meaning.match (/^37/) ||
SWI_meaning.match (/^30/) ||
SWI_meaning.match (/^38/) ||
SWI_meaning.match (/^36/) ||
SWI_meaning.match (/^6011/))) SWI_disallow=1;
allowed = SWI_vars.typesallowed ?
SWI_vars.typesallowed.toLowerCase() :
'visa+mastercard+amex+dinersclub+discover+private';
if (!allowed ||
allowed.indexOf (CARDTYPE) == -1) SWI_disallow=1;
dm_root=SWI_meaning;
    "/>
    -->
    <ruleref uri="#CREDITCARD"/>
    <tag>
    SWI_meaning = rules.CREDITCARD.V.replace(/[ ]+/g, '');
    var mask = [ 0, 2, 4, 6, 8, 1, 3, 5, 7, 9 ];
    var sum = 0;
    var double_the_value = 0;/* start with check digit */
    /* move from end to start */
    var i;
    var add;
    var allowed;
    for (i=SWI_meaning.length - 1;i >= 0; i -= 1) {
    add = parseInt(SWI_meaning[i], 10);/* get value at index i */
    sum += double_the_value ? parseInt(mask[add], 10) : add;/* increase sum */
    double_the_value = !double_the_value;
    }
    if (sum % 10 != 0) SWI_disallow = 1;
    out.CARDTYPE=rules.CREDITCARD.CARDTYPE;
    if (out.CARDTYPE == 'private' &&&
    (SWI_meaning.match (/^4/) ||
    SWI_meaning.match (/^5/) ||
    SWI_meaning.match (/^34/) ||

```

```

SWI_meaning.match (/^37/) ||
SWI_meaning.match (/^30/) ||
SWI_meaning.match (/^38/) ||
SWI_meaning.match (/^36/) ||
SWI_meaning.match (/^6011/)) SWI_disallow=1;
allowed = SWI_vars.typesallowed ?
SWI_vars.typesallowed.toLowerCase() :
'visa+mastercard+amex+dinersclub+discover+private';
if (!allowed ||
allowed.indexOf (out.CARDTYPE) == -1) SWI_disallow=1;
out.MEANING=SWI_meaning;
</tag>

```

- (several times):

```
<count number="optional"> --> <item repeat="0-1">
```

- (several times):

```
</count> --> </item>
```

inin_dtmf_currency.grxml

This file is a modified version of the original dtmf_currency.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
- <ruleref uri="#ROOT" tag="

```

SWI_meaning = ROOT.SWI_literal.replace(/[ ]+/g, '');
SWI_meaning = SWI_meaning.replace(/\*/g, '.');
var both = SWI_meaning.split ('.');
if (both.length < 2) SWI_meaning += '.00';
else if (both.length == 2 && both[1].length == 1) SWI_meaning += '0';
if (SWI_meaning.substr(0,1) == '&quot;.&quot;' ||
SWI_meaning.length == 0)SWI_meaning = '0' + SWI_meaning;
var numeric = parseFloat (SWI_meaning);
var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0';
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '999999.99';
mina = parseFloat(mina);
maxa = parseFloat(maxa);
if (mina > maxa) SWI_disallow = 1;
var grana = parseFloat(SWI_vars.granularityallowed);
if (numeric < mina || numeric > maxa||
(grana && Math.round(100*numeric) % Math.round(100 * grana) != 0) )
SWI_disallow=1;
dm_root=SWI_meaning;

```

```
"/>
```

```
-->
```

```
<ruleref uri="#ROOT"/>
```

```

<tag>
SWI_meaning = rules.ROOT.replace(/[ ]+/g, '');
SWI_meaning = SWI_meaning.replace(/\*/g, '.');
var both = SWI_meaning.split ('.');
var decimal = both[1];
if (both.length &lt; 2) SWI_meaning += '.00';
else if (both.length == 2 && decimal.length == 1) SWI_meaning += '0';
if (SWI_meaning.substr(0,1) == &quot;.&quot; ||
SWI_meaning.length == 0)SWI_meaning = '0' + SWI_meaning;
var numeric = parseFloat (SWI_meaning);
var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0';
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '999999.99';
mina = parseFloat(mina);
maxa = parseFloat(maxa);
if (mina &gt; maxa) SWI_disallow = 1;
var grana = parseFloat(SWI_vars.granularityallowed);
if (numeric &lt; mina || numeric &gt; maxa||
(grana && Math.round(100*numeric) % Math.round(100 * grana) != 0) )
SWI_disallow=1;
out.MEANING=SWI_meaning;
</tag>

```

- (many times):

```
<count number="optional"> --> <item repeat="0-1">
```

- (many times):

```
</count> --> </item>
```

- (several times):

```
* --> <token>*</token>
```

inin_dtmf_digits.grxml

This file is a modified version of the original dtmf_digits.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantic/1.0" --> tag-format="semantic/1.0"
- <ruleref uri="#DIGIT_STRING"tag = "

```

SWI_meaning=DIGIT_STRING.SWI_literal.replace(/ /g, '');
var min_len = SWI_vars.minlength ? parseInt(SWI_vars.minlength, 10) : 1;
var max_len = SWI_vars.maxlength ? parseInt(SWI_vars.maxlength, 10) : 20;
var len = SWI_meaning.length;
if (len &gt; max_len || len &lt; min_len) SWI_disallow=1;
if (SWI_vars.length) {
var disallow = 1;
var allowed_arr = SWI_vars.length.split ('+');
for (i=0; i &lt; allowed_arr.length; i++) {

```

```

if (len == parseInt(allowed_arr[i], 10)) {
disallow = 0;
break;
}
}
SWI_disallow = disallow;
}
dm_root=SWI_meaning;
"/>
    -->
<ruleref uri="#DIGIT_STRING" />
    <tag>
SWI_meaning=rules.DIGIT_STRING.replace(/ /g, '');
var min_len = SWI_vars.minlength ? parseInt(SWI_vars.minlength, 10) : 1;
var max_len = SWI_vars.maxlength ? parseInt(SWI_vars.maxlength, 10) : 20;
var len = SWI_meaning.length;
if (len > max_len || len < min_len) SWI_disallow=1;
if (SWI_vars.length) {
var disallow = 1;
var allowed_arr = SWI_vars.length.split ('+');
for (i=0; i < allowed_arr.length; i+=1) {
if (len == parseInt(allowed_arr[i], 10)) {
disallow = 0;
break;
}
} //end for
SWI_disallow = disallow;
}
out.MEANING=SWI_meaning;
</tag>
    • <count number="1+"> --> <item repeat="1-">
    • </count> --> </item>

```

inin_dtmf_keypad.grxml

This file is a modified version of the original dtmf_keypad.xml file.

- Remove the <!DOCTYPE> line.
- ```
<ruleref uri="#KEYPAD_STRING" tag = `
 SWI_meaning=KEYPAD_STRING.SWI_literal.replace(/ /g, '');
 dm_root=SWI_meaning;"/>
-->
<ruleref uri="#KEYPAD_STRING"/>
 <tag>
 SWI_meaning=rules.KEYPAD_STRING.replace(/ /g, '');
 out.MEANING=SWI_meaning;
 </tag>
```
- ```
<count number="1+"> --> <item repeat="1-">
```
- ```
</count> --> </item>
```
- ```
<item>*</item>--> <item><token>*</token></item>
```
- ```
<item>#</item>--> <item><token>#</token></item>
```

---

## inin\_dtmf\_number.grxml

This file is a modified version of the original dtmf\_number.xml file.

- Remove the <!DOCTYPE> line.
- ```
tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
```
- ```
<ruleref uri="#ROOT" tag="`
 SWI_meaning = ROOT.SWI_literal.replace(/[]+/g, '');
 SWI_meaning = SWI_meaning.replace(/*/g, '.');
 if (SWI_meaning.substr(0,1) == "." ||
 SWI_meaning.length == 0)SWI_meaning = '0' + SWI_meaning;
 var numeric = parseFloat (SWI_meaning);
 var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0';
 var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '999999.99';
 var max_dec = SWI_vars.maxdecimal ? SWI_vars.maxdecimal : '2';
 mina = parseFloat(mina);
 maxa = parseFloat(maxa);
 var grana = parseInt(SWI_vars.granularityallowed, 10);
 max_dec = parseInt (max_dec, 10);
 var num_and_dec = SWI_meaning.split('.');
 if (num_and_dec.length == 2 &&&
 num_and_dec[1].length > max_dec) SWI_disallow=1;
 if (numeric < mina || numeric > maxa ||
 (grana &&& numeric % grana != 0))
 SWI_disallow=1;
 dm_root=SWI_meaning;
`"/>
-->
```



