Part 3: Network Analysis for Improvement of the Patent Document Search Environment

3 Network Analysis for Improvement of the Patent Document Search Environment

3.1 Background, Problems and Objective of the Analysis

(1) Conclusion of Phase 1 Study, and Scope of Phase 2 Study

The patent examiner is required to examine a patent application by verifying that it is not in public knowledge or use worldwide (Article 14 of the Patent Act). To fulfill his duty, the examiner must search foreign as well as local patents to check if there is a patent that impedes novelty of the patent application. Meanwhile, examiners everywhere face a steady increase in workload as there is high growth of the applications filed from year to year, and effective reduction of the workload is a major concern for the patent office in many countries. The patent examinations being conducted at present in Malaysia is for applications made in 1996.

In Phase 1, the current search environment of foreign patent documents was studied to improve the efficiency of patent examination.

The patent document search system of IPCM is a system for searching foreign patent documents used by patent examiners for their examination. The current system uses CD-ROMs and DVDs provided by EPO, USPTO and JPO, containing the patent documents. Examiners, who want to use a full text with this system, are required to find the target CD-ROM among 4,000 CD-ROMs, which are kept in the search room. The procedure is complicated, and moreover, if the target CD-ROM is being used by another examiner, the examiner has to wait until it becomes available. The initial improvement plan proposed by the Malaysian side was to store all the data contained in the CD-ROMs and DVDs on a hard disk (Local Library Method).

Heavy workloads required for patent examination service are one of the major issues facing patent offices in many countries, including Malaysia, and various international cooperative efforts, especially under the leadership of the WIPO, are underway to reduce them. It was pointed out, in this connection, that the storage and use of all patent documents on the hard disk would be costly, and that the considerable investment required for storing the documents on hard disk could become wasted in the short-term future, if the international collaboration become readily accessible via the Web. Thus, it was concluded that the future system should be based on a Web-based search. However, since it was observed that the present Web-based search system was very slow and frequently stalled, reducing the efficiency of examination work, the need for further

network analysis was identified.

As a result, the objective of Phase 2 Study was agreed to be the determination of the proposal for improvement on the basis of the analysis of the Internet access environment.

(2) Change in IT environment afterwards

IPCM has started to convert the current paper-based data to electronic data. The main work consists of scanning of paper document data to image file data, particularly of trademarks, and migration of the image file data to CS database. This work has caused overloads on the CS, and the search time for trademarks and patents was increased significantly, affecting the examiners workload seriously.

The following were assumed as the cause.

1) Problem of the network

The delays in data transmission were caused by collisions in the line originating in the circuit disturbance as a result of the heavy load caused by the increase in the volume of data flowing on the network. That increased the search time.

2) Overload to server

With the increase in data handled by CS, the CPU of CS server was overloaded, resulting in delay in the search time.

On the other hand, a large number of employees were newly recruited on the occasion of corporatization to IPCM, and the number of terminals was also increased. IPCM enhanced the internal network to 100/1,000 Mbps to avoid the danger of overload of the system that could be caused by the increased number of terminals in use. Because of this, IPCM deemed that the above problems were caused by CPU overload accompanying the increase in handling data, and not by a problem of the network. IPCM implemented the following measures accordingly:

1) Independent Server Configuration for Trademark and Patent Business

CS supports both patent and trademark administration. These two systems were operated on one server when the above problem occurred. IPCM changed to use of two dedicated servers, and made each system run independently on a separate server.

2) Introduction of Documentum

IPCM introduced Documentum, a document management application, which uses an Oracle database, together with Storage Area Network Model EVA3000, a storage device, which is managed by Documentum and is connected by optical fiber cables capable of high-speed data transfer, in order to realize quick searching and storing of image files.

Figures 3-1 and 3-2 show the server configuration and the equipment configuration for network connection, after the above measures were implemented.

Figure 3-1 Current Configuration of Server Equipment

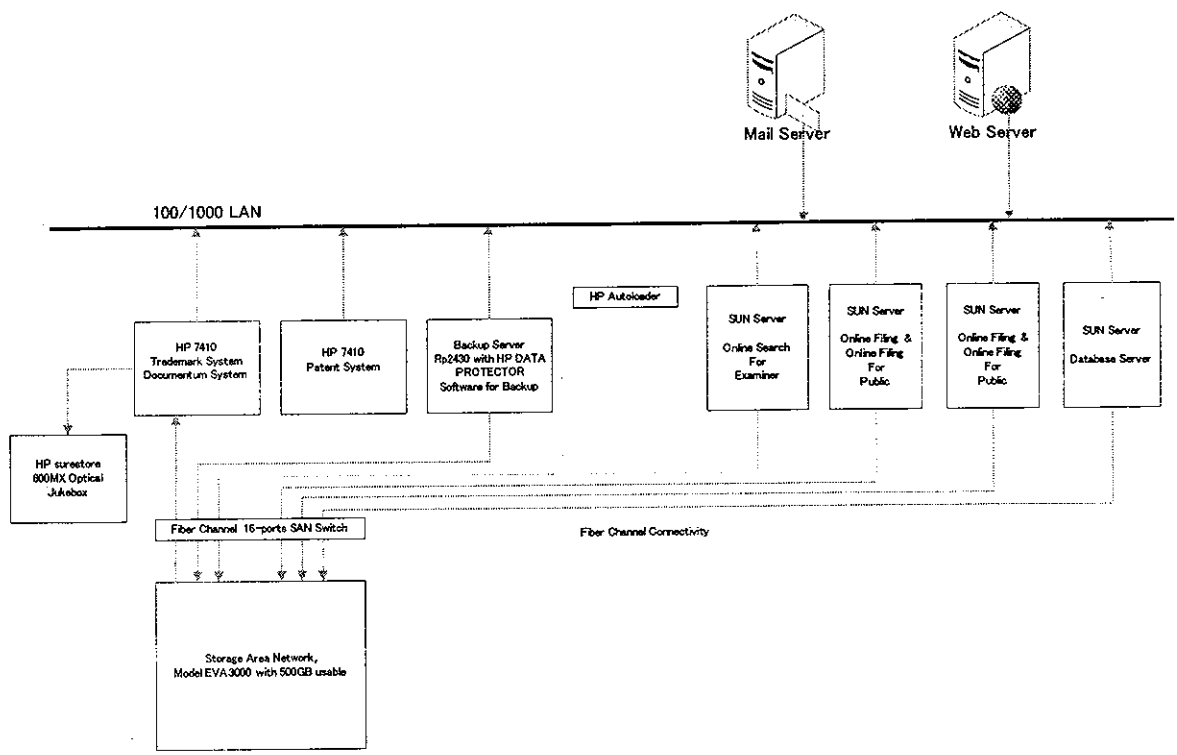
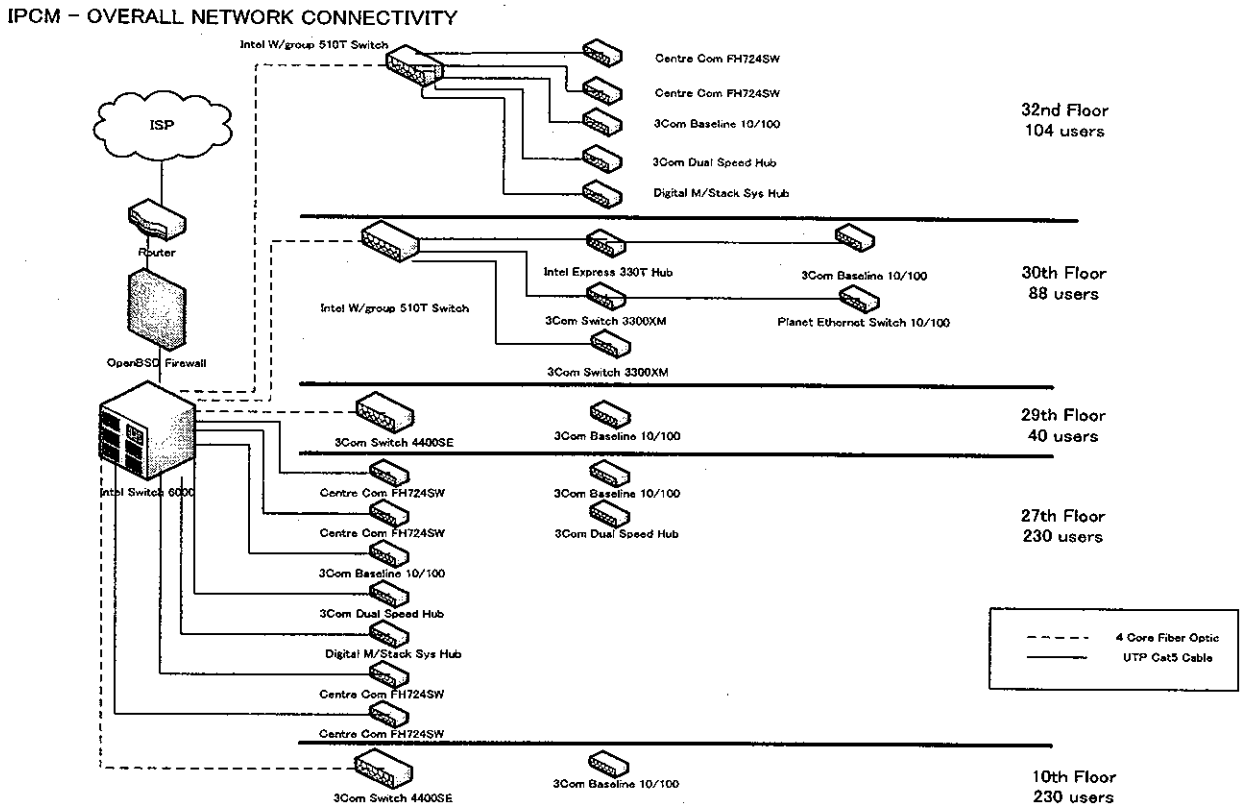


Figure 3-2 Configuration of Equipment for Network Connection



The Internet line was enhanced from 128Kbps to 1.5Mbps assuming commencement of online services.

