VisualEther Protocol Analyzer 7.0

WIRESHARK TO SEQUENCE DIAGRAMS

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Wireshark to sequence diagrams

Convert Wireshark pcap to sequence diagrams

1. Save Wireshark capture in a PCAP file.
2 Browse and select the PCAP file.

3 Load a sample FXT file that defines the templates for the messages to be included in the sequence diagram.

4 Click to generate sequence diagrams.
VisualEther generates a sequence diagram.

Click on any message in the PDF file to see field level details.

See a detailed dump of the message.
Select messages and parameters to include in sequence diagrams

**YouTube** Add parameters to messages

1. Right click and copy the field name.

Note that Wireshark also displays the fieldname in the status bar.
Define a FXT file with templates for messages you wish to include in the message.

2. Click “SCTP”. The selected field code is used as the opcode.

3. Similarly copy the fieldnames from Wireshark and click “param” for each parameter.

Note: We selected "SCTP" as the message type. You can choose between SCTP, TCP, UDP, IP, WIFI, MAC, or roll out your custom message type.
Click the “Generate Diagrams” button and find the newly added message in the sequence diagram.
 Bookmark messages for quick access

 Bookmark error conditions in PDF

<?xml version="1.0" encoding="utf-8"?>
<FXT>

<!-- Message Template for Domain Name System (DNS) Extraction -->
<!-- Capture DNS messages apply the greenkhaki style. Use the
“bookmark” attribute for quick navigation in the PDF file. -->
<udp-message style="greenkhaki" bookmark="true">
  <opcode regex-match="^Domain">dns</opcode>
  <param>dns.qry.name</param>
  <param>dns.resp.name</param>
  <param>dns.Addr</param>
</udp-message>

<!-- More templates … -->
</FXT>

1 Select the messages to be bookmarked.

2 Bookmarked messages let you navigate quickly through a large sequence diagram.
Use regular expressions for content based filter selection and styling

Add style and color

Flag error messages with regular expressions

Filters can be applied on the content of the captured field.

```xml
<?xml version="1.0" encoding="utf-8"?>
<FXT>
  <!-- Template for Domain Name System (DNS) Extraction -->
  <!-- Capture DNS messages that end with "(query)". 
       Apply the greenkhaki style. 
       Also bookmark in PDF.
  -->
  <udp-message style="greenkhaki" bookmark="true">
    <opcode regex-match="\(query\)\$">dns</opcode>
    <param>dns.qry.name</param>
    <param>dns.resp.name</param>
    <param>dns.Addr</param>
  </udp-message>

  <!-- Other DNS messages are included but they aren't bookmarked -->
  <udp-message style="greenkhaki">
    <opcode regex-match="^Domain">dns</opcode>
    <param>dns.qry.name</param>
    <param>dns.resp.name</param>
    <param>dns.Addr</param>
  </udp-message>

  <!-- Template for Hypertext Transfer Protocol (HTTP) Request Extraction -->
  <tcp-message style="redblue">
    <opcode>http.request.method</opcode>
    <param>http.request.uri</param>
    <param>http.request.version</param>
    <param>http.response.code</param>
    <param>http.If-Modified-Since</param>
    <param>tcp.len</param>
  </tcp-message>

  <!--more... -->

</FXT>
```
Use regular expression substitution to customize the displayed text

Customize message titles with regex

<?xml version="1.0" encoding="utf-8"?>
<FXT>

<!-- Call control messages -->
<sctp-message style="bluegreen">
  <opcode regex-match=".*DTAP Call Control Message Type: (.*)">
    <regex-replace="DTAP CC $1">gsm_a.dtap_msg_cc_type</regex-replace>
  </opcode>
  <param>gsm_a.cld_party_bcd_num</param>
  <param>gsm_a.numbering_plan_id</param>
  <param>gsm_a_dtap.cause</param>
  <param>gsm_a.imsi</param>
</sctp-message>

<!-- Mobility management messages -->
<sctp-message style="purpleblue" bookmark="true">
  <opcode regex-match=".*DTAP Mobility Management Message Type: (.*)">
    <regex-replace="DTAP MM $1">gsm_a.dtap_msg_mm_type</regex-replace>
  </opcode>
  <param>gsm_a.cld_party_bcd_num</param>
  <param>gsm_a.numbering_plan_id</param>
  <param>gsm_a_dtap.cause</param>
  <param>gsm_a.imsi</param>
</sctp-message>

