ABSTRACT
Imagine if you will – the leader of the support effort for the student information system resigns, a member of top management fills in, the relationship between the technical folks (DBAs) and functional staff is crumbling, the user community is demanding more services, a new version of the product is about to be released, and Y2K is only months away -- you have entered the Nightmare Zone.

Not really a stretch of the imagination, is it? In 1999, WVNET, a centralized computing and networking service bureau supporting education in West Virginia, was facing these issues. Suddenly, this organization which had experienced great success with the world’s first Banner student information system implementations didn’t know where to turn.

The focus of divisional meetings moved from reviewing current student information system projects to discussions about …should we expand our services, tread water, or bail out? “Where do we go from here?” became the mantra.

This paper explores how the WVNET Banner Support Team in the midst of these challenges set out on a path to redefine its direction.

Keywords
Customer Service Strategy, Organizational Change

1. INTRODUCTION
Traditionally, the WVNET functional consultants supporting the Banner software had been passively reactive – a call came in from one of the 15 public institutions using the system, and we tried to fix the problem or answer the question. There was a strong tendency to take whatever “came at us” and try our best to “take care of it.” While it is very admirable to accept such a challenge, it hasn’t done much for our collective reputations. Most of us have ended up in a no-win situation with our end users (customers) expecting more than we can reasonably provide.

To eliminate this no-win situation, the Banner Support Team (with members of upper management) realized they needed to enter new territory by establishing service level agreements (SLAs) – mutual agreements between WVNET and the institutions. SLAs will define the expectations of the services to be provided and roles and responsibilities of each party. Formalizing the services in a SLA will help impose accountability, create ownership, and develop a customer-focused mind-set.

2. SLAs = MANAGED EXPECTATIONS
A Service Level Agreement or SLA is a contract that states the expectations and responsibilities that exist in a business relationship between the service provider and the customer. The document comprise of the essential elements of services and quantifies the minimum level of service which meets the business needs to be provided by the supplier to the client.

“A service-level agreement should clearly define the types of services provided, commitment to the level of quality as well as the timing of services; the same things you expect from an external outsourcer should be committed to your customers,” explains Roberta Linger, Manager/Administrative Applications, the current leader of the Banner support effort.

The objective of an SLA is to specify, in writing, what each party can reasonably expect and what responsibilities each party has in order for the agreement to be binding. By letting others know what to expect, we not only keep their expectations in check, but also their perception of the service provided to them. Since we are documenting what we need from them (our customers), we can improve the speed, efficiency, and quality of our service.

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1 Banner is a product of the Systems and Computer Technology Corporation (SCT). Headquartered in Malvern, Pennsylvania, SCT specializes in systems integration and application software and services for higher education.
We are also, by describing the service that we expect to provide, giving the other party the opportunity to request modifications in that service.

It becomes a basis for evaluating and improving services; empowering the other party by allowing them to take an active part in the determination of the service to be provided.

3. BUILDING ON HISTORY
As the Banner Support Team moved into its thirtieth year of operation, WVNET was staggering under the impact of supporting hundreds of users, at various stages of implementation, spread across the state, on an administrative software system. In addition, a significant upgrade of the Banner software was scheduled for release, and it was clear that a new support approach was needed for this team.

So how can we transform a no-win situation to a win-win situation by using an SLA? How will a SLA help to establish a positive reputation for the Banner Support Team?

The primary objective of the team is to provide centralized support to the West Virginia higher education institutions using the administrative student information system, Banner. This includes the traditional means of providing user support via email, the web, the phone, and on occasion, in person. Additionally, in the user advocacy role, the team is responsible for planning for the information systems changes necessary to keep the software up-to-date. This facilitation includes the management of the releases of software, testing, documentation, and implementation assistance. The team is comprised of two principal units: technical support staff (database administrators) and functional support staff. The current organizational structure of the team is outlined in Table 1.