As for the patent document search, the function of IPDL provided by EPO, which is the most frequently used search tool for patent examination in IPCM, was enhanced. The downloading function of searched documents was upgraded to whole document downloading from the former "page by page downloading". Thus, the patent document search environment has been improved significantly, except for some remaining problems which are analyzed in Chapter 4.

(3) Objective of the Study

A network study was conducted to investigate whether the current network has enough capacity to meet the future increase in the load that will be caused by various factors, such as introduction of online services, increase in number of employees, and other unforeseeable factors. The study analyzed the occurrence of data and the delay of data, after the internal network configuration of IPCM and the network structure to the Internet were surveyed.

The study also investigated the cause of deteriorated response at client terminals for patent examiners, which has been observed during the regular operation. The following points were analyzed.

1) Performance of the CS server for patent administration
2) Network traffic between the terminals and the server
3) Performance of the client terminals

3.2 Anticipated Increase in Traffic Load in the Near Future

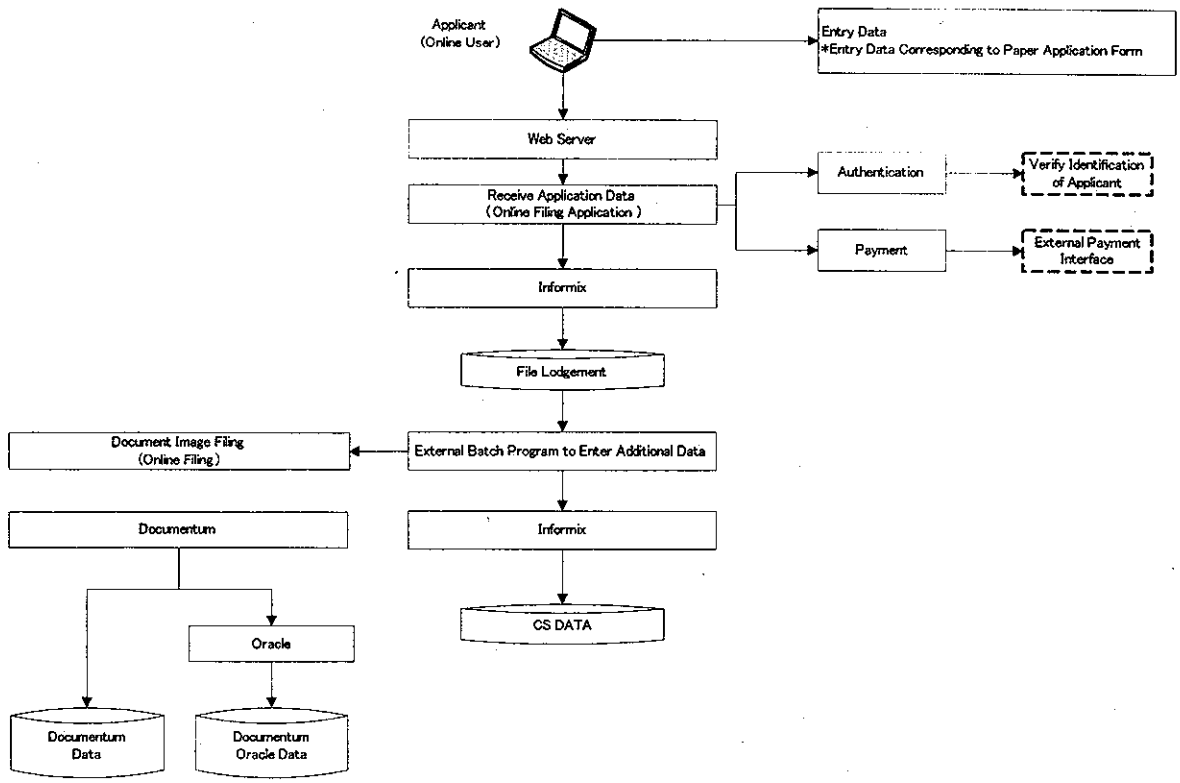
The planned online services are as follows:

(1) Online Filing

Online Filing service will enable applicants or agents to submit a first application for patent or trademark rights through Internet. Users log on to the Online Filing system, input the prescribed information, and submit it to IPCM together with attached material files. The submitted information will be temporarily stored in the work area of IPCM. The external batch program, that runs at a constant cycle, reads this information, gives the application a serial number, and stores it in the database that is managed by CS.

Figure 3-3 shows the data flow of the Online Filing.

Figure 3-3 Data Flow of Online Filing



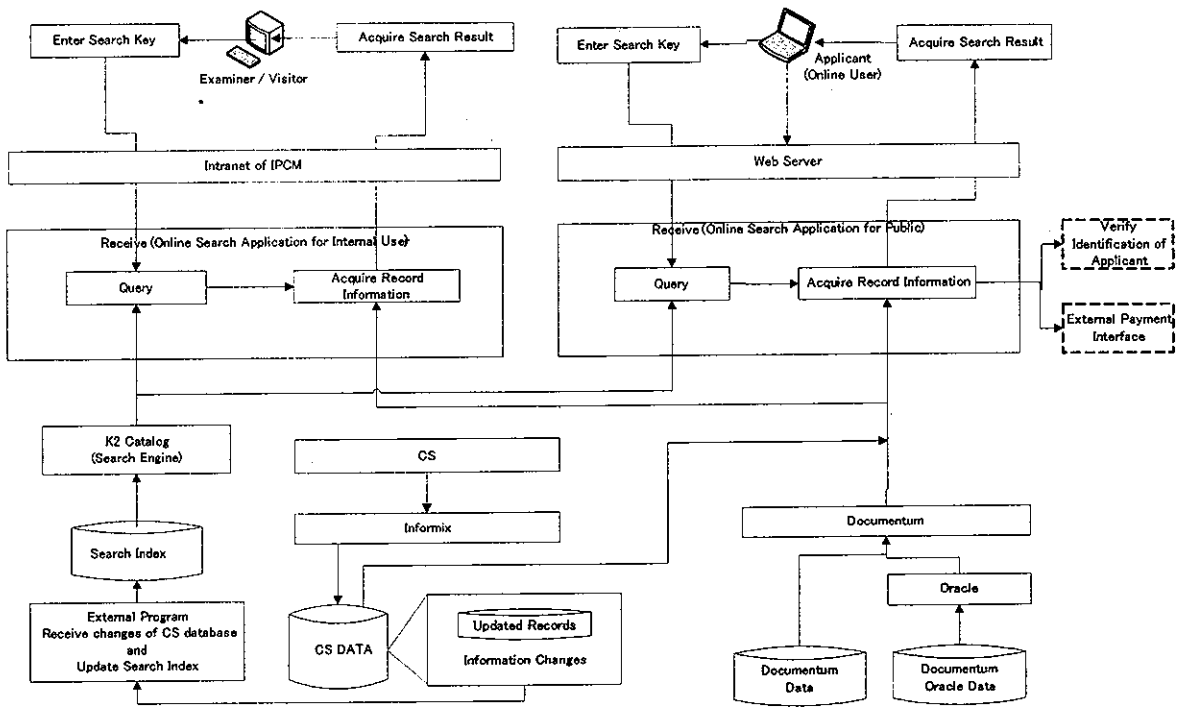
(2) Online Search

Online Search is the service for public users, to search whether similar trademarks or patents exist in the CS database, through the Internet, before they submit their application.

This Online Search function is already available for patent/trademark examiners through the internal network of IPCM. The search option for the examiners covers more than that for public users.

Figure 3-4 shows the data flow of the Online Search.

Figure 3-4 Online Search Data Flow



(3) Online Payment

This is a system that collects the charges from public users of the above Online Filing/Search services.

