THE BALBOA INSURANCE AGENCY
SMALL COMPANY COMPUTING SYSTEM
CASE STUDY

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Course: MIS 440

General

The Balboa Insurance Agency is an insurance brokerage firm residing in a town with a population of approximately 60,000 inhabitants. Balboa services its customers by examining their insurance needs, recommending the appropriate coverage, and providing the best quote for that coverage given by the several different insurance companies Balboa represents. Balboa has been in business for 25 years and has recently been purchased by Barbara Holmes. Ms. Holmes has requested that the company's computing needs be examined and alternative reviewed.

Requirements Analysis

Balboa's current data processing needs include:

1. Remote insurance quotation computer access and data entry
2. Word processing
3. Spreadsheet analysis
4. Client data base management
5. Mail merge
6. Accounting and financial analysis (manual system)

Two dumb terminals (with modems) are used to access the remote insurance quotation computers while company standardized software is used for the other data processing applications. The other processing needs are accommodated by five stand alone personal computers (PCs) (2 XT's and 3 AT's all with hard disk drives), two laser printers, and three dot matrix printers. Software copies are available for each PC of all software

packages used. Balboa has been experiencing problems with client data base integrity (i.e. inconsistent data or redundant data) and inefficiencies due to the limited number of peripherals (printers and modems). Ms Holmes believes that the current system needs improvement. For example, the client data base integrity issue, Ms. Holmes believes, is effecting the customer relations. This is because the broker or administrator that responds to a clients phone call does not have ready access to the latest updated customer file.

In the future Ms. Holmes anticipates modifying the cycles cycle such that the insurance brokers can evaluate the customers insurance needs, access the remote insurance quotation computers, prepare the insurance quotes, and present the insurance package and price during one client session at the customers location. In order to accomplish this type of processing Bolboa will have to purchase Laptop computers for the brokers. Additionally, she anticipates expanding the business insurance portion of the company's market. In order to accomplish this she expects that sophisticated business graphics and desk top publishing software will be needed. To support this software a color printer and plotter will be required. Finally, Ms Holmes would like to automate the companies accounting and financial analysis systems.

One type of computer software application not considered is E-mail. This type of system would provide a paperless communication network for managing the office and should be considered as a future application.

Alternatives Evaluation

Nine alternative system configurations were deemed appropriate for review. These alternatives are: 1. Multi-user system, 2. Clustered system, 3. Service Bureau, 4. Current system with improved organization and data flow, 5. Sub-LAN (data switch), 6. LAN Serial Ports, 7. Low Speed LAN, 8. Medium Speed LAN, and 9. High Speed LAN.

Each system has certain advantages and disadvantages. The multi-user and the related clustered systems provide good remote access and protect Balboa's current investment in software and training. However, these systems are not well support by the industry, have limited concurrent user use and limited graphical support, and will not fully utilize Balboa's current hardware investment. The service bureau alternative provides for relatively easy maintenance and expansibility but does little to solve Balboa's peripheral sharing issue. This alternative also limits Balboa's control over its data.

The current system can be improved by centralizing the terminals and PCs, and requiring that all broker data processing be performed in a central location. Only those users who must have PCs at their desks, namely, administrative personnel, or PCs that contain sensitive data, namely Ms Holmes' PC, will not be in the common area. This solution also can alleviate the peripheral sharing problem. However, this solution does not solve the file transfer problem and it creates inefficiency because users must get up from their desk to access data.

The sub-LAN (data switch) and LAN serial ports solutions solve many of the problems currently being experienced by Balboa. However, these options create the need for additional training and are not very "user friendly."

The LAN (low, medium, and high speed) solutions generally solve all of Balboa's problems but they also create new ones. The LAN solutions will require some additional user training, will be less secure, and will require additional management.