<!-- RANAP signaling -->
<sctp-message style="redblue">
  <opcode regex-match="procedureCode: id- (.*)">
    <regex-replace="RANAP $1">ranap.procedureCode</regex-replace>
  </opcode>
  <param>ranap.pLMNidentity</param>
  <param>ranap.id</param>
  <param>gsm_a.imsi</param>
</sctp-message>

</FXT>

You can further customize the content of opcodes and parameters with regular expression substitution.

Group the patterns you are interested in and reference them with $1, $2 ...
Specify a host file to map IP addresses to meaningful names

1. By default, IP addresses are used in sequence diagram headings.

2. Map the addresses to names in HOSTS.txt file and place it in the same directory as the PCAP file.

3. Generate diagrams. Notice that the sequence diagrams now use the hosts file translation.
Choose between port level and IP address level sequence diagrams

VisualEther lets to draw sequence diagrams at IP address level or port level. The difference between the three options is best explained with the Options dialog selection and the generated sequence diagram.

Draw instance axis at IP address level

Options dialog selection:
- TCP, UDP and SCTP port level
- IP Address level and display port numbers
- IP Address level

Sequence diagram axis at IP address level.
Draw instance axis at IP address level and display port numbers

- Source and destination ports are displayed.
Draw instance axis at TCP, UDP and SCTP port level

Sequence diagram axis are at port level.
Filter out periodic and traffic messages

When capturing SIP and IMS calls, RTP and RTCP packets can crowd out the signaling handshakes. Periodic messages like the Wi-Fi beacon can also clutter the generated sequence diagram.

A filter attribute can be added to filter out periodic and traffic flow messages. When the filter attribute is set, only one message of the matching message type is displayed.

1 The SIP-RTP sample results in a 76-page call flow if all RTP packets are shown!
2 Add a filter for RTP messages. This removes out all but one RTP message in each direction.

3 Set the filter attribute in the .fxt.xml file. The call flow shrinks to 4 pages focused on call signaling.
Extract tunneled messages

When dealing with tunneling protocols like GTP you can choose between the outer and the inner message by specifying the skip attribute.

By default, VisualEther will select the fields from the outer message.

Fields from the inner message can be selected by using the skip=“1” attribute.
Capturing the outer message

VisualEther defaults to capturing the outer message.

```xml
<?xml version="1.0" encoding="utf-8"?>
<FXT>
  <message>
    <opcode>gtp.message</opcode>
    <param>gtp.length</param>
    <param>gtp.teid</param>
    <param>gtp.seq_number</param>
    <param>gtp.apn</param>
    <param>pap.code</param>
    <param>gtp.gsn_ipv4</param>
    <param>gsm_map.address.digits</param>
    <source>
      <address>ip.src</address>
    </source>
    <destination>
      <address>ip.dst</address>
    </destination>
  </message>
</FXT>
```

Capturing the inner message

Adding a skip-attribute results in VisualEther ignoring the outer message fields and capturing the fields from the inner message.

```xml
<?xml version="1.0" encoding="utf-8"?>
<FXT>
  <message>
    <opcode>icmp.type</opcode>
    <param skip="1">ip.len</param>
    <source>
      <address skip="1">ip.src</address>
    </source>
    <destination>
      <address skip="1">ip.dst</address>
    </destination>
  </message>
</FXT>
```
Specify the color and style for messages

```xml
<?xml version="1.0" encoding="utf-8"?>
<FXT>
  <!-- Message Template for Domain Name System (DNS) Extraction -->
  <udp-message style="greenkhaki">
    <opcode regex-match="^Domain">dns</opcode>
    <param>dns.qry.name</param>
    <param>dns.resp.name</param>
    <param>dns.Addr</param>
  </udp-message>

  <!-- Template for Hypertext Transfer Protocol (HTTP) Request Extraction -->
  <tcp-message style="redblue">
    <opcode>http.request.method</opcode>
    <param>http.request.uri</param>
    <param>http.request.version</param>
    <param>http.response.code</param>
    <param>http.If-Modified-Since</param>
    <param/tcp.len/></param
  </tcp-message>

  <!-- Template for Hypertext Transfer Protocol (HTTP) Response -->
  <tcp-message style="purpleblue">
    <opcode>http.response.code</opcode>
    <param>http.request.uri</param>
    <param>http.request.version</param>
    <param>http.response.code</param>
    <param/tcp.len/></param
  </tcp-message>

  <!-- Default Message Template for Hypertext Transfer Protocol (HTTP) -->
  <tcp-message style="bluegreen">
    <opcode>http</opcode>
    <param>http.request.uri</param>
    <param>http.request.version</param>
    <param>http.response.code</param>
    <param/tcp.len/></param
  </tcp-message>
</FXT>
```