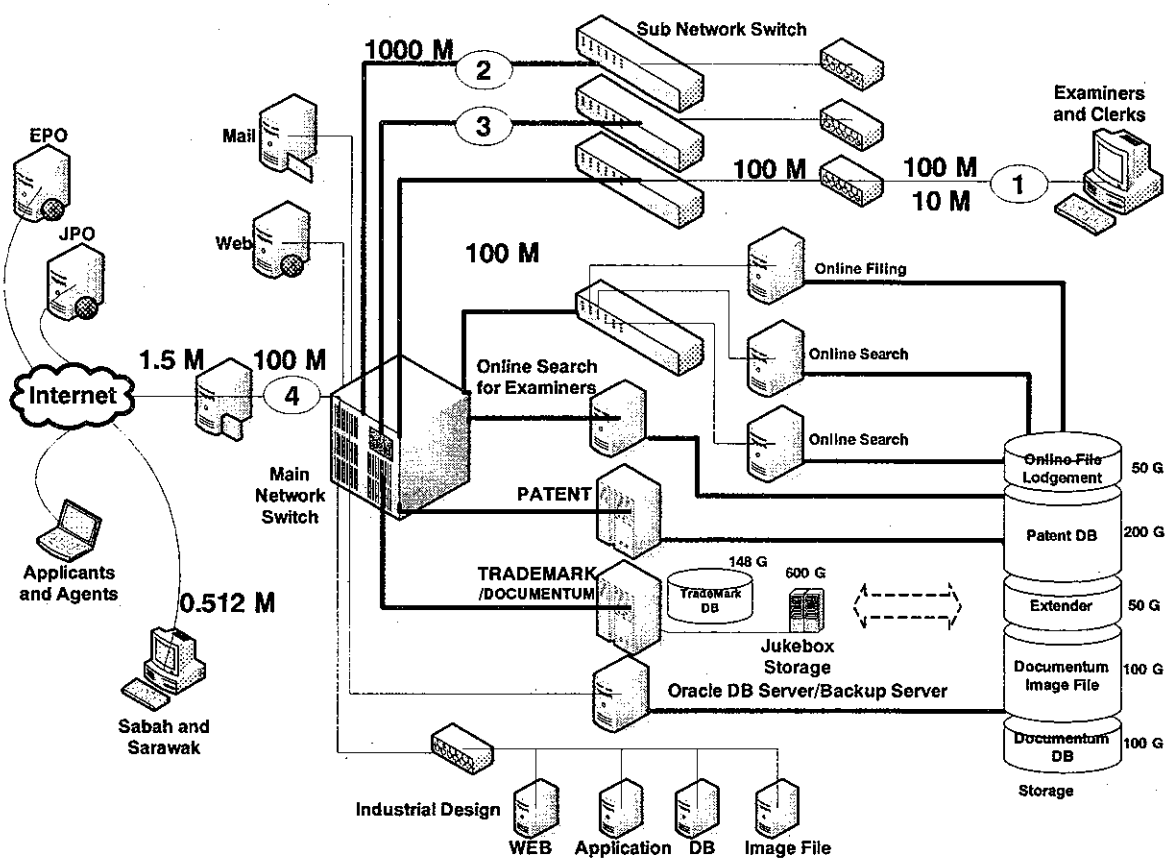
The charge for an Online Filing/Search services is processed by using a payment service API (Application Interface: Interface to call specific function from application) provided by banks and credit companies. API is called up from the Online Filing/Search application after setting parameters such as charge amount and user account information for payment.

The conditions concerning the payment of the commission etc. for online transactions are under negotiation with banks and credit companies, and a system test is scheduled for fiscal year 2004.

3.3 Scope and Method of Network Study

Figure 3-5 shows current network configuration in IPCM in view of the connections among devices. The numbers (1) through (4) stand for the measuring points set for the present network analysis.

Figure 3-5 Network Configuration of IPCM



The objectives of the study, and the items investigated at each measurement point, were as follows:

(1) Study Objective 1

To investigate whether the IPCM internal network line has sufficient capacity to the increase in the load in the future.

Measurement point and measurement item

Point (1):

To confirm the volume of data that a single given client terminal generates, the volume of data (amount of the packet) and the type of data between the client terminal and HUB connected with the client terminal was measured.

Point (2):

The volume of data (amount of the data packet) that flows between the main network switch and subnetwork switches connected with the terminals on the 30th floor of IPCM was measured.

Point (3):

The amount of the data packet that flows between the main network switch and subnetwork switches connected with the terminals on the 32nd floor of IPCM was measured.

(2) Study Objective 2

To investigate whether the IPCM internet line provides enough performance against the anticipated load after IPCM provides online service for public users.

Measurement point and measurement item

Point (4):

The (amount of the packet) and the type of data between main network switching HUB and the Internet gateway was measured.

3.4 Measurement Results and Conclusion

3.4.1 Network Study

(1) Measurement result and observation

1) Measurement result of number of packets of data that flow between client terminal and HUB

The measurement of the number of data packets was implemented twice between the terminal at Patent Division and HUB on the following conditions at the measurement point (1) of Figure 3-5.

Line for measurement:	Line between client terminal at Patent Division and sub-switch
Measurement place:	Patent Division on the 30th floor of IPCM
Measurement software:	Ethereal V0.10.5a

Result of First Measurement

Measurement time	8 hours 22 minutes 35 seconds.
Measured number of total packets	808,724 packets
Measured total number of bytes	266,969,596 bytes
Number of average bytes per second	8,853.022 bytes/second
Number of averages Mbit per second	0.071 Mbps

Result of Second Measurement

Measurement time	3 hours 19 minutes 47 seconds.
Measured number of total packets	345,520 packets
Measured total number of bytes	107,326,928 bytes
Number of average bytes per second	8,953.279 bytes/second
Number of averages Mbit per second	0.072 Mbps

2) Number of data packets between the main network switch and subnetwork switch

Figures 3-6, 3-7, and 3-8 show the number of data packets measured in a sub-switch and the main switch on the 30th floor at measurement point (2) during regular business hours.

Figure 3-6 Data Traffic Status of the 30th Floor (First time)

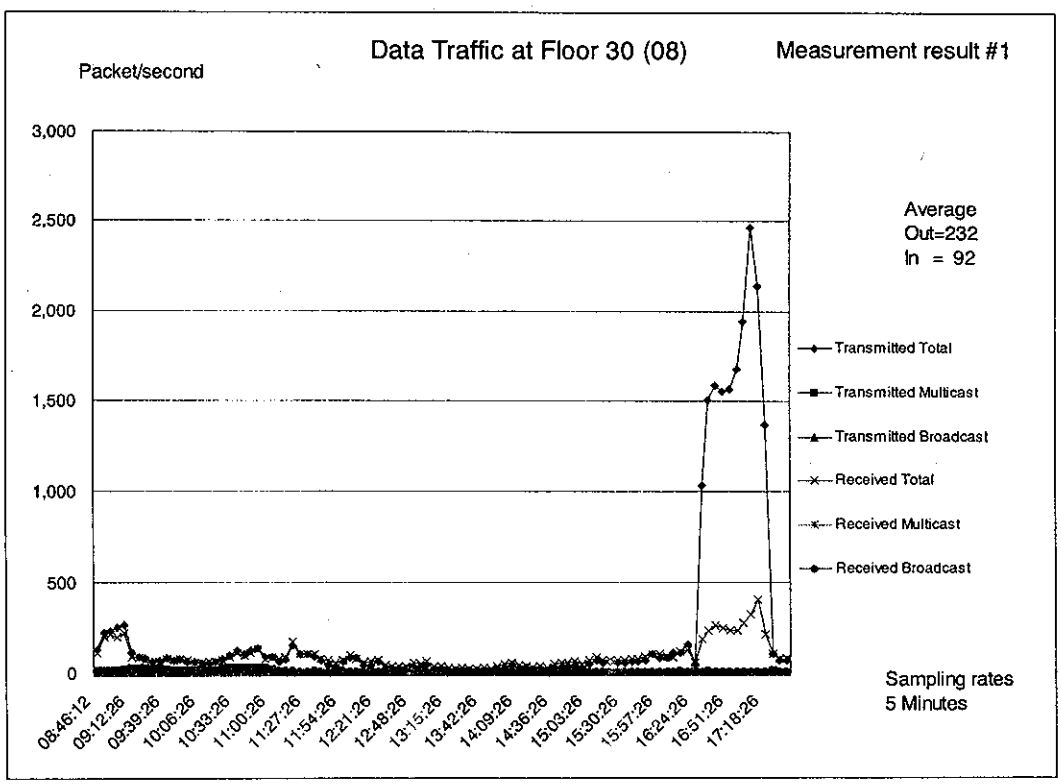


Figure 3-7 Data Traffic Status of the 30th Floor (Second time)

