Helmholtz Association

Largest research organization in Germany

- 18 national research centers (6 with focus on Health Research)
- More than 38,000 staff
- Budget: more than € 4 bn

Max Delbrück Center for Molecular Medicine

<table>
<thead>
<tr>
<th>Basic Facts 2014</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MDC Core Budget 2014</td>
<td>€ 81 M</td>
</tr>
<tr>
<td>Extramural Funding 2014</td>
<td>€ 23 M</td>
</tr>
<tr>
<td>Shared 2nd place for DFG-funding nationwide</td>
<td></td>
</tr>
<tr>
<td>European Research Council (ERC) Grants</td>
<td>14</td>
</tr>
<tr>
<td>Research Groups</td>
<td>60</td>
</tr>
<tr>
<td>Staff (incl. guests), 25% international</td>
<td>1,653</td>
</tr>
<tr>
<td>Postdocs (incl. guests), 50% international</td>
<td>229</td>
</tr>
<tr>
<td>PhD Students (incl. guests), 44% international</td>
<td>374</td>
</tr>
<tr>
<td>Patent families</td>
<td>95</td>
</tr>
</tbody>
</table>
• MDC
• Leibniz Institute for Molecular Pharmacology (FMP)
• Charité
• (Startup) Companies
38 total staff in IT…
… and we are hiring
NETWORKING

• WAN:
  – Redundant 1 Gb/s connection to DFN (141.80.0.0/16 Class B network; mdc-berlin.de domain)
  – Redundant 10 Gb/s connection to BRAIN (Berlin Research Area Information Network)

• Extreme Network for campus networking (2016/17 upgrade of building switches to 40 Gb/s)
• Core routers are 10 Gb/s 6509 Cisco but will be changed this year to 40 Gb/s Extreme Network
• Firewall Fortinet FortiGate 1500D (8x10 Gb/s ports)
• WLAN controllers and APs are from Cisco
• HPC is using Dell/Force 10 but will change depending on tender results

• No IPv6 yet
HPC

RFP is out for
~70 compute nodes with
a 40 Gb/s backbone and
5 Tesla P100 GPUs

GPFS is now ~830 TB usable

NFS space on
5 Oracle ZFS appliances (HA)
and 2 Dell servers.
Total of ~3.4 PB usable space
INFRASTRUCTURE

• Authentication/Authorization
  – Active Directory (also for Linux and HPC)
• Email
  – Microsoft Exchange; Kemp Load Balancer/Proxy for OWA
• Backup / Archive
  – Just replaced 4 Oracle SL500 with 2 frames of IBM T4500 with 12 Jaguar drives (15 PB total capacity)
  – Moved from Oracle SAM-FS to Versity (new implementation of SAM-FS on Linux) as HSM
  – Veritas NetBackup
• Telephony
  – Not (yet) in IT. No comprehensive VoIP strategy yet.