1. Add a style to a filter to choose the font, size and color.
2 Regenerate documents with selected styles.
3 Customize the themes by editing the VisualEther.fdl file.

Sample styles

**style** redblue: *textcolor*=FIREBRICK, *color*=ROYALBLUE, *paramcolor*=SLATEBLUE

**style** bluegreen: *textcolor*=DODGERBLUE, *color*=LIMEGREEN, *paramcolor*=FORESTGREEN

**style** bluegrey: *textcolor*=MEDIUMBLUE, *color*=GREY, *paramcolor*=DIMGREY

**style** greenhaki: *textcolor*=OLIVEDRAB, *color*=DARKHAKI, *paramcolor*=OLIVE

**style** purpleblue: *textcolor*=PURPLE, *color*=DARKBLUE, *paramcolor*=DODGERBLUE
Explore the examples

Get started with examples that cover a range of protocols from ARP to X.509. The examples include PCAP files, extraction template files (.FXT.XML).

Some examples include Hosts.txt file that allows you to substitute IP address axis headings with host names.

The examples are installed in:

My Documents\VisualEther Documents\Examples

1. Click “Explore Examples” to browse the available examples.
2. Choose from more than 45 examples.
run-all.bat – Script diagram generation

Add the VisualEther installation directory to the default search path. Use the `start /wait` primitive in batch files to invoke VisualEther via a command-line interface.

The `run-all.bat` sample batch file in the Examples directory generates diagrams from all the samples included with VisualEther.
FXT reference

Supported protocols

```xml
<?xml version="1.0" encoding="utf-8" ?>

<FXT>
  <!-- Message Templates for Session Initiation Protocol (SIP) Extraction -->
  <udp-message>
    <opcode display="brief">sip.Request-Line</opcode>
    <param display="brief">sip.from.addr</param>
    <param display="brief">sdp.connection_info</param>
  </udp-message>

  <!-- Message Template for File Transfer Protocol (FTP) Extraction -->
  <tcp-message>
    <opcode display="brief">ftp</opcode>
    <param display="brief">ftp.response.code</param>
    <param display="brief">ftp.response.arg</param>
    <param display="brief">ftp.request.command</param>
  </tcp-message>
</FXT>
```
<!-- Message Template for Transaction Capabilities Application Part (TCAP) Extraction -->
<sctp-message style="redblue">
<opcode>tcap</opcode>
<param>tcap.oid</param>
<param>tcap.application_context_name</param>
<param>tcap.otid</param>
<param>tcap.msgtype</param>
</sctp-message>

SCTP v4 for telecom signaling

<sctpv6-message style="redblue">
<opcode>tcap</opcode>
<param>tcap.oid</param>
<param>tcap.application_context_name</param>
<param>tcap.otid</param>
<param>tcap.msgtype</param>
</sctpv6-message>

SCTP v6 for telecom signaling

<!-- Message Template for Internet Control Message Protocol (ICMP) Extraction -->
<ip-message>
<opcode>icmp.type</opcode>
<param>icmp.seq</param>
</ip-message>

IPv4

<ipv6-message>
<opcode>icmp.type</opcode>
<param>icmp.seq</param>
</ipv6-message>

IPv6

<!-- Display the beacon message, but filter out duplicates -->
<wifi-message filter="true" style="grey">
<opcode>regex-match="Type/Subtype: Beacon (.*)" regex-replace="IEEE 802.11: Beacon $1" wlan.fc.type_subtype</opcode>
<param>wlan.seq</param>
<param>regex-match="Tag interpretation: (.*)" regex-replace="$1" wlan_mgt.tag.interpretation</param>
<param>data.len</param>
</wifi-message>

WiFi – 802.11 Wireless LAN
Define your own protocols

You are not limited to the predefined protocols. You can add filters for any custom protocol using the <source> and <destination> tags.