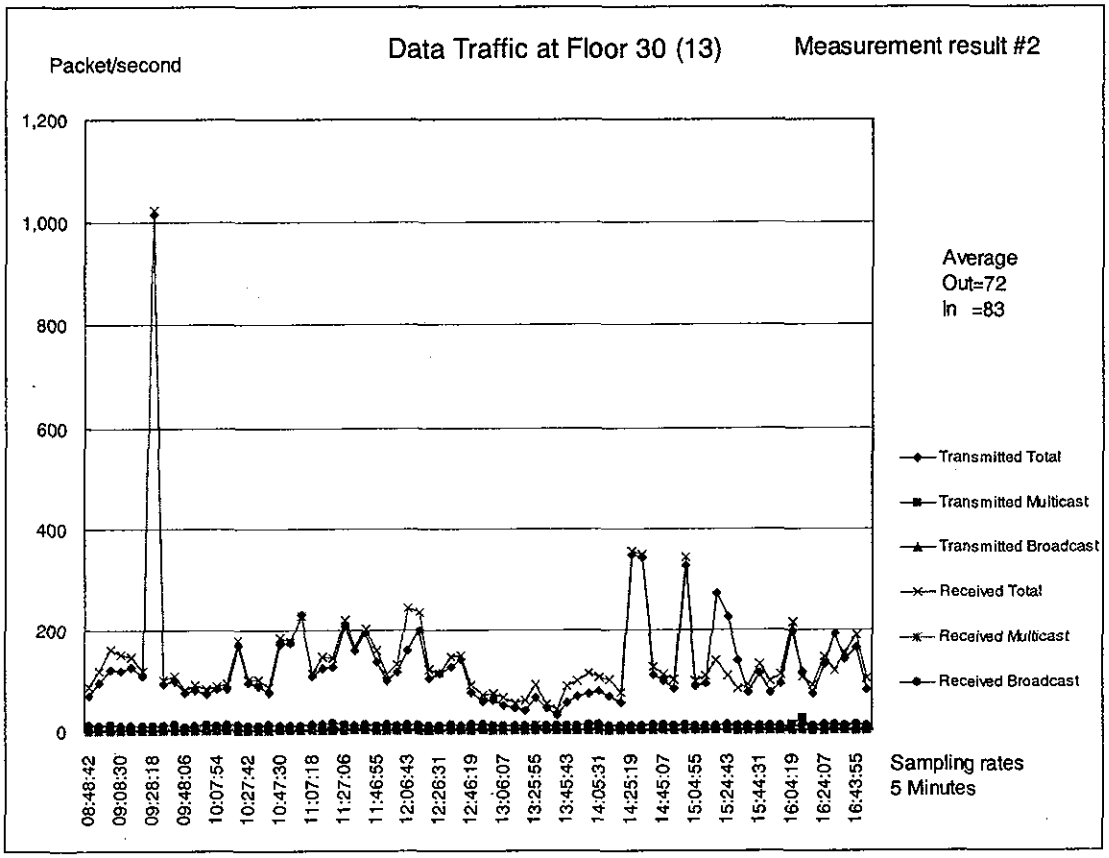
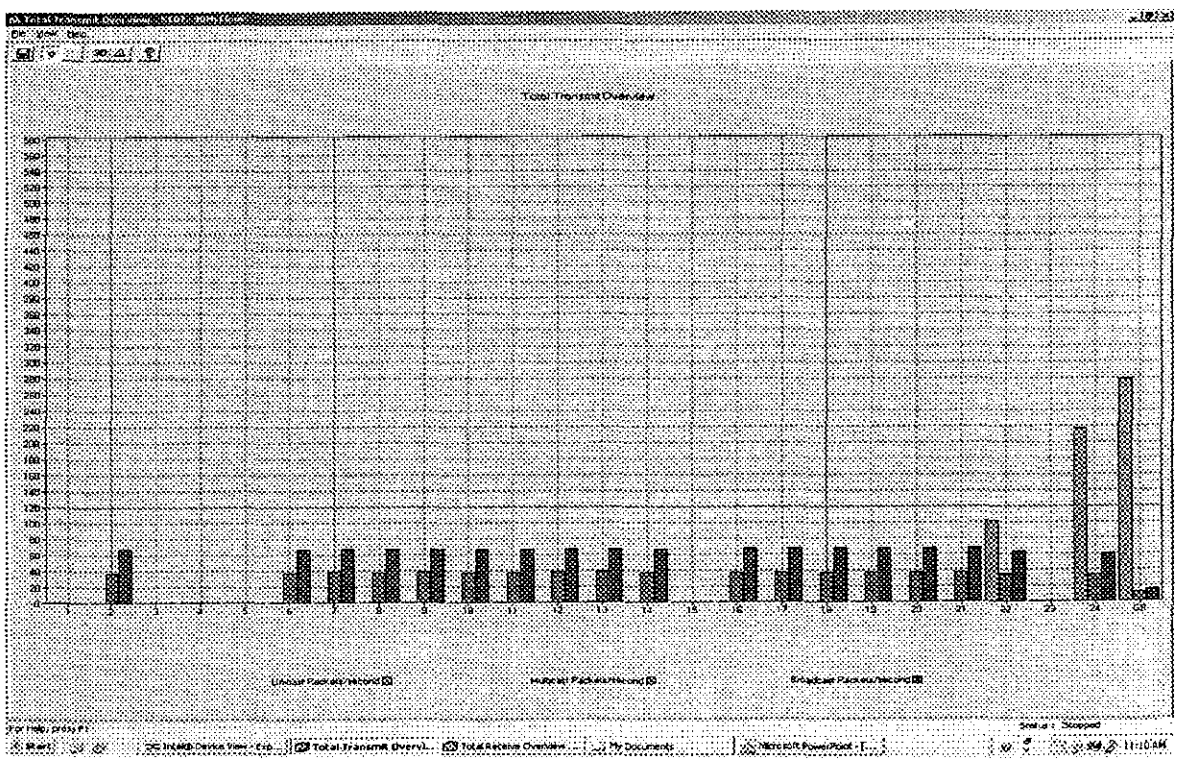


Figure 3-8 Broadcast Data to Subnetwork Switch for the 30th Floor



3) Number of data packets between the main network switch and subnetwork switch

Figures 3-9, 3-10, and 3-11 show the number of data packets measured in a sub-switch and the main switch of the 32nd floor at measurement point (3) during regular business hour.

Figure 3-9 Data Traffic Status of the 32nd Floor (First time)

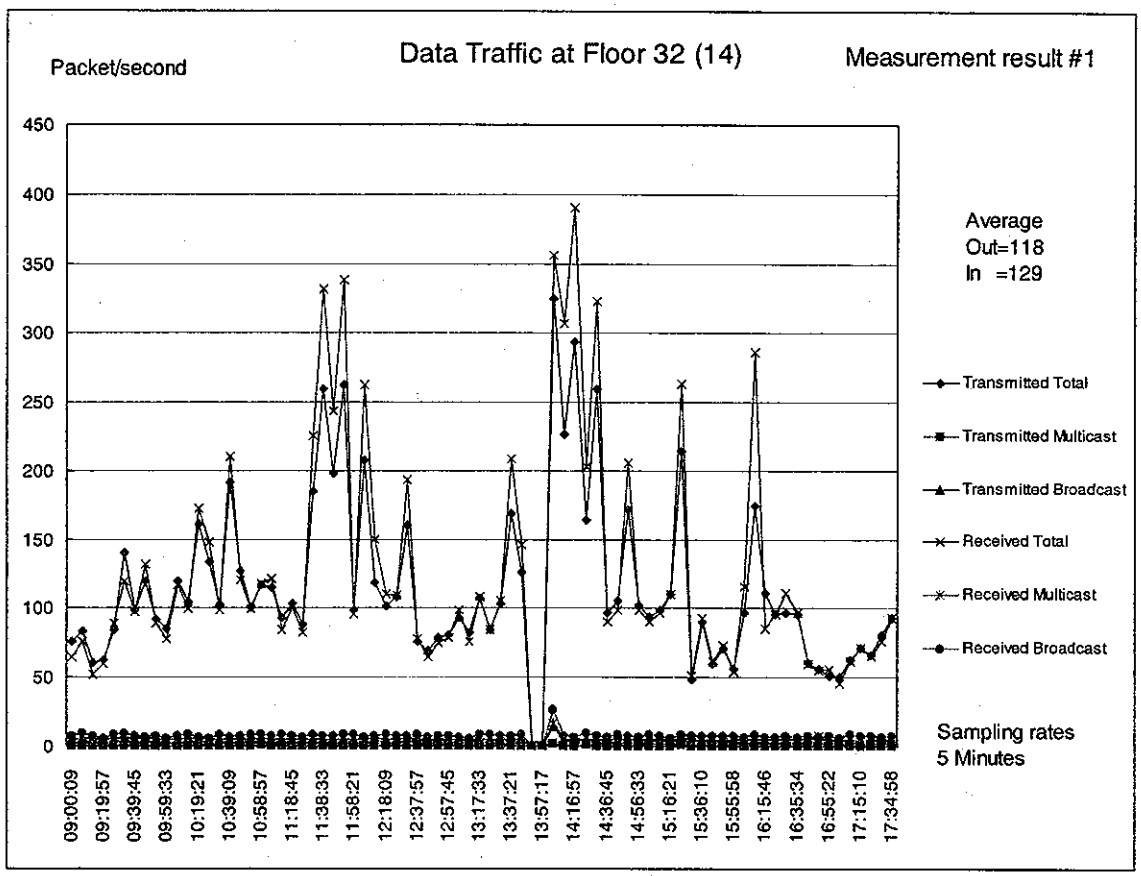


Figure 3-10 Data Traffic Status of the 32nd Floor (Second time)

