What is “Co-Location?”

“Co-Location” is an ITS service that allows departments and researchers at the University of Hawaii to locate and operate their computing hardware inside professionally maintained data centers on the Manoa campus.

Why should I use this service?

This service offers several benefits which may be of value to you, including:

- Reliable power and cooling will increase the uptime of your equipment
- Physically secure facilities will better protect your computing equipment from theft, vandalism and accidental damage
- Moving equipment out of your local offices frees up space for your other priorities
- Efficient power and cooling reduces UH’s use of natural resources and overall expenses
- The environmentally hardened IT Center Data Center can reduce the risk of your equipment being damaged or unavailable due to natural disasters

ITS Data Centers

ITS provides the co-location service at two locations: The IT Center and Keller Hall.

Due to physical and logistical differences between the two facilities, the features of the co-location service will differ slightly between the two buildings. The exact differences are articulated throughout this document. When you order the service, ITS staff advise you on which data center works best for your needs.

What are the features of this service?

Users of this service can expect the following from ITS:

- **Consulting.** ITS can provide consulting assistance to help you plan for your use of the service.
- **Physical monitoring.** ITS will physically monitor the data center to make sure only approved personnel enter the facility.
• **Network monitoring.** ITS will monitor the data center network, firewall and other support services to ensure they are available and operating as expected.

• **Disposal.** When your data center equipment reaches end-of-life, ITS can make sure the equipment is disposed of in a secure and environmentally-friendly fashion.

• **Installation.** ITS will handle all equipment installation in the ITC Data Center in coordination with the customer. The customer can handle all equipment installation in the Keller Data Center. If desired, ITS staff can assist the customer with the initial physical installation and final removal of equipment in Keller as well. See Appendix 3 of this document for more detail on what exact support ITS will provide.

In addition, ITS staff can be contracted on an hourly basis to provide assistance beyond the scope of the defined service. For customers who would like this type of additional service, ITS will provide a simple “Statement of Work” describing the work and the expected cost of their service. The most up to-date hourly rates can be found on the ITS service price sheet.

**What do I have to do?**

As a consumer of this service, you are responsible for the following:

• **Access Control.** You must identify no more than two people that shall have physical access to the data center and your equipment. You must let ITS know in a timely fashion when changes to access are necessary, for example, when someone on the list leaves your department.

• **Badges.** You are responsible to hold and protect any data center badges/keys you are given. You are responsible to make sure only the people you have specifically put on your ITS access list enter the facility. You are also responsible for returning all badges/keys to ITS in a timely manner. ITS may charge you for lost badges/keys.

• **System operation.** You are responsible for the operation of your computing devices including managing hardware upgrades and maintenance, installations, removals, and software upgrades.

• **Network connectivity.** If you purchase the full cabinet service, you are responsible for managing the network within your cabinet. If you purchase the per rack unit service, ITS will handle these responsibilities.

• **Security of devices.** You’re responsible for following University guidelines and general best practices for securing your IT components. This includes registering and patching servers, using appropriate malware avoidance software and maintaining access control lists for your devices. If you handle HIPAA, FERPA, or PCI data you are responsible for identifying an appropriate compliance officer to ensure you are handling and securing your data in accordance with UH, state and federal policies for handling such data.

• **Providing network and firewall requirements.** You’re responsible for providing ITS with any network or firewall requirements for your systems.

• **Backup and recovery.** You’re responsible to make sure your data assets are backed up to support your recovery needs. You are also responsible to perform any system recoveries.

• **Keep your contact information up to date.** At least two contact names will be provided to ITS when you sign-up for the service. These contacts will be the only people permitted into the data
center to access your equipment. ITS will also use these names when communication about the service is necessary (e.g. to announce a potential outage or explain problems). It is critical, therefore, that you notify ITS in a timely fashion of any changes to your contacts. Send changes to: itsdc@hawaii.edu.

- **Follow data center etiquette.** You are responsible for following any posted or published rules in the data center as well as using general best practices (e.g. don’t touch others equipment or connections).

- **Payment.** You’re responsible for paying for your service.

### How do I report a problem?

If at any time you need assistance regarding the co-location service or you find that the service is not operating as expected, send email to itsdc@hawaii.edu. This email group is monitored by technical support staff during normal business hours. If the problem is urgent you can call 1-808-956-2393. This phone number is monitored 24x7x365 by ITS Operations Center staff.

As a customer of this service, if you feel your issues have not been adequately addressed through normal channels, you can escalate your concerns to the service owner (Jan Kawachi - kawachi@hawaii.edu). Further escalation to the Director of Technology Infrastructure (Bill Wroblewski - wrob@hawaii.edu) or the CIO (UHCIO@hawaii.edu) is also possible.

### How do I access my equipment?

Upon initiation of the service, you will designate up to two individuals who will be responsible for the installation and subsequent updates to your equipment. These individuals will receive a hands on orientation at the start of the service, and yearly safety briefings and updated protocols via email afterwards. If these contacts change, send timely updates via email to itsdc@hawaii.edu.

Whenever you want to access your equipment, call 808-956-2393 (the IT Operations Center). They can arrange logistics with you to let you into the facilities.