The following example demonstrates how the source and destination entities can be specified using the source and destination tags. These address tag in source and destination identifies the node. The port tag specifies the field that maps to the port number. Here the originating and destination point codes are used as the source and destination nodes. The SLS field is used as the port number.

<?xml version="1.0" encoding="utf-8" ?>
<!----
<!-- MAP (Mobile Application Part) messages -->
<!--
<message style = "purpleblue"
<opcode regx-match="\d\{4\} \(.\)" regx-replace="MAP \$1">ansi_tcap.private</opcode>
<param>ansi_map.bcd_digits</param>
<param>ansi_map.mscid</param>
<param>ansi_map.serviceIndicator</param>
<param>ansi_map.actionCode</param>
<param>ansi_683.for_msg_type</param>
<param>ansi_683.rev_msg_type</param>
<param>ansi_tcap.ComponentPDU</param>
<source>
  <address>mtp3.opc</address>
  <port>mtp3.sls</port>
</source>
<destination>
  <address>mtp3.dpc</address>
  <port>mtp3.sls</port>
</destination>
</message>
<!---->
</FXT>
Specify the message type and parameters

The `<opcode>` tag extracts the message name. A message is only included if a matching `<opcode>` tag is found.

Use the `<param>` tag to specify the parameters that should be included with the message.
Include remarks

You may also specify a `<remark>` tag to display a field next to the message. If no tag is specified, the time of message receive will be displayed.

```xml
<sctp-message style="purpleblue" bookmark="true">
  <remark>
    Frame 292: 118 bytes on wire (944 bits), 118 bytes captured (944 bits)
  </remark>
  <regex-match>*DTAP Mobility Management Message Type: (.*)" regex-replace="DTAP MM $1">gsm_a.dtap_msg_mm_type</regex-match>
  <param>gsm_a.cld_party_bcd_num</param>
  <param>gsm_a.numbering_plan_id</param>
  <param>gsm_a_dtap.cause</param>
  <param>gsm_a.imsi</param>
  <remark>frame</remark>
</sctp-message>
```
Attributes

Bookmark messages

Color the messages in a combination of Green and Khaki colors.

```
<udp-message style="greenkhaki" bookmark="true">
    <opcode regex-match="\((query)\)" dns/>
    <param>dns.qry.name</param>
    <param>dns.resp.name</param>
    <param>dns.Addr</param>
</udp-message>
```

Bookmark the message in PDF for easy access.

```
<udp-message>
    <opcode regex-match="\((query)\)">
        <param>dns.qry.name</param>
        <param>dns.resp.name</param>
        <param>dns.Addr</param>
    </opcode>
</udp-message>
```

Only match DNS messages that end with the string "(query)"

Substitute default Wireshark text with regular expressions

```
<sctp-message style="redblue">
    <opcode regex-match="procedureCode: id-(.*)" regex-replace="RANAP $1">ranap.procedureCode</opcode>
    <param>ranap.plMNidentity</param>
    <param>ranap.id</param>
    <param>gsm_a.imsi</param>
</sctp-message>
```

Replace Wireshark text. The extracted part is substituted with $1.
Filter out periodic messages

<!-- Display the beacon message, but filter out duplicates -->
<wifi-message filter="true" style="grey">
  <opcode regex-match="Type/Subtype: Beacon (.*)"
    regex-replace="IEEE 802.11: Beacon $1">wlan.fc.type_subtype</opcode>
  <param> wlan.seq </param>
  <param regex-match="Tag interpretation: (.*)"
    regex-replace="$1">wlan_mgt.tag.interpretation</param>
  <param> data.len </param>
</wifi-message>

Choose the field to select from multiple occurrences in a message

Use the skip attribute to ignore the specified number of occurrences of a field code. Use the skip attribute to extract tunneled messages.

