Stage 3: #316 Add <diagnostics element> to troubleshooting topic

Add an optional `<diagnostics>` element to the troubleshooting topic. This element will provide a location for authors to provide information about how to determine the cause of a problem and thus apply the correct remedy.

Champion

Dawn Stevens, Comtech Services, Inc.
Kristen James Eberlein, Eberlein Consulting LLC (grammar file implementation)

Tracking information

Event	Date	Links
Stage 1 proposal accepted	19 November, 2019	https://lists.oasis-open.org/archives/dita/201911/msg00026.html
Stage 2 proposal submitted	28 April, 2020	http://tools.oasis-open.org/version-control/browse/wsvn/dita/trunk/DITA-2.0/stage-2/Issue316-Diagnostics.dita
Stage 2 proposal discussed	30 June, 2020	https://lists.oasis-open.org/archives/dita/202007/msg00011.html
Stage 2 proposal approved	7 July, 2020	https://lists.oasis-open.org/archives/dita/202007/msg00010.html
Stage 3 proposal submitted to reviewers	1 September, 2020	Eric Sirois, Nancy Harrison
Stage 3 proposal (this document) submitted to TC		

Approved technical requirements

Modify the content model of `<troublebody>` to allow zero or more new `<diagnostics>` elements after `<condition>`. The `<diagnostics>` element will in turn contain two new diagnostic elements, `<diagnostics-general>` and `<diagnostics-steps>` to address the two use cases described earlier.

This proposal will add three elements:

- Add `<diagnostics>` element which will:
  - Be specialized from `<bodydiv>`
  - Have a content model of:
    - Zero or one `<diagnostics-general>`
    - Zero or one `<diagnostics-steps>`
- Add a `<diagnostics-general>` element which will:
  - Be specialized from `<section>`

- Have an identical content model as `<cause>`
- Provide a location to add a diagnostics table
- Add `<diagnostics-steps>` which will:
  - Be specialized from `<section>`
  - Remove `<responsible-party>` from the `<remedy>` content model, but otherwise be identical
  - Provide a location to add step-by-step diagnostic instructions

Dependencies or interrelated proposals

None.

Modified grammar files

This proposal will require modifications to the following files:

- `troubleshooting.mod`
- `troubleshooting.rng`

In the content below, the following conventions are used:

- Bold is used to indicate code to be added, for example, **addition**.
- Line-through and red text is used to indicate code to be removed, for example, ~~removal~~.
- Ellipses (…) indicate where code is snipped for brevity.