```

<ruleref uri="#ROOT"/>
<tag>
SWI_meaning = rules.ROOT.replace(/[]+/g, '');
SWI_meaning = SWI_meaning.replace(/*/g, '.');
if (SWI_meaning.substr(0,1) == '"."' ||
SWI_meaning.length == 0)SWI_meaning = '0' + SWI_meaning;
var numeric = parseFloat (SWI_meaning);
var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0';
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '999999.99';
var max_dec = SWI_vars.maxdecimal ? SWI_vars.maxdecimal : '2';
mina = parseFloat(mina);
maxa = parseFloat(maxa);
var grana = parseInt(SWI_vars.granularityallowed, 10);
max_dec = parseInt (max_dec, 10);
var num_and_dec = SWI_meaning.split('.');
if (num_and_dec.length == 2 &&&
num_and_dec[1].length > max_dec) SWI_disallow=1;
if (numeric < mina || numeric > maxa ||
(grana &&& numeric % grana != 0))
SWI_disallow=1;
out.MEANING=SWI_meaning;
</tag>

```

- (many times):

<count number="optional"> à

<item repeat="0-1">

- (many times):

</count> à

</item>

- (several times):

\* -> <token>\*</token>

## inin\_dtmf\_phone.grxml

This file is a modified version of the original dtmf\_phone.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
- <ruleref uri="#DIGIT\_STRING" tag="

```

SWI_meaning=DIGIT_STRING.SWI_literal.replace(/ /g, '');
SWI_meaning=SWI_meaning.replace (/*/, 'x');
SWI_meaning=SWI_meaning.replace (/^1/, '');
var num_and_ext=SWI_meaning.split ('x');
if (num_and_ext.length == 2) {
var ext = parseInt (num_and_ext[1], 10);
var ext_min = SWI_vars.minextension ? SWI_vars.minextension : 1;
var ext_max = SWI_vars.maxextension ? SWI_vars.maxextension : 9999;

```

```

 if (ext && (ext < ext_min || ext > ext_max))
 SWI_disallow=1;
 }
 dm_root=SWI_meaning;
"/>
-->
<ruleref uri="#DIGIT_STRING"/>
<tag>
 SWI_meaning=rules.DIGIT_STRING.replace(/ /g, '');
 SWI_meaning=SWI_meaning.replace('#',''); // Line added for testing
 SWI_meaning=SWI_meaning.replace (/\/, 'x');
 SWI_meaning=SWI_meaning.replace (/^1/, '');
 var num_and_ext=SWI_meaning.split ('x');
 if (num_and_ext.length == 2) {
 var ext = parseInt (num_and_ext[1], 10);
 var ext_min = SWI_vars.minextension ? SWI_vars.minextension : 1;
 var ext_max = SWI_vars.maxextension ? SWI_vars.maxextension : 9999;
 if (ext && (ext < ext_min || ext > ext_max))
 SWI_disallow=1;
 }
 out.MEANING=SWI_meaning;
</tag>

```

- change:

```
<count number="optional">1</count>
```

```
<count number="optional">
```

```
 to:
```

```
 <item repeat="0-1">1</item>
```

```
 <item repeat="0-1">
```

- </count> --> </item>

- change:

```
<count number="optional">
```

```
<item>*</item>
```

```
<ruleref uri="#DIGIT"/>
```

```
<count number="optional">
```

```
<ruleref uri="#DIGIT"/>
```

```
<count number="optional">
```

```
<ruleref uri="#DIGIT"/>
```

```
<count number="optional">
```

```
<ruleref uri="#DIGIT"/>
```

```
</count>
```

```
</count>
```

```
</count>
```

```
</count>
```

to:

```
<item repeat="0-1">
<item><token>*</token></item>
<ruleref uri="#DIGIT"/>
<item repeat="0-3">
<ruleref uri="#DIGIT"/>
</item>
</item>
```

---

## inin\_dtmf\_socialsecurity.grxml

This file is a modified version of the original dtmf\_socialsecurity.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
- <ruleref uri="#SSN" tag="

```
SWI_meaning = SSN.SWI_literal.replace(/[]+/g, '');
/* Based on some SSA documentation */
/* area (first three) range from 001 to 768 with several gaps. */
/* No guarantee that these gaps will not be filledor */
/* that numbers won't continue to be added */
/* group cannot be 00 */
/* serial cannot be 0000 */
var area = parseInt (SWI_meaning.substr(0,3), 10);
var group = SWI_meaning.substr (3,2);
var serial = SWI_meaning.substr (5,4);
if (group == '00') SWI_disallow=1;
if (serial == '0000') SWI_disallow=1;
if (area == 0 || area >= 800) SWI_disallow = 1;
dm_root=SWI_meaning;
"/>
-->
<ruleref uri="#SSN"/>
<tag>
SWI_meaning = rules.SSN.replace(/[]+/g, '');
/* Based on some SSA documentation */
/* area (first three) range from 001 to 768 with several gaps. */
/* No guarantee that these gaps will not be filledor */
/* that numbers won't continue to be added */
/* group cannot be 00 */
/* serial cannot be 0000 */
var area = parseInt (SWI_meaning.substr(0,3), 10);
var group = SWI_meaning.substr (3,2);
var serial = SWI_meaning.substr (5,4);
if (group == '00') SWI_disallow=1;
if (serial == '0000') SWI_disallow=1;
if (area == 0 || area >= 800) SWI_disallow = 1;
out.MEANING=SWI_meaning;
</tag>
```

---

## inin\_dtmf\_time.grxml

This file is a modified version of the original dtmf\_time.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"