<?xml version="1.0" encoding="utf-8"?>
<FXT>
  <message>
    <opcode>icmp.type</opcode>
    <param skip="1">ip.len</param>
    <source>
      <address skip="1">ip.src</address>
    </source>
    <destination>
      <address skip="1">ip.dst</address>
    </destination>
  </message>
</FXT>
Regular expressions
The samples included with VisualEther should be suitable for a large variety of matching and searching scenarios. For more complicated needs we recommend:

Regular expression – quick reference

Free regular expression tool - Expresso
http://www.ultrapico.com/expresso.htm
Working around incomplete Wireshark field definitions

In rare cases, you will find that Wireshark does not have the correct field definition.

For example, the MP Reach NLRI fields do not have a field name (normally field name is displayed in the status bar).

In such cases text before the colon may be used as the field name.

```plaintext
<param>bgp.MP Reach NLRI prefix length</param>
<param>bgp.MP Reach NLRI prefix</param>
```
Colors

A handy reference for predefined colors in EventStudio. Use these definitions to define your own styles in VisualEther.fdl file.

<table>
<thead>
<tr>
<th>Color</th>
<th>RGB Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLACK</td>
<td>&quot;0.0,0.0,0.0&quot;</td>
</tr>
<tr>
<td>DIMGRAY</td>
<td>&quot;0.41,0.41,0.41&quot;</td>
</tr>
<tr>
<td>DIMGREY</td>
<td>&quot;0.41,0.41,0.41&quot;</td>
</tr>
<tr>
<td>GRAY</td>
<td>&quot;0.50,0.50,0.50&quot;</td>
</tr>
<tr>
<td>GREY</td>
<td>&quot;0.50,0.50,0.50&quot;</td>
</tr>
<tr>
<td>DARKGREY</td>
<td>&quot;0.66,0.66,0.66&quot;</td>
</tr>
<tr>
<td>DARKGRAY</td>
<td>&quot;0.66,0.66,0.66&quot;</td>
</tr>
<tr>
<td>SILVER</td>
<td>&quot;0.75,0.75,0.75&quot;</td>
</tr>
<tr>
<td>LIGHGRAY</td>
<td>&quot;0.83,0.83,0.83&quot;</td>
</tr>
<tr>
<td>LIGHTGREY</td>
<td>&quot;0.83,0.83,0.83&quot;</td>
</tr>
<tr>
<td>GAINSBORO</td>
<td>&quot;0.86,0.86,0.86&quot;</td>
</tr>
<tr>
<td>WHITESMOKE</td>
<td>&quot;0.96,0.96,0.96&quot;</td>
</tr>
<tr>
<td>WHITE</td>
<td>&quot;1.00,1.00,1.00&quot;</td>
</tr>
<tr>
<td>ROSYBROWN</td>
<td>&quot;0.74,0.56,0.56&quot;</td>
</tr>
<tr>
<td>INDIANRED</td>
<td>&quot;0.80,0.36,0.36&quot;</td>
</tr>
<tr>
<td>BROWN</td>
<td>&quot;0.65,0.16,0.16&quot;</td>
</tr>
<tr>
<td>FIREBRICK</td>
<td>&quot;0.70,0.13,0.13&quot;</td>
</tr>
<tr>
<td>LIGHTCORAL</td>
<td>&quot;0.94,0.50,0.50&quot;</td>
</tr>
<tr>
<td>MAROON</td>
<td>&quot;0.50,0.0,0.0&quot;</td>
</tr>
<tr>
<td>DARKRED</td>
<td>&quot;0.55,0.0,0.0&quot;</td>
</tr>
<tr>
<td>RED</td>
<td>&quot;1.00,0.0,0.0&quot;</td>
</tr>
<tr>
<td>SNOW</td>
<td>&quot;1.00,0.98,0.98&quot;</td>
</tr>
<tr>
<td>SALMON</td>
<td>&quot;0.98,0.50,0.45&quot;</td>
</tr>
<tr>
<td>MISTYROSE</td>
<td>&quot;1.00,0.89,0.88&quot;</td>
</tr>
<tr>
<td>TOMATO</td>
<td>&quot;1.00,0.39,0.28&quot;</td>
</tr>
<tr>
<td>Darksalmon</td>
<td>&quot;0.91,0.59,0.48&quot;</td>
</tr>
<tr>
<td>ORANGERED</td>
<td>&quot;1.00,0.27,0.0&quot;</td>
</tr>
<tr>
<td>CORAL</td>
<td>&quot;1.00,0.50,0.31&quot;</td>
</tr>
<tr>
<td>LIGHTSALMON</td>
<td>&quot;1.00,0.63,0.48&quot;</td>
</tr>
<tr>
<td>Color</td>
<td>RGB Value</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------</td>
</tr>
<tr>
<td>SIENNA</td>
<td>&quot;0.63,0.32,0.18&quot;</td>
</tr>
<tr>
<td>CHOCOLATE</td>
<td>&quot;0.82,0.41,0.12&quot;</td>
</tr>
<tr>
<td>SADDLEBROWN</td>
<td>&quot;0.55,0.27,0.7&quot;</td>
</tr>
<tr>
<td>SEASHELL</td>
<td>&quot;1.00,0.96,0.93&quot;</td>
</tr>
<tr>
<td>SANDYBROWN</td>
<td>&quot;0.96,0.64,0.38&quot;</td>
</tr>
<tr>
<td>PEACHPUFF</td>
<td>&quot;1.00,0.85,0.73&quot;</td>
</tr>
<tr>
<td>PERU</td>
<td>&quot;0.80,0.52,0.25&quot;</td>
</tr>
<tr>
<td>LINEN</td>
<td>&quot;0.98,0.94,0.90&quot;</td>
</tr>
<tr>
<td>DARKORANGE</td>
<td>&quot;1.00,0.55,0.0&quot;</td>
</tr>
<tr>
<td>BISQUE</td>
<td>&quot;1.00,0.89,0.77&quot;</td>
</tr>
<tr>
<td>TAN</td>
<td>&quot;0.82,0.71,0.55&quot;</td>
</tr>
<tr>
<td>BURLYWOOD</td>