<table>
<thead>
<tr>
<th>Table 1. Banner Support Team</th>
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<tr>
<td><strong>Current Organization</strong></td>
</tr>
<tr>
<td>Manager/Database Administration (Systems &amp; Operations Division)</td>
</tr>
<tr>
<td>2 Database Administrators</td>
</tr>
<tr>
<td>• Senior DBA</td>
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<tr>
<td>• DBA</td>
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4. THE STARTING POINT
Our initial intent was to “clearly define the product and service.” After discussing issues such as technical support vs. “help desk” support, WVNET’s role vs. the institution’s role, we developed a mission statement and scope of services for the team. Next, these two papers were matched up with the skill-sets of the team members to create an overview of the Banner support team operating principles (see Appendix A). Although, still in draft, this document has started to guide the operation of the team toward the goal of improving our reputation with the customer and delivering better service.

We next focused on service issues we wanted to clarify. We began with the following list:

- Our hours of operation
- How to contact us
- Our problem tracking system
- The priority of service and our response time
- What we expected our customers to do before they called
- What we would do as a result of the customer’s call
- Some things that might result in problem escalation
- Who to call in the event of dissatisfaction

Once this list was settled upon, we turned our attention to the question of whether we should have one “vanilla” SLA for all the institutions or customize for each school. This was probably the most time-consuming part of the process – and the most painful. It meant that we needed to determine our core level of service – in essence, our support responsibility to our customers. Some members resisted the idea of one generic SLA, while others embraced it. After weeks of discussion, we informally agreed that one SLA outlining our basic level of service was the best approach. However, a secondary SLA for those institutions that run their Banner system on equipment housed at WVNET was also agreed on.

5. DESIGN/STRUCTURE OF A SLA
While there’s no clear-cut formula for crafting an effective SLA, we began by focusing on two key areas: service and management.

- **Service:** Which services will be provided (and which will not be)? What are the conditions of service availability? What service standards (metrics) will be used to measure the service provisions; what are the responsibilities of both parties? What cost vs. service tradeoffs can you expect? And, what escalation procedures will be used?
- **Management:** How will you and the customer track service effectiveness? How will information about service effectiveness be reported and addressed? How will you resolve service-related disagreements? And, how will the parties review and revise the SLA, which is a living document?

In order to transform the SLA into a manageable endeavor, we created the following component list. In general a SLA should include, but is not limited to these components:

- Who the agreement is between
- Purpose of the SLA
- Duration of the agreement
- Description of service:
  - Service overview
  - Corporate dependence
  - Priority
  - Critical/peak periods
  - Service level components (Availability, Transactions, Response, Utilization, Accuracy, Background work
details and Security) with their definitions, conditions, targets and metrics by which they are to be measured

- Scheduled unavailability for maintenance and changes
- Support hours
- Monitoring actual service levels against targets
- Responsibilities
- Service level reporting
- Penalties for failure
- Arrangement for customer service review meetings and renegotiations
- Contacts
- Definition or glossary of terms used in the document

6. KEY STEPS IN THE SLA DEVELOPMENT PROCESS
A service level agreement is an excellent tool for helping two parties improve communications, manage expectations, clarify responsibilities and build the foundation for a win-win relationship. However, establishing an agreement is neither quick nor a simple process.

Because of the tremendous amount of time involved in creating an SLA, as well as the importance of the decisions you make in the process, it is crucial that you generate buy-in. It is important that all members of both parties who have a stake in, and responsibility for, the success of the SLA have the opportunity to review the draft, raise questions, and offer suggestions. Using this feedback, you can conduct further negotiations, gain the necessary approvals, and finalize the SLA document. In addition to generating buy-in, this step improves the quality of the final document.

The manager/database administration, Bonnie Lynch, has assumed the leadership role of SLA manager. “Our management is very supportive of the SLA incentive we are undertaking,” explains Lynch. “We began this process in ’99; now 11 months later, we are still at the draft stage. Without the support of management, this project would be halted. When looking at a new support approach such as SLAs, it is vital that your management play the role of valuable ally instead of possible foe.” The results of this 11-month effort can be seen in Appendices B and C.