```

 • <ruleref uri="#TIME_ABS" tag="
 HOUR=TIME_ABS.H;
 MINUTE=TIME_ABS.M;
 AMPM=(HOUR > 12 || HOUR == 0) ? 'h' : '?';
 QUALIFIER='exact';
 if (HOUR==24) HOUR = '00';
 SWI_disallow = 0;
 var hm = parseInt (HOUR+MINUTE, 10);
 var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0000';
 var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '2359';
 mina = parseInt(mina, 10);
 maxa = parseInt(maxa, 10);
 var hmpm;
 if (AMPM == '?') {
 hmpm = hm + 1200;
 if (hmpm >= 2400) hmpm -= 2400;
 if ((hm < mina || hm > maxa) &&
 (hmpm < mina || hmpm > maxa)) SWI_disallow=1;
 /* if am/pm ambiguous but only fits one allowed range */
 /* make it unambiguous */
 /* It is not in AM range but is in PM range */
 if ((hm < mina || hm > maxa) &&
 !(hmpm < mina || hmpm > maxa))
 AMPM = 'p';
 /* vice-versa */
 else if (!(hm < mina || hm > maxa) &&
 (hmpm < mina || hmpm > maxa))
 AMPM = 'a';
 }
 else if (AMPM == 'a' || AMPM == 'h') {
 if (hm < mina || hm > maxa) SWI_disallow=1;
 }
 else if (AMPM == 'p') {
 hmpm = hm + 1200;
 if (hmpm >= 2400) hmpm -= 2400;
 if (hmpm < mina || hmpm > maxa) SWI_disallow=1;
 }
 var minutes = 60 * parseInt (HOUR, 10) + parseInt (MINUTE);
 var grana = SWI_vars.granularityallowed;
 if (grana && (minutes % grana != 0)) SWI_disallow=1;
 SWI_meaning = HOUR+MINUTE+AMPM;
 dm_root=SWI_meaning;
 "/>
 -->

```

```

<ruleref uri="#TIME_ABS"/>
<tag>
out.HOUR=rules.TIME_ABS.H;
out.MINUTE=rules.TIME_ABS.M;
out.AMPM=(out.HOUR > 12 || out.HOUR == 0) ? 'h' : '?';
out.QUALIFIER='exact';
if (out.HOUR==24) out.HOUR = '00';
SWI_disallow = 0;
var hm = parseInt (out.HOUR+out.MINUTE, 10);
var mina = SWI_vars.minallowed ? SWI_vars.minallowed : '0000';
var maxa = SWI_vars.maxallowed ? SWI_vars.maxallowed : '2359';
mina = parseInt(mina, 10);
maxa = parseInt(maxa, 10);
var hmpm;
if (out.AMPM == '?') {
hmpm = hm + 1200;
if (hmpm >= 2400) hmpm -= 2400;
if ((hm <= mina || hm >= maxa) &&
(hmpm <= mina || hmpm >= maxa)) SWI_disallow=1;
/* if am/pm ambiguous but only fits one allowed range */
/* make it unambiguous */
/* It is not in AM range but is in PM range */
if ((hm <= mina || hm >= maxa) &&
!(hmpm <= mina || hmpm >= maxa))
out.AMPM = 'p';
/* vice-versa */
else if (!(hm <= mina || hm >= maxa) &&
(hmpm <= mina || hmpm >= maxa))
out.AMPM = 'a';
}
else if (out.AMPM == 'a' || out.AMPM == 'h') {
if (hm <= mina || hm >= maxa) SWI_disallow=1;
}
else if (out.AMPM == 'p') {
hmpm = hm + 1200;
if (hmpm >= 2400) hmpm -= 2400;
if (hmpm <= mina || hmpm >= maxa) SWI_disallow=1;
}
var minutes = 60 * parseInt (out.HOUR, 10) + parseInt (out.MINUTE);
var grana = SWI_vars.granularityallowed;
if (grana && (minutes % grana != 0)) SWI_disallow=1;
SWI_meaning = out.HOUR+out.MINUTE+out.AMPM;
out.MEANING=SWI_meaning;
</tag>

```

---

## inin\_dtmf\_zipcode.grxml

This file is a modified version of the original dtmf\_zipcode.xml file.

- Remove the <!DOCTYPE> line.
- tag-format="swi-semantics/1.0" --> tag-format="semantics/1.0"
- <ruleref uri="#ZIP" tag="<br><pre>SWI\_meaning = ZIP.SWI\_literal.replace(/[ ]+/g, '');
if (SWI\_meaning.substr(0,5) == '00000') SWI\_disallow=1;
dm\_root=SWI\_meaning;
"/>
-->
<ruleref uri="#ZIP"/>
<tag>
SWI\_meaning = rules.ZIP.replace(/[ ]+/g, '');
if (SWI\_meaning.substr(0,5) == '00000') SWI\_disallow=1;
out.MEANING=SWI\_meaning;
</tag>
<ruleref uri="#DIGIT"/>
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
<count number="optional">
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
<ruleref uri="#DIGIT" />
</count>
-->
<item repeat="5">
<ruleref uri="#DIGIT"/>
</item>
<item repeat="0-1">
<ruleref uri="#DIGIT"/>
<ruleref uri="#DIGIT"/>
<ruleref uri="#DIGIT"/>
<ruleref uri="#DIGIT"/>
</item>
</pre>

## Other files

For information about the files that had to be tweaked, see the following:

- [Relative files in grammars](#)
- [ndm-service-config.xml](#)
- [ndmStandaloneWrapper.jsp](#)
- [\\*.xml](#)

---

## Relative files in grammars

Some grammar files (from the `.\ndm-core\en-US\grammars\framework\ndm\nr9.0` directory and the `.\ndm-core\en-US\grammars\framework\ndm\nr10.0` directory for Nuance Recognizer 10) reference relative files from inside the grammar. This can be a problem for two reasons:

- Performance can suffer because we don't cache files references inside of grammar files.
- The referenced files may not be found because we tell the Reco subsystem the location of the cached grammars, not the original location.

The changes include the paths for installation with Nuance Recognizer 9.0 OR Nuance Recognizer 10.0.

For more information about these grammar files, see the following:

- [alphanum.xml](#)
- [number.xml](#)
- [phoneloop.en-US.grxml](#)
- [saphrase.jsp](#)
- [time.xml](#)

### alphanum.xml

```
<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr9.0/alphanum.userdict"/> or <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr10.0/alphanum.userdict"/>
```

### number.xml

- ```
<meta name="swirec_user_dict_name" content="number.userdict"/> --> <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr9.0/number.userdict"/>
or
<meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr10.0/number.userdict"/>
```

phoneloop.en-US.grxml