### How does billing for the service work?

ITS will bill you when your order for the service is first processed, and then annually after that on the anniversary of your order. The bills will cover the full cost of the service for the upcoming year. Accommodations can be made for special fiscal or calendar year billing needs.

Exceptions to this annual payment method are:

- **Service expansion.** If over the course of the year, you place an order to expand your use of the service, ITS will process a one-time charge for the prorated amount for the remainder of the service term. Subsequent charges will be included in your bill at the start of the service term.
• **Service cancellation.** If you cancel the service, where allowable by fiscal policy, ITS will refund the pro-rated amount within sixty days of your equipment being completely removed from the facility and your keys being returned to ITS.

• **Service reduction.** If you reduce the use of your service during the middle of the service term, where allowable by fiscal policy, ITS will credit the pro-rated amount toward your next bill after your equipment has been completely removed from the facility.

If you have problems with your bills, please contact itsdc@hawaii.edu.

**Network & Security**

ITS will set-up your servers on a network within the data center. This will allow your servers to be isolated from other servers within the ITS Data Center. This will reduce the risk that your server will be adversely affected by another server, or vice versa.

You may elect to have your services behind the ITS firewall. ITS will work with you to determine what traffic should or should not be blocked from your servers.

Maintaining the security of your servers is your responsibility. You should make sure software is patched, malware is blocked, passwords are secure and access lists are managed. If for some reason your server is compromised, and it becomes a threat to the greater UH community (e.g. it is being used as a host to attack other services), ITS reserves the right to remove your equipment from the network or block its traffic. If this occurs, ITS will notify you immediately.

**ITS access to your equipment**

For safety purposes, ITS reserves the right to inspect your cabinet as necessary to ensure power, networking and other standards are being correctly followed. ITS may also take immediate steps to remedy any safety issues.

**Special service requests**

In general, ITS believes this service is structured well to support a wide-range of UH users. Of course, it’s possible that some very large installations or very unique situations will arise where this service may not work perfectly for some people. In these situations, ITS is happy to meet with you to discuss your special needs, and see if we can tailor the existing service to make it workable for you. Custom service requests may involve additional charges.
Appendix 1: Specific Service Levels

The table below describes the specific service levels provided by ITS.

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Description</th>
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</table>
| Physical Security  | **Keller Data Center**  
• 7x24x365 video monitoring.  
• Locked racks.  
  (Locks are common across all racks. Customers that would like their own unique locks can pay a one-time fee. See ITS price sheet for exact costs.)  
• Physical access to Keller will require contacting the ITS Operations Center (ITOC). ITOC will physically escort you into the facility.  
**ITC Data Center**  
• 7x24x365 video monitoring.  
• 7x24x365 on site personnel.  
• Locked racks.  
  (Locks are common across all racks. Customers that would like their own unique locks can pay a one-time fee. See ITS price sheet for exact costs.)  
• Access to ITC will require contacting the ITOC. They will physically escort you into the facility. ITOC offices are located immediately next to the data center on the 2nd floor of the ITC. |
| Monitoring         | 7x24x365 monitoring of network, DNS, and firewall components.                                                                                   |
| Unplanned Outages  | • An unplanned outage is a service interruption in cooling, power, or data center network that has not been scheduled in advance by ITS personnel.  
**ITC Data Center**  
• 99.8% availability for Data Center Network, DNS and Firewall components.  
• 99.99% availability for Power and Cooling components.  
**Keller Hall Data Center**  
• 99% availability for Data Center Network, DNS and Firewall components.  
• 99% availability for Power and Cooling components.  
• Note, ITS is reliant on campus water supply for Keller and ITC cooling purposes. If campus suffers a water supply problem, cooling may be adversely affected. |
| Planned Outages    | • A planned outage is defined as a service interruption in cooling, power, or data center network that has been arranged in advance by ITS personnel.  
• There will be no more than 2 planned outages per year.  
• 30 days advanced warning before any outage.  
• Outages will be scheduled during non-business hours. |
| Service Requests   | • ITS staff will respond within 1 business day for service requests sent to itsdc@hawaii.edu (e.g. request for new access card or updating access list). |
| Problem Reports    | • ITS staff will respond within one business day to emails sent to itsdc@hawaii.edu.  
• For urgent problems, IT Operations Center staff are available via phone 24 hours a day (808-956-2393). IT Operations staff may refer questions to engineering staff as appropriate. Engineering staff will generally respond to IT Operations within four hours for urgent problems. During unusual situations, response time may be |
| Outages | ITS will post information about any outages on the ITS web site at: http://www.hawaii.edu/its/alerts/. |
Appendix 2: Technical Specifications

Usually, cooling will be the limiting constraint on devices within the ITS data centers. This means that the number of computing devices in each rack will be limited by how much heat they produce which is usually directly correlated to how much electricity they use.

The table below describes the technology and constraints of ITS data centers at a high level. If you have needs outside of these specifications, you should consult with ITS. We can describe what other options we may be able to support.