Constructing a service level agreement requires planning and care. While the process can vary among higher education institutions, we have outlined a few steps to follow:

1. Assess whether an SLA is appropriate
2. Get management commitment
3. Designate SLA managers
4. Educate the parties involved about SLAs
5. Assess current services
6. Gather customer feedback
7. Ensure agreement about the agreement; create a draft
8. Solicit feedback
9. Complete pre-implementation activities, such as establishing tracking mechanisms and conducting pilot studies
10. Implement and manage the agreement

Hint: SLA should be adequate to meet the needs of the parties. While excessive detail can overburden the negotiating process, it sometimes saves time later in the relationship. For example, you may not want to identify the individuals by name in the problem management process but you would want to identify the title of the person in each organization that would be responsible for working through problems. The level of acceptable detail is different in different relationships.

7. BUILDING TRUST
The process of planning, establishing and implementing an agreement - information-gathering, analyzing, documenting, presenting, educating, negotiating and consensus-building - can help both parties understand their needs and capabilities as well as their limitations. In addition, negotiating services provides an opportunity for developing mutual respect and trust, which is vital for successful implementation.

Without a good relationship and understanding, the SLA often becomes an unenforceable piece of paper showing only that the service provider tried to manage customers’ expectations. Granted, our basic SLA has not yet been implemented, the informal discussions with our customers concerning our services and their expectations has generated goodwill. Our customers are favorably receiving this SLA effort.

8. FINAL THOUGHTS
Although an SLA is an excellent expectations-managing mechanism, it's important to manage your own expectations of what it can realistically accomplish. Unfortunately, some people view an SLA as a complaint-stifling mechanism or a quick fix to a troubled relationship; however, using it for such purposes creates more problems than it solves. Instead, think of a SLA as:

- A communications tool. The value of an agreement is not just in the final product; the very process of establishing an SLA helps to open up communications.
- A conflict-prevention tool. An agreement helps to avoid or alleviate disputes by providing a shared understanding of needs and priorities. And if conflicts do occur, they tend to be resolved more readily and with less gnashing of teeth.
- A living document. This is one of its most important benefits. The agreement isn't a dead-end document consigned to the Forget Forever file. On a predetermined frequency, the parties to the SLA review the agreement to assess service adequacy and negotiate adjustments.
• An objective basis for gauging service effectiveness. An SLA ensures that both parties use the same criteria to evaluate service quality.

As we go to press, it’s too early to say what impact this new direction will bring to the team; however, SLAs will doubtless mean a more customer focused strategy for WVNET.

9. REFERENCES

APPENDIX A: Banner Support Team Functions (DRAFT)

*Describes the technical and function support tasks for application software support*

**Technical support staff** provides software installation, maintenance, program development, and other software support tasks, which assure the reliable operation of vendor supplied or locally developed software. Expertise in database management, operating systems, software internals, programming languages, and TCP/IP are required. The primary customers served by technical support staff are campus technical support staff and local functional support staff.

Technical support tasks for applications software include:

1. Install and maintain vendor software, including application of fixes and upgrades, and making available vendor documentation from distribution media for use by clients and functional support staff.
2. Develop interfaces between supported software applications as necessary.
3. Develop and document production operations and backup and recovery procedures and turn over to operations for daily execution.
5. Administer application security.
7. Develop procedures to simplify customization of product for different sets of users (procs/profiles, separate database instances, security, etc.) and to provide for a test system.
8. Assist campuses technical support staff with local installation and support issues.
9. For software that is installed on campus systems, verify and correct vendor installation instructions and vendor software updates.
10. Contact vendor as needed to report and resolve software problems.

**Functional support staff** are expert users of vendor supplied or locally developed software and provide assistance to the application's functional users in using the supported software in performing the business procedures the software is designed to address. Expertise in the appropriate business areas, how the application software supports those business processes, data structures and organization, end-user reporting tools, and general structure and function of the support software are required. Primary customers of functional support staff are campus functional users.