<td>&quot;0.87,0.72,0.53&quot;</td>
</tr>
<tr>
<td>ANTIQUEWHITE</td>
<td>&quot;0.98,0.92,0.84&quot;</td>
</tr>
<tr>
<td>NAVAJOWHITE</td>
<td>&quot;1.00,0.87,0.68&quot;</td>
</tr>
<tr>
<td>BLANCHEDALMOND</td>
<td>&quot;1.00,0.92,0.80&quot;</td>
</tr>
<tr>
<td>PAPAYAWHIP</td>
<td>&quot;1.00,0.94,0.84&quot;</td>
</tr>
<tr>
<td>MOCCASIN</td>
<td>&quot;1.00,0.89,0.71&quot;</td>
</tr>
<tr>
<td>WHEAT</td>
<td>&quot;0.96,0.87,0.70&quot;</td>
</tr>
<tr>
<td>OLDLACE</td>
<td>&quot;0.99,0.96,0.90&quot;</td>
</tr>
<tr>
<td>ORANGE</td>
<td>&quot;1.00,0.65,0.0&quot;</td>
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<tr>
<td>FLORALWHITE</td>
<td>&quot;1.00,0.98,0.94&quot;</td>
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<tr>
<td>GOLDENROD</td>
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<tr>
<td>DARKGOLDENROD</td>
<td>&quot;0.72,0.53,0.4&quot;</td>
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<tr>
<td>CORNSILK</td>
<td>&quot;1.00,0.97,0.86&quot;</td>
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<tr>
<td>GOLD</td>
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<tr>
<td>KHAKI</td>
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</tr>
<tr>
<td>LEMONCHIFFON</td>
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<tr>
<td>PALEGOLDENROD</td>
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<tr>
<td>DARKKHAKI</td>
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<tr>
<td>BEIGE</td>
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<tr>
<td>LIGHTGOLDENRODYELLOW</td>
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<tr>
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<tr>
<td>YELLOW</td>
<td>&quot;1.00,1.00,0.0&quot;</td>
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<tr>
<td>LIGHTYELLOW</td>
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</tr>
<tr>
<td>IVORY</td>
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</tr>
<tr>
<td>OLIVEDRAB</td>
<td>&quot;0.42,0.56,0.14&quot;</td>
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<td>Hex Code</td>
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<tr>
<td>GREENYELLOW</td>
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<tr>
<td>LAWNGREEN</td>
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<tr>
<td>CHARTREUSE</td>
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<td>DARKSEAGREEN</td>
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<td>FORESTGREEN</td>
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<td>LIMEGREEN</td>
<td>&quot;0.20,0.80,0.20&quot;</td>
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<tr>
<td>LIGHTGREEN</td>
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<tr>
<td>PALEGREEN</td>
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<tr>
<td>GREEN</td>
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</tr>
<tr>
<td>LIME</td>
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<tr>
<td>HONEYDEW</td>
<td>&quot;0.94,1.00,0.94&quot;</td>
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<tr>
<td>SPRINGGREEN</td>
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<td>MINTCREAM</td>
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<tr>
<td>TURQUOISE</td>
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<tr>
<td>LIGHTSEAGREEN</td>
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<tr>
<td>MEDIUMTURQUOISE</td>
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<td>DARKSLATEGREY</td>
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<tr>
<td>PALETURQUOISE</td>
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<tr>
<td>TEAL</td>
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<tr>
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<td>CYAN</td>
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<tr>
<td>LIGHTCYAN</td>
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<tr>
<td>AZURE</td>
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<tr>
<td>DARKTURQUOISE</td>