In order to scientifically evaluate the different alternatives available to Balboa a 100 point criteria weighting system was developed. This weighting system was based upon a review of the available material and other considerations. Listed below are the evaluation criteria and the point weighting given to each criteria:

DATA PROCESSING SYSTEM EVALUATION CRITERIA

Evaluation Criteria	Weighting
Budget constraints	15
Ability to centralized client data	9
Accum print jobs & direct them to selected printers	8
Protection of existing hardware investment	7
Cost — long term	6
Protection of software and training investment	6
Allows modem pooling	5
Ease of system administration (backup and maintenance)	5
Fault tolerance	5
Software and systems support availability	5
Ability to meet future software needs	4
Ability to expand	4
Ease of peripheral sharing	4
Ease of remote access	4
Ease of system management (data control)	4
Training time and cost	4
Transparency to user	3
Ability to maintain sensitive information	2
TOTAL	100

The advantages and disadvantages of the different systems were reviewed using the general evaluation criteria and applying the appropriate weighting points (judgmentally), both positively and negatively, to each of the nine systems (see analysis on next three pages) to arrive at a net point weighing for each alternative. This approach resulted in the following alternative ranking:

System Type	Rating (see note below)
Low Speed LAN	62
Medium Speed LAN	50
High Speed LAN	50
Clustered system	34
Multi-user system	34
Service Bureau	20
LAN Serial Ports	16
Sub-LAN (data switch)	16
Current system	14

Note: The analysis on the next three pages also identifies the estimated total cost of the system. Note that these costs are estimates and actual costs could vary materially.

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DATA PROCESSING SYSTEM ALTERNATIVES ANAYSIS

Multi-user Sys

System Type	Hardware/Software description	Cost	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria
Multi-user Sys	High performance PC	6,000	15	-Budget constraints	-5	-Software and sys support
	Cable	400	9	-Ability to center data	4	-Meet future SW needs
	Installation of cable	4,000	8	-Accum print jobs & prt	-4	-Abillity to expand
	Modem pool	use existing	-7	-Protect hardware invest	4	-Ease of peripheral sharing
	Protocal converter	1,000	-6	-Cost – long term	4	-Ease of remote access
	Productivity software	min upgrade cost	6	-Protect SW & train inves	4	-Ease of system mgt
	Customized operating system	3,000	5	-Allows modem pooling	-4	-Traning time and cost
	Consulting time	2,000	5	-Ease of system admin	3	-Transparency to user
	Other	2,000	-5	-Fault tolerance	-2	-Sensitive info
	ESTIMATED TOTAL COST	12,000		NET EVALUATION POINTS		34

Clustered Sys

System Type	Hardware/Software description	Cost	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria
Clustered Sys	High performance PC	6,000	15	-Budget constraints	-5	-Software and sys support
	Cable	use existing	9	-Ability to center data	4	-Meet future SW needs
	Installation of cable	n/a	8	-Accum print jobs & prt	-4	-Abillity to expand
	Modem pool	use existing	-7	-Protect hardware invest	4	-Ease of peripheral sharing
	Protocal converter	1,000	-6	-Cost – long term	4	-Ease of remote access
	Productivity software	min upgrade cost	6	-Protect SW & train inves	4	-Ease of system mgt
	Customized operating system	3,000	5	-Allows modem pooling	-4	-Traning time and cost
	Consulting time	2,000	5	-Ease of system admin	3	-Transparency to user
	Other	2,000	-5	-Fault tolerance	-2	-Sensitive info
	ESTIMATED TOTAL COST	8,000		NET EVALUATION POINTS		34

Service Bureau

System Type	Hardware/Software description	Cost	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria
Service Bureau	Modems	2,100	15	-Budget constraints	5	-Software and sys support
	Cable	use existing	9	-Ability to center data	-4	-Meet future SW needs
	Com software	600	-8	-Accum print jobs & prt	4	-Abillity to expand
	Printer spoolers	1,900	7	-Protect hardware invest	-4	-Ease of peripheral sharing
	Consulting	500	-6	-Cost – long term	4	-Ease of remote access
	Other	2,000	-6	-Protect SW & train inves	4	-Ease of system mgt
			5	-Allows modem pooling	-4	-Traning time and cost
			5	-Ease of system admin	-3	-Transparency to user
			-5	-Fault tolerance	2	-Sensitive info
	ESTIMATED TOTAL COST	7,100		NET EVALUATION POINTS		20
	Estimated Monthly Charge	600				

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DATA PROCESSING SYSTEM ALTERNATIVES ANAYSIS

System Type	Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
Current System with improved organization and data flow	None	None	-Budget constraints	15	-Software and sys support	5
			-Ability to center data	-9	-Meet future SW needs	4
			-Accum print jobs & prt	-8	-Abillity to expand	4
			-Protect hardware invest	7	-Ease of peripheral sharing	-4
			-Cost – long term	-6	-Ease of remote access	-4
			-Protect SW & train inves	6	-Ease of system mgt	-4
			-Allows modem pooling	-5	-Traning time and cost	4
			-Ease of system admin	5	-Transparency to user	-3
			-Fault tolerance	5	-Sensitive info	2
	ESTIMATED TOTAL COST	0	NET EVALUATION POINTS			14