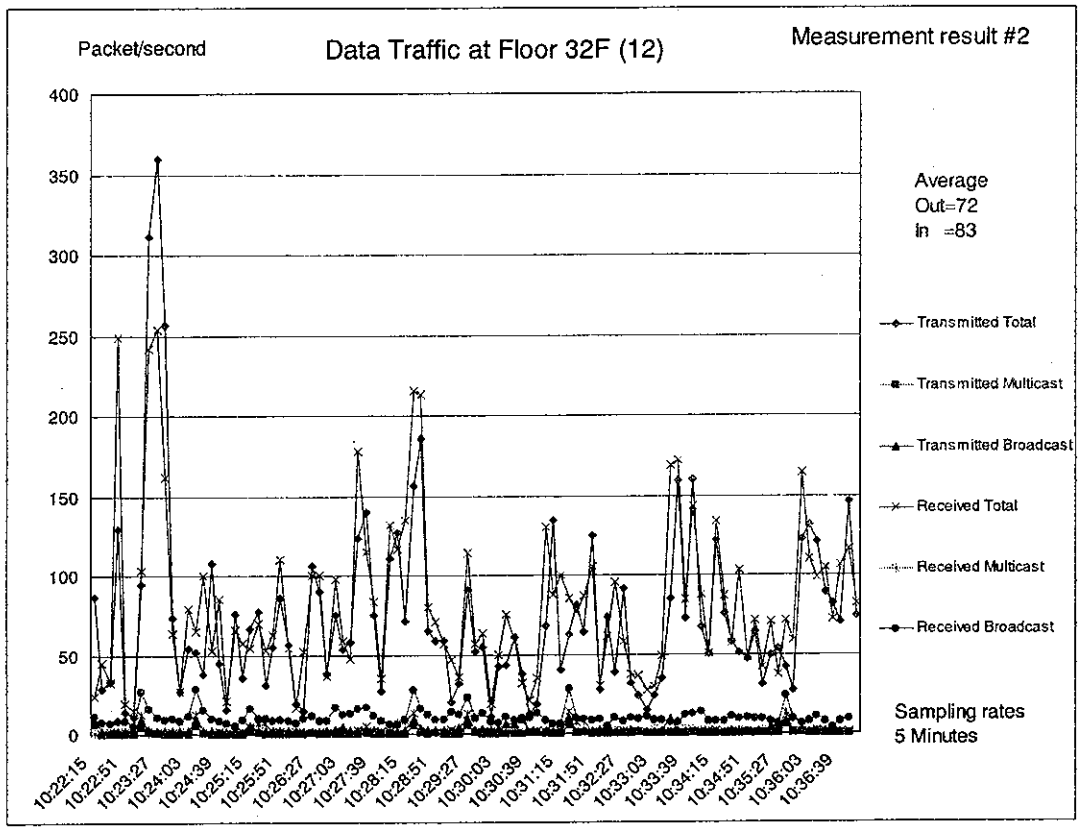


Figure 3-11 Communication Status of Broadcast Data by the 32nd Floor

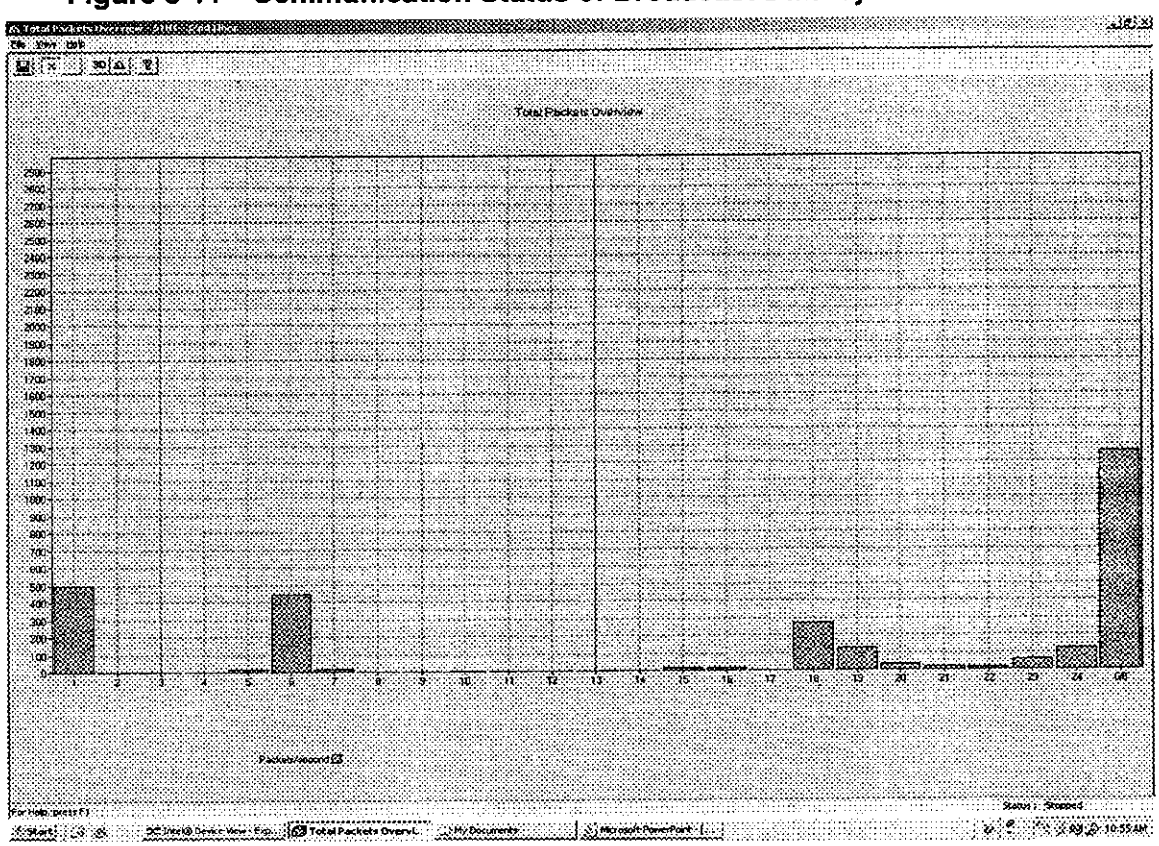
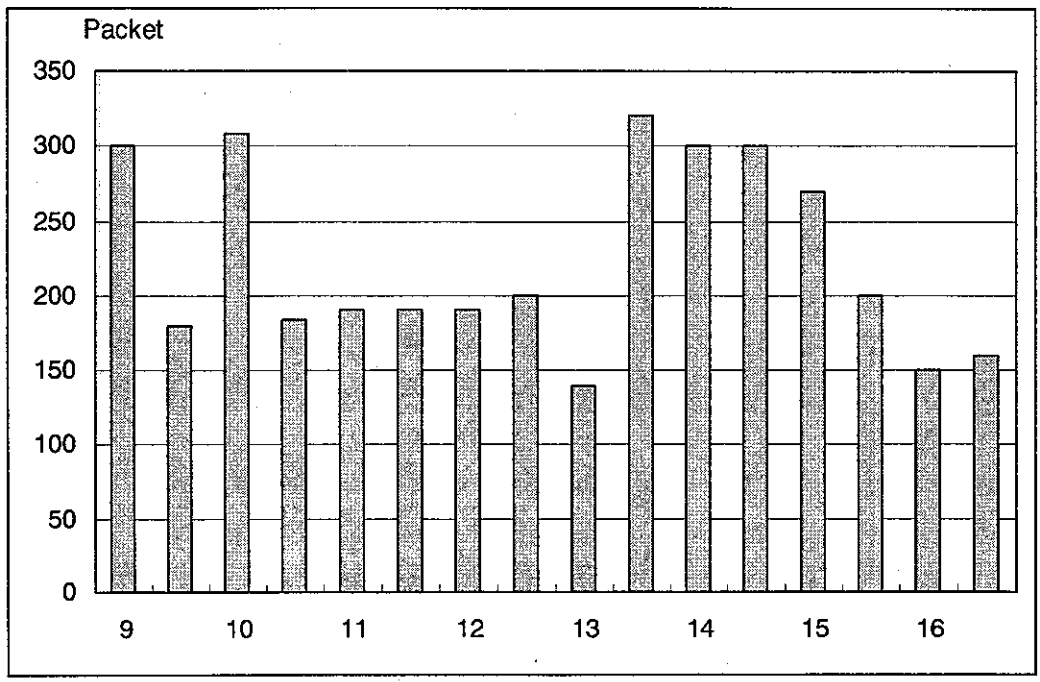


Figure 3-12 The Maximum Values of Number of Average Packets Measured for 30 Seconds Every 30 Minutes



4) Observation in internal network analysis

a) The regular highest network usage was observed during 10:00 to 10:30 and 13:30 to 15:00.

b) There were some irregular peaks around 8:00 to 9:00 and 16:00 to 17:00.

c) The number of total data packets of one floor sometimes reaches as high as 4,500 packets/sec, although the average packets number is 100-200. The 4,500 packets are almost equal to 4,500 x 1.5k x 8 bits = 54,000 kbits, which is 54 Mbits.

d) When a big number of packets is measured, it is assumed the case generated when the network is used at the same time by two or more PC.

e) The average packets number per second is usually less than 1/3 of the highest packets number per second.

5) Data traffic measurement of the external Internet line

The following show the result of measurement of the number of data packets and the data type that flows in the Internet line during the regular business hours between the gateway server and the main switch at measurement point (4).