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<td>CADETBLUE</td>
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<td>POWDERBLUE</td>
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<td>Color Name</td>
<td>RGB Value</td>
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<tr>
<td>LIGHTBLUE</td>
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</tr>
<tr>
<td>DEEPSKYBLUE</td>
<td>&quot;0.0,0.75,1.00&quot;</td>
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<tr>
<td>SKYBLUE</td>
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<tr>
<td>LIGHTSKYBLUE</td>
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<tr>
<td>STEELBLUE</td>
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<tr>
<td>ALICEBLUE</td>
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<tr>
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<tr>
<td>LIGHTSLATEGREY</td>
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</tr>
<tr>
<td>DODGERBLUE</td>
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<tr>
<td>LIGHTSTEELBLUE</td>
<td>&quot;0.69,0.77,0.87&quot;</td>
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<tr>
<td>CORNFLOWERBLUE</td>
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</tr>
<tr>
<td>ROYALBLUE</td>
<td>&quot;0.25,0.41,0.88&quot;</td>
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<tr>
<td>MIDNIGHTBLUE</td>
<td>&quot;0.10,0.10,0.44&quot;</td>
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<tr>
<td>LAVENDER</td>
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<tr>
<td>NAVY</td>
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<tr>
<td>DARKBLUE</td>
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</tr>
<tr>
<td>MEDIUMBLUE</td>
<td>&quot;0.0,0.0,0.80&quot;</td>
</tr>
<tr>
<td>BLUE</td>
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</tr>
<tr>
<td>GHOSTWHITE</td>
<td>&quot;0.97,0.97,1.00&quot;</td>
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<td>Darkslateblue</td>
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<td>SLATEBLUE</td>
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<tr>
<td>MEDIUMPURPLE</td>
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<tr>
<td>BLUEVIOLET</td>
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<tr>
<td>INDIGO</td>
<td>&quot;0.29,0.0,0.51&quot;</td>
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<tr>
<td>DARKORCHID</td>
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<tr>
<td>DARKVIOLET</td>
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<tr>
<td>MEDIUMMORCHID</td>
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<tr>
<td>THISTLE</td>
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<td>PLUM</td>
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<td>PURPLE</td>
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<tr>
<td>DARKMAGENTA</td>
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<tr>
<td>FUCHSIA</td>
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<tr>
<td>Color</td>
<td>RGB Color</td>
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<tr>
<td>----------</td>
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<tr>
<td>MAGENTA</td>
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<tr>
<td>ORCHID</td>
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<tr>
<td>MEDIUMVIOLETRED</td>
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<tr>
<td>DEEPPINK</td>
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</tr>
<tr>
<td>HOTPINK</td>
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<tr>
<td>PALEVIOLETRED</td>
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<tr>
<td>LAVENDERBLUSH</td>
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<tr>
<td>CRIMSON</td>
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</tr>
<tr>
<td>PINK</td>
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</tr>
<tr>
<td>LIGHTPINK</td>
<td>&quot;1.00,0.71,0.76&quot;</td>
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