System Type	Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
Sub-LAN (data switch)	Serial ports	use existing	-Budget constraints	15	-Software and sys support	5
	Cable	400	-Ability to center data	9	-Meet future SW needs	-4
	Installation of cable & connecting hub	4,000	-Accum print jobs & prt	-8	-Abillity to expand	-4
	Modem pool	use existing	-Protect hardware invest	7	-Ease of peripheral sharing	-4
	LAN software	600	-Cost – long term	-6	-Ease of remote access	-4
	Productivity software	min upgrade cost	-Protect SW & train inves	6	-Ease of system mgt	4
	Low end file server	1,750	-Allows modem pooling	5	-Traning time and cost	-4
	Consulting time	2,000	-Ease of system admin	-5	-Transparency to user	-3
	Other	1,000	-Fault tolerance	5	-Sensitive info	2
	ESTIMATED TOTAL COST	9,350	NET EVALUATION POINTS			16

System Type	Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
LAN Serial Ports	Data switch (16 ports)	2,500	-Budget constraints	15	-Software and sys support	5
	Cable	use existing	-Ability to center data	9	-Meet future SW needs	-4
	Connecting hub	1,000	-Accum print jobs & prt	-8	-Abillity to expand	-4
	Modem pool	use existing	-Protect hardware invest	7	-Ease of peripheral sharing	-4
	Print spoolers	1,900	-Cost – long term	-6	-Ease of remote access	-4
	Productivity software	min upgrade cost	-Protect SW & train inves	6	-Ease of system mgt	4
	File transfer software	500	-Allows modem pooling	5	-Traning time and cost	-4
	Consulting time	2,000	-Ease of system admin	-5	-Transparency to user	-3
	Other	1,000	-Fault tolerance	5	-Sensitive info	2
	Serial ports	use existing				
	ESTIMATED TOTAL COST	8,900	NET EVALUATION POINTS			16

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DATA PROCESSING SYSTEM ALTERNATIVES ANAYSIS

Low Speed LAN

Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
Additional cards (not supplied with software)	800	-Budget constraints	15	-Software and sys support	5
Cable	use existing	-Ability to center data	9	-Meet future SW needs	4
Connecting hub	1,000	-Accum print jobs & prt	8	-Abillity to expand	4
Modem pool	use existing	-Protect hardware invest	7	-Ease of peripheral sharing	4
LAN software	800	-Cost – long term	-6	-Ease of remote access	4
Productivity software	min upgrade cost	-Protect SW & train inves	6	-Ease of system mgt	-4
Medium end file server	3,500	-Allows modem pooling	5	-Traning time and cost	-4
Consulting time	2,000	-Ease of system admin	5	-Transparency to user	-3
Other	1,000	-Fault tolerance	5	-Sensitive info	-2
ESTIMATED TOTAL COST	**9,100**	NET EVALUATION POINTS			62

Medium Speed LAN

Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
Additional cards (not supplied with software)	1,200	-Budget constraints	-15	-Software and sys support	5
Cable	400	-Ability to center data	9	-Meet future SW needs	4
Installation of cable & connecting hub	4,000	-Accum print jobs & prt	8	-Abillity to expand	4
Modem pool	use existing	-Protect hardware invest	7	-Ease of peripheral sharing	4
LAN software	1,300	-Cost – long term	6	-Ease of remote access	6
Productivity software	min upgrade cost	-Protect SW & train inves	6	-Ease of system mgt	-4
High end file server	5,000	-Allows modem pooling	5	-Traning time and cost	-4
Ease of system admin	2,000	-Ease of system admin	5	-Transparency to user	3
Other	500	-Fault tolerance	5	-Sensitive info	-2
ESTIMATED TOTAL COST	**14,400**	NET EVALUATION POINTS			50