- ```
<meta name="swirec_user_dict_name" content="phoneloop.en-US.userdict"/> --> <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr9.0/phoneloop.en-US.userdict "/>
or
<meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-US/grammars/framework/ndm/nr10.0/phoneloop.en-US.userdict "/>
```



## saphrase.jsp

- `<%@ page language="java" contentType="text/xml"%> --> <%@ page language="java" contentType="application/x-swi-grammar-xml"%>`
- `<grammar xml:lang="en-US" version="1.0" root="_secureanswerphrase" tag-format="swi-  
semantics/1.0"> --> <grammar xml:lang="en-US" version="1.0" root="_secureanswerphrase" tag-  
format="swi-semantics/1.0" xml:base="{pageContext.request.requestURL}">`
- `<ruleref tag="SWI_meaning='Decoy'; dm_root=SWI_meaning;" uri="phoneloop.en-US.grxml" /> -->  
<ruleref tag="SWI_meaning='Decoy'; dm_root=SWI_meaning;" uri="http://bbtestpc:8080/ndm-  
core/en-US/grammars/framework/ndm/nr9.0/phoneloop.en-US.grxml" />  
or  
<ruleref tag="SWI_meaning='Decoy'; dm_root=SWI_meaning;" uri="http://bbtestpc:8080/ndm-  
core/en-US/grammars/framework/ndm/nr10.0/phoneloop.en-US.grxml" />`

### Note:

The first two listed changes are necessary so that the MIME type or the tag-format will force our RecoSubsystem to pass the grammars on to the Nuance engine, rather than try to interpret the grammars itself.

## time.xml

```
<meta name="swirec_user_dict_name" content="time.userdict"/> --> <meta
name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-
US/grammars/framework/ndm/nr9.0/time.userdict"/>
or
<meta name="swirec_user_dict_name" content="http://bbtestpc:8080/ndm-core/en-
US/grammars/framework/ndm/nr10.0/time.userdict"/>
```

## ndm-service-config.xml

The following parameter needs to be set in the ndm-service-config.xml file (from the .\ndm-core\configuration\application\ndm directory), so that the NDM modules are aware of the type of voice browser being used:

- `<parameter name="browser">`  
`<value>osb</value>`  
`</parameter>`
- >
- `<parameter name="browser">`  
`<value>standard</value>`  
`</parameter>`

---

## ndmStandaloneWrapper.jsp

The following changes need to be made in the ndmStandaloneWrapper.jsp file (from the .\ndm-core\dialogs\framework\ndm directory):

- `<%@ page contentType="application/voicexml+xml; charset=UTF-8" %>`  
`<?xml version="1.0" encoding ="UTF-8"?>`  
`-->`  
`<%@ page contentType="application/voicexml+xml; charset=UTF-8" %><?xml version="1.0" encoding ="UTF-8"?>`
- Remove the `<!DOCTYPE>` element.
- `<if cond="typeof(${dmid}.error) != 'undefined' || ${dmid}.rethrow=='true'">`  
`-->`  
`<if cond="typeof(${dmid}.error) != 'undefined' || ((typeof(${dmid}.rethrow) != 'undefined') &amp;&amp; ${dmid}.rethrow == 'true')">`

### Notes:

The first change is so that the `<?xml>` element is on the first line of the generated document. This is necessary because our VoiceXML interpreter is very strict.

The second change is necessary in IC 4.0, though we don't believe that it is in IC 3.0. This isn't really because of us, but because the newer version of msxml became more strict.

The third change is because our VoiceXML interpreter/SpiderMonkey is very strict.

---

## \*.xml

The various \*.xml files in the .\ndm-core\en-US\configuration\framework\ndm subdirectory need to be changed to refer to the new grammar file names.

<a href="#">All.xml</a>	<a href="#">NaturalNumber.xml</a>	<a href="#">SocialSecurity.xml</a>
<a href="#">CCExpiryDate.xml</a>	<a href="#">Phone.xml</a>	<a href="#">Time.xml</a>
<a href="#">CreditCard.xml</a>	<a href="#">SecureAnswerDate.xml</a>	<a href="#">YesNo.xml</a>
<a href="#">Currency.xml</a>	<a href="#">SecureAnswerDigits.xml</a>	<a href="#">ZipCode.xml</a>
<a href="#">Date.xml</a>	<a href="#">SecureAnswerPhone.xml</a>	

### All.xml

- `dtmfkeypadgrammar="dtmf_keypad.xml" --> dtmfkeypadgrammar="inin_dtmf_keypad.grxml"`
- `<dtmfgrammars filename="dtmf_boolean.xml" count="1"/> --> <dtmfgrammars filename="inin_dtmf_boolean.grxml" count="1"/>`

### CCExpiryDate.xml

`<dtmfgrammars filename="dtmf_ccexpdate.xml" count="1"/> --> <dtmfgrammars filename="inin_dtmf_ccexpdate.grxml" count="1"/>`

### CreditCard.xml

`<dtmfgrammars filename="dtmf_creditcard.xml" count="1"/> --> <dtmfgrammars filename="inin_dtmf_creditcard.grxml" count="1"/>`

## Currency.xml

```
<dtmfgrammars filename="dtmf_currency.xml" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_currency.grxml" count="1"/>
```

## Date.xml

```
<dtmfgrammars filename="dtmf_digits.xml?minlength=2;maxlength=8;" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_digits.grxml?minlength=2;maxlength=8;" count="1"/>
```

## NaturalNumber.xml

- <dtmfgrammars filename="dtmf\_number.xml" count="1"/> --> <dtmfgrammars  
filename="inin\_dtmf\_number.grxml" count="1"/>

## Phone.xml

- <dtmfgrammars filename="dtmf\_phone.xml" count="1"/> --> <dtmfgrammars  
filename="inin\_dtmf\_phone.grxml" count="1"/>

## SecureAnswerDate.xml

```
<dtmfgrammars filename="dtmf_digits.xml?minlength=2;maxlength=8;" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_digits.grxml?minlength=2;maxlength=8;" count="1"/>
```

## SecureAnswerDigits.xml

```
<dtmfgrammars filename="dtmf_digits.xml" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_digits.grxml" count="1"/>
```

## SecureAnswerPhone.xml

```
<dtmfgrammars filename="dtmf_phone.xml" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_phone.grxml" count="1"/>
```

## SocialSecurity.xml

```
<dtmfgrammars filename="dtmf_socialsecurity.xml" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_socialsecurity.grxml" count="1"/>
```

## Time.xml