Measurement situation

Measurement part: Between gateway server and the main switch (Intel6000) (External connected port of the main switch is mirrored for measurement)

Measurement place: The IPCM 27th floor server room

Measurement software: Ethereal V0.10.5a

Measurement Result

Measurement time	2 hours and 39 minutes 42 seconds.
Measured number of total packets	2,199,743 packets
Measured total number of bytes	1,371,612,846 bytes
Number of average bytes per second	143,070.079 bytes/second
Number of average Mbit per second	1.145 Mbps

Content and Component Percentages of Measured Data

Internet Protocol	96.8%	= 1,328,174,230bytes / 1,371,612,846bytes
The main content of composition of the above-mentioned data		
+Transmission Protocol	95.9%	= 1,315,955,926bytes / 1,371,612,846bytes
(HyperText Transfer Protocol)	(81.0%	= 1,111,360,998 bytes / 1,371,612,846bytes)
+Data	0.7%	= 10,031,822 bytes /1,371,612,846bytes
+Simple Mail Transfer Protocol	2.1%	= 128,453,908 bytes / 1,371,612,846bytes
+Post Office Protocol	0.03%	= 421,459 bytes / 1,371,612,846bytes

6) Observation in the Internet Line Analysis

a) The regular highest network usage was observed during 10:00 to 12:00 and 14:00 to 15:00.

b) The number of total data packets sometimes reaches as high as 320 packets/sec.

c) As longest packet is 1.5 kbytes, 320 packets is almost equal to 320 x 1.5k x 8 bits = 3,840 kbits, which is 3.84 Mbits. As the Internet line is 1. 5Mbits/second, the packets at the peak periods have to go to the buffer and wait until the resources become available.

d) The average data flow is about 1.14 Mbits/sec. It can be said the internet line is efficiently used for current operation.

(2) Conclusion

1) Internal network

Internal network speed has been upgraded to 100/1,000 Mbps. According to the measurement result in 3.4, the line load is concluded to be not so high as to cause the data insufficiency and the data delivery delay, though there is a data packet transmitted by the broadcast.

Thus, the internal network has sufficient quality to withstand the load that will be generated by the system modification and the new business addition now.

2) The Internet line

The Internet line of 1.5Mbps is used very efficiently at the present operation level.

However, the load of the Internet line is expected to be increased in the future, because of the following factors.

- Increase in the Internet use for patent document search
- Commencement of online services

Therefore, upgrading of the Internet line will be necessary in the near future, since the performance shortage is feared. There will be three options for the upgrading.

Option A) Use of maximum line speed that ISP can offer

The speed of the Internet line that IPCM uses is 1.5 Mbps. There are ISPs in Malaysia that provide the service of 2.0Mbps line speed. They will provide faster line speed in the future. Use of fastest line speed is this option.

Option B) Introduction of more than one line, and allocation of them by user group

Currently IPCM uses one Internet line. Once IPCM starts the Online Service with one Internet line, the public users and internal users of IPCM will compete each other on the single line. This option recommends to use more than one line and allocate them by user group.

However, it should be noted that this method requires modification of the current system environment.

Option C) Mixture of Option A and Option B

This option recommends to use the fastest line available (Option A), and use more than one line for allocation among different user groups (Option B).

The Option A works most quickly, while Option B and C require time for modification of the environment, and checking of operation. Thus, Option A is

recommended first, while other options should be considered according to the results of Option A.

3.4.2 Decrease in Response of Client Terminal

(1) Server performance investigation

The CS server for patent administration is a Unix server that has two CPUs.

Table 3-1 shows CPU performance of CS server for patent administration. Measurement of CPU IDLE was implemented to confirm CPU performance. CPU IDLE means the percentage of CPU waiting time for commands requested in a specified period.

Table 3-1 CPU IDLE Status of CS Server for Patent Administration

	Case 1	Case 2	Case 3	Case 4
Time	15:34:57	15:41:15	15:45:39	15:47:55
CPU #0	69.8%	96.2%	91.7%	27.0%
CPU #1	83.3%	99.8%	97.8%	96.0%

According to the result observed in Table 3-1, there is no case in which both CPU #0 and CPU #1 show 0% status of CPU IDLE. Cases 1 and 4 in Table 3-1 show that when one CPU shows "Busy", the other CPU shows high value of CPU IDLE.

The CS server for patent administration, therefore, is concluded to have enough performance capability to work stably at the present stage.

(2) Network traffic

Each examiner's terminal generates about 0.072Mbps of data according to the result of 3.4.1.

As of now there are 300 terminals in IPCM. Assuming that each terminal generates data the same as by patent administration, the total volume of data will be about 21.6Mbps (=0.072 Mbps × 300 terminals). However, the network still has enough performance capacity at the present stage, with the internal line speed capacity being 100Mbps.

(3) Client terminal performance

According to the study on terminal response, following tendencies were observed.

- When a menu, other than the current one, of the TOP menu is selected by the operator, the PC screen response becomes slow.
- The decrease in response is observed at the terminals of the following low specs, while the response decrease are not observed at new terminals.

  - CPU: Pentium2 (233MHz)
  - Memory: 64MB
  - DISK: 6GB

Note: OS of the CS client is limited to Windows 98

(4) Conclusion

According to the above-mentioned survey results, it is concluded that the response decrease in the client terminal of the Patent Division is caused by insufficient performance of old client terminals.

Table 3-2 Assessment Result of Response Decrease

Survey Items	Assessment Criteria	Assessment
(1)	Server Performance	Server has enough performance
(2)	Network Traffic	Network has enough performance
(3)	Client Terminal Performance	Some terminals don't have enough performance.

Around 60 PC terminals are provided for examiners in the Patent Division, and about 50% of them are Pentium2 machines as of now.

Part 4: Recommendation for Further Improvement of Intellectual Property Administration through Utilization of IT

4 Recommendation for Further Improvement of Intellectual Property Administration through Utilization of IT

4.1 Objectives

Use of IT is expected to increase its importance in the work of intellectual property (IP) administration much more than in the past. The importance of IT will be found not only in the internal administrative process of IPCM, but also in promoting international harmonization of IP systems, and improving the quality of service for applicants and related parties.

The present study has focused on improvement of IP administration through use of IT throughout Phases 1 and 2 of the study. This chapter recommends potential areas of improvement in the administration process through the use of IT, based on the analyses of the overall administration process including areas the Study did not cover previously.

4.2 Current Status of IT Use in IPCM

The status of IT use in IPCM was studied in detail in Phase 1 (for details, see III-2 of the Phase 1 Report). The following describes the changes after that and the current situation.

(1) Change in organizational setup of IPCM

The former IPD of the Ministry of Domestic Trade and Consumer Affairs (MDTCA) was separated from the MDTCA and reorganized as IPCM, a Government corporation. IPCM, however, is still under the control of the Minister of the MDTCA with its budget plan being subject to the approval of the Minister. IPCM is expected to perform the same functions of the former IPD including the management of international affairs of IP, while no new organization responsible for IP administration was established within MDTCA. Thus, there was no significant change in organizational setup responsible for IP administration, except that it gained authority regarding financial and human resource management.

The number of staff members of IPCM has increased to 272 from 153 by recruiting of 119 persons. The internal organizational setup has not changed significantly, except for the following adjustments as a separate Government corporation.

1. Establishment of the Board of the Corporation and its secretariat
2. Creation of the Public Relations Unit
3. Establishment of the Geographic Indication Division

4. Establishment of the IT Division, which used to be organized with staffs temporarily transferred from the IT Division of MDTCA, as their own organization

(2) Upgrading of IT infrastructure and equipment

The following upgrading has been carried out for the IT environment:

1) Increase in number of PCs

In line with recruitment of examiners and staff members, additional PCs were installed, and as a result, the number of PCs, which are connected to the LAN and servers, was increased.

2) Upgrading of the transaction capacity of internal network

Installation of the increased number of PCs has caused a heavy burden on servers and the response time of each transaction deteriorated accordingly. IPCM upgraded their system to solve this problem in early 2004.

The current backbone of the internal network provides 1,000Mbps quality of speed. The servers and switches of each floor are connected to the backbone. The PCs are connected to the switches of each floor at 100Mbps. Thus, the current internal network has enough capacity for the transactions within IPCM including capacity for a possible increase in the near future. Some broadcasting messages are delivered to all the PCs and servers, as the internal network is defined as a single segment. Although those messages are noise to those, which are not related, the level of noise is not so serious to affect the client PCs.

3) Upgrading of the bandwidth to the Internet

The access bandwidth to the Internet was increased to 1.5Mbps form 128Kbps in late 2003, assuming the introduction of Online Filing and Online Search Services.

(3) Enhancement of computerized administration systems

There was no significant progress in application systems. Online Filing and Online Search Systems, which were planned to be open to the public, are not available as of December 2004.

Currently, the computerized administration systems of trademarks and patents are operated on independent servers separately both using Common Software. Most of the data is stored in the network storage system, which has a hard disk with capacity of 550 GB, and the system is connected to the servers. IPCM is promoting adoption of paperless administration processes, and completed the scanning of all the documents of trademarks and patents applications, while they are in a process of creating indexes to the scanned data. As the volume of scanned data became so big, and the available storage capacity of the network storage system became scarce, the infrequently used data are

stored in a Jukebox disk.

The environment of the patent document search has been improved; because of the upgrading of the Internet line speed and delay in implementation of Online Filing and Online Search Services. Thus, the access of the examiners to the IPDL of EPO, USPTO, and JPO through the Internet has been improved. Further, the new service of EPO's IPDL, which allows downloading all the pages of a given application, helps improve the efficiency of examiners when getting the necessary information.

Although Online Search Service for public is not available yet, the examiners are using the online search tool, which is a part of Online Search Service System, to search applications filed in Malaysia. As not all the scanned documents have been indexed yet and specification of patents cannot be retrieved on PCs, the examiners usually use a tool to find out the patent numbers which has similarities, and, for the specification, they still depend on the paper documents in the filing room.