High Speed LAN

| Hardware/Software description	Cost	Evaluation Criteria	Pos/-Neg Pts	Evaluation Criteria	Pos/-Neg Pts
Additional cards (not supplied with software)	1,500	-Budget constraints	-15	-Software and sys support	5
Cable	400	-Ability to center data	9	-Meet future SW needs	4
Installation of cable & connecting hub	4,000	-Accum print jobs & prt	8	-Abillity to expand	4
Modem pool	use existing	-Protect hardware invest	7	-Ease of peripheral sharing	4
LAN software	1,500	-Cost – long term	6	-Ease of remote access	4
Productivity software	min upgrade cost	-Protect SW & train inves	6	-Ease of system mgt	-4
Dedicated server	6,000	-Allows modem pooling	5	-Traning time and cost	-4
Consulting time	2,000	-Ease of system admin	5	-Transparency to user	3
Other	500	-Fault tolerance	5	-Sensitive info	-2
ESTIMATED TOTAL COST	**15,900**	NET EVALUATION POINTS			50

Implementation

The low speed LAN alternatives provides Balboa with the greatest potential for solving its current and future data processing needs. Implementing a new system can be very disruptive to employees. Therefore, careful thought and planning should be made before, during, and after implementation process. On the following pages are the floor plans for Balboa's office (the basement has not been included), the PC, printer, etc.. layout and discussions relating to the general setup for implementing the low speed LAN alternative. The low speed LAN alternative does not provided enough data speed to load application software to the PCs directly. Therefore, all PCs will have the office software loaded on their hard disk drives. The LAN will be used only to control printing jobs, to connect, via a pooled modem, to the insurance carriers, and for data base record sharing. Note that this gives some degree of fault tolerance. If the server should become inoperative individual PCs can function independently using the software on their hard disk drives. They will not, however, be able to access data files during this down time.

Floor #1

On the following page is the layout for floor #1. Floor #1 will have four PCs, two dot matrix printers, one laser printer, and one terminal. All PCs and printers will be placed in the open office area with the exception of the PC and dot matrix printer in the presidents office. The isolated PC will be connected to the network, thus allowing access to the common printers The isolated dot matrix printer will only be connected to the isolated PC and not to the network. This equipment will be used for processing, printing and storing sensitive information. Sensitive data should only be stored on removal medium (i.e. floppy disk) to prevent unauthorized access or damage through the network. Further protection can be obtained by locking the office door when the president is out or by low cost PC locking mechanisms. Of the three PCs in the common area one should be near the receptionist (administrative person) so that this person can work on tasks when not answering the telephone or greeting customers. This PC should be linked to the common printers. The remaining two PCs will be placed on a table in the common area next to the shared dot matrix and laser printer. Both these PCs will be linked to the network. When funds become available for the purchase of an additional PC, these PCs along with the new one can be redistributed to the broker's offices. The common area will also have one terminal with a modem connect to the insurance carriers on-line systems. This extra terminal will provide fault tolerance. If the network server were to be unavailable the office could still link to the insurance carriers.