```
<dtmfgrammars filename="dtmf_time.xml" count="1"/> --> <dtmfgrammars
filename="inin_dtmf_time.grxml" count="1"/>
```

## YesNo.xml

- <dtmfgrammars filename="dtmf\_boolean.xml" count="1"/> --> <dtmfgrammars  
filename="inin\_dtmf\_boolean.grxml" count="1"/>

## ZipCode.xml

- <dtmfgrammars filename="dtmf\_zipcode.xml" count="1"/> --> <dtmfgrammars  
filename="inin\_dtmf\_zipcode.grxml" count="1"/>

# Recommended VoiceXML parameter settings

The following VoiceXML configuration parameter settings are recommended:

- `defaultGrammarMimeType`: leave blank
- `ignoreGrammarFileMimeType`: true
- `recoValueSlotName`: MEANING

Note: Nuance NDM changes, [ndm61-name changes](#), [Ndm61-address changes](#), [spelling-dm changes](#), and [email-dm changes](#) apply to version 6.1.3 NDM Core

# Nuance NDM Changes

## Official patch against NSRD00088654(for NDM61-core 6.1.3 only)

Nuance supplied a patch to allow 6.1 Name and Address to work. This was released in NDM-CORE\_61\_PATCH\_NSRD00088654. This only needs to be applied if installing Name and/or Address.

## Incidents 201310110341 and 201310110251

Nuance supplied a patch for Incidents 201310110341 and 201310110251 (All.xml in patch to make names work with 6.1.3 has spelling error and omissions and All.xml in patch to make email work with 6.1.3 has spelling error and omissions). This was released in NDM61\_NAME\_6.1.0\_PATCH\_NSRD00090063. This contained a new all.xml file and is for both Names and Email.

## Incident 201311270181

Nuance supplied a patch for Incident 201311270181 (reference to undefined property dm.alternateConfirmCommand). This patch was released in Alphamail61\_EmailDM\_NSRD00090380 and is for both email and spelling.

# ndm61-name changes

For information about the changes to some of the files from the Nuance ndm61-name offering, see the following:

- [DTMF Grammars](#)
- [name.properties, all.properties](#)
- [web.xml](#)

## DTMF Grammars

The following DTMF grammar files (from the noted directories) had to be tweaked for SRGS (SISR) compatibility as noted. These files originally had a .xml filename extension, but were renamed to have a .grxml filename extension.

---

### **.\ndm61-name\en-US\grammar\nr9.0 directory for Nuance Recognizer 9 or the .\ndm61-name\en-US\grammar\nr10.0 directory for Nuance Recognizer 10**

#### **inin\_dtmf\_boolean.grxml**

This file is a modified version of the original dtmf\_boolean.xml file.

The same changes as where made to the inin\_dtmf\_boolean.grxml file in the [ndm-core 6.1.3 changes](#).

#### **inin\_dtmf\_command.grxml**

This file is a modified version of the original dtmf\_command.xml file.

The same changes as where made to the inin\_dtmf\_command.grxml file in [ndm-core 6.1.3 changes](#).

#### **inin\_dtmf\_keypad.grxml**

This file is a modified version of the original dtmf\_keypad.xml file.

The same changes as where made to the inin\_dtmf\_keypad.grxml file in [ndm-core 6.1.3 changes](#).

## **name.properties, all.properties**

These files (from the .\ndm61-name\properties directory) needs to be changed to reflect the file name changes noted previously.

- dtmf\_boolean.xml --> inin\_dtmf\_boolean.grxml
- dtmf\_command.xml --> inin\_dtmf\_command.grxml
- dtmf\_keypad.xml --> inin\_dtmf\_keypad.grxml

## web.xml

The following parameters need to be set in the web.xml file (from the .\ndm61-name\WEB-INF directory):

```
Com.speechworks.osdm.enableServerSideLogging --> false
<mime-mapping>
<extension>
xml
</extension>
<mime-type>
application/srgs+xml
</mime-type>
</mime-mapping>
-->
<mime-mapping>
<extension>
xml
</extension>
<mime-type>
</mime-type>
</mime-mapping>
 <param-name>recognizer</param-name>
 <param-value>nr10.0</param-value>
-->
<param-name>recognizer</param-name>
<param-value>nr10.0 or nr9.0</param-value> (depending on recognizer)
<filter-mapping>
<filter-name>CharsetFilter</filter-name>
<url-pattern>/*</url-pattern>
</filter-mapping>
-->
<!--
<filter-mapping>
<filter-name>CharsetFilter</filter-name>
<url-pattern>/*</url-pattern>
</filter-mapping>
-->
```

### Notes:

The first change is because having server side logging was causing a problem, but we don't remember what it was.

The second change is so that grammar files with an .xml extension won't have the "application/srgs+xml" MIME type thereby triggering our RecoSubsystem into interpreting those grammars. Since we've changed recommended VoiceXML settings, this change may no longer be necessary.

The third change determines the ASR engine being used.

The last change stops charset=UTF-8 from being appended to grammars

# Ndm61-address changes

For information about the changes to some of the files from the Nuance ndm61-address offering, see the following:

- [DTMF Grammars](#)
- [address.properties.all.properties](#)
- [web.xml](#)

## DTMF Grammars

Some DTMF grammar files had to be tweaked for SRGS (SISR) compatibility as noted.

These files originally had a .xml filename extension, but were renamed to have a .grxml filename extension.

For more information, see the following:

- [.\ndm61-address\en-US\grammar\nr9.0 directory or .\ndm61-address\en-US\grammar\nr10.0 directory](#)
- [.\ndm61-address\en-US\grammar\nr9.0\address directory or](#)

---

## **.\ndm61-address\en-US\grammar\nr9.0 directory or .\ndm61-address\en-US\grammar\nr10.0 directory**

### **inin\_dtmf\_boolean.grxml**

This file is a modified version of the original dtmf\_boolean.xml file.

The same changes as where made to the inin\_dtmf\_boolean.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_command.grxml**

This file is a modified version of the original dtmf\_command.xml file.

The same changes as where made to the inin\_dtmf\_command.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_digits.grxml**

This file is a modified version of the original dtmf\_digits.xml file.

The same changes as where made to the inin\_dtmf\_digits.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_keypad.grxml**

This file is a modified version of the original dtmf\_keypad.xml file.

The same changes as where made to the inin\_dtmf\_keypad.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_zipcode.grxml**

This file is a modified version of the original dtmf\_zipcode.xml file.

The same changes as where made to the inin\_dtmf\_zipcode.grxml file in [ndm-core 6.1.3 changes](#).

---

## **.\ndm61-address\en-US\grammar\nr9.0\address directory or .\ndm61-address\en-US\grammar\nr10.0\address directory**

### **inin\_dtmf\_apartment.grxml**

This file is a modified version of the original dtmf\_apartment.xml file.

```
<ruleref uri="#DIGIT_STRING"
```



```

tag = "
SWI_meaning=DIGIT_STRING.SWI_literal.replace(/ /g, '');
var min_len = SWI_vars.minlength ? parseInt(SWI_vars.minlength, 10) : 1;
var max_len = SWI_vars.maxlength ? parseInt(SWI_vars.maxlength, 10) : 20;
var len = SWI_meaning.length;
if (len > max_len || len < min_len) SWI_disallow=1;
if (SWI_vars.length) {
var disallow = 1;
var allowed_arr = SWI_vars.length.split ('+');
for (i=0; i < allowed_arr.length; i++) {
if (len == parseInt(allowed_arr[i], 10)) {
disallow = 0;
break;
}
}
SWI_disallow = disallow;
}
APTNUM=SWI_meaning;
APTTYPE='APARTMENT';
APTTYPEABBR='APT';
FULLAPT = APTTYPE + ' ' + APTNUM;
FULLAPTABBR = APTTYPEABBR + ' ' + APTNUM;
SWI_meaning = FULLAPTABBR;
MEANING=SWI_meaning;
 "/>
 ->
 <ruleref uri="# DIGIT_STRING "/>
 <tag>
SWI_meaning=DIGIT_STRING.SWI_literal.replace(/ /g, '');
var min_len = SWI_vars.minlength ? parseInt(SWI_vars.minlength, 10) : 1;
var max_len = SWI_vars.maxlength ? parseInt(SWI_vars.maxlength, 10) : 20;
var len = SWI_meaning.length;
if (len > max_len || len < min_len) SWI_disallow=1;
if (SWI_vars.length) {
var disallow = 1;
var allowed_arr = SWI_vars.length.split ('+');
for (i=0; i < allowed_arr.length; i += 1) {
if (len == parseInt(allowed_arr[i], 10)) {
disallow = 0;
break;
}
}
SWI_disallow = disallow;
}

```