Functional support tasks include:

1. Test application to ensure all parts are performing as documented especially when new releases or fixes are applied.
2. Answer questions on software operation for end users.
3. Perform problem determination procedures to identify reported problems as functional (how the software is being used) or technical.
4. Document technical problems for referral to appropriate technical support staff.
5. Provide or arrange training for application users.
6. Evaluate and recommend reporting tools based on knowledge of the application and awareness of end user requests.
7. Provide system-wide documentation and information exchange for end-users, including announcements, web pages, discussion lists, and participation in user groups.
8. Use report tools to develop common reports. Promote the use of report tools by users and encourage exchange of developed reports, including modifying site-specific reports for general use.
9. Assist users with transition from terminal to GUI application interface, or with use of new software releases.
10. Assist campus application support staff with use of the software.
11. Contact vendor as necessary to answer application questions and to assist in problem determination.
APPENDIX B: Service Level Agreement for Basic Banner Support (DRAFT)

*Describes the basic level of service for all schools using Banner*

**WVNET's Role and Responsibilities -- Basic Banner Support**

- WVNET will perform installs and upgrades for Banner Student, Alumni, and Financial Aid systems on WVNET equipment for OpenVMS and AIX operating environments. Included with these systems are the modules of Accounts Receivable and General. Support for additional Banner systems (Human Resources, Finance, IVR, Web for Student, etc.) are not included in this agreement. These installations are done for the purpose of verifying SCT's installation procedures before making the software available for downloading by staff at member institutions, and to assist WVNET Banner staff in supporting the member schools.
- WVNET will assist campus technical support with upgrades on their system by providing verified and corrected installation instructions, software, and installation scripts or com files, and by being available during upgrades to answer questions and help solve problems. WVNET will not perform the actual installation process unless separately contracted to do so (subject to staff availability and additional cost). Arrangements for installation support must be made in advance.
- WVNET will support Oracle forms for the above components in the same manner.
- WVNET will not support modifications to the vendor distributed baseline software.
- WVNET will maintain the current version and one version back of the SCT-supported software. Maintenance of the previous version will cease when no WVNET member is running that version or when the product is no longer supported by the vendor. In the event that a member is still running an unsupported version, WVNET will keep the version on the system only as long as space is not required for newer supported software. However, WVNET support will be limited to determination of whether a problem existed in the distributed package as time allows; no corrections for unsupported vendor software will be available.
- WVNET will assist member applications support staff with use of the Banner software. Assistance may be over the phone, via email, or on location at the affiliate campus if needed. Arrangements for on-site visits must be made in advance.
- WVNET will arrange or provide user training for new releases of the software. Special training sessions can be arranged with WVNET's training department.
- WVNET will make available technical notes, documentation, and other information provided by SCT on product usage and support. This information will be available on a secured webpage. Alternative delivery methods (diskette, CD, or hardcopy) may be available on request; however, WVNET encourages users to use the webpage for the most up-to-date information and cost-effective method of access.
- WVNET will communicate news concerning Banner and Oracle support to our users via the WVNSIS-L listserv list. All interested parties involved in using, supporting, or administering Banner products within the WVNET community are encouraged to subscribe and participate in the listserv.
- WVNET will be the primary contact with SCT and Oracle support for problem resolution and software defect support for the centrally contracted software components.
- In the event that these basic services are not adequate for an affiliate school's needs, additional support can be arranged and contracted either temporarily or long term upon mutual agreement.

**Member Institutions Roles and Responsibilities -- Basic Banner Support**

- Member institutions will provide systems programming and operations support for the operating environment on which their Banner systems run, unless a separate contract has been established for WVNET to provide such support.
- Members are responsible for distributing user and process notes to the appropriate local staff.
- Member technical support staff should provide the primary support for their local users on the Banner products.
- Member technical support staff will report problems to WVNET's Help Desk at (800) xxx-xxx. The helpdesk will log all calls for support and keep records of results. Members can also log problems via the web at [http://wvnvm.wvnet.edu/~tools/index.html#problem](http://wvnvm.wvnet.edu/~tools/index.html#problem)
- Members will be responsible for establishing operating system and Oracle accounts and security, including role and form level security.
- Any modifications to the Banner software and any reports or interfaces produced locally by members will be the member institution's sole responsibility.
- Members should be aware that deviations from vendor supplied code and procedures make necessary upgrades to vendor software extremely difficult, and can even result in loss of data.
- Members will provide, install, and support forms servers and necessary network connections and SQL*Net.
- Members will provide, install, and support the web server platforms and software needed to support the Banner Web products. Banner and Oracle Web components are not
centrally contracted by WVNET with SCT at this time. Acquisition of these products and corresponding vendor support contracts must be handled by the member institution.

