

# **AVTEC Technical Infrastructure Plan**

## **Purpose of the Plan**

The AVTEC Information Technology Services Department (ITS) is staffed appropriately to maintain all ITS resources in a functional manner to meet the needs of students, staff, faculty, administration and authorized visitors of AVTEC.

## **Identify Stakeholders**

Enrolled students

Instructional staff

Non-Instructional staff

Authorized visitors and guests

## **Scope of Services**

The AVTEC Information Technology Services Department is charged with the operation and maintenance of all hardware, software, and network operations of all IT systems on campus. These responsibilities include capital planning and purchases, installation and maintenance of ITS infrastructure, daily and scheduled updates, backups, and maintenance of equipment and software, problem solving, data privacy and storage, and as needed hardware repair of all IT systems and resources on campus.

## **Staff Responsible**

The AVTEC Information Technology Services staff consists of the following positions:

- 1 Information Technology Services Department Head
- 1 Internet Specialist I
- 2 Micro/Internet Specialist I
- 1 Publication Specialist I

AVTEC Information Technology Services staff work a varied schedule depending on needs and an overarching desire to minimize infrastructure downtime during times when training or administrative functions are ongoing. Depending on system needs, ITS staff work both during traditional hours and after working hours Monday – Friday. During non-traditional hours, the 4 members of the department share responsibilities for providing on-call services for all IT resources. The on-call ITS staff member is available for call-in 24 hours-a-day, and has access to all of the supplies, equipment, and other maintenance resources, including other staff if necessary, to handle IT emergencies on the AVTEC campuses.

AVTEC has a well-equipped ITS Department. ITS Staff members have access to a vehicle to use during the workday to travel between buildings as necessary. The ITS Department has a full assortment of tools ranging from those used by the ITS Staff (all tools and equipment needed to monitor, alert, diagnose, repair, and install IT network switches, wireless units, servers) to hand

and power tools related to overall equipment maintenance.

Specialized maintenance on technical aspects of the IT infrastructure of AVTEC is sometimes contracted out to external specialists. Additionally, large jobs that are beyond the abilities of the ITS staff are contracted-out using the State of Alaska procurement procedures and policies.

### **Major Activities**

Most Information Technology resources across AVTEC campuses, such as the switches and wireless access points, are monitored remotely by ITS staff from the IT building or through the Internet using VPN access. Changes to system performance and operation can be made through remote access, allowing an ITS staff member to control many aspects of AVTEC IT operations from their office or home when on-call and not physically on campus.

All staff and student information related to and within the AVTEC IT infrastructure is stored securely behind AVTEC's internet firewalls. All publicly accessible servers are located in a DMZ (secured subnet) on the firewall. All internal servers are blocked from outside internet access. Internal servers are also secured by the use of private networks that do allow outside access. Access to all AVTEC network resources is restricted to staff and students with passwords that are governed by industry standard expiration and convention requirements. Data traffic is separated by the use of separate routers with one allocated to Staff and the other to student traffic. User privileges on the internal network are assigned according to specific employment responsibilities. Upon separation from AVTEC employment user accounts are deactivated and/or deleted.

Maintenance is carried out by the IT Services staff based on daily assignments from the ITS Department Head. Ongoing maintenance tasks are submitted to the ITS Department Head by AVTEC staff members and Department Heads through an on-line work order system maintained by the AVTEC Information Technology Department.

Whenever possible, redundant infrastructure is in place to protect data and operations from issues related to catastrophic or unexpected failure of any hardware. Having multiple pieces of hardware performing the same task allows the regular utilization of resources even when one of the systems or specific essential hardware experiences failure. This redundancy is also strengthened by a regular backup plan schedule where all data is preserved using industry-standard security and technology. Based on this schedule, data is backed up from various storage arrays, NAS Clusters array, and among the AVTEC network infrastructure on a daily basis according to IT industry best practices. Having a backup allows the recovery of data in the event of equipment failure affecting data storage on campus. AVTEC deploys multiple site storage arrays that allow for the quick recover should the primary backup systems fail for any reason. In addition to server backups AVTEC also has all user PC's being automatically backed up using these same storage arrays allowing for the quick recovery due to either user or hardware failures.

AVTEC maintains inventory of all hardware, monitors, printers and network equipment using a live query system hosted on AVTEC's NOC (Network Operations Center) web site. This provides for the ability to establish a life-cycle record, annually review inventory, and plan for replacement according to the ITS annual budget.

## **Evaluation**

The effectiveness of the Information Technology Services Department is evaluated on a daily basis, whenever training or administrative functions of AVTEC are in process. It is expected that all necessary IT resources and infrastructure used to support regular training and administrative operations is working at full capacity at all times during work/training hours.

Multiple different metrics are used to gauge the effectiveness of this plan and the Information Technology Services Department's operations. Because network infrastructure is the keystone of most training at AVTEC, 'downtime' percentage for network resources is one of the most useful metrics available. Since the effectiveness of this plan linked to the operation of highly technical hardware, another benchmark used for evaluation is the number of equipment failures that affect system status. While all of the Information Technology resources at AVTEC have duplication backups (so their unexpected failures are not necessarily apparent to stakeholders or constituents) these incidents can indicate greater problems for the entire IT infrastructure when they occur – especially when they arise in equipment that is still within its serviceable life.

The number of emergency call outs for system problems and the ITS staff time spent on unexpected repairs or incidents is a factor in evaluating the effectiveness of this plan.

This plan is evaluated on an annual basis by the AVTEC Leadership and Department Head Teams. Additionally, as issues related to Technological Infrastructure occur during the course of usual operations, they are reviewed by the AVTEC administration and the Information Technology Services Department Head. Modifications to the plan may occur at any time as a result of knowledge gained through usual operations or from one of the regular reviews of this plan.

Key aspects of technological resource operations are preventative maintenance, regular software updates, and patches. A final measure of the effectiveness of this plan is the number of equipment or software failures that occur within the expected service-life of the affected equipment, since it is reasonable to believe that some premature failures are a result of a lack of preventative maintenance or other preventable causes.

## **Communication Plan**

AVTEC Information Technology Services support activities are documented through a work request ticket system that accounts for all time spent on service requests. All AVTEC staff members are encouraged to contact IT Services support via the online ticket system. If a staff member does not submit a ticket, but contacts the IT department by other means, the assigned IT staff member will create the ticket as a way to document the issue and its resolution. The benefit of this system is not only to assist the IT Department to track work hours, but also to create an historical record of issues and responses. This searchable database of IT issues decreases response time for future incidents and assists IT staff sharing knowledge with stakeholders and constituents.

This plan is available to all AVTEC staff members as part of the AVTEC Employee Handbook. It is also available through the AVTEC public website.

## **Budgetary Resources**

The AVTEC Information Technology Services Department has a separate annual budget within the school's operating budget for staff supplies, travel, education, equipment, and contractual services. Additional funding is requested as necessary through the state capital budget for larger maintenance and capital improvement/replacement projects.

AVTEC Administration works closely with the ITS Department Head to review the status of facilities, maintenance priorities, as well as current and future capital projects. The ITS Department Head advises AVTEC administration which projects are beyond the scope or capability of existing resources. When it is determined that services will need to be contracted out, the IT Services Department Head works through the state procurement system.