```

out.APTNUM=SWI_meaning;
out.APPTYPE='APARTMENT';
out.APPTYPEABBR='APT';
out.FULLAPT = out.APPTYPE + ' ' + out.APTNUM;
out.FULLAPTABBR = out.APPTYPEABBR + ' ' + out.APTNUM;
SWI_meaning = out.FULLAPTABBR;
out.MEANING=SWI_meaning;
 </tag>
 • <count number="1+"> --> <item repeat="1-">
 • </count> --> </item>

```

## address.properties, all.properties

These files (from the .\ndm61-address\properties directory) needs to be changed to reflect the file name changes noted previously (the .grxml changes).

- dtmf\_apartments.xml -> inin\_dtmf\_apartment.grxml
- dtmf\_boolean.xml -> inin\_dtmf\_boolean.grxml
- dtmf\_command.xml -> inin\_dtmf\_command.grxml
- dtmf\_digits.xml -> inin\_dtmf\_digits.grxml
- dtmf\_keypad.xml -> inin\_dtmf\_keypad.grxml
- dtmf\_zipcode.xml -> inin\_dtmf\_zipcode.grxml
- dtmf\_digits.xml -> inin\_dtmf\_digits.grxml

## web.xml

The following parameters need to be set in the web.xml file (from the .\ndm61-address\WEB-INF directory):

- com.speechworks.osdm.enableServerSideLogging --> false
- <mime-mapping>

```

<extension>
xml
</extension>
<mime-type>
application/srgs+xml
</mime-type>
</mime-mapping>
 -->
<mime-mapping>
<extension>
xml
</extension>
<mime-type>
</mime-type>
</mime-mapping>

```

### Notes:

The first change is because having server side logging was causing errors on the server side.

The second change is so that grammar files with an .xml extension won't have the "application/srgs+xml" MIME type thereby triggering our RecoSubsystem into interpreting those grammars.

# spelling-dm changes

For information about the changes to some of the files from the Nuance spelling-dm offering, see the following:

- [DTMF Grammars](#)
- [Other files](#)
- [\configuration\application\application-config.xml](#)

## DTMF Grammars

The following DTMF grammar files (from the noted directories) had to be tweaked for SRGS (SISR) compatibility as noted.

---

**.\spelling-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\spelling-dm\en-US\grammars\framework\ndm\nr10.0 directory**

### **inin\_dtmf\_boolean.grxml**

This file is a modified version of the original dtmf\_boolean.xml file.

The same changes as where made to the inin\_dtmf\_boolean.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_command.grxml**

This file is a modified version of the original dtmf\_command.xml file.

The same changes as where made to the inin\_dtmf\_command.grxml file in [ndm-core 6.1.3 changes](#).

### **inin\_dtmf\_keypad.grxml**

This file is a modified version of the original dtmf\_keypad.xml file.

The same changes as where made to the inin\_dtmf\_keypad.grxml file in [ndm-core 6.1.3 changes](#).

## Other files

The following files also had to be tweaked

- [Relative files in grammars](#)
- [Dialog files](#)
- [model.es](#)
- [All.xml, Spelling.xml, YesNo.xml](#)
- [web.xml](#)

---

## Relative files in grammars

Some grammar files (from the .\spelling-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\spelling-dm\en-US\grammars\framework\ndm\nr10.0 directory) reference relative files from inside the grammar. This can be a problem for two reasons:

- Performance can suffer because we don't cache files references inside of grammar files.
- The referenced files may not be found because we tell the Reco subsystem the location of the cached grammars, not the original location.

For more information about these files, see the following:

- [inin\\_alphanum.jsp](#)
- [inin\\_alphanum.xml](#)
- [inin\\_correct.jsp](#)

## inin\_alphanum.jsp

This file is a modified version of the original `alphanum.jsp` file.

```
<%@ page language="java" contentType="text/xml"%> --> <%@ page language="java"
contentType="application/x-swi-grammar-xml"%>

<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta
name="swirec_user_dict_name" content="http://bbtestpc:8080/spelling-dm/en-
US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>
```

### Note:

The first change is necessary so that the tag-format will force our RecoSubsystem to pass the grammars on to the Nuance engine, rather than try to interpret the grammars itself.

## inin\_alphanum.xml

This file is a modified version of the original `alphanum.xml` file.

```
<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta
name="swirec_user_dict_name" content=" http://bbtestpc:8080/spelling-dm/en-
US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>

<ruleref uri="spelling-delimiter.xml#Main"/> --> <ruleref uri="http://bbtestpc:8080/spelling-
dm/en-US/grammars/framework/ndm/nr9.0/spelling-delimiter.xml#Main"/>
```

## inin\_correct.jsp

This file is a modified version of the original `correct.jsp` file.

- `<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/spelling-dm/en-US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>`
- Change all `".SWI_meaning"` to `".zSWI_meaning"`

### Note:

I'm not 100% sure why the second change was done. We believe that `SWI_meaning` was frosting our RecoSubsystem.

## Dialog files

Files in the `.\spelling-dm\dialogs` directory (`Alphanum_controller.jsp`, `Alphanum_dialog.jsp`, `Alphanum_exit.jsp`, `Alphanum_loopback.jsp`, `Alphanumroot.vxml`, `Menu-spelling-subdialog.jsp`, `Menu-spelling-taglib.jsp`, `spelling-dm/dialogs/framework/ndm/ndmStandaloneWrapper.jsp`) need to be changed so as NOT to use the following line:

```
<!DOCTYPE vxmlPUBLIC "-//Nuance/DTD VoiceXML 2.0//EN"
"http://voicexml.nuance.com/dtd/nuancevoicexml-2-0.dtd">
```

(just commented it out).

### Note:

This change is necessary in IC 4.0, though we don't believe that it is in IC 3.0. This isn't really because of us, but because the newer version of msxml became more strict.

For more information, see [alphanum\\_controller.jsp](#).

## alphanum\_controller.jsp

In addition to the change noted above, this file needs the following changes:

- `<grammar type="application/srgs+xml" src="${currentstate.grammar}"/> --> <grammar type="application/x-swi-grammar+xml" src="${currentstate.grammar}"/>`
- `<grammar type="application/srgs+xml" src="${currentstate.commandGrammar}"/> --> <grammarsrc="${currentstate.commandGrammar}"/>`
- `<grammar srcexpr="'${currentstate.dtmfCommandGrammar}'"/> --> <grammar mode="dtmf" srcexpr="'${currentstate.dtmfCommandGrammar}'"/>`
- Change all `".SWI_meaning"` to `".zSWI_meaning"`

### Notes:

The first two changes are necessary so that the MIME type will force our RecoSubsystem to pass the grammars on to the Nuance engine, rather than try to interpret the grammars itself.

The third change is necessary so that our RecoSubsystem knows that the grammar is a "dtmf" grammar.

I'm not 100% sure why the fourth change was done. We believe that SWI\_meaning was frosting our RecoSubsystem.

## model.es

This file (from the `.\spelling-dm\en-US\scripts\framework\ndm` directory) needs to be tweaked for what seem to be "programming" errors in the script.