Floor #1

Broker #3

Pres Office

Wire hub

Broker #1

Broker #2

Restroom

Reception
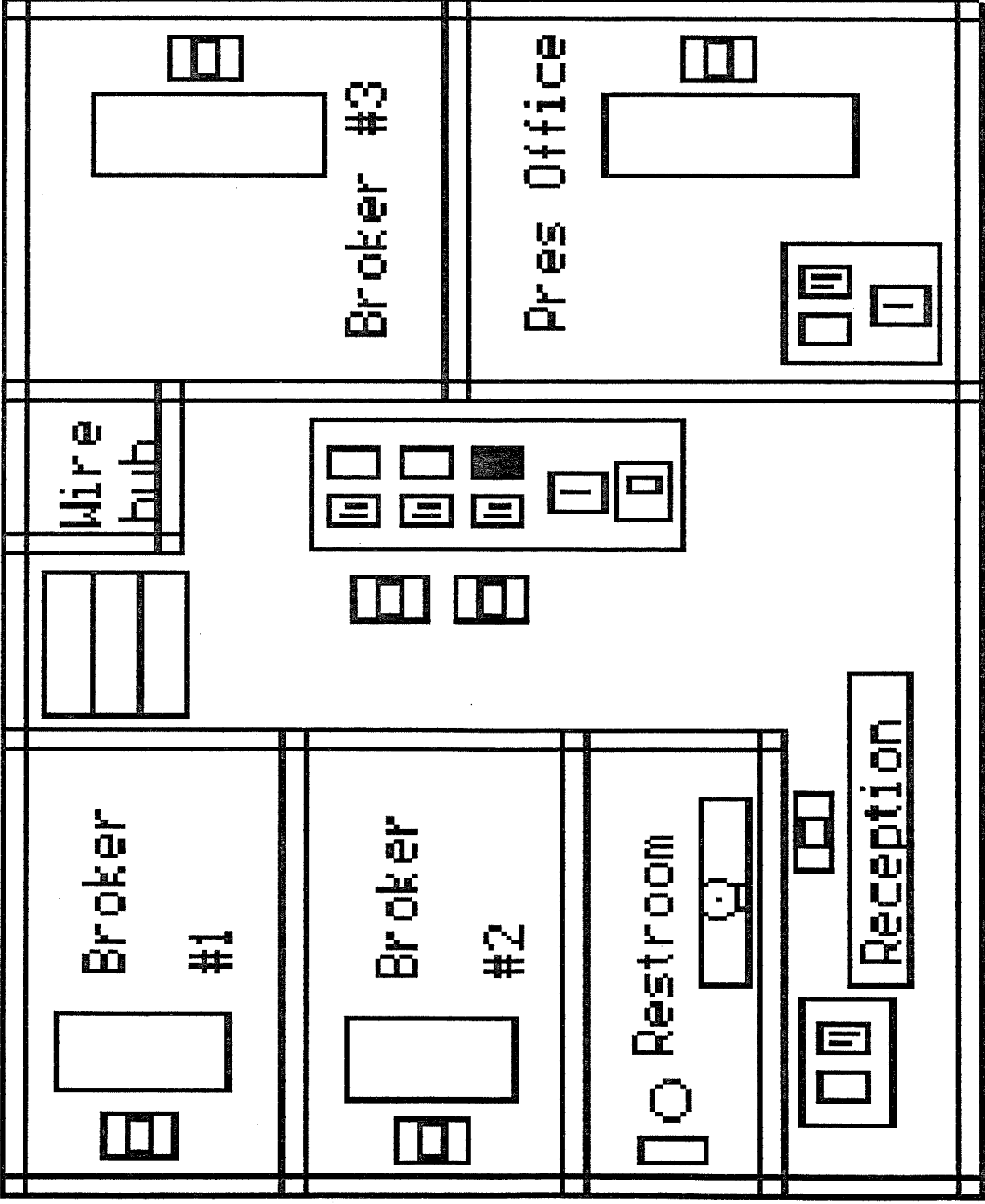
PC   Term   Dot Prt   Laser Prt

Floor #2

On the following page is the layout for floor #2. Floor #2 will house the file server with modem, one PC, one laser printer, and one dot matrix printer. The chief administrators office will contain the server. This provides security because the chief administrator can visually monitor the computer. Additionally, the chief administrator, if not chosen as the person actually performing the LAN management function, should be responsible for the LANs correct administration and locating the server in their office provides direct oversight. The server should be able to function both as an operating PC and a server simultaneously thus giving the chief administrator access to a PC. The other PC will be located in the other administrative office. Both the LAN and the other PC will be linked to the common printers.

Meeting Current and Future Needs

The low speed LAN alternative provides Balboa with the beginnings of a centralized data base system and provides it with peripheral sharing for a cost that is within its budget constraints.

In the future Balboa can easily add additional PCs, upgrade to a more powerful server (retaining the existing server as an additional PC), add more sophisticated communication systems that will allow connection to external broker laptops, add desk top publishing and E-mail software, and add a color printer and plotter. All these additional features can be accomplished while still protecting the existing hardware and software investments.