Figure 1: Changes to troubleshooting.mod

```
...
<!-- ============================================================ -->
<!--                 ELEMENT NAME ENTITIES                        -->
<!-- ============================================================ -->

<!ENTITY % troubleshooting       "troubleshooting"               >
<!ENTITY % troublebody           "troublebody"                   >
<!ENTITY % cause                 "cause"                         >
<!ENTITY % condition             "condition"                     >
<!ENTITY % remedy                "remedy"                        >
<!ENTITY % diagnostics           "diagnostics"                   >
<!ENTITY % diagnostics-general   "diagnostics-general"           >
<!ENTITY % diagnostics-steps     "diagnostics-steps"             >
<!ENTITY % responsibleParty      "responsibleParty"              >
<!ENTITY % troubleSolution       "troubleSolution"               >

<!-- ============================================================ -->
<!--                 ELEMENT DECLARATIONS                         -->
<!-- ============================================================ -->
...


<!--                 LONG NAME: Troubleshooting Body             -->
<!ENTITY % troublebody.content
                    "((%condition;)?,
                      (%diagnostics;)?,
                      (%troubleSolution;)+)?"
...
<!--                 LONG NAME: Diagnostics                      -->
<!ENTITY % diagnostics.content
                    "((%diagnostics-general;)|(%diagnostics-steps;)?)"
>
<!ENTITY % diagnostics.attributes
            "%univ-atts;"
>
<!ELEMENT  diagnostics %diagnostics.content;>
```

```
<!ATTLIST  diagnostics %diagnostics.attributes;>

<!--                     LONG NAME: Diagnostics general            -->
<!ENTITY % diagnostics-general.content
                        "(%section.blocks.only.cnt;)?"
>
<!ENTITY % diagnostics-general.attributes
              "%univ-atts;
                spectitle
                         CDATA
                                  #IMPLIED"
>
<!ELEMENT  diagnostics-general %diagnostics-general.content;>
<!ATTLIST  diagnostics-general %diagnostics-general.attributes;>

<!--                     LONG NAME: Diagnostics steps              -->
<!ENTITY % diagnostics-steps.content
                        "((%title;)?,
                          (%steps; |
                           %steps-unordered; |
                           %steps-informal;))"
>
<!ENTITY % diagnostics-steps.attributes
              "%univ-atts;
                spectitle
                         CDATA
                                  #IMPLIED"
>
<!ELEMENT  diagnostics-steps %diagnostics-steps.content;>
<!ATTLIST  diagnostics-steps %diagnostics-steps.attributes;>

<!-- ============================================================ -->
<!--            SPECIALIZATION ATTRIBUTE DECLARATIONS             -->
<!-- ============================================================ -->

<!ATTLIST  troubleshooting     class CDATA "- topic/topic troubleshooting/troubleshooting ">
<!ATTLIST  troublebody         class CDATA "- topic/body troubleshooting/troublebody ">
<!ATTLIST  troubleSolution     class CDATA "- topic/bodydiv troubleshooting/troubleSolution ">
<!ATTLIST  cause               class CDATA "- topic/section troubleshooting/cause ">
<!ATTLIST  condition           class CDATA "- topic/section troubleshooting/condition ">
<!ATTLIST  diagnostics         class CDATA "- topic/bodydiv troubleshooting/diagnostics ">
<!ATTLIST  diagnostics-general class CDATA "- topic/section troubleshooting/diagnostics-
general ">
<!ATTLIST  diagnostics-steps   class CDATA "- topic/section troubleshooting/diagnostics-steps
">
<!ATTLIST  remedy              class CDATA "- topic/section troubleshooting/remedy ">
<!ATTLIST  responsibleParty    class CDATA "- topic/p troubleshooting/responsibleParty ">

<!-- ================== End of DITA Troubleshooting DomainTopic ==================== -->
```