<table>
<thead>
<tr>
<th></th>
<th>Keller Data Center</th>
<th>ITC Data Center</th>
</tr>
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<tbody>
<tr>
<td>Type of Racks</td>
<td>• Chatsworth Mega-Frame</td>
<td>• Chatsworth Terra-Frame</td>
</tr>
<tr>
<td></td>
<td>• Vertical rails</td>
<td>• Vertical rails</td>
</tr>
<tr>
<td></td>
<td>• Screw mounted racks. (ITS can provide screws.)</td>
<td>• Peg and post mounting.</td>
</tr>
<tr>
<td>Capacity</td>
<td>• Devices that require a combined total of no more than 10 power connections per rack.</td>
<td>• Generally 20 power connections per rack but higher options may be available with different cooling approaches</td>
</tr>
<tr>
<td>Power &amp; Cooling</td>
<td>• 120V or 208V (cabinet dependent)</td>
<td>• 120V or 208V</td>
</tr>
<tr>
<td></td>
<td>• Single phase</td>
<td>• Triple phase</td>
</tr>
<tr>
<td></td>
<td>• 15 AMP (20 AMP may be available)</td>
<td>• 20 AMP (30 AMP may be available)</td>
</tr>
<tr>
<td></td>
<td>• Maximum draw of approximately 1.5 KW</td>
<td>• Chimney cooling on racks or optional rear door coolers (configuration to be determined by ITS)</td>
</tr>
<tr>
<td>Network</td>
<td>• A single network connection will be provided. Customer must set up their own switch inside of their rack.</td>
<td>• One network connection will be provided for each device installed within the rack.</td>
</tr>
<tr>
<td></td>
<td>• ITS will provide 1Gb network connection</td>
<td>• ITS will provide 1Gb connections</td>
</tr>
<tr>
<td>Weight</td>
<td>• The total weight of a full rack cannot exceed 2000 lbs.</td>
<td>• The total weight of a full rack cannot exceed 3000 lbs.</td>
</tr>
</tbody>
</table>
Appendix 3: Setup and Installation of Your Equipment

Once you’ve decided to use the Co-Location Service, ITS can work with you to get your equipment set-up and installed within the appropriate data center. The table below describes the assistance they can provide you during the setup of your equipment.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
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<tbody>
<tr>
<td>Racking</td>
<td>ITS will work with you to physically install your equipment in racks within the data center. If you have requested custom locks for your racks, ITS will acquire and install these as well. Note, physical installation of computers at the ITC Data Center will be performed by ITS staff in coordination with customer. Physical installation at the Keller Data Center will be done by the customer with the assistance of ITS (if desired).</td>
</tr>
<tr>
<td>Power</td>
<td>A standard power configuration is defined in this SLA. If you have power needs beyond these standards, ITS will try to meet them. Of course, ITS will be limited by the constraints of its data center facilities and equipment.&lt;br&gt;&lt;br&gt;<strong>Please note it is possible that future co-location rates may be based, in part, upon the power configuration of your rack. If this occurs, your requests for additional power may result in your co-location fees being raised in the future.</strong> (As stated earlier in the SLA, ITS will review rates annually and will communicate changes to the rates well in advance to all customers.)</td>
</tr>
<tr>
<td>Network</td>
<td>ITS will make sure physical network is set-up correctly within the data center to support your devices. This will include installing all necessary network cables.</td>
</tr>
<tr>
<td>Domain Name Service (DNS)</td>
<td>Based on your input, ITS will ensure that domain name service is properly configured for your devices.</td>
</tr>
<tr>
<td>Firewall Rules</td>
<td>Based on your input, ITS will ensure that firewall rules are properly set-up for your devices.</td>
</tr>
<tr>
<td>Backup</td>
<td>At the present time, ITS does not offer backup services.</td>
</tr>
<tr>
<td>Other</td>
<td>Additional professional services are available to support you and your team. (Additional hourly fee may apply.)</td>
</tr>
</tbody>
</table>
**Abbreviations used in this document**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDU</td>
<td>Cabinet Distribution Unit. A device within a rack which handles power for all devices within the rack.</td>
</tr>
<tr>
<td>CIO</td>
<td>Chief Information Officer. The statewide IT leader for the University of Hawaii.</td>
</tr>
<tr>
<td>DNS</td>
<td>Domain Name Service. An Internet protocol service for resolving IP numbers and names.</td>
</tr>
<tr>
<td>HIPAA</td>
<td>Health Insurance Portability and Accountability Act. A federal act that outlines requirements for handling health records.</td>
</tr>
<tr>
<td>ITC</td>
<td>Information Technology Center. A new campus building which is home to ITS staff offices and an ITS data center.</td>
</tr>
<tr>
<td>ITOC</td>
<td>Information Technology Operations Center. An ITS team that monitors and services ITS networks and data centers 24/7.</td>
</tr>
<tr>
<td>ITS</td>
<td>Information Technology Services. The UH system wide information technology organization.</td>
</tr>
<tr>
<td>PDU</td>
<td>Power Distribution Unit. A device within the data center that provides power to a row of racks.</td>
</tr>
<tr>
<td>SSL</td>
<td>Secure Socket Layer. An encryption protocol commonly used to protect web-based communication.</td>
</tr>
</tbody>
</table>