Images of trademarks are already scanned and registered in the database of CS and Online Search Servers. However, since the users of Online Search Service cannot access some of the items in the database of CS, updating of the search functions is being planned.

Online Search Service has been provided to the public on a trial basis in a library room of IPCM, and IPCM is planning to improve the functions of this service reflecting the feedback received from those who used the service.

4.3 Analysis and Recommendation on Further Utilization of IT for Improvement of IP Administration

4.3.1 Facilitation for the Convenience of Applicants

(1) Improvement of ease of application procedure

In view of improvement of the easiness of the application procedure, there are two issues. One is how to describe the contents of applications precisely, and the other is how to reduce mistakes in the procedure. It is pointed out that the inappropriate description of specifications of patents represents the most typical error found in the process of application, followed by typographic errors.

Nevertheless, there seems to be no serious error in the application procedures. The application form is very simple for industrial design application. Application manuals are available for applicants free of charge for patents and industrial design application, while a charge is collected for the manual in the case of trademark applications.

Guidance and dialog meetings have been held for agents. Guidance information is also available on the Web, and questions from the applicants are responded through e-mails.

As for the patents application, higher levels of educational achievement for the applicants and agents, and improved technical writing skills for describing the specification of inventions will increasingly become necessary in the near future.

To prevent typographic errors when applications are prepared, an intelligent data entry screen can provide an automatic function which can eliminate misspelling and unexpected wording. The Common Software does not provide these functions. To prevent errors of long sentences such as specification of invention at data entry at IPCM, they enter the sentences into a "Word" document first, make verification using the spelling-check function, and then "copy and paste" the sentences on the data entry screen of Common Software.

The planned Online Filing System, once it is introduced, will provide automatic checking functions. EPTOS~Soprano, the next generation of Common Software, also provides the functions. The upgrading to EPTOS~Soprano has already been decided by IPCM, and will be implemented within two years.

Recommendation 1

Amending of errors after filing of an application requires the official procedures of communication between applicants and examiners. Therefore, it is desirable to avoid such procedure by establishing a mechanism for applicants to correct errors before the application is filed. It is recommended in this connection, that either there be adoption of a rule for applicants to go utilize the spelling check function before submitting an application, or provision of automatic spell-check functions in an automatic application form.

(2) Easy access to filing

Online Filing Service is being planned, and will enable applicants to file their applications without appearing at the counter of IPCM. The functional test of Online Filing system has been completed, but the operational test, which involves all the expected real parties, has not been performed yet. The remaining issues for the planned service include the following (for further details, see the text box on the next page):

1. Technical issues
   - Connectivity to banks
   - Verification of digital certificate

2. Legal issues

- Electronic document law

Online Filing service, which is being planned, is only for patents and trademarks, and does not cover industrial designs.

Recommendation 2

It is recommended that after the online services for patents and trademarks are implemented, and operational issues are cleared, IPCM should launch on Online Filing Service for industrial designs. In view of convenience it would provide for applicants and agents, an integrated operation rule among patents, trademarks, and industrial designs is desirable to be applied.

Remaining Issues for the Planned Online Filing Services

(1) Temporary Storage of Application

In the case of the Online Fling, the application data is transferred form the user PC to the Online Filing server of IPCM for temporary storage with the contents being kept secret by use of encryption technology. The stored data are transferred automatically to the Common Software System by means of mapping technology, item by item. However, since the Common Software server does not have the function of checking items, the system must be provides with a function of checking items that are in between the temporary storage process and automated data transfer process.

(2) Proof of Applicants' Identity

Current procedure uses the written signature of applicants and agents as an evidence of authenticity of applicants and agents. In the case of Online Filing, a digital signature and digital certificate will replace the function of the written signature. For the reliable use of digital signatures, IPCM has to verify if the received digital certificate has been issued by a reliable certificate authority, if the certificate is valid, if the certificate belongs to the applicant, and if the signature can be verified with the certificate, when IPCM receives the electronic application. Full facilitation of the above processes must be confirmed thoroughly before starting the service, since these processes use new technologies, and technical problems can occur easily.

(3) Payment of Fees

Current paper based document practice uses checks as the instrument of payment. In order to take advantage of the Online Filing, IPCM is to introduce pre-deposit (account debit) payment and credit card payment. The system has already been developed. However, connectivity tests with banks and credit card companies have not been performed yet. Detailed tests are required to examine the validity of the system assuming various possible cases.

(4) Legal Framework.

Digitally signing of documents has been made legal by the Digital Signature Law in Malaysia. Electronic documents, however, are not legalized yet. The government is planning to introduce the "Electronic Document Act" which defines the standard operation rules, requirements for scanned documents, requirements for storage of electronic data, definition of original documents, and other related issues. The rules will be applied to all electronic documents including the Online Filing document for patents. If IPCM provides the official service of Online Filing, it will be necessary to comply with the act. The draft act, however, has not been disclosed to the public yet, and therefore, IPCM has to wait to implement the Online Filing service until the act is settled.

(3) Filing at local offices

IPCM has two local offices, in Sabah and Sarawak. These offices have been connected to the head office via the Internet at the speed of 64Kbps since 1999. Currently the offices receive the applications, but send them to the head office by mail without taking any action. The applications received by these offices are still 2 or 3 per week. IPCM has a plan to connect these offices with the head office through the Internet using the VPN connectivity so that applications can be sent directly from these offices. This method will allow PCs in these offices to access servers at the head office. The plan is scheduled for implementation at the end of 2004.

Recommendation 3

The current security measures for when access is made from these local offices to the head office are composed of an ID and password. The messages between the offices are exchanged as plain text. Before starting to exchange filing data between these offices, it is highly recommended that a higher security measures be adopted to avoid ill-intended access and to protect information.

(4) Improvement of applicants' convenience in search before application
(See 4.3.7 (2)).

(5) Corresponding to inquiries from applicants in the process of examination

Current practice allows applicants to contact the examiners by telephone or mail to inquire about the applications that have been filed. Most such contacts are about the status of applications. The examiners have accepted inquiries by telephone, even without enough presentation of evidence identifying the inquirer. The information provided currently is limited to the information that should be open to the public. The Online Search Service, when it will be available, can provide this level of information on occasion of the search by the inquirers, and applicants can enjoy the benefit of those facilitations.

Inquiries or notices to the applicants from IPCM are currently delivered by postal mail. If those exchanges of paper documents can be replaced by online procedures, less paper is required and the delivery time will be shortened. In this case, however, the information provided will be that of limited parties, and require precise identification of the senders and the recipients. In this connection, a more secure method for identifying corresponding parties must be established.

Recommendation 4

After the Online Filing Service is established, it is recommended to promote online correspondence not only for application procedures, but also for all other administrative processes, to improve efficiency of administration and convenience of applicants.

4.3.2 Reduction of the Examination Workload

Reducing the workload of examination is important particularly for patent examiners. For the current practice of patent examination, see IV-3 of the Phase 1 Report.

(1) Patent examination

To ensure efficient patent examination, it is necessary for examiners to collect necessary information easily and speedy, and display the information precisely. The procedure of collecting information from EPO has been highly improved as IPCM has upgraded the line speed of its connection to the Internet and the EPO has begun the new IPDL services that allow downloading all pages of specification by a single operation.

The search keys allowed at the IPDL, however, are limited to four words only, which are not enough for the complex conditions of search. Therefore, many examiners still prefer to use MIMOSA, which provides more than 100 key words as search conditions.

In the case of searches for applications which have been filed in Malaysia, the examiners totally depend on the search tool available from the Online Search System. The search system uses the index, which is compiled from bibliographic information and summary. The search result shows the application numbers, which meets the search conditions. However, document image data are not available on the Online Search servers; they are stored in a different server. Further, there are many documents which are not stored correctly, or not available. Thus, the examiners currently use the Online Search tool to find out the patent or filing numbers only, and ask staff members to bring the original paper documents from the filing room by referring to the patent or filing numbers thus found.

In addition, the Online Search tool is not capable of accepting complex search conditions, and it requires examiners to enter search conditions in each case of search. IPCM is studying the development of "batch search" functions, which enable examiners to assign a file, which can contain complex search conditions like MIMOSA.

(2) Trademark examination

For examination of trademarks, examiners use the Online Search tool as same as in the case of patents filed in Malaysia.

Since the Online Search servers do not necessarily include all the data, which are registered in CS, examiners sometimes have to use the CS client software and re-key in to access necessary information. IPCM is considering to update the Online Search tool to be able to access directly the necessary information stored in the database of CS.

Recommendation 5

Patent examiners prefer to use paper documents for examination. They prepare paper documents for examination after searching the relevant patent documents by IPDL or MIMOSA, even if they can see them on the screen. Paper documents provide wider visibility than the data on the PC screen. They are also easier to read. On the other hand, examiners have to take the time to make hard-copy printouts in order to get the paper documents. The current PCs and reference environment are not equipped with convenient tools sufficient for conducting examination without use of paper documents, resulting in the examiners' preference for use of paper documents for examination.

For the future, however, it is recommended to provide better conditions for examiners to conduct their examinations with reduced dependence on paper documents, considering the benefit of paper-less operation including the reduction of the costs of printing and disposal of paper, etc. Such tools/functions include high speed for search response and a function that puts memos on the screen.