Figure 2: Changes to troubleshooting.rng

```
...
  <div>
    <a:documentation>ELEMENT TYPE NAME PATTERNS</a:documentation>
    ...
    <define name="diagnostics">
      <ref name="diagnostics.element"/>
    </define>
    <define name="diagnostics-general">
      <ref name="diagnostics-general.element"/>
    </define>
    <define name="diagnostics-steps">
      <ref name="diagnostics-steps.element"/>
    </define>
  </div>
...
  <div>
    <a:documentation>ELEMENT TYPE DECLARATIONS</a:documentation>
    <div>
    ...
    <div>
      <a:documentation> LONG NAME: Troubleshooting Body </a:documentation>
```

```
        <define name="troublebody.content">
          <optional>
            <optional>
              <ref name="condition"/>
            </optional>
            <optional>
              <ref name="diagnostics"/>
            </optional>
            <oneOrMore>
              <ref name="troubleSolution"/>
            </oneOrMore>
          </optional>
        </define>
        ...
        <div>
        <a:documentation> LONG NAME: Diagnostics </a:documentation>
        <define name="diagnostics.content">
            <choice>
              <ref name="diagnostics-general"/>
              <ref name="diagnostics-steps"/>
            </choice>
        </define>
        <define name="diagnostics.attributes">
          <ref name="univ-atts"/>
        </define>
        <define name="diagnostics.element">
          <element name="diagnostics" dita:longName="Diagnostics" dita:since="2.0">
            <a:documentation>
              <![CDATA[
    Category: Troubleshooting elements
  ]]></a:documentation>
            <ref name="diagnostics.attlist"/>
            <ref name="diagnostics.content"/>
          </element>
        </define>
        <define name="diagnostics.attlist" combine="interleave">
          <ref name="diagnostics.attributes"/>
        </define>
      </div>
        <div>
        <a:documentation> LONG NAME: Diagnostics General </a:documentation>
        <define name="diagnostics-general.content">
          <optional>
            <ref name="section.blocks.only.cnt"/>
          </optional>
        </define>
        <define name="diagnostics-general.attributes">
          <ref name="univ-atts"/>
          <optional>
            <attribute name="spectitle"/>
          </optional>
        </define>
        <define name="diagnostics-general.element">
          <element name="diagnostics-general" dita:longName="Diagnostics General"
dita:since="2.0">
          <a:documentation>
            <![CDATA[
    Category: Troubleshooting elements
  ]]></a:documentation>
          <ref name="diagnostics-general.attlist"/>
          <ref name="diagnostics-general.content"/>
        </element>
      </define>
      <define name="diagnostics-general.attlist" combine="interleave">
        <ref name="diagnostics-general.attributes"/>
      </define>
    </div>
    <div>
      <a:documentation> LONG NAME: Diagnostics Steps </a:documentation>
      <define name="diagnostic-steps.content">
        <optional>
          <ref name="title"/>
        </optional>
        <choice>
```

```
            <ref name="steps"/>
            <ref name="steps-unordered"/>
            <ref name="steps-informal"/>
          </choice>
        </define>
        <define name="diagnostic-steps.attributes">
          <optional>
            <attribute name="spectitle"/>
          </optional>
          <ref name="univ-atts"/>
        </define>
        <define name="diagnostics-steps.element">
          <element name="diagnostic-steps" dita:longName="Diagnostics Steps" dita:since="2.0">
            <a:documentation>
              <![CDATA[
    Category: Troubleshooting elements
  ]]></a:documentation>
            <ref name="diagnostic-steps.attlist"/>
            <ref name="diagnostic-steps.content"/>
          </element>
        </define>
        <define name="diagnostic-steps.attlist" combine="interleave">
          <ref name="diagnostic-steps.attributes"/>
        </define>
      </div>
      </div>
      <div>
      <a:documentation>SPECIALIZATION ATTRIBUTE DECLARATIONS</a:documentation>
      ...
      <define name="diagnostics.attlist" combine="interleave">
        <optional>
          <attribute name="class" a:defaultValue="- topic/bodydiv troubleshooting/diagnostics
">
        </optional>
      </define>
          <define name="diagnostics-general.attlist" combine="interleave">
        <optional>
          <attribute name="class" a:defaultValue="- topic/section troubleshooting/diagnostics-
general ">
        </optional>
      </define>
          <define name="diagnostics-steps.attlist" combine="interleave">
        <optional>
          <attribute name="class" a:defaultValue="- topic/section troubleshooting/diagnostics-
steps ">
        </optional>
      </define>
    </div>
    ...
```

Modified terminology

None.

Modified specification documentation

- Update Section 2.7.1.6 to discuss new structure
  - Rewrite first paragraph

Original	Suggested Rewrite
For some conditions there could be more than one cause-remedy pair. The troubleshooting topic accommodates this. Typically, a cause is immediately followed by its remedy. Multiple cause-remedy pairs can provide a series of successive fall-backs for resolving a condition.	For some conditions there could be more than one cause-remedy pair. The troubleshooting topic accommodates this. Typically, a cause is immediately followed by its remedy. Multiple cause-remedy pairs can provide a series of successive fall-backs for resolving a condition. An optional diagnostics section can be included to assist in determining which of the cause-remedy pairs applies to the specific situation.

– Add after `<condition>` and before `<troubleSolution>` in the section *The structure of the troubleshooting topic*

\<diagnostics\>
> This optional element precedes `<troubleSolution>` and provides information used to determine which cause-remedy pair applies in a given situation.

> The `<diagnostics>` element contains one of the following elements:

\<diagnostics-general\>
> This element provides non-procedural diagnostic information, such as a flowchart diagram or a look-up table of symptoms. Results of the diagnostic may link to the specific cause-remedy section that applies to each result.

\<diagnostics-steps\>
> This element provides step-by-step instructions for diagnosing the problem. Step results may link to the specific cause-remedy section that applies.