Floor #2

File Room

Chief Adm

Empty

Adm #1

Adm #2

Restroom
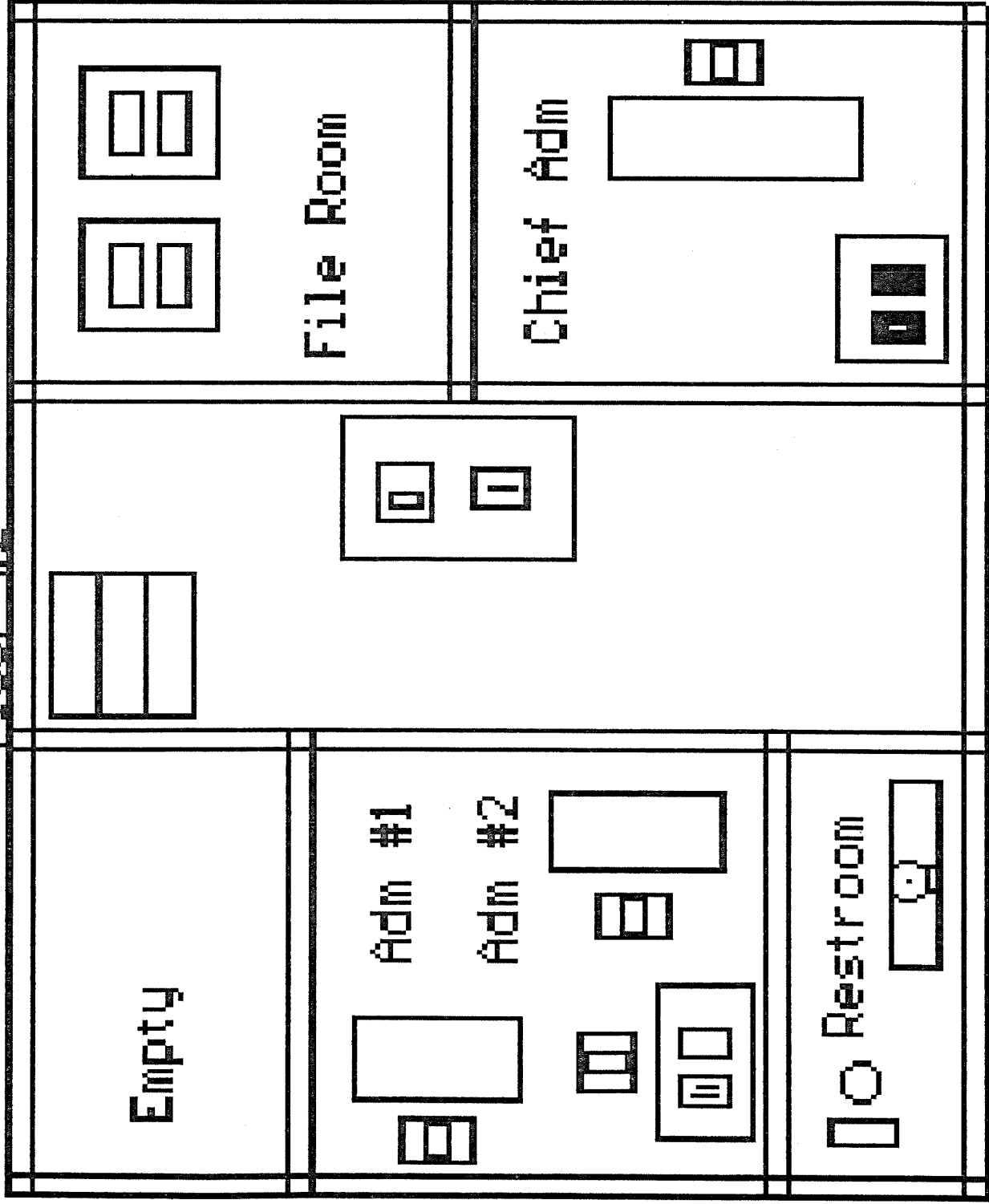
□○ Restroom   □ PC ■ Srver   □ Dot Prt   □ Laser Prt

Management Responsibilities

Several new management responsibilities come with the introduction of a network. When PCs are networked together it is necessary to assure that the common link, namely the server, is properly and continuously functioning. Additionally, now that the printers will be linked together someone must that responsibility for their maintenance. Initially, Balboa can rely on a consultant to develop login batch files, assign file and user security, create necessary subdirectories, connect and disconnect workstations, diagnose and correct problems, maintain applications, and interface with vendors. However, eventually these responsibilities will be assumed by Balboa. It will, therefore, be beneficial to determine the person who will eventually take over these LAN administrative responsibilities and have that person work closely with the consultant until that person becomes fully trained. An assistant LAN administrator should also be designated in the early periods of implementation. This person, to the extent possible should observe and participate in the LANs implementation. This assistant will function as a backup person in case the first administrator becomes ill or leaves. Finally, because of the critical nature of the servers operations a maintenance agreement should be purchased for its protection.

In addition to these hookup and maintenance functions the LAN administrator should be responsible for data file backup and archiving. Some regular schedule should be developed for these procedures. Additionally, a method of offsite backup file storage should also be implemented and maintained.

Conclusion

Using the low speed LAN alternatives will solve Balboa's current and short term data processing needs. Balboa must understand and accept the additional management responsibilities that come with a LAN system. As Balboa grows the low speed LAN alternative will begin to become taxed. Balboa must realize that upgrading and adding additional components to the system will be an unavoidable eventuality.