```
• } else if (obj instanceof Object || typeof(obj) == 'object') {
if (obj._type == 'ApplicationState') {
xml += recognitions2XML(obj);
}
-->
 } else if (obj instanceof Object || typeof(obj) == 'object') {
if (! obj._type) {
obj._type = 'zztop';
}
if (obj._type == 'ApplicationState') {
xml += recognitions2XML(obj);
}
}
```

### Note:

This change is necessary to make our VoiceXML interpreter's strict SpiderMonkey happy.

## All.xml, Spelling.xml, YesNo.xml

These files (from the `.\spelling-dm\en-US\configuration\framework\ndm` directory) need to be changed to reflect the grammar file name changes noted previously.

- `alphanum.jsp->inin_alphanum.jsp`
- `alphanum.xml->inin_alphanum.xml`
- `correct.jsp->inin_correct.jsp`
- `dtmf_boolean.xml->inin_dtmf_boolean.grxml`
- `dtmf_command.xml->inin_dtmf_command.grxml`
- `dtmf_keypad.xml->inin_dtmf_keypad.grxml`

---

## web.xml

The following parameters need to be set in the web.xml file (from the .\spelling-dm\WEB-INF directory):

- `<mime-mapping>`  
`<extension>xml</extension>`  
`<mime-type>application/srgs+xml</mime-type>`  
`</mime-mapping>`  
    `-->`  
`<mime-mapping>`  
`<extension>xml</extension>`  
`<mime-type></mime-type>`  
`</mime-mapping>`
  - `<filter-mapping>`  
`<filter-name>CharsetFilter</filter-name>`  
`<url-pattern>/*</url-pattern>`  
`</filter-mapping>`  
    `-->`  
`<!--`  
`<filter-mapping>`  
    `<filter-name>CharsetFilter</filter-name>`  
    `<url-pattern>/*</url-pattern>`  
`</filter-mapping>`  
    `-->`

### Notes:

The first change is so that grammar files with an .xml extension won't have the "application/srgs+xml" MIME type thereby triggering our RecoSubsystem into interpreting those grammars.

The last change stops charset=UTF-8 from being appended to grammars

## **\configuration\application\application-config.xml, \configuration\application\ndm\ndm-service-config.xml core, configuration\framework\ndm\ndm-service-config.xml.template**

Set browser to standard:

```
<parameter name="browser">
<value>standard</value>
</parameter>
```

# email-dm changes

For information about the changes to some of the files from the Nuance email-dm offering, see the following:

- [DTMF Grammars](#)
- [Other files](#)
- [\configuration\application\application-config.xml](#)

## DTMF Grammars

The DTMF grammar files listed in this section (from the noted directories) had to be tweaked for SRGS (SISR) compatibility as noted.

---

### **.\email-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\email-dm\en-US\grammars\framework\ndm\nr10.0 Directory**

#### **inin\_dtmf\_boolean.grxml**

This file is a modified version of the original dtmf\_boolean.xml file.

The same changes as where made to the inin\_dtmf\_boolean.grxml file in [ndm-core 6.1.3 changes](#).

#### **inin\_dtmf\_command.grxml**

This file is a modified version of the original dtmf\_command.xml file.

The same changes as where made to the inin\_dtmf\_command.grxml file in [ndm-core 6.1.3 changes](#).

#### **inin\_dtmf\_keypad.grxml**

This file is a modified version of the original dtmf\_keypad.xml file.

The same changes as where made to the inin\_dtmf\_keypad.grxml file in [ndm-core 6.1.3 changes](#).

## Other files

The following files also had to be tweaked:

- [Relative files in grammars](#)
- [Dialog files](#)
- [EmailDMSubdialog.jsp](#)
- [model.es](#)
- [All.xml, Email.xml, YesNo.xml](#)
- [web.xml](#)

---

## Relative files in grammars

Some grammar files (from the .\email-dm\en-US\grammars\framework\ndm\nr9.0 directory or .\email-dm\en-US\grammars\framework\ndm\nr10.0 directory) reference relative files from inside the grammar. This can be a problem for two reasons:

- Performance can suffer because we don't cache files references inside of grammar files.
- The referenced files may not be found because we tell the Reco subsystem the location of the cached grammars, not the original location.

For more information about these files, see the following:

- [inin\\_alphanum\\_.xml](#)
- [inin\\_content.xml](#)
- [inin\\_correct.jsp](#)

## inin\_alphanum\_.xml

This file is a modified version of the original `alphanum_.xml` file.

```
<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta
name="swirec_user_dict_name" content=" http://bbtestpc:8080/email-dm/en-
US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>

<ruleref uri=" full-domains.xml#Extensions"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-
US/grammars/framework/ndm/nr9.0/full-domains.xml#Extensions"/>
```

## inin\_content.xml

This file is a modified version of the original `content.xml` file.

- `<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta name="swirec_user_dict_name" content="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>`
- `<ruleref uri=" first-names.xml#Main"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/first-names.xml#Main"/>`
- `<ruleref uri=" last-names.xml#Main"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/last-names.xml#Main"/>`
- `<ruleref uri=" email-delimiter.xml#Main"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/email-delimiter.xml#Main"/>`
- `<ruleref uri=" email-specials.xml#Main"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/email-specials.xml#Main"/>`
- `<ruleref uri=" full-domains.xml#Domain"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/full-domains.xml#Domain"/>`
- `<ruleref uri=" email-specials.xml#UsernameParts"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/email-specials.xml#UsernameParts"/>`
- `<ruleref uri=" full-domains.xml#DomainParts"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/full-domains.xml#DomainParts"/>`
- `<ruleref uri=" full-domains.xml#Extra"/>--> <ruleref uri="http://bbtestpc:8080/email-dm/en-US/grammars/framework/ndm/nr9.0/full-domains.xml#Extra"/>`

## inin\_correct.jsp

This file is a modified version of the original `correct.jsp` file.

