Premium IP Management

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Cambridge

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Premium IP Management

- Premium IP service implemented using DiffServ EF PHB
- Service currently enabled only on GEANT network
- Admission Control and Policing currently done on the GEANT boundary routers
- Operational procedure defined (SEQUIN)
- Service management is done manually
- Service set up, maintenance and termination is done by phone calls and emails
Need for Automation

• Considerable manual effort required
• Complexity in keeping track of:
  • Path information
  • Current and future reservations
  • Premium IP utilisation levels
  • Changes in network topology
• Multi-party communication
System Architecture

- Java web-based architecture
- Using Apache 1.3 web server, Tomcat servlet container & MySQL Database
Application Architecture

• Use open source software
• Reusable component-based architecture
• Flexible & Extensible
  • Customisable user interface
  • Parameter driven
  • XML interfaces for communication
• Work with all major browser platforms
Authentication & Authorisation

1. Authentication compatible with current monitoring tools
2. Two levels of authorisation
   1. Function control (modules)
   2. Data control (data records)
3. Immediate users - APM’s, NOC, DANTE
4. In future, access can be given to other users
dante.anand,

Welcome to Premium IP
Path Finder

- Find shortest path between two end points
  - GEANT NREN to NREN
  - GEANT Core Router to Core Router
- Dynamic based upon configured IS-IS cost
- A reusable component
- Possible web service
### Path Finder

#### Shortest Path between UKERNA and Hungarnet

<table>
<thead>
<tr>
<th>Link Source</th>
<th>Source Interface</th>
<th>Link Destination</th>
<th>Destination Interface</th>
<th>ISIS cost</th>
<th>Link Capacity (Mbps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JANET Access router</td>
<td>NA</td>
<td>uk1.uk.geant.net</td>
<td>POS 2/2/0</td>
<td>10</td>
<td>2500.0</td>
</tr>
<tr>
<td>uk1.uk.geant.net</td>
<td>POS 7/0</td>
<td>fr1.fr.geant.net</td>
<td>POS 7/0/0</td>
<td>70</td>
<td>10000.0</td>
</tr>
<tr>
<td>fr1.fr.geant.net</td>
<td>POS 6/0/0</td>
<td>ch1.ch.geant.net</td>
<td>POS 6/0/0</td>
<td>70</td>
<td>10000.0</td>
</tr>
<tr>
<td>ch1.ch.geant.net</td>
<td>POS 7/0/0</td>
<td>at1.at.geant.net</td>
<td>POS 7/1/0</td>
<td>100</td>
<td>10000.0</td>
</tr>
<tr>
<td>at1.at.geant.net</td>
<td>POS 1/2/0</td>
<td>hu1.hu.geant.net</td>
<td>POS 1/2/0</td>
<td>400</td>
<td>2500.0</td>
</tr>
<tr>
<td>hu1.hu.geant.net</td>
<td>POS 1/1/0</td>
<td>Hungarnet Access Router</td>
<td>NA</td>
<td>10</td>
<td>2500.0</td>
</tr>
</tbody>
</table>
Utilisation

- Check Premium IP reservation levels on each intermediate link along the path
- Take into account all active reservation during the given time period
- Search by
  - Link & Date
  - Link & Date Range
  - Path & Date
  - Path & Date Range
- Display the available Premium IP capacity
# Premium IP Utilisation

## Utilisation by Date Range

<table>
<thead>
<tr>
<th>Source</th>
<th>uk1.uk.geant.net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination</td>
<td>fr1.fr.geant.net</td>
</tr>
<tr>
<td>Link Capacity</td>
<td>10000000 kbps</td>
</tr>
<tr>
<td>Reservable Premium IP Percentage</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Reservable Premium IP Capacity</td>
<td>1000000.0 kbps</td>
</tr>
<tr>
<td>Start Date</td>
<td>10/10/2003 (DD/MM/YYYY)</td>
</tr>
<tr>
<td>End Date</td>
<td>20/10/2003 (DD/MM/YYYY)</td>
</tr>
</tbody>
</table>

## Daily Utilisation

<table>
<thead>
<tr>
<th>Date</th>
<th>Reserved Capacity (kbps)</th>
<th>Percentage Reserved (%)</th>
<th>Available Capacity (kbps)</th>
<th>Percentage Available (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/10/2003</td>
<td>1250</td>
<td>0.125</td>
<td>998750.0</td>
<td>99.875</td>
</tr>
<tr>
<td>11/10/2003</td>
<td>1350</td>
<td>0.136</td>
<td>998650.0</td>
<td>99.865</td>
</tr>
<tr>
<td>12/10/2003</td>
<td>1350</td>
<td>0.135</td>
<td>998650.0</td>
<td>99.865</td>
</tr>
<tr>
<td>13/10/2003</td>
<td>1350</td>
<td>0.135</td>
<td>998650.0</td>
<td>99.865</td>
</tr>
<tr>
<td>14/10/2003</td>
<td>1350</td>
<td>0.135</td>
<td>998650.0</td>
<td>99.865</td>
</tr>
<tr>
<td>15/10/2003</td>
<td>1350</td>
<td>0.135</td>
<td>998650.0</td>
<td>99.865</td>
</tr>
<tr>
<td>16/10/2003</td>
<td>1300</td>
<td>0.13</td>
<td>998700.0</td>
<td>99.87</td>
</tr>
<tr>
<td>17/10/2003</td>
<td>1300</td>
<td>0.13</td>
<td>998700.0</td>
<td>99.87</td>
</tr>
<tr>
<td>18/10/2003</td>
<td>1300</td>
<td>0.13</td>
<td>998700.0</td>
<td>99.87</td>
</tr>
<tr>
<td>19/10/2003</td>
<td>1300</td>
<td>0.13</td>
<td>990700.0</td>
<td>99.07</td>
</tr>
<tr>
<td>20/10/2003</td>
<td>1700</td>
<td>0.12</td>
<td>999700.0</td>
<td>99.97</td>
</tr>
</tbody>
</table>
Reservation

- Reservation management
  - View
  - Request
  - Modify
  - Cancel
- Based upon available Premium IP capacity
- Contact management
- IP Address management
## Premium IP - IP Details

**IP Address Details**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservation Number</td>
<td>12</td>
</tr>
<tr>
<td>Version</td>
<td>IPV4</td>
</tr>
<tr>
<td>IP</td>
<td>10.10.27.172</td>
</tr>
<tr>
<td>End Point</td>
<td></td>
</tr>
<tr>
<td>Created By</td>
<td>dante.anand</td>
</tr>
<tr>
<td>Date Created</td>
<td>26/08/2003</td>
</tr>
<tr>
<td>Modified By</td>
<td>dante.anand</td>
</tr>
<tr>
<td>Date Modified</td>
<td>26/08/2003</td>
</tr>
</tbody>
</table>

[Update IP] [Delete IP]
Electronic Mail Notification

- Automated email notification to:
  - User
  - DANTE - Premium IP team
  - NOC
- upon Reservation
  - Request
  - Modification
  - Cancellation
Other Functions

- **IS-IS Cost**
  - Display IS-IS cost of all links
  - Help to keep IS-IS cost up-to-date
- **Router Configuration**
  - For NOC to update router configuration
  - For DANTE to check router configuration
- **Reports**
- **Archival**
- **System Administration**
Possible enhancements

- Aggregation between domains
- Handle router, interface or link failures
- Multi-homed NREN’s (e.g. Abilene)
- Move components to web services
- ‘What-If’ analysis capability
- Multi-domain bandwidth broker
Q&A

Any further Questions, Comments, Feedback or Suggestions please contact
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