– Update example

```
<troubleshooting id="blinking_lights">
   <title>Blinking lights</title>
   <shortdesc>Printer indicator lights are blinking, indicating an error of
      some kind.</shortdesc>
   <troublebody>
      <condition>The printer indicator lights are blinking and you are unable
         to print.</condition>
      <diagnostics>
         <diagnostics-general><p>Use the table below to determine the
            problem.</p>
          <table frame="all" id="light_diagnostics">
           <title>Printer light diagnostics</title>
           <tgroup cols="2">
              <colspec colname="c1" colnum="1" colwidth="1*"/>
              <colspec colname="c2" colnum="2" colwidth="2*"/>
              <thead>
                 <row>
                    <entry>Lights</entry>
                    <entry>Issue</entry>
                 </row>
              </thead>
              <tbody>
                 <row>
                    <entry>
                       <ul>
                          <li>Power light: Flashing</li>
                          <li>Resume light: Off</li>
                       </ul>
                    </entry>
                    <entry>The printer is preparing to print. No action is
                       required. The light will stop flashing when the
                       printer has received all data.</entry>
                 </row>
                 <row>
                    <entry>
                       <ul>
```

```
                                    <li>Power light: On</li>
                                    <li>Resume light: Flashing</li>
                                </ul>
                        </entry>
                        <entry>Printer jam. See <xref
                                href="#trouble_olv_gvg_wmb/jam" format="dita"/>.
                        </entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Power light: Flashing</li>
                                <li>Resume light: Flashing</li>
                            </ul>
                        </entry>
                        <entry>Printer is stalled and needs to be restarted. See
                            <xref href="#trouble_olv_gvg_wmb/restart"
                                format="dita"/>.
                        </entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Left cartridge light: On</li>
                                <li>Right cartridge light: Off</li>
                            </ul>
                        </entry>
                        <entry>Low ink. See <xref href="#trouble_olv_gvg_wmb/ink"
                                format="dita"/>.</entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Left cartridge light: On</li>
                                <li>Right cartridge light: Flashing</li>
                            </ul>
                        </entry>
                        <entry>Dirty ink cartridge. See <xref
                                href="#trouble_olv_gvg_wmb/clean" format="dita"/>.
                        </entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Connection light: Flashes for five seconds</li>
                                <li>Error light: Flashes for five seconds</li>
                            </ul>
                        </entry>
                        <entry>The printer has lost connection with the camera
                            while printing. Unplug and replug the camera.</entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Connection light: On</li>
                                <li>Error light: Flashing</li>
                            </ul>
                        </entry>
                        <entry>The camera is not set to the correct mode for
                            transferring photos. Change the camera mode.</entry>
                    </row>
                    <row>
                        <entry>
                            <ul>
                                <li>Connection light: Off</li>
                                <li>Error light: On</li>
                            </ul>
                        </entry>
                        <entry>An unsupported device, such as a mouse, has been
                            connected to the front USB port. Disconnect the
                            unsupported device.</entry>
                    </row>
                </tbody>
            </tgroup>
```

```
            </table>
        </diagnostics-general>
    </diagnostics>
    <troubleSolution>
        <remedy id="jam">
            <title>Clearing a paper jam </title>
            <steps>
                <step>
                    <cmd>Turn off the printer.</cmd>
                </step>
                <step>
                    <cmd>Remove the rear access door by pressing the handle to
                        the right and pulling out the door.</cmd>
                </step>
                <step>
                    <cmd>Remove any paper that is inside the printer by pulling
                        the paper out from the back of the printer.</cmd>
                </step>
                <step>
                    <cmd>Replace the rear access door.</cmd>
                </step>
                <step>
                    <cmd>If the paper jam cannot be removed from the back of the
                        printer, raise the printer cover, remove the paper jam
                        from the front of the printer, and then lower the cover.
                    </cmd>
                </step>
                <step>
                    <cmd>Turn on the printer and print the document again. </cmd>
                </step>
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="restart">