```
<meta name="swirec_user_dict_name" content="alphanum.userdict"/> --> <meta
name="swirec_user_dict_name" content="http://bbtestpc:8080/email-dm/en-
US/grammars/framework/ndm/nr9.0/alphanum.userdict"/>
```

---

## Dialog files

Files in the `.\email-dm\dialogs` directory (everything in the root folder, plus `alphanum_controller.jsp`, `menu-email-taglib.jsp`, `menu-email-subdialog.jsp` and `ndmStandaloneWrapper.jsp`) need to be changed so as NOT to use the following line:

```
<!DOCTYPE vxmlPUBLIC "-//Nuance/DTD VoiceXML 2.0//EN"
"http://voicexml.nuance.com/dtd/nuancevoicexml-2-0.dtd">
```

(just commented it out).

### Note:

This change is necessary in IC 4.0, though we don't believe that it is in IC 3.0. This isn't really because of us, but because the newer version of msxml became more strict.

For more information, see [alphanum\\_controller.jsp](#).



## alphanum\_controller.jsp

In addition to the change noted above, this file needs the following changes:

- `<grammar type="application/srgs+xml" src="${currentstate.grammar}"/> --> <grammar type="application/x-swi-grammar+xml" src="${currentstate.grammar}"/>`
- `<grammar type="application/srgs+xml" src="${currentstate.commandGrammar}"/> --> <grammarsrc="${currentstate.commandGrammar}"/>`
- `<grammar srcexpr="'${currentstate.dtmfCommandGrammar}'"/> --> <grammar mode="dtmf" srcexpr="'${currentstate.dtmfCommandGrammar}'"/>`
- Change all `".SWI_meaning"` to `".dm_root"`

### Notes:

The first two changes are necessary so that the MIME type will force our RecoSubsystem to pass the grammars on to the Nuance engine, rather than try to interpret the grammars itself.

The third change is necessary so that our RecoSubsystem knows that the grammar is a "dtmf" grammar.

I'm not 100% sure why the fourth change was done. We believe that SWI\_meaning was frosting our RecoSubsystem.

---

## EmailDMSubdialog.jsp

This file (from the `.\email-dm\dialogs\framework\ndm` directory) needs to be changed to use new grammar file names.

```
<!--var name="collection_grammar1"
expr="'<%=appName%>/grammars/content.xml;application/srgs+xml'"/ --> <!--var
name="collection_grammar1" expr="'<%=appName%>/grammars/inin_content.xml'"/-->
```

---

## model.es

This file (from the .\email-dm\en-US\scripts\framework\ndm directory) needs to be tweaked for what seem to be “programming” errors in the script.

```
• var object2XML = function(obj, name) {
var name = isNaN(name) ? name : '_' + name;
if(! /^[a-z_][\w$]*$/i.test(name)){
return '';
}
var xml = '<' + name;
à
var object2XML = function(obj, name) {
var name1 = isNaN(name) ? name : '_' + name;
if(! /^[a-z_][\w$]*$/i.test(name1)){
return '';
}
var xml = '<' + name1;
• } else if (obj instanceof Object || typeof(obj) == 'object') {
if (obj._type == 'ApplicationState') {
xml += recognitions2XML(obj);
}
-->
} else if (obj instanceof Object || typeof(obj) == 'object') {
if (obj._type) {
} else {
obj._type = 'zztop';
}
if (obj._type == 'ApplicationState') {
xml += recognitions2XML(obj);
}
• xml += '</' + name + '>';--> xml += '</' + name1 + '>';
```

### Note:

These changes are necessary to make our VoiceXML interpreter's strict SpiderMonkey happy.

---

## All.xml, Email.xml, YesNo.xml

These files (from the .\email-dm\en-US\configuration\framework\ndm directory) need to be changed to reflect the grammar file name changes noted previously.

- alphanum\_.xml -> inin\_alphanum\_.xml
- content.xml -> inin\_content.xml
- correct.jsp -> inin\_correct.jsp
- dtmf\_boolean.xml -> inin\_dtmf\_boolean.grxml
- dtmf\_command.xml -> inin\_dtmf\_command.grxml
- dtmf\_keypad.xml -> inin\_dtmf\_keypad.grxml

---

## web.xml

The following parameters need to be set in the web.xml file (from the .\email-dm\WEB-INF directory):

- `<mime-mapping>`  
`<extension>xml</extension>`  
`<mime-type>application/srgs+xml</mime-type>`  
`</mime-mapping>`  
    `-->`  
`<mime-mapping>`  
`<extension>xml</extension>`  
`<mime-type> </mime-type>`  
`</mime-mapping>`
- `<filter-mapping>`  
`<filter-name>CharsetFilter</filter-name>`  
`<url-pattern>/*</url-pattern>`  
`</filter-mapping>`  
    `-->`  
`<!--`  
`<filter-mapping>`  
`<filter-name>CharsetFilter</filter-name>`  
`<url-pattern>/*</url-pattern>`  
`</filter-mapping>`  
`-->`

### Notes:

This change is so that grammar files with an .xml extension won't have the "application/srgs+xml" MIME type thereby triggering our RecoSubsystem into interpreting those grammars.

The last change stops charset=UTF-8 from being appended to grammars

**\configuration\application\application-config.xml,  
\configuration\application\ndm\ndm-service-config.xml core,  
configuration/framework\ndm\ndm-service-config.xml.template**

Set browser to standard:

```
<parameter name="browser">
 <value>standard</value>
</parameter>
```

# Recommended VoiceXML parameter settings

The following VoiceXML configuration parameter settings are recommended:

- `defaultGrammarMimeType`: leave blank
- `ignoreGrammarFileMimeType`: true
- `recoValueSlotName`: MEANING

# Change Log

The following table lists the changes to the *CIC VoiceXML Integration with Nuance Dialog Modules Versions 6.1/6.1.3 Developer's Application Note* since its initial release.

Date	Changes
11-May-2012	Version 1.0 Document created
06-July-2012	Version 1.0.1 Add section 3.1 "The <data> element handles".
23-July-2012	Version 1.0.2 <ul style="list-style-type: none"> <li>• Remove &lt;!DOCTYPE&gt; line from grammars</li> <li>• Add section "Nuance NDM changes"</li> <li>• Tweak various test results</li> <li>• Tweak Questions section.</li> <li>• Expanded section 5.2.5 "*.xml"</li> <li>• Tweak "saphrase.jsp" section</li> </ul>
10-August-2012	Version 1.0.3 <ul style="list-style-type: none"> <li>• Update "Nuance NDM changes" section</li> <li>• Update "Questions" section</li> </ul>
27-August-2012	Version 1.0.4 Updated web.xml changes
13-September-2012	Version 1.0.5 <ul style="list-style-type: none"> <li>• Updated web.xml changes</li> <li>• Updated ndm-server-config.xml changes</li> <li>• Updated recommended VoiceXML parameter settings</li> </ul>
12-December-2012	Version 1.0.6 Added some notes to some of the changes in section 5 "ndm-core_6.1.0 changes" to explain the reason for the changes
04-January-2013	Version 1.0.7 Added some information concerning two of the Nuance changes being incorporated into NDM-core 6.1.2
03-February-2013	Version 4.0 Updated for 4.0 SU3 release
05-February-2013	Added SCR information to Section 3, BladewareVXML changes
20-February-2014	Updated for NDM-core 6.1.3
01-August-2014	Updated documentation to reflect changes required in the transition from version 4.0 SU# to CIC 2015 R1, such as updates to product version numbers, system requirements, installation procedures, references to Interactive Intelligence Product Information site URLs, and copyright and trademark information.
11-June-2015	Updated cover page to reflect new color scheme and logo. Updated copyright and trademark information.
09-October-2015	Updated documentation to reflect 2016 R1 Release
04-February-2016	Updated documentation to reflect 2016 R2 Release
04-May-2018	Rebranded from Interactive Intelligence to Genesys
23-October-2018	Updated documentation for 2018 R5 release. Correction some issues from Customer Care.
14-June-2019	Reorganized the content only, which included combining some topics and deleting others that just had an introductory sentence such as, "In this section..."