- Members will notify WVNET at least one month prior to Banner upgrade schedules to ensure that WVNET staff coverage can be arranged.

- Technical staff at member institutions will maintain current skills to be able to perform the responsibilities outlined in this document. Members are encouraged to attend SCT conferences, user group meetings, and Banner-related training offered by WVNET in order to stay current.

APPENDIX C: Service Level Agreement for WVNET-Operated Banner Installation (DRAFT)

Describes services provided by WVNET and the local campuses when the campus Banner system is run on equipment located at WVNET

Service Level Agreement For

Operation of <School name>'s BANNER Systems

<contract start date>

This Service Level Agreement is made between West Virginia Network (hereinafter referred to as WVNET) and <full name of school> (hereinafter referred to as <school name>).

PURPOSE

The purpose of this agreement is to describe a relationship between WVNET and <school name>. It specifies the services and commitments of WVNET and the expectations and obligations of <school name> in relation to the installation, support, and operation of <school name>’s Banner Student Information System.

WVNET and <school name> agree to the following concerning <school name> running BANNER systems on WVNET hardware.

WVNET'S ROLE AND RESPONSIBILITIES

WVNET will provide systems programming and operations support for the operating environment on which <school name>’s BANNER systems run. This environment will be located in WVNET's machine room. Maintenance and operations will be according to WVNET central site standards (UPS, 24-hour staff, etc.). Normal WVNET system down times for maintenance are 7:30 P.M. Saturday through 7:30 A.M. Sunday and 5:00 A.M. - 7:30 A.M. Monday through Saturday. During these times the BANNER systems will be unavailable.

WVNET has designated the Associate Director of Systems and Operations at WVNET, as the Project Manager to act as the point of contact regarding this Service Level Agreement and the administration of this agreement. He can be reached at xxx-xxx Extension xxx.

WVNET will perform installs and upgrades for BANNER Student, Alumni, and Financial Aid systems, including the Accounts Receivable and General modules. Installs and upgrades will occur at a mutually agreed upon time. Support for additional BANNER systems (Human Resources, Web for Student, IVR, etc.) are not included in this agreement.

To allow for a true test environment during implementation and upgrades, <school name> will have both a production and test database. At <school name>’s request, WVNET will perform upgrades to the test database. Upgrades will be performed first on the test database to allow for <school name>’s thorough testing and training. WVNET will then upgrade the production database at <school name>’s request.

WVNET will perform nightly backups of both the test and production databases. Weekly off-site backups will occur for both databases. Restores will occur as needed.

The need for system rebuilds and table resizing will be determined by WVNET. The rebuild and resizing will be performed by WVNET at a mutually agreed upon time.
• WVNET will be responsible for establishing operating system accounts and security for <school name>'s BANNER users.
• WVNET will be responsible for performing all Oracle and operating system upgrades at a mutually agreed upon time.
• WVNET will support the BANNER applications for <school name> to the same level as WVNET supports the other BANNER institutions.
• WVNET will purchase the necessary CPU and disk space to provide for <school name>'s databases.
• WVNET will have technical support staff available on an on-call basis to handle after hours emergencies according to the problem reporting procedures outlined below.
• WVNET will only support baseline products as provided by SCT. No modifications to the delivered product nor uses of the product in ways other than intended and documented by the vendor will be supported.
• WVNET will notify the <school name> Help Desk of any planned outages and when system problems are being encountered. <School name> will develop a process to notify their end-users of these occurrences.