            <title>Restarting the printer</title>
            <steps>
                <step>
                    <cmd>Press the Power button to turn off the printer, and then
                        press the Power button to restart the printer. </cmd>
                    <info>Proceed to step 2 if the lights continue to flash.
                    </info>
                </step>
                <step>
                    <cmd>Press the Power button to turn off the printer.</cmd>
                </step>
                <step>
                    <cmd>Disconnect the printer power cord from the electrical
                        outlet.</cmd>
                </step>
                <step>
                    <cmd>Reconnect the printer power cord to the electrical
                        outlet.</cmd>
                </step>
                <step>
                    <cmd>Press the Power button to turn on the printer.</cmd>
                </step>
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="clean">
            <title>Cleaning ink cartridge</title>
            <steps>
                <step>
                    <cmd>Raise the printer cover, remove the print cartridge on
                        the right, and then lower the cover.</cmd>
                </step>
                <step>
                    <cmd>Follow one of these steps.</cmd>
                    <choices id="choices_kql_wgh_wmb">
                        <choice>If the light is flashing: Open the printer cover,
                            replace the print cartridge that you removed, and then
                            remove the other print cartridge. Proceed to step 3.
```

```
                </choice>
                <choice>If the light is off: There is a problem with the
                    print cartridge that you removed. Proceed to step 3.
                </choice>
            </choices>
        </step>
        <step>
            <cmd>Manually clean the print cartridge.</cmd>
        </step>
        <step>
            <cmd>After cleaning the print cartridge, reinsert it into the
                printer. If the light continues to flash, replace the
                print cartridge.</cmd>
        </step>
    </steps>
</remedy>
</troubleSolution>
<troubleSolution>
    <remedy id="ink">
        <title>Replacing ink cartridge</title>
        <steps>
            <step>
                <cmd>Turn on the printer.</cmd>
            </step>
            <step>
                <cmd>Make sure to load the printer with plain, white paper.
                </cmd>
            </step>
            <step>
                <cmd>Gently grasp the handles on either side of the printer
                    and raise the ink cartridge access door until it locks
                    in place.</cmd>
                <stepresult>The carriage moves to the center of the printer.
                </stepresult>
            </step>
            <step>
                <cmd>Wait until the carriage is idle and silent before you
                    proceed.</cmd>
            </step>
            <step>
                <cmd>Lift the lid on the ink cartridge slot, then gently push
                    the lid back until it stops.</cmd>
            </step>
            <step>
                <cmd>Pull up on the ink cartridge to remove it from the
                    slot.</cmd>
            </step>
            <step>
                <cmd>Remove one of the new ink cartridges from its package,
                    being careful to touch only the black plastic on the
                    cartridge.</cmd>
            </step>
            <step>
                <cmd>Remove the plastic tape from the ink cartridge.</cmd>
                <info>
                    <note type="caution">Do not touch the copper-colored
                        contacts or the ink nozzles. Do not replace the
                        protective tape on the contacts. Handling these
                        parts can result in clogs, ink failure, and bad
                        electrical connections.</note>
                </info>
            </step>
            <step>
                <cmd>Hold the ink cartridge by its sides with the nozzles
                    toward the printer, then slide the ink cartridge forward
                    into the slot.</cmd>
            </step>
            <step>
                <cmd>Close the lid on the ink cartridge slot to secure the n
                    ink cartridge i place.</cmd>
            </step>
            <step>
                <cmd>Repeat the previous steps to install the other ink
                    cartridge if necessary.</cmd>
```

```
            </step>
            <step>
               <cmd>Close the ink cartridge access door.</cmd>
               <stepresult>The printer automatically prints an alignment
                  page.</stepresult>
            </step>
            <step>
               <cmd>Wait for the alignment page to fully eject from the
                  printer.</cmd>
            </step>
            <step>
               <cmd>Lift the scanner lid.</cmd>
            </step>
            <step>
               <cmd>Place the alignment page with the print side down on the
                  scanner glass according to the engraved guides around the
                  glass.</cmd>
            </step>
            <step>
               <cmd>Close the scanner lid and touch OK.</cmd>
               <stepresult>The printer aligns the ink cartridges.
                  </stepresult>
            </step>
         </steps>
      </remedy>
   </troubleSolution>
 </troublebody>
</troubleshooting>
```