4.3.3 Improvement of Efficiency of Administrative Process

(1) Ensuring interoperability among different administration systems and use of a unified window among the systems

IPCM has introduced more than one system for administrative work, including the Patent System and the Trademark System, which are operated on the CS, the Documentum System, which provides document image filing, and the Industrial Design System, which will be in operation soon. The Industrial Design System was designed to have interoperability with the database of CS so that they can communicate in the future.

If integrity among all the systems is achieved, and users can access every data or application programs, it might improve the users' convenience to some extent. However, since only a limited number of users need to access different systems in the regular administration process, integrity of operation does not necessarily provide a significant benefit for users, except that common use of data among the different system will increase the users' convenience.

Recommendation 6

The expecting convenience should be analyzed in detail, with the integrity among the different systems, in advance to which there should be a decision on the integrity issue. The requirements should be identified and the extent of benefits from the integrity should be figured out in advance.

(2) Interoperability with computerized accounting system

Introduction of the SAGA system (Standard Accounting system for Government Agencies) is being planned, with as the target for introduction the middle of year 2005. The government has requested every agency to submit its daily accounting report, which provides data compatible to the SAGA, to gather accurate account data of the Government agencies.

IPCM currently does not have enough information on the specifications of SAGA and no specific implementation plan has discussed yet. The SAGA covers all financial activities, which include business procurements, salaries of employees, and others. The

probable relevant process to SAGA in the case of IP administration will be collection of fees. The collection of fees is managed by a system which is completely independent from CS of patents and trademarks. The SAGA will replace the current accounting system in the future. In this case, as long as the current practice of fee management will be continued together with the introduction of the SAGA system, there will be no need of adjustment for CS or the Industrial Design System with the launch of the new system. However, in anticipation of the introduction of Online Filing service and Online Search service, an appropriate way will be necessary to be identified through a study as to how the CS and the Industrial Design System should transfer data on fee collection into the current accounting system or SAGA.

Nevertheless, since IPCM does not have enough information about SAGA, it is difficult to make any suggestion at present on how the current systems should be adjusted to acquire interoperability with SAGA.

4.3.4 Reduction of Massive Storage of Paper Documents with Computerized Documents

Promotion of electronic documents is a part of efforts to improve the efficiency of administrative procedures. It will improve efficiency of application filing procedures, and other administrative procedures. It will also contribute to improvement in providing a variety of information to the relevant organizations and personnel.

Promotion of electronic documents requires the computerization in all the administrative processes including but not restricted to Online Filing, internal procedures of IPCM, and document exchange between IPCM and applicants. IPCM has already implemented computerization in the internal administrative procedures for patents and trademarks. Online Filing service for patents and trademarks is being planned. The internal administration procedures for industrial designs will also be announced soon. In this connection, conversion of paper documents to electronic documents is in progress and the Documentum system is used to store the scanned images and retrieve. All the paper documents are already scanned and the quality control of the scanned documents will be completed by the end of November 2004. Since quality control is not finished yet for the scanned documents, examiners cannot depend on the Documentum system yet, and still have to get paper documents in the filing room.

However, if all the examiners use scanned image documents, excessively heavy transaction traffic would occur at CS and Documentum.

Recommendation 7

To further advance the shift to paperless administrative processing, the transaction capacity of Documentum must be upgraded. Currently the Documentum is operated on the same server as that of CS for trademarks, while the Documentum obtains necessary data from the Oracle database on another server (backup server). Since there is no need for the Documentum to be operated on the same server as that of CS, they should be operated on the different servers to reduce the transaction burden.

4.3.5 Assurance of Security of Stored Data

From the viewpoint of security of stored data, there are two important issues; these are:

1) How to ensure the data storage capacity of the system, and
2) How to secure the data back up operation

Capacity for data storage was upgraded in 2004, with the introduction of new servers and data storage devices. They are operating in good condition at present. However, if the planned Online Search service is implemented, and electronic image document files are fully utilized, there will be a heavy burden on some portions of the systems again. It is recommended for IPCM to have future enhancement plan ready in advance based on projection of such future events. There could be the case wherein the systems might be required to be replaced, in the future.

With regard to the data back up operation, IPCM has experience gained in early 2004 when the systems were upgraded. IPCM backed up all the data and programs and restored them on the new servers. However, periodical review of the back up procedures and drill training of the procedure is essential for possible change of IT staff in the future.

Recommendation 8

It is strongly recommended to review the back up procedures time to time, and have drills on the procedures periodically, at least once a year.

4.3.6 Strengthening of Network Security

The major focus with regard to strengthening of network security is on the following points:

1) Need for review of security measures in line with as increase in the number of connections outside the network, and
2) Ensuring the security for connection with the PCs at local offices.

The connection with the outside network will increase accordingly with implementation of Online Filing service and Online Search service. The connection with the local offices is being planned with the Sabah and Sarawak offices.

To protect the resources of IPCM, the current security measures should be reviewed from all the possible physical, technical, and operational points of view. PCs at the remote offices will be connected to the servers of CS and Documentum at the head office. Introduction of VPN is planned to protect data security.

Recommendation 9

For the immediate measures, the parameters of the firewall should be reviewed and adjusted, and the current management rules for IDs and passwords should also be reviewed to enable detection and rejection of intruders. The access rights to be assigned to the local offices should be studied carefully based on the analysis of all the information of IPCM and the probable risks accompanying the exposure.

4.3.7 Expansion and Upgrading of Intellectual Property Services

(1) Computerization of geographic indications administration

IPCM is promoting registration of geographic indications. The current target is more on increase in awareness and enlightenment of geographic indication as one type of intellectual property, and the applications for the geographic indications are very few.

As the applications are still small, the computerization of the administrative process is not necessary except for disclosure of registration on the Internet.

(2) Implementation of Online Search service and building up of IPDL

Online Search service is being planned for patents and trademarks. The software for search service has been developed already, but the contents of the database are still undergoing a quality check. It will take some more time before the service is commenced.

To start the service, network security measures must be implemented. To protect the internal servers, separation of the servers and databases accessible from the outside should be studied physically and logically.

As for the building up of IPDL (Intellectual Property Digital Library), which is based on the concept of a free service for information disclosure, the current Malaysian laws and regulations assumes that disclosure of contents of the Register is a service with fees. There is a need to make adjustment between the concept of charged services and the free IPDL services, which are a useful measure in promoting the intellectual property rights

system.

Recommendation 10

There is a significant policy gap between the current laws and regulations on the matter of provision of Online Search service with fees and the philosophy of free IPDL services. Development of IPDL needs budgetary steps to be taken for establishment and operation. The consensus building for free IPDL service is necessary on the basis of the understanding that the availability of free information on intellectual property would play a big role in the development of the intellectual property rights system.

4.3.8 Harmonization with the International IP Systems

A current issue in Malaysia related to the international harmonization of IP system is membership in PCT. Malaysia's Parliament has approved accession to membership, but the necessary laws and regulations have not been finalized yet. Since the patent applications based on PCT are required to be published 18 months after the filing date, the government is preparing laws and regulations to apply the same rule to domestic patent applications.

Further, the preparation is necessary for the implementing procedures, which are required for the accepting countries of PCT applications, and the guidance for applicants.

4.3.9 Exploitation of Cooperation among IP Offices

(1) Utilizing the cooperation of JPO

JPO is providing the AIPN (Advanced Industrial Property Network) to IP Offices in Asian countries as one of the activities of international cooperation in the field of patent examinations. AIPN provides an English translation of search reports produced in Japan and information on patent family. AIPN can be accessed over the Internet and it does not require any additional facilities or equipment. As Japanese applicants have made around 30% of patents applications, the Japanese search reports would help to provide good information for examiners.

(2) Utilizing the cooperation of the EPO

Malaysia has officially joined ECAP II. The upgrading of CS is being planned.

Further, EPO renewed the IPDL service, which enabled the users to download and print the whole specification of a patent. The examiners do not need to print specifications page by page any more. The efficiency of preparatory procedures for

examinations has been significantly improved with the renewal of the service. The service is being provided in good condition at present.

(3) Cooperation of the USPTO

IPCM does not have any direct relation with USPTO at present. The search reports issued by USPTO cover many areas, which could be a great help for examiners of IPCM. But as the examination system of patents in USA is different from that of Malaysia, and IPCM does not have enough information about the procedures of USA, the search reports are not be used efficiently.

Recommendation 11

The current study has provided a good opportunity for JPO and IPCM to communicate and understand each other. Nevertheless, the current official communication channel between them is not sufficient enough for the cooperative efforts to be widely known and used by the examiners in their administrative process, as in the case of AIPN, which was developed by JPO for the Asian patent offices. It is recommended for IPCM to establish an official structure, which enables the examiners smooth and continuous communication with JPO and other IP offices abroad.

4.3.10 Enhancement of Planning Role of the IT Unit

IPCM has been utilizing IT by a combination of systems developed originally, packaged systems, and the services provided outside of IPCM. IPCM needs to have a plan of IT development that takes into account strategic and integrated use, while utilizing the current mixed resources as much as possible. The plan should be developed in view of greater IT utilization for further improvement of IP administration, besides the system improvement in view of operation including adoption of a single window among the different systems.

To realize this, the role of the IT Unit is essential. The status of the IT Unit should not be left as the technical supporting team. It should be so positioned as to enhance the planning role of IP administration system as a whole to realize the objectives of IPCM.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