<School name>’S ROLE AND RESPONSIBILITIES
• <School name> will report all problems to WVNET's Help Desk according to the problem reporting procedures outlined below.
• <School name> will designate a Project Manager to act as the WVNET point of contact regarding this agreement and the administration of this agreement.
• <School name> will be responsible for creating Oracle user accounts, and for implementing BANNER Role and Form level security. BANNER upgrades can require additional security maintenance. WVNET will inform <school name> of requirements prior to upgrades.
• Any reports produced by <school name> will be <school name>’s sole responsibility. This includes use of Banner tables or data from Banner tables by reporting tools, programs, or packages other than the delivered Banner products.
• <School name> will be responsible for providing an application (forms) server(s) for the BANNER forms (for the GUI environment). Operating system maintenance, network configuration and maintenance, applications maintenance, and user security on the forms server(s) will be the responsibility of <school name> staff. WVNET will be responsible for SQL*Net on the database server and <school name> will be responsible for SQL*Net on the clients. WVNET will provide necessary form changes for the application server(s) during upgrades.
• <School name> will provide WVNET with information regarding production scheduling relating to Banner (registration, grades, billing, etc.) as soon as the schedule is set for each school term. At least three weeks notice is needed to make any necessary system adjustments to accommodate major production processing.

PROBLEM REPORTING PROCEDURES
<School name> will ensure end-users are aware of the procedures for contacting <school name> and WVNET for assistance.
All problems should be reported to the WVNET Help Desk during the hours of 8:30 A.M. and 5:00 P.M., Monday through Friday except for holidays. The WVNET Help Desk telephone number is xxx-xxx Ext. xxx. After-hours calls should be directed to xxx-xxx and zero out to the operator. In these cases, the operational staff at WVNET can page a technician to handle troubleshooting for critical problems.
When a <school name> user encounters a problem, the initial point of contact will be the <school name> Help Desk, as established by local <school name> procedures. If the problem appears to be a WVNET problem, the <school name> designee will contact the WVNET Help Desk and provide information such as user name, telephone number, userid, e-mail address, and a description of the problem.
The WVNET Help Desk will enter the problem in the WVNET Problem Management System. If a problem cannot be solved by WVNET during the initial call, a WVNET technician will call the user or the <school name> Help Desk back. If the technician cannot resolve the problem during this call, they will enter into the Problem Management System a description of the problem, the resources required for problem resolution, the priority of the problem, and the potential mission impact. The Problem Management System will keep the reporter of the problem on an interested party mailing list. Problem status will be tracked using the Problem management System to keep the <school name> Help Desk informed of the progress of the investigation and ultimate resolution of the problem.
If problem ownership resides in WVNET, and the problem is considered critical, WVNET staff will work on the problem until the problem is resolved. If the problem ownership resides in WVNET, and the problem is not critical, WVNET staff will work on the problem during normal business hours until the problem is resolved.

PROBLEM ESCALATION PROCEDURES
If a problem is not being solved or <school name> is not satisfied with a problem resolution, the <school name> Project Manager can escalate the problem. Once a problem is escalated, WVNET technicians working on the problem will draft a report that describes the scope of the problem and possible solutions. The WVNET Project Manager will add his comments to this report and forward the report to the <school name> Project Manager and the Director of WVNET for comment and/or action.

ESCALATION LEVEL 1: WVNET Associate Director of Systems and Operations
ESCALATION LEVEL 2: WVNET Director

AGREEMENT TERM AND PAYMENT GUIDELINES
The term of this Agreement will be for 12 months, beginning <contract start date>. <School name> will pay to WVNET a contracted amount of <monthly amount> per month, which will be billed, on a WVNET monthly invoice. Prior to June 2000, WVNET and <school name> may negotiate a new Service Level Agreement to begin July 1, 2000.

If the scope of this service level agreement should change (i.e., additional service and/or equipment requirements) this agreement may be altered upon mutual consent of both parties.

By signing below, the parties agree to abide by the terms of this agreement.

AGREED BY: AGREED BY:

<Full name of school> WVNET

___________________________________ ______________________________
Title: ______________________________Title: __________________________

Date: ______________________________Date: __________________________