- Update to section 3.10.4:
  - New sections on the three new elements (see topics that follow)

    Note Updates to the example in section 3.10.4.1 were considered; however, because the diagnostics section could contain two different approaches, it was decided to add examples to those topics below, rather than attempt to make 3.10.4.1 comprehensive for only one case.

Migration plans for backwards incompatibilities

Not applicable.

<diagnostics>

The `<diagnostics>` element is a container element for diagnostic elements that help users determine which of several possible causes discussed within the troubleshooting topic applies to the symptoms they are experiencing. Diagnostics may be provided in text or table format within `<diagnostics-general>` or in step-by-step format within `<diagnostics-steps>`.

Usage information

Use when a troubleshooting topic contains more than one possible cause for the condition.

Specialization hierarchy

The `<diagnostics>` element is specialized from `<bodydiv>`. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: Universal attribute group.

Example

See diagnostics-general (13) and diagnostics-steps (15).

<diagnostics-general>

The `<diagnostics-general>` element includes non-procedural information that can help determine which of multiple cause-remedy pairs apply to a specific situation. Results of the diagnostics may link to the specific cause-remedy section that applies to each result.

Usage information

Use this element when presenting non-procedural diagnostic information; for example, when including a diagnostic table or a flowchart. Often in these cases, the symptoms are observable without users having to take a specific action – they can simply observe that the symptom exists; for example, if a particular light is on or off.

Specialization hierarchy

The `<diagnostics-general>` element is specialized from `<section>`. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: Universal attribute group and `@spectitle`.

Example

The following code sample shows how a troubleshooting topic would provide a diagnostic table to help a user determine which cause and therefore which solution applies to them.

```
<troubleshooting>
    <title>Car is making funny noises.</title>
    <shortdesc/>
    <prolog/>
    <troublebody>
       <condition>
          <p>You probably know how your vehicle sounds when it's running properly.
             Listening to your car can help you troubleshoot problems. If you hear
             a strange sound, pay attention and react accordingly.
          </p>
        </condition>
       <diagnostics>
          <diagnostics-general>
             <table frame="all">
               <tgroup cols="2">
                   <colspec colname="c1" colnum="1" colwidth="1*"/>
                   <colspec colname="c2" colnum="2" colwidth="1*"/>
                   <thead>
                       <row>
                           <entry>Symptom</entry>
                           <entry>Probable Cause</entry>
                       </row>
                   </thead>
                   <tbody>
                       <row>
                           <entry>Clunking noise on bumps only</entry>
                           <entry><xref href="#./checkstruts"/></entry>
                       </row>
                       <row>
                           <entry>Continuous clunking noise</entry>
                           <entry><xref href="#./checkballjoints"/></entry>
                       </row>
                       <row>
```

```
                            <entry>Ticks when in neutral</entry>
                            <entry><xref href="#./checkexhaust"/></entry>
                        </row>
                        <row>
                            <entry>Ticks only in reverse</entry>
                            <entry><xref href="#./checkbrakes"/></entry>
                        </row>
                        <row>
                            <entry>Ticks in turns and curves</entry>
                            <entry><xref href="#./checkcvjoint"/></entry>
                        </row>
                        <row>
                            <entry>Only ticks when cold</entry>
                            <entry><xref href="#./checkcatalyticconverter"/></entry>
                        </row>
                        <row>
                            <entry>Ticks only at slow speed</entry>
                            <entry>xref href="#./checkwheels"/></entry>
                        </row>
                    </tbody>
                </tgroup>
            </table>
        </diagnostics-general>
    </diagnostics>
    <troubleSolution>
        <remedy id="checkstruts">
            <title>Checking your struts</title>
            <steps>
                <step>
                    ...
                </step>
                ...
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="checkballjoints">
            <title>Checking your ball joints</title>
            <steps>
                <step>
                    ...
                </step>
                ...
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="checkexhaust">
            <title>Checking your exhaust</title>
            <steps>
                <step>
                    ...
                </step>
                ...
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="checkbrakes">
            <title>Checking your brakes</title>
            <steps>
                <step>
                    ...
                </step>
                ...
            </steps>
        </remedy>
    </troubleSolution>
    <troubleSolution>
        <remedy id="checkcvjoint">
            <title>Checking your CV joints</title>
            <steps>
                <step>
                    ...
```

```
                    </step>
                    ...
                </steps>
            </remedy>
        </troubleSolution>
        <troubleSolution>
            <remedy id="checkcatalyticconverter">
              <title>Checking your catalytic converter</title>
              <steps>
                <step>
                    ...
                </step>
                ...
              </steps>
            </remedy>
        </troubleSolution>
        <troubleSolution>
            <remedy id="checkwheels">
              <title>Checking your wheels</title>
              <steps>
                <step>
                    ...
                </step>
                ...
              </steps>
            </remedy>
        </troubleSolution>
    </troublebody>
</troubleshooting>
```

\<diagnostics-steps>

The `<diagnostics-steps>` element includes step-by-step information that can help determine which of multiple cause-remedy pairs apply to a specific situation. Results of each diagnostic step may link to the specific cause-remedy section that applies to each result.

Usage information

Use this element in situations where causes are not be simply observable, but require the user to perform a series of steps to determine the cause of the problem; for example, set breakpoints, send commands, push buttons, and so on.

Specialization hierarchy

The `<diagnostics-steps>` element is specialized from `<section>`. It is defined in the troubleshooting module.

Attributes

The following attributes are available on this element: Universal attribute group and `@spectitle`.

Example

The following code sample shows how a troubleshooting topic would provide step-by-step instructions to help a user determine which cause and therefore which solution applies to them.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE troubleshooting PUBLIC "-//OASIS//DTD DITA 2.0 Troubleshooting//EN"
    "troubleshooting.dtd">
<troubleshooting>
    <title/>
    <shortdesc/>
    <prolog/>
    <troublebody>
```

```
      <condition/>
      <diagnostics>
        <diagnostics-steps>
          <steps>
            <step>
                <cmd>Open the command prompt and type <userinput>ipconfig</userinput>.</cmd>
                <info>
                  <p>The Default Gateway (listed last) is your router's IP. Your computer's IP
                     address is the number next to "IP Address." If your computer's IP address
                     starts with 169, the computer is not receiving a valid IP address. See
                     <xref href="#./ipaddress"/></p>
                </info>
            </step>
            <step>
                <cmd>If your address does not start with 169, type <userinput>tracert
                     8.8.8.8</userinput> to view each step between your router and the Google
                     DNS servers.</cmd>
                <info>If the error comes up early along the pathway, see
                      <xref href="#./resetnetwork"/></info>
            </step>
            <step>
                <cmd>If everything is working with Google, use the command
                  <cmdname>nslookup</cmdname> to determine if there's a problem with the
                  server you are trying to connect to.</cmd>
                <info>If you received results such as <msgph>Timed Out</msgph>,
                      <msgph>Server Failure</msgph>, <msgph>Refused</msgph>,
                      <msgph>No Response from Server</msgph>, or <msgph>Network is
                      Unreachable<?msgph>, the problem originates in the DNS server for
                      your destination. </info>
            </step>
            <step>
                <cmd>If the previous steps turn up no problems, contact your ISP to see if
                      they're having issues.</cmd>
            </step>
          </steps>
        </diagnostics-steps>
      </diagnostics>
      <troubleSolution>
         <remedy id="ipaddress">
            <title>Resetting Your IP Address</title>
         <steps>
           <step>
              ...
           </step>
           ...
           </steps>
         </remedy>
      </troubleSolution>
      <troubleSolution>
         <remedy id="resetnetwork">
            <title>Resetting Your Local Network</title>
         <steps>
           <step>
              ...
           </step>
           ...
            </steps>
            </remedy>
         </troubleSolution>
      </troublebody>
   </